GOVERNANCE, NATURAL RESOURCES AND LOCAL DEVELOPMENT IN MOZAMBIQUE

By

Israel Jacob Massuanganhe

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To God, always present, my thankfulness.

Israel Jacob Massuanganhe[1]
December, 2008

[1] Student Number: 200314134. email: Jacob.Massuanganhe@gmail.com

Key Messages

"It is Essential that African leaders follow up on the commitments they have made to the people of Africa, and genuinely improve governance and transparency in all sectors."

Kofi Annan, Implementation of the UN Millennium Declaration, 2002.

"Commercial farms in South Africa could become significantly more efficient if they became smaller. The government could encourage that trend by removing policies and distortions that favour large over small farms".

Johan van Zyl, Hans Binswanger and Colin Thirtle (1995).

"Typically, development agenda has sought to bring about change through technically sound programmes, supported in country by individual champions of reform or change. Increasingly the importance of understanding the underlying political systems and the mechanics of pro-poor change has been acknowledged. In particular the role of institutions – both formal and informal, and underlying structural features is being recognized".

DFID, 2000

DECLARATION

I declare that the thesis hereby submitted by me for the PhD Degree in Agricultural Economics at the University of the Free State is my own independent work and has not previously been submitted by me at another university/faculty. I further more cede the copyright of the thesis in favour of the University of the Free State.

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Israel Jacob Massuanganhe

07 December, 2008

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By

ISRAEL JACOB MASSUANGANHE

Degree: **PhD**
Department: **Agricultural Economics**
Promoter: **Prof. Herman van Schalkwyk**
Co-promoter: **Prof. Jan Groenewald**

ABSTRACT

The role that agriculture should play in economic development has been recognised for years. In recent years, concern has been expressed over rising agricultural and food prices. The world market prices for major food commodities have risen sharply to historic highs of more than 60 percent above levels just two years ago. Many factors have contributed to the rise in food commodity prices. Some factors reflect trends of slower growth in production and more rapid growth in demand that have contributed to a tightening of world balances of grains and oilseeds over the last decade. Other factors that have added to global food commodity price inflation include the declining value of the US dollar, rising energy prices, increasing agricultural costs of production, growing foreign exchange holdings by major food-importing countries, and policies adopted recently by some exporting and importing countries to mitigate their own food price inflation (Trostle, 2008).

Mozambique has a vast extension of land and diversity of natural resources. Resources are inadequately used, the rural income continues to fall, and poverty is increasing. The rural standard of living has been deteriorating year by year. To date, estimations reveal that between 60 and 80 percent of cultivated land in all the provinces is concentrated in areas between 0.2 and 1 ha. For a sample of 192 farmers, using a translog stochastic production frontier like that of Bravo-Ureta and Pinheiro (1993), who estimated a Cobb-Douglas total value product frontier for analysis purposes, the study found that the average economic efficiency (EE), technical efficiency (TE) and allocative efficiency (AE) for the sample were 11.6%, 83.0% and 13.7% respectively. These results suggest that there is considerable room to maximise resource usage and increase agricultural output without additional input and given the existing technology.

The adoption of new technologies designed to enhance farm output and income has received particular attention as a means to accelerate economic development. However, output growth is not only determined by technological innovations, but also by the efficiency with which available technologies are used in the absence of inefficiency factors. As Bravo-Ureta and Pinheiro (1993) noted, the evidence presented in this study suggests that there is much room for improving the efficiency of natural resource management in general. The results based on frontier methodology are generally consistent with the notion that local actors play an important role in the management of local resources; consequently, public investments designed to enhance human and social capital at local level can be expected to generate additional skills and output even in the absence of new technologies. The participation of citizens in all stages is crucial.

It is recognised that qualitative variables have influence and potential importance in efficiency. Governance is considered within the framework of power, process and practice and how these have shaped peasant access to and control and use of natural resources. Over the years, state visions of appropriate agriculture development have largely been extended to the peasant sector through a

centrally directed structure and process. Pioneering efforts at decentralising entrustments over the use and management of resources to the peasant communities have largely resulted in recentralisation at the district level, where such efforts are still practised in the trickle-down mode. This is in part because the policy thrust seeking to empower the peasant communities is supply-led, and thus defined according to the terms and processes of external agents, including funders and central governments.

The research found that by improving institutions', citizens' and communities' capacity to address local governance and decision-making through prominent, decentralised natural resources management policies, they could participate more effectively in local development, gain experience in democratic processes, and hold local officials responsible for their decisions. The study concluded that natural resources play a strategic role in rural economies both as a potential source of long-term development and as the essential contributor to sustained food security. Access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.) is essential for sustainable poverty reduction. Many rural communities are dependent on natural resources in one way or another. Decentralising natural resource management and using local decision-making power is critical to improve the revenue generation of citizens and local authorities. Local representative bodies need power over the resources that affect rural sustainable livelihoods in order to become legitimate actors around which civic organisations and citizens rally for justice, sustainable livelihoods and economic improvement. Decentralising natural resource management (NRM) can give local governments allocative powers over lucrative opportunities, both of which can help build local government legitimacy. In short, local development can emerge.

Keywords: Data envelopment analysis, Efficiency, Decentralisation, Natural resource management, Land reform, Agricultural development, Governance, Participation, Local development

LIST OF ABBREVIATIONS AND ACRONYMS

AE	Allocative Efficiency
CA	Community Association
CBNRM	Community-Based Natural Resource Management
CBD	Convention on Biological Diversity
CBO	Community-Based Organisation
CDF	*Code Domanial et Foncier* (Domain and Land Tenure Code)
COLS	Corrected Ordinary Least Squares
CSO	Civil Society Organisation
CFs	Collective Farms
CGIAR	Consultative Group on International Agricultural Research
COGEP	Community Management Council
CRS	Constant Return to Scale
DDP	District Development Plan
DEA	Data Envelopment Analysis
DEAP	Data Envelopment Analysis Program
DFID	Department for International Development (UK Government)
GDs	*Grupos Dinamizadores* (Dynamising Groups)
DINA	*Direcção Nacional de Agricultura* (National Directorate of Agriculture)
DMU	Decision-Making Unit
DINAGECA	*Direcção Nacional de Geografia e Cadastro* (National Directorate of Geography and Cadastre)
DNFFB	*Direcção Nacional de Florestas e Fauna Bravia* (National Directorate of Forestry and Wildlife)
DNRM	Decentralised Natural Resource Management
DWG	Decentralisation Working Group
EE	Economic Efficiency
FAO	Food and Agriculture Organisation of the United Nations
FRELIMO	*Frente de Libertação de Moçambique* (Liberation Front of Mozambique)
GDs	Dynamising Groups (*Grupos Dinamizadores*)
GDP	Gross Domestic Product
GIS	Geographic Information System
GNP	Gross National Product
GoM	Government of Mozambique
HIPC	Heavily Indebted Poor Country
IDPPE	*Instituto Nacional de Desenvolvimento da Pesca de Pequeno Escala* (Institute for the Development of Small-Scale Fisheries)
IMC	*Instituto Moçambicano de Cereais* (Mozambican Grain Marketing Board)
IMF	International Monetary Fund
INE	National Statistics Institute
IPCC	*Instituicoes de Participacao e Consulta Comunitaria* (Institution for Community Participation and Consultation)

ISRDS	Integrated Sustainable Rural Development Strategy
LDCs	Least Developed Countries
LDP	Local Development Programme
LOLE	Law on Local Organs of the State
LOMACO	Lonrho-Mozambique Agricultural Company
LSO	Large-Scale Successor Organisation
MADER	Ministry of Agriculture and Rural Development
MAE	Ministry of State Administration
MAP	Ministry of Agriculture
MDGs	Millennium Development Goals
M & E	Monitoring and Evaluation
MICOA	Ministry of the Coordination of Environmental Affairs
MITUR	Ministry of Tourism
MLE	Maximum Likelihood Estimation
MPD	Ministry of Planning and Development
MPLA	*Movimento Popular de Libertação de Angola – Partido do Trabalho* (Popular Movement for the Liberation of Angola – Party of Labour)
NAFTA	North American Free Trade Agreement
NGO	Non-Governmental Organisation
NR	Natural Resource
NRM	Natural Resource Management
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
OMM	Organisation of Mozambican Women
ORAM	*Organização Rural de Ajuda Mutua* (Rural Mutual Help Organisation)
PARPA	*Plano Da Acção Para a Redução Da Pobreza Absoluta* (Action Plan for the Reduction of Absolute Poverty)
PES	*Plano Económico e Social* (Economic and Social Plan)
PRE	Programme of Economic Rehabilitation
PRGF	Poverty Reduction and Growth Facility
PROAGRI	Agricultural Sector Public Expenditure Programme
RENAMO	*Resistência Nacional Moçambicana* (Mozambican National Resistance)
SACs	Southern African Countries
SADC	Southern African Development Community
SHG	Self-Help Group
SPFFB	*Serviços Provinciais de Florestas e Fauna Bravia* (Provincial Services for Forestry and Wildlife)
SPGC	*Serviços Provinciais de Geografia e Cadastro* (Provincial Geographic and Cadastral Services)
TE	Technical Efficiency
TFP	Total Factor Productivity
TIA	*Trabalho de Inquérito Agrícola* (Rural Income Survey)
UF	Unit Family

UN	United Nations
UNAC	*União Nacional dos Camponeses* (National Small-Scale Farmers' Union)
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
VRS	Variable Returns to Scale

Table of Contents

Declaration ii
Acknowledgment....ii
Abstract ii
Acronyms vi
Table of contents.... viii
List of tables and figures xii

1. INTRODUCTION 1

1.1. BACKGROUND 1
1.2. PROBLEM STATEMENT 3
1.3. OBJECTIVES 5
1.4. RESEARCH METHODOLOGY 6
1.5. SAMPLE, DATA USED AND PROCESSING 7
1.6. OUTLINE OF THE THESIS 8

2. A REVIEW OF AGRICULTURAL AND RURAL LIVELIHOODS.... 10

2.1. COUNTRY PROFILE 10
2.2. RURAL LIVELIHOODS IN MOZAMBIQUE 14
2.2.1. Natural Resource Use and livelihood strategies 17
2.2.2. Rural Farmers and Vulnerability Households 18
2.2.3. Farm Size and Agriculture Development 20
2.3. AGRICULTURE DEVELOPMENT 24
2.3.1. Farm Systems and Productivity 27
2.3.2. Economic and Political Changes 27
2.3.3. Agricultural Reforms 29
2.4. RETROSPECTIVE OF THE AGRICULTURE SECTOR IN MOZAMBIQUE 32
2.4.1. Agricultural Policy Background 33
2.4.2. Period Before Independence 35
2.4.3. Post-independence Policies 36
2.4.4. Agricultural Production Growth 40
2.4.5. Population Growth and Farming Systems 42
2.4.6. Public Investments in Agriculture 43
2.5. THE ROLE OF INSTITUTIONS 46
2.5.1. Economics of Institutions 47
2.5.2. Institutionalizing Common Pool Resources 48
2.5.3. Land Reform and Impact in Agriculture 49
2.5.4. Institutional Changes in Agriculture 50
2.6. THE ROLE OF TRADITIONAL AUTHORITIES 52

2.6.1. Social Institutions Promoting Development ... *53*
2.6.2. Dimensions of Traditional Leadership ... *55*
2.6.3. Traditional Institutions' Support to Local Livelihoods ... *57*
2.6.4. Community Incentives and Secure Rights ... *59*

2.7. SUMMARY OF POLICY ISSUES ... 62

3. DECENTRALIZATION AND GOOD GOVERNANCE ... 64

3.1.1. Overview of Decentralization and Good Governance ... *64*
3.1.2. Local Participation and Representation ... *66*
3.1.3. The Legal Framework ... *68*

3.2. DECENTRALIZED NATURAL RESOURCES MANAGEMENT ... 74

3.2.1. Natural resources and rural economies ... *75*

3.3. NATURAL RESOURCES MANAGEMENT IN AFRICA ... 79

3.3.1. Communal Natural resources Management ... *85*
3.3.2. Local Natural Resources Planning ... *89*
3.3.3. Institutional Setting in Mozambique ... *89*

3.4. ACCESS AND PROPERTY RIGHTS TO NATURAL RESOURCES ... 94

3.4.1. Typology of Rural Households ... *95*
3.4.2. Gender and Access to Natural Resources ... *98*
3.4.3. Security of Property Rights ... *101*

3.5. LAND POLICY IN MOZAMBIQUE ... 103

3.5.1. Policy Formulation ... *104*
3.5.2. New Policy Tools and Concepts ... *105*
3.5.3. Consultations and Representation ... *106*
3.5.4. Participation in Resource Management ... *108*

3.6. LAND TENURE AND RURAL HOUSEHOLDS ... 109

3.6.1. Land rights, Titling and Tenure Security ... *109*
3.6.2. Land and the Impact of Market Imperfections ... *111*
3.6.3. Efficiency and Customary Tenure Systems ... *115*
3.6.4. Tenure Reform in the Communal Areas ... *119*
3.6.5. Tenure Security and Investment Incentives in Agriculture ... *121*
3.6.6. Policy Distortions in the Agricultural Sector ... *122*

3.7. SUMMARY OF POLICY ISSUES ... 125

4. ECONOMIC THEORY OF EFFICIENCY ... 129

4.1. INTRODUCTION ... 129

4.2. CONCEPTUAL AND ANALYTICAL FRAMEWORK ... 132

4.2.1. Conceptual Framework ... *132*
4.2.2. Frontier Function Methodology ... *134*
4.2.3. Deterministic Production Frontiers ... *137*
4.2.4. Cross-Sectional Frontiers ... *139*

4.3. ANALYTICAL PROGRAMMING MODEL ... 139

4.3.1. Data envelopment Analysis - DEA ... *139*
4.3.2. Theoretical Modelling Approach ... *141*
4.3.3. Institutional Framework ... *142*
4.3.4. Resource Allocation Model ... *143*

4.4. EMPIRICAL POLICY EVIDENCES ... 145

5. ESTIMATIONS AND DATA ANALYSIS ... 147

5.1. INTRODUCTION ... 147

5.2. DEA MODEL THEORETICAL BACKGROUND ... 147

5.2.1. Modeling Efficiency Approach ... *148*
5.2.2. Data and Descriptive Statistics ... *149*
5.2.3. Production Estimations ... *151*

5.3. EMPIRICAL RESULTS OF EFFICIENCY ... 152

5.3.1. Unit Farms Efficiency Estimates ... *152*
5.3.2. Aggregated Results per province ... *155*
5.3.3. Geographic analysis of Technical Efficiency ... *157*
5.3.4. Geographic analysis of Scale Efficiency ... *158*

5.4. FACTORS AFFECTING EFFICIENCY ... 160

5.4.1. Econometric Modeling ... *161*
5.4.2. Econometric Specification ... *163*
5.4.3. Definition of Variables of the Model ... *164*
5.4.4. Estimative of the Regression ... *166*
5.4.5. Model Simulation ... *170*
5.4.6. Prediction of Difference Scenarios ... *171*

5.5. DISCUSSION OF THE EVIDENCES ... 173

5.5.1. Trends of Quantitative Influence of the Estimations ... *173*
5.5.2. Governance Policy Influences ... *175*
5.5.3. Social and Cultural Influences ... *178*

6. POLICY & INSTITUTIONAL ISSUES ... 180

6.1. INTRODUCTION ... 180

6.2. RURAL LIVELIHOODS IN CONTEXT ... 180

6.2.1. The Vulnerability Context of Rural Livelihoods ... *181*
6.2.2. Public Policy and Natural Resources ... *183*
6.2.3. Natural Resource and Livelihood Strategies ... *185*

6.3. DECENTRALIZED MANAGEMENT AND RURAL LIVELIHOODS ... 186

6.3.1. RURAL GOVERNANCE PERSPECTIVE ... *187*
6.3.2. Institutional Arrangements and Natural Resource Management ... *189*
6.3.3. Decentralization Initiatives on Natural Resources ... *190*
6.3.4. Consultations and Participation in Natural Resources Management ... *193*
6.3.5. Local Participation and Community Consultation ... *195*

6.4. THE ROLE OF LOCAL AUTHORITIES ... 197

6.4.1. The Drives of Change ... *198*

6.4.2. Anthropologic and Sociologic Perspectives ... 199
6.4.3. Local institutions and rural livelihoods ... 202
6.4.4. The role of Traditional Authorities ... 204
6.4.5. Relationship between State organs and traditional leaders ... 207
6.4.6. Revitalizing Traditional Institutions for Natural Resource Management ... 210

6.5. THE NEW RURAL DEVELOPMENT PARADIGM ... 214

6.5.1. Institutions and Organizations Influences ... 214
6.5.2. Planning for Sustainable Livelihoods ... 215
6.5.3. Towards an Integrated Rural Development Strategy ... 217
6.5.4. Supporting Local Institution Building ... 218

6.6. FINDINGS AND POLICY IMPLICATIONS ... 219

6.6.1. Land Issue in Mozambique ... 221
6.6.2. Access to Land and Implications in Agriculture Sector ... 224
6.6.3. Impact in Credit and Investment ... 227
6.6.4. Efficiency Losses Associated with Customary Tenure Systems ... 229

6.7. DEVELOPMENT POLICY PRIORITIES ... 230

7. SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS ... 233

7.1. INTRODUCTION ... 233
7.2. SUMMARY ... 234
7.3. CONCLUSIONS ... 237
7.4. RECOMMENDATIONS ... 240
7.5. FUTURE RESEARCH ... 244

REFERENCES ... 246

APPENDIX AND ANNEXES : ... 263

List of Tables

2.1 Structure of Mozambique's economy 12
2.2 Land use by province in Mozambique (sq km) 20
2.3 Land use for food and cash crops by province (sq km) 21
2.4 Land distribution in Mozambique 22
2.5 Agricultural sector – Average annual growth rates (%) 39
2.6 Proportion of agricultural investment 2006-2010
5.1 Summary of statistics 145
5.2 Farm unit production efficiency 146
5.3 Farm unit efficiency 147
5.4 Farm unit frequency distribution of efficiency 148
5.5 DEA estimates by province 150
5.6 Determinant factors of the model 158
5.7 Description of qualitative variables 159
5.8 Parameter estimations 160
5.9 Model simulation 163

List of Figures

1.1 Agro-ecological distribution	7
2.1 Map of Mozambique	10
2.2 Growth of capital and GDP, and growth of exports and imports	13
2.3 Maize crop production (in MT)	16
2.4 Small-scale farms, by province	19
2.5 Production, yield, area harvested, population, and per capita production	24
2.6 Food commodity prices	25
2.7 Production zones of Mozambique	40
4.1 DEA output-oriented model	127
4.2 Factor allocation model	138
4.3 Resource allocation model	139
5.1 Farm unit frequency distribution of efficiency	149
5.2 Geographic distribution of efficiency analysis	151
5.3 Geographic influences of scale analysis per province	153
5.4 Variables with a long-term effect	166
6.1 Integrated Rural Development Framework	209

1. INTRODUCTION

1.1. BACKGROUND

World market prices for major food commodities such as grains and vegetable oils have risen sharply to historic highs - more than 60 percent above levels just two years ago. Retail food prices in many countries have also risen in the last two years, raising concerns around the world. No one factor has been the cause of the rise in food commodity prices. Some factors reflect underlying trends in supply and demand for agricultural commodities that began more than a decade ago. Other developments that have contributed to the price increase have occurred more recently. Some factors reflect significant structural changes in supply-and-demand relationships; others can be interpreted as short-term shocks to global supply and demand for agricultural products.

Reduced agricultural research and development by governmental and international institutions may have contributed to the slowing growth in crop yields. Stable food prices over the past two decades have led to some complacency about global food concerns and to a reduction in research and development funding levels. Although private sector funding of research has grown, private sector research has generally focused on innovations that private companies could sell to producers. These have often been cost-reducing rather than yield-enhancing technological developments. The demand for agricultural commodities has also been affected by some long-term trends. Over the last decade, strong global growth in average income combined with rising population to increase the demand for food, particularly in developing countries. As per capita incomes rose, consumers in developing countries not only increased their per capita consumption of staple foods, they also diversified their diets to include more meat, dairy products and vegetable oils, which in turn amplified the demand for grains and oilseeds (Trostle, 2008).

International pricing, natural disasters and deteriorating of weather conditions (climate changes) are not the only factors that affect the stability of the agricultural sector. Institutional constraints and the role of local authorities in many African countries are the second important elements determining productive output. Low agricultural productivity associated with institutional and policies frameworks have pushed food prices beyond the reach of a significant number of the rural poor. The livelihoods of rural people without access, or with very limited access, to natural resources are vulnerable because they have difficulty obtaining food, accumulating other assets, and recuperating after natural or market shocks or misfortunes. Any discussion of food prices must make mention of agricultural structures, production systems, rural development, and access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.) as being essential for sustainable poverty reduction.

Despite the implementation of governance reforms and agricultural restructuring over the past 12 years, no recent institutional and rural development model of natural resource management has explicitly considered these new issues. This research discusses these factors and illustrates how they have contributed to the deterioration of rural livelihoods and the food crisis. This thesis is developed as a framework to consider how policies related to natural resources affect local development and how effective natural resource governance strategies can be addressed to support communities, organisations and local authorities (traditional) to jointly define and efficiently implement local development based on existing resources, local potential and opportunities.

The matter of efficiency has been of interest since Adam Smith's era and prior thereto (Farrell, 1957; Lovell, 1993). However, a rigorous analytical approach to the measurement of efficiency in production can be said to have originated with the work of Koopmans in 1951. The formal definition provided by Koopmans (1951) considers efficiency to be the measure of a unit's ability to produce outputs from a given set of inputs. Efficiency represents "best performance" and is made up of the units in the data set that are most efficient in transforming their inputs into outputs. Units classified as being 100% (optimal level of the productive frontier) are considered efficient, while those less than 100% are regarded as inefficient.

While efficiency and sustainable agricultural development in Africa has been studied extensively (Hayami & Ruttan, 1985; Churchill 1991; Bruce & Migot-Adholla, 1994), far less attention has been devoted to qualitative aspects, e.g. public policies (agriculture efficiency analysis and how institutional frameworks affect local development), particularly in Mozambique, where more than 80% of the population lives in rural areas where institutions are weak and agriculture is considered as the main source of income and family subsistence for more than 90% of the rural labour force. Many researchers and policymakers have focused their attention on the impact that the adoption of new technology can have on the effort to improve farm productivity and income (Schultz, 1964; Kuznets, 1966; Hayami & Ruttan, 1985). During the past two decades, major technological gains stemming from the green revolution seem to have been largely introduced across the developing world. Bravo-Ureta and Pinheiro (1993) emphasised that there is considerable agreement with the notion that effective economic development strategy depends critically on promoting productivity (efficiency) and output growth in the agricultural sector, particularly among small-scale producers. This suggests that attention to productivity gains arising from the more efficient use of existing technology is justified.

The presence of shortfalls in efficiency means that output can be increased without requiring additional conventional inputs and without the need for new technology. If this is the case, empirical measures of efficiency are necessary in order to determine the magnitude of the gains that could be obtained by improving performance in agricultural production with a given technology. An important policy implication stemming from significant levels of inefficiency is that it might be more cost effective to achieve short-run increases in farm output, and thus income, by concentrating on improving efficiency rather than on the introduction of new technologies. Bingxin, Fulginiti and Perrin (2002) hypothesised that African countries are poorer not because of cultural or geographic factors, but mostly because of poorer institutions and development policies that affect production. This suggests that these factors should be considered in determining the causes of agricultural productivity performance.

1.2. PROBLEM STATEMENT

After decades of research, institutional analysis became a prominent area of development. The combination of policies and institutions seems to bring a new analytical direction to non-market-oriented analysis, where the traditional analytical framework (demand and supply) seems to have limitations. In agriculture analysis particularly, more factors influencing efficiency are qualitative, and mostly related to institutions, politics and policies. In Africa in general, and Mozambique in particular, it is recognised that agriculture plays an important role in rural development and food security. It is a potential factor for structural change and transformation of the rural economy.

Poor and food-insecure households are being forced to plant crops on steep slopes or are unable to afford to keep land fallow, invest in land improvements, or use costly inputs such as fertiliser or to capitalise on existing potential in terms of natural resources. A crop and food supply assessment, conducted by the Food and Agricultural Organisation (FAO) and World Food Programme (WFP) of the United Nations (UN) found in Mozambique that the production of food crops forecast cereal import requirements for 1997/2000 and determined the likely food aid needs. The mission found encouraging developments in the crop and food supply situation, but nevertheless estimated that considerable amounts of food aid would still be needed. Roughly 75% of the population in rural areas still remains mired in poverty, suffering from chronic malnutrition (FAO, 2000).

As a result of the civil war the main infrastructure has been destroyed and is in the process of reconstruction. The rural population therefore has "limited" access to markets. Alternative off-farm income sources are, for instance, seasonal labour and, in declining order, other forms of wage labour, fishing trade, and sales of farm products. Throughout the country, supply rehabilitation or construction was and is carried out by several development cooperation organisations. Water

sources are quite often between 10 and 20 km away from communities and villages. Irrigated areas are limited, and the rain-fed production pattern throughout the country is dependent on the regularity of the annual rainy season. A delay of one month, followed by, for instance, excessive rains, may lead to serious harvest losses. Households with no crop varieties (mono-cropping system) are therefore most severely affected by droughts and/or floods due to the distribution of risk to one single crop.

Mozambique possesses sufficient primary resources, land and labour to reduce dependence and alleviate absolute poverty. The agro-ecological production systems allow deferent crops and multiple land-use systems. The resources are not efficiently capitalised to promote productivity, economic growth, local development, and food security. Soto (2000) considers it as the *mystery of capital*, when the resources are abundant but continue, without any contribution and added value, to act as incentive for investment and to improve agriculture productivity as rural *capital*. Agriculture contributes less than 30% to the country's Gross Domestic Product (GDP)[2]. Problems of soil nutrient depletion, erosion, and other manifestations of land degradation appear to be increasing. Declining agricultural productivity contributes to poverty and food insecurity. Resource degradation can in turn contribute to poverty and food insecurity. Poor and food-insecure households may be forced to plant crops on steep slopes or be unable to afford to keep land fallow, invest in land improvements, or use costly inputs such as fertiliser. The resources are being inadequately used, rural income is continually falling, poverty is increasing, and food security has been decreasing rapidly, thus increasing the rate of mortality.

Mozambique is one of the poorest countries in the world, ranking 168 out of 177 countries on the 2005 *United Nations Human Development Index*. Mozambique faces serious constraints to development. These include: HIV/AIDS, pronounced gender inequality, vulnerability to drought and flooding, income and regional disparities, and, the lack of capacity in all levels and sectors of government, chronic poverty, hunger and pandemics mostly associated with malnutrition, food insecurity and extreme dependence. In general, resource allocation and institutional mechanisms for its management seem to be the limitation. The rural standard of living has been deteriorating year by year. Net incomes and livelihoods are dependent on informal systems and subsistence agriculture. Agro-climatic production systems allow for deferent crops and a multiple land-use system. The extensions of rivers and lakes are potential mechanisms to improve land productivity, with large irrigation systems and vast drainage, but hunger and misery affects more than half of the

[2] Agriculture (21% of GDP; annual growth 7.9%): *Exports:* cotton, cashew nuts, sugarcane, tea, cassava (tapioca), corn, coconuts, sisal, citrus and tropical fruits, potatoes, sunflowers, beef and poultry. View more country profiles online at http://earthtrends.wri.org

population, with major incidences thereof in rural areas. Many of the rural poor depend directly on shared natural resources (NRs), yet they often live in ecologically marginal areas and have limited and insecure rights to NRs. *A recurrent question in the rural development debate has been: How are poverty, local governance and access to NRs linked and what are the policy implications of these linkages*?

1.3. OBJECTIVES

Over the past years, rapid population growth and a decrease in food production have affected Mozambique to a serious extent. This study is a qualitative analysis, as many of the most important factors influencing success in the process are not quantifiable. However, the qualitative analysis will also be supplemented by some quantitative empirical analysis. The research aims to provide evidence concerning the extent of inefficiency of natural resource management on agriculture and to reflect a careful examination of the influence of variables affecting local development in Mozambique, specifically:

- The **primary objective** of this study is to *obtain empirical evidence* with regard to the allocation, use and utility of natural resources (governance and management) over time to explain variations in policies and variables that influence its efficient use in promoting agricultural growth, agrarian relationships and social welfare across the country. It explores theory to measure resource allocation efficiency and non-market frameworks to measure the optimal current social development theory for a wide range of studies in developing countries.
- The **second objective** is to conduct a quantitative analysis to capture the magnitude of the above-mentioned influence by analysing the *efficiency* theory and models to determine and estimate a non-parametric and deterministic production frontier using the linear programming solver Data Envelopment Analysis (DEA)[3]. This objective is pursued first by estimating a stochastic production frontier, which provides the basis for measuring farm-level technical efficiency (*TE*), economic efficiency (*EE*), and allocative efficiency (*AE*).
- The **third objective** is to analyse qualitative effects, e.g. governance and policies vs. institutional perspective, to determine influences and the relationship associated with inefficiency effects between access to and utility of natural resources at the household level. This study has policy implications, because it not only provides empirical measures of different efficiency indices, but also identifies some key variables that are correlated with these indices. In this regard, the analysis is intended to provide information on how efficiency could be improved by improving related policies and institutional constraints.

[3] Data Envelopment Analysis (DEA) is a nonparametric method in operations research and econometrics for multivariate frontier estimation and ranking. DEA offers a variety of useful results such as benchmarking, productivity index, inefficiency, or slack of each input and output.

- Finally, the **fourth objective** is to use the qualitative and quantitative analysis as basis to explore and discuss policy implications in local development. The implications of these findings for local development and rural poverty alleviation strategies are explored.
-

1.4. RESEARCH METHODOLOGY

Farrell (1957) defined overall productive efficiency (also called cost or total efficiency) as the product of technical and allocative, or price, efficiency. Implicit in the notion of allocative efficiency is a specific behavioural assumption about the goal of the producer; Farrell considered cost minimisation in competitive input markets, although other behavioural assumptions can be considered. Technical efficiency has been decomposed into the product of measure of Scale Efficiency (SE), input congestion and "pure" technical efficiency (Färe, Grosskopf & Lovell, 1994).

De Meza and Gould (1992) measured technical efficiency through a deterministic Cobb-Douglas production frontier obtained by linear programming. This study addresses efficiency by applying Data Envelopment Analysis (DEA), a popular benchmarking methodology developed by management scientists (Charnes, Cooper & Rhodes, 1978). DEA is a non-parametric approach that can deal with multiple inputs and multiple outputs and involves the use of linear programming methods to construct a non-parametric piecewise surface (or frontier) over the data. Efficiency measures are calculated relative to this surface. Based on recent studies of efficiency, since none of the production frontier models used in empirical analyses of production efficiency is without limitations, it is very important to choose a model carefully. Coelli (1996a) discusses the strengths and weaknesses of different types of production frontier models.

Sexton (1986) argues that an appropriate non-parametric method for analysing efficiency is the DEA method, which is useful in situations where (a) there are multiple outputs and multiple inputs; (b) there is no objective way to determine the efficiency of a unit based upon one efficiency index formula, and in such cases, more than one unit may be technically efficient while producing different amounts of products and using different input levels; and (c) where for multiple inputs to determine qualitative influence (political and governance), aspects seem to have nothing to do with this method.

In order to determine the factors affecting efficiency, regression estimations are measured. Variables are desegregated to measure the influence in overall efficiency using the Maximum Likelihood Estimates (MLE) of the production function parameters based on econometric specifications. The regression coefficients are the average amount the dependent increases when the independent increases by one unit and other independents are held constant. MLE has been

used in past technical efficiency studies (as prescribed by Sexton, 1986), and is used here. A censored two-limit tobit model (as discussed in Greene, 1993), with limits of 0 to 1 on the dependent technical efficiency variable, is also used. Basic and descriptive statistics are used, with yield being a partial productivity measure, considering the relationship of output to the input.

1.5. SAMPLE, DATA USED AND PROCESSING

The data-collection strategy for the survey had two objectives. Firstly, a territorial sample was chosen with the intention to increase the generalisability of the findings. At the same time, it was necessary that certain marketing skills should be present among the families in the sample. The second objective of the data-collection strategy was to collect the required information only from the policymakers in order to collect detailed and lengthy data. In doing so, particular emphasis was placed on avoiding leading information, as well as complex or sensitive questions (especially in the beginning of the survey) that could influence the results negatively. The analysis is based on the data of a rural household survey conducted by the *Direcção Nacional de Agricultura* (DINA) – or National Directorate of Agriculture – and the results of a 1996-2006 agricultural campaign (MADER, 2005).

The study covered 20 districts in 10 different provinces subdivided into three macro regions: South, Centre and North. The survey targeted the answers to its questions to be 95% accurate with a 10% error margin. Using a structured survey of 192 farms, which were selected by random sampling, the input-output data used in this study was collected. Focused group interviews were used to evaluate the validity and reliability of the survey.

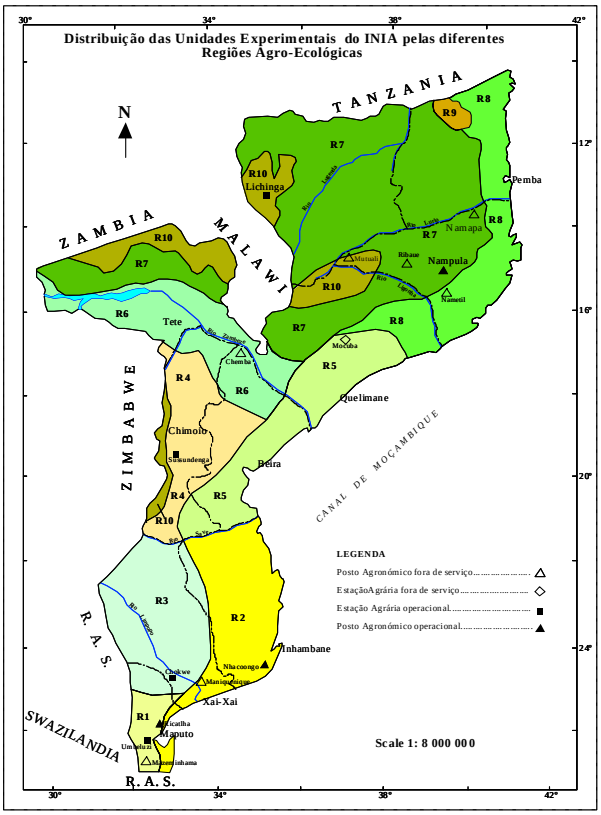


Figure 1.1: Agro-ecological distribution

Data was collected in different regions of Mozambique covering all 10 agro-ecological zones, as illustrated in Figure 1.1. To capture agro-ecological and climatic conditions, a variable representing land quality was constructed based on the percentage of land within a given Decision-Making Unit (DMU) that was of good or regular quality, and suitable for production with handling levels A, and B, as classified by the Ministry of Agriculture. Good-quality land did not face any significant production limitations. Regular-quality land could face moderate production limitations,

which could reduce productivity or substantially increase the need for inputs to overcome these limitations.

For data processing and efficiency estimations, the study adopted the DEA linear programming application, the Data Envelopment Analysis Program (DEAP), developed by Coelli (1996b), and subsequently for the factors affecting efficiency for the regression estimations Ordinary Least Squares (OLS) and Maximum Likelihood Estimation (MLE) using Stata 6.0.

1.6. OUTLINE OF THE THESIS

Chapter one is the introduction to the thesis, which presents the context of the research, the problems to be analysed and the key objectives in Section 1. Section 2 gives the conceptual framework and the data analysis methodology applied, and finally Section 3 gives the quantitative analytical model and the qualitative institutional framework. One would expect higher productivity from land suitable for production with such simple techniques, if it is cultivated using more modern methods. The research extends the previous analysis of rural family incomes and examines the relationship of productivity and efficiency to farm size in the individual farming sector, with emphasis on how inputs and outputs should be adjusted in order to transform inefficient producers into efficient producers and to maximise the utility of resources to improve livelihoods, particularly at local level.

Chapter two reviews aspects related to agricultural development and rural livelihoods, with special emphasis on international and national perspectives. The first section looks at aspects related to agricultural development in Africa, its performance during the period under review, and food production in sub-Saharan countries. Public investment in the agricultural sector is one area of concern that is reviewed. The second section reviews Mozambique as a case study. To understand the dynamics of the agricultural sector, this section considers agricultural policies and strategies, production and basic indicators during the period in question. Also discussed are issues related to land and its influences in agriculture, particularly in Mozambique. The last section summarises the empirical evidence of policies, discussing the role of institutions in agricultural development, as well as the role of the local authorities with emphasis on traditional and community structures.

Chapter three reviews aspects related to natural resources (policies and management), decentralisation and agricultural development. This chapter investigates how governance and institutional framework on natural resource management could be improved in rural areas. It describes the concept of decentralisation and participation, as well as access to and management of natural resources, and how the security of property influences investment in agriculture

development. It describes customary tenure systems, analyzing different countries at regional level (Southern Africa).

Chapter four describes the conceptual and analytical framework using frontier function methodology that arises in empirical analysis and the theoretical concept of efficiency. Non-parametric techniques derived from *DEA* are applied to micro data to construct the *best-practice* or *technological frontiers* of production within the examined DMUs. The chapter highlights the theory and the model of efficiency analytical framework, based on Farrell's DEA. The objective function of the linear programming formulation for determining efficiency is reviewed and factors determining a unit's efficiency and affecting productivity are identified.

Chapter five estimates the efficiency based on the nonparametric model and investigates the factors influencing the efficiency at the output level of farms. The chapter gives estimations on the technical, scale and allocative efficiency, as well as the institutional constraints based on the investigation carried out in 10 provinces of Mozambique. Quantitative and qualitative influences are discussed with emphasis on the influence of public policies at local level (grassroots).

Chapter six looks at institutional frameworks and describes how qualitative variables could affect natural resource governance. This chapter discusses agricultural development and policy implications as the essential contributors to sustained food security. It discusses policy implications and how livelihood strategies could be addressed by looking at the influence of natural resources and the contribution of local community and actors in the management of their resources. Evidence relating to the improvement of rural incomes and investment incentives (land) is analysed based on the measurements.

Finally in conclusion, **Chapter seven** summarises the key findings and presents policy recommendations.

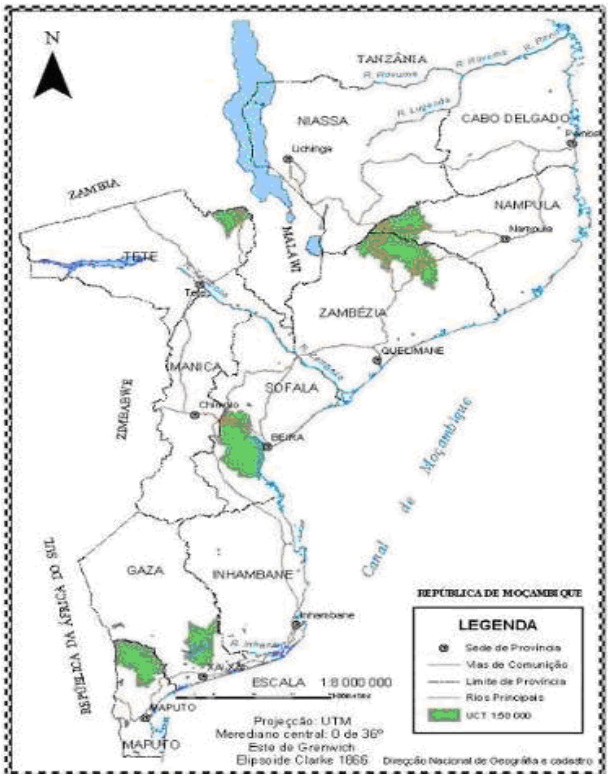
2. REVIEW OF AGRICULTURAL AND RURAL LIVELIHOODS

> "*Commercial farms in South Africa could become significantly more efficient if they became smaller. The government could encourage that trend by removing policies and distortions that favour large over small farms*".
> Johan van Zyl, Hans Binswanger and Colin Thirtle (1995)

2.1. COUNTRY PROFILE

The Republic of Mozambique shares borders with Tanzania to the north, and Malawi, Zimbabwe, South Africa and Swaziland to the west and south. Total land area is 786,380 square kilometres, with a long and largely undeveloped Indian Ocean coastline of some 2000 kilometres, and 13 000 square kilometres of inland water including part of Lake Niassa and the Cahora Bassa Reservoir. Population is now around 21.4 million (INE, 2007). The last 30 years of Mozambique's history have reflected political developments elsewhere in the 20th century. Following the April 1974 coup in Lisbon, Portuguese colonialism collapsed. In Mozambique, the military decision to withdraw occurred within the context of a decade of armed anti-colonial struggle, initially led by American-educated Eduardo Mondlane, who was assassinated in 1969.

Figure 2.1: Map of Mozambique



After independence from Portugal in 1975, the leaders of the military campaign of the Liberation Front of Mozambique (FRELIMO) rapidly established a one-party state allied to the Soviet bloc and outlawed rival political activity. FRELIMO eliminated political pluralism, religious educational institutions, and the role of traditional authorities. The FRELIMO government began a rural policy of collectivisation and state-farm agriculture. The Mozambican National Resistance (RENAMO) opposition forces initiated a destructive 15-year civil war which, together with droughts in the 1980s and early 1990s, ravaged the resource base of rural families. Some 6.5 million people fled to neighbouring countries, or were internally displaced, and the rural economy and infrastructure collapsed.

The majority, namely 80%, of the population of Mozambique is active in agriculture and fisheries. Of these, about 90% work in the family farm sector. The other nationally defined sectors, which are not part of the study, are the state-farm sector and the commercial sector. The family agriculture system is characterised by family labour force and low mechanisation grade. Agricultural inputs such as tractors, ploughs, fertilisers, pesticides and others are low, or almost zero. The number of irrigated areas is mainly limited to larger farms in lowland areas (rice) and mainly directed at vegetable production in small areas.

FRELIMO abandoned Marxist-Leninism in 1989, and a new democratic constitution in November 1990 allowed press freedoms and other political parties. The Civil War ended in October 1992. The first multi-party elections in October 1994 gave FRELIMO a new democratic mandate, but RENAMO won in the centre and north and now has over 30% of Republic Assembly seats. Around 60% of Mozambicans live in a 50-kilometre wide strip along the coast. Some 75% are rural, 90% of whom live on small farms using mostly family labour which, despite their size and low technology, account for some 50% of Gross National Product (GNP) and a high share of exports. Over 60% of Mozambicans also live in absolute poverty. Years of failed economic policy, war and drought have left Mozambique totally dependent upon foreign assistance and struggling to achieve the rapid economic growth needed to counter poverty and high demographic growth. Structural adjustment began in 1987, with deeper market and fiscal reforms since 1992.

After a post-war (1992) surge in GNP of 19%, an 'enabling environment' of fiscal, legal and administrative reforms, including integrated employment, rural and urban development policies, was needed to promote the investment and internal economic linkages required for sustainable growth. Government reserves were measured in days rather than months, and the government appeared to have temporarily lost control of spending. The government has since initiated a strong macro-economic stabilisation programme. The programme appears to be having a stabilising effect and inflation is falling sharply, while domestic and international debt is being restructured with Mozambique opting to be classified as a Heavily Indebted Poor Country (HIPC). Government borrowing has fallen sharply and the interest rate is moving towards affordable levels. These measures are laying the foundation for a move forward with development and poverty reduction policies and programmes.

In terms of potential, around 34 million hectares (42%) have been assessed as being suitable for various types of agricultural, livestock and agro-forestry activity. Between 12 and 16 million hectares (15-20% of total surface area) are suitable for cultivation. Inland, there is huge untapped potential for all types of farming. Nine large rivers cross the country from west to east, of which the

largest are the Zambezi (820 km) and the Limpopo. Rich alluvial soils bordering the major rivers can support highly productive agriculture, and river valley land is now a major focus of external investor activity. Soil fertility is patchier in other areas, and mainly rain-fed agriculture is vulnerable to cyclical droughts. The government inherited an unhealthy economy, with an unstable currency, inflation close to 20%, domestic debt interest payments consuming half of all revenue, and very high effective interest rates of over 45%.

Table 2.1: Structure of Mozambique's Economy

% of GDP	1985	1995	2004	2005
Agriculture	47.5	36.9	23.3	22.3
Industry	13.2	15.5	29.2	29.8
Manufacturing	…	8.1	14.8	14.2
Service	39.3	47.7	47.5	47.9
Household final consumption expenditure	92.2	85.2	75.3	79.1
General gov. final consumption expenditure	12.9	9.8	10.4	10.3
Imports of goods and services	11.5	41	39.2	42.3

Source: World Bank (2005)

A sector-wide support programme for agricultural and rural development, the Agricultural Sector Public Expenditure Programme (PROAGRI), in place since 1999, and the Action Plan for the Reduction of Absolute Poverty (PARPA), adopted in 2002, have both established principles and priorities in respect of natural resource usage that are intended to ensure a reduction in the vulnerability and an improvement in the livelihoods of the rural poor. In 2006[4] Mozambique exported US $2.43 billion worth of goods and imported US $2.82 billion worth of goods. Support programmes provided by foreign donors and private financing of foreign direct investment mega-projects and their associated raw materials have largely compensated for balance-of-payment shortfalls.

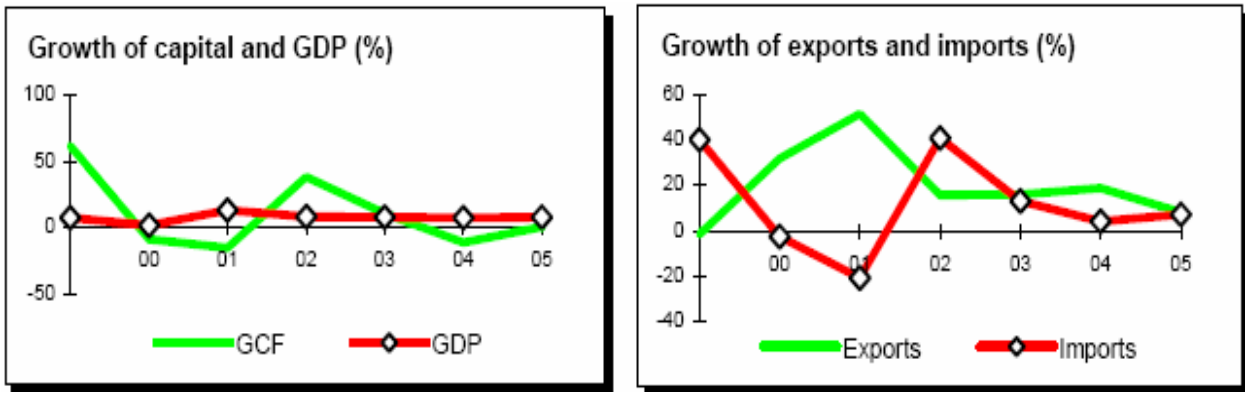
Between 15 and 20% of the total surface area is suitable for cultivation. The country's extension of rivers and lakes and significant river basins provides great potential for improvement of *capital productivity*[5] through large irrigation systems and drainage. Despite sufficient potential, land fertility, a large extension of arable land, the diversity of natural resources and suitable agro-climatic conditions, agriculture contributes less than 25% to the country's gross value added (UNDP, 2001).

[4] http://www.state.gov/r/pa/ei/bgn/7035.htm
[5] Capital productivity is defined as physical output divided by the physical units of capital services used to generate that output (Axel, 1997).

Food insecurity is reported as critical. Declining agricultural productivity is, on the one hand, mentioned as associated with inefficient usage of production inputs.

Annual rainfall in the north and west is adequate and reasonably reliable, having produced surpluses of major crops such as maize in recent years. Rainfall of 400-600 mm in the south is less dependable, with the exception of upland areas in the west of the Maputo Province. Extensive cattle production and exploitation of natural forest and other resources traditionally complement agriculture in local farm systems, but herds decimated by war and drought are only now beginning a slow recovery. With tsetse prevalent in most of the country, few savings and no access to credit, most peasants are now limited to raising goats, sheep and poultry.

Figure 2.2: Growth of capital and GDP, and growth of exports and imports



Source: World Bank (2005)

The tables above show that the level of imports tends to increase. The medium-term outlook for exports is encouraging, as a number of recent foreign investment projects have improved the trade balance. Traditional Mozambican exports include cashews, shrimp, fish, copra, sugar, cotton, tea, and citrus and exotic fruits. Most of these industries are being rehabilitated. In addition, Mozambique is less dependent upon imports for basic food and manufactured goods as the result of steady increases in local production.

On the other hand, there is a perception that it is associated with resources that are largely unexplored, inadequately used and not being capitalised to promote investment with collateral effect in productivity. Of around 36 000 000 hectares of fertile land, only about 10% of the total is being cultivated (MADER, 2002). Problems of soil nutrient depletion, erosion, and other manifestations of land degradation appear to be increasing. Resources are worthless in rural development efforts and rural community livelihoods. Food insecurity is reportedly increasing in many rural areas, with low and declining yields of food crops.

The different types of land tenure and the land administration system prevailing in Mozambique today evolved over time from the interplay of the socio-political organisations of the various tribes, clans and families through trade, wars and incorporation; the advent of colonial rule and subsequent introduction of tree-crop agriculture, as well as commercial exploitation of timber and mineral resources; post-independence politics; and urbanisation. The basic land laws and land tenure practices in Mozambique are, therefore, deeply embedded in the socio-cultural systems and political institutions of its indigenous societies even though they have been fundamentally influenced by administrative and statutory rules of the modern state. Over time, as land became scarcer, indigenous arrangements under which individual members of the lineage enjoyed general rights of access to land have been rendered untenable.

The landed property belongs to the state, and indigenous tenancies have generally been replaced by sharecropping that enabled local landowners to gain labour for their farms. Post-independence governments enacted a multiplicity of legislation to deal with specific problems on an ad hoc basis, not forming part of a comprehensive policy of land acquisition or land use administration. It was the realisation of the need for more coherent long-term land policy and its effective administration that instigated the GoM (Government of Mozambique) to develop a national land policy in 1999 and seek ways of implementing it. A number of issues that require immediate attention have been identified in many previous land administration-related studies and are summarised in the 1999 National Land Policy document. Commercial transactions in land and the transformation of inheritance rules compounded by population pressure have given rise to increased litigation over land as individuals sought to exclude those they believed to hold illegitimate claims, and especially migrant farmers.

2.2. RURAL LIVELIHOODS IN MOZAMBIQUE

Over the past 30 years Mozambique has suffered long periods of disruption as a result of war, severe drought and extensive flooding. As a result it remains one of the poorest countries in the world. The poverty index in 2006 was approximately 54% (UNDP, 2006). Those living on less than US $1 per day form 38% of the population and almost 80% survive on less than US$ 2 per day (UNDP, 2003). The spatial distribution of poverty is not uniform: on aggregate, poverty is more predominant in the centre of the country and less so in the north and south and there are significant differences between provinces. Mozambique remains heavily dependent on the international donor community with the net disbursement of Official Development Assistance (ODA) in 2001 totalling US $934.8 million (US $51 per capita).

Major changes have occurred in the context in which rural livelihoods have been constructed in Mozambique over the last 20 years, many of which have increased the vulnerability of the majority of the rural population. These changes have impacted upon the natural, physical and social capital that is available to the rural poor. They include the widespread destruction of the war, the introduction of economic structural adjustment policies, the advent of market forces and a liberalised economy at the end of the war, the increasing onset of a severe HIV/AIDS epidemic, prolonged periods of drought, and more recently, devastating floods and climatic events. The demand for agricultural commodities has also been affected by some long-term trends. Over the past decade, strong global growth in average income combined with rising population to increase the demand for food, particularly in developing countries. As per capita incomes rose, consumers in developing countries not only increased their per capita consumption of staple foods, they also diversified their diets to include more meat, dairy products and vegetable oils, which in turn amplified the demand for grains and oilseeds.

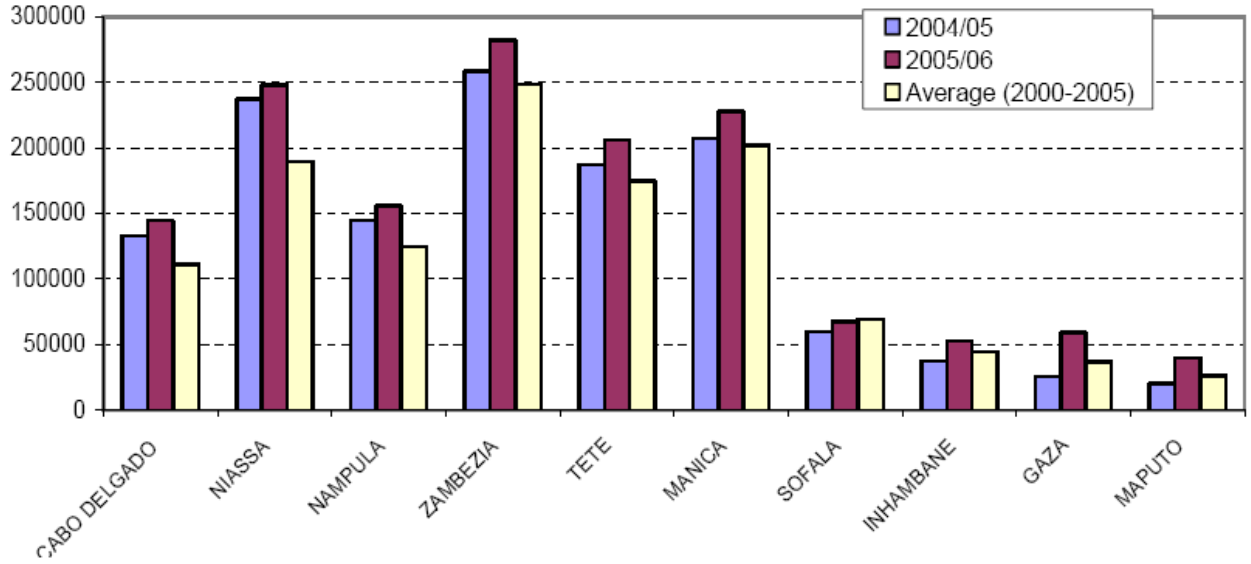
Global economic growth has been strong since the late 1990s. For developing countries, growth has been quite strong since the early 1990s. Growth in Asia has been exceptionally strong for more than a decade. Unusually rapid economic growth in China and India, with nearly 40% of the world's population, has provided a powerful and sustained stimulus to the demand for agricultural products. The world's population growth rate has been trending down since before the 1970s. This declining trend applies to nearly all countries and regions of the world. However, the number of people on earth is still rising by about 75 million (1.1%) per year. This rising population adds to the global demand for agricultural products and energy. The impact on demand is amplified, because the most rapid population growth rates tend to be in developing countries. Many of these have rapidly rising incomes, again particularly important for agricultural demand due to diet-diversification.

Smallholder farmers face a range of hazards that pose a threat to their productivity and farm-based livelihood strategies. These hazards include declining soil fertility through the practice of slash-and-burn agriculture. There are significant threats to crops and livestock from disease, insect infestations, weeds and storage pests. Cattle and goats were decimated by the war, and as populations recover there are concerns about the capacity of veterinary support services. External shocks such as global commodity price volatility and the continuing shrinkage in migrant labour opportunities in South Africa have the potential to significantly reduce rural incomes. Other threats include flood and drought. The areas most vulnerable to drought are those in the central and southern parts of the country (Maputo, Gaza, Inhambane, northern Manica and southern Tete). It is estimated that around 60% of the country has a probability higher than 30% of drought occurrence.

Flood risk affects over 1.7 million hectares at an altitude of less than 20 metres above sea level and within 10 kilometres of the principal hydro-basins. The areas most at risk of flood are those around the Zambezi, Pungue and Buzi rivers, and, to a lesser extent, those surrounding the Limpopo and Incomati (GoM 1998).

Mozambique's agricultural sector has suffered from several changes in direction since independence, as well as the massive disruption from the war. At the end of the war, the severe lack of basic services and rural infrastructure was a binding constraint on agricultural growth. Many rural areas with large populations and considerable agricultural potential continue today to have extremely difficult access to the national road network. The International Monetary Fund (IMF) review of the implementation of the Action Plan for the Reduction of Absolute Poverty (PARPA) in 2003 stated that the "*nationwide coverage of transitable highways is still fragile, however, which has discouraged private-sector investment and slowed the development of rural markets for agricultural inputs and products*" (IMF, 2003). According to agriculture authorities, despite this progress there are still severe obstacles hindering growth in agricultural production and productivity. These include vulnerability to pests and plant diseases, low use of modern inputs such as improved seeds, and insufficient use of irrigation and of animal traction.

Figure 2.3: Maize crop production (in MT)



Source: MADER/SIMA (2005)

The graphic shows the maize crop production by province, at household level, in the 2005/06 agriculture season compared to the previous season and average. In all 10 provinces of the country, maize production at household level had surpassed the previous season's total maize

production and the five-year average, except in Sofala, which did not reach the average but was near the average. The government's efforts to restock livestock over the past decade have also showed encouraging results in terms of increased meat production, which in 2005 was 12% higher than in 2004. This has allowed Mozambique to cut its beef imports, which were 22% lower in 2005 than in the previous year.

Rural trading is therefore beset with problems of transport availability, at costs that make Mozambican trading comparatively disadvantaged. A number of studies (INE, 2002; IMF, 2003; MADER, 2004) have identified market access and prices as the most important determinant for agricultural production. Physical capital in the form of the network of small stores (*cantinas*) that existed during the colonial period has been decimated – these used to offer the option of bartering agricultural produce for consumer goods and agricultural inputs, and provided an important bulking-up function. They may also have offered small-scale production or consumption credit to local people. Now, many farmers have to travel long distances to local markets where their bargaining position is weak.

The impact of HIV/AIDS over the coming years is likely to raise the vulnerability levels of many households, as families are affected by illness. HIV prevalence rates were estimated at 12.2% in 2002, with the highest rates in the Central region (INE, 2002). Some families are likely to lose land, or to get much less benefit from the land than was assumed. The burden of care for family members who fall ill will largely be placed upon female members of the household, who are also predominantly those involved in agricultural production. Family savings will be consumed and assets sold to help pay for medical expenses. It is noticeable that the higher rates of infection also coincide with those areas where there is most competition for land – the major international transport corridors and the peri-urban areas. In addition, HIV/AIDS has already begun to affect the people working within land and natural resource administrations and related institutions, as well as those involved in the supply of essential goods and services or those that provide markets. The implications for institutional capacity to carry out functions will be several: impacts in terms of productivity, on finances and on human resources. The effect in Mozambique is that a much higher percentage of the population lives in isolated communities that are directly dependent on access to surrounding natural resources.

2.2.1. NATURAL RESOURCE USE AND LIVELIHOOD STRATEGIES

Mozambique is essentially an agriculture-based economy, and the contribution of agriculture in 1999 was almost 28% of Gross Domestic Product (GDP) and in 2005 reported as 35%. More than 75% of the population is employed in the agricultural sector. It is estimated that of the total land

area of 78.6 million hectares, about 46% is considered suitable for arable use. Around 36 million hectares (42%) are assessed as being suitable for various types of agricultural, livestock and agro-forestry activity. Between 12 and 16 million hectares (15-20% of total surface area) are suitable for cultivation. Inland, there is huge untapped potential for all types of farming. Nine large rivers cross the country from west to east, of which the largest are the Zambezi (820 Km) and the Limpopo. Rich alluvial soils bordering the major rivers can support highly productive agriculture, and river valley land is now a major focus of external investor activity. Soil fertility is patchier in other areas, and mainly rain-fed agriculture is vulnerable to cyclical droughts. But even with this favourable picture of natural potential, Mozambique faces daunting challenges that are threatening the nation, its people and its partners. Mozambique remains one of the poorest countries in the world (MADER, 2005).

The war resulted in increased pressure on land near major towns of the coastal zones and safe rural areas, but out-migration to areas of origin has since occurred. With improvements to rural security and the tertiary road network has come increasing clearance of land for cultivation. Of the total area cultivated, it is estimated that about 90% is under production systems of the so-called "family sector". The remainder is used by other agents: agribusiness firms (particularly sugar, tea and cotton) state/private joint ventures, cooperatives and private individual farmers. Most agriculture is rain-fed, and in the southern and central provinces of Mozambique rain falls erratically and most of it only during a short period of the year (Pereira & Cossa, 2001).

The use of natural resources in livelihood strategies is not limited to agriculture and the full-time cultivation of land, i.e. the low level of land that is cultivated paints a false picture of the actual area that is important to the rural poor. Other natural resources are collected, processed and/or marketed by many families, either as a predominant activity or as part of a diversified portfolio of livelihood strategies designed to spread and minimise specific risks. These include resources such as bush-meat, honey, clay, roots and tubers, medicinal plants, building materials, thatching grass, firewood, and the production of charcoal and salt. Forests, in particular, provide a range of resources central to people's livelihoods. The majority of the population remains in settlements dispersed widely throughout the country's forests. This is in marked contrast to other African countries, where colonial policy had been to relocate people from the forests to roadside communities.

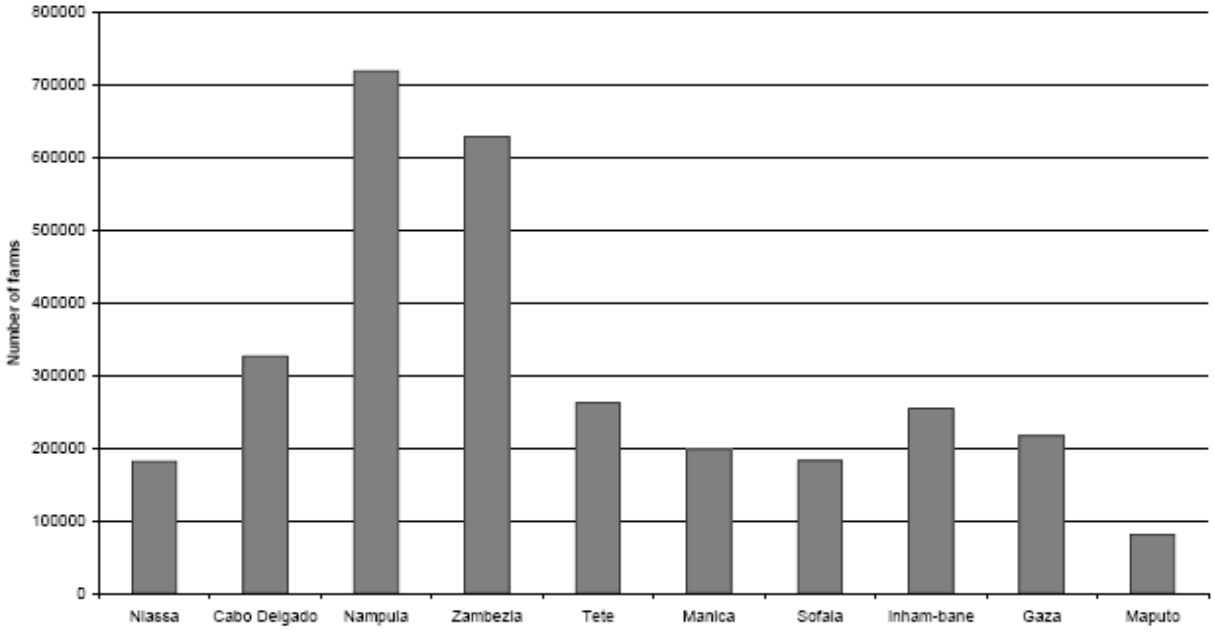
2.2.2. RURAL FARMERS AND VULNERABILITY HOUSEHOLDS

Most of the population lives within a 40-kilometre-wide coastal strip extending over 2 000 km, making artisan coastal fishing a major livelihood strategy for a huge part of the population. The main freshwater fishery in central and northern Mozambique is Lago Niassa (Lake Malawi). There are also a number of major rivers (e.g. Rovuma, Zambezi) which also host significant fisheries resources (although in some cases these are in decline due to destructive fishing techniques), and fishing in smaller rivers and water sources is also prevalent. The Sofala Bank (a wide extension of the continental shelf fed by the Zambezi Delta) extends from Beira in Sofala along Zambézia to Nampula in the north. This fishery is rich in prawns. Inland fishing in rivers and lakes and the production of dried fish will very often be part of rural people's subsistence or informal commercial activities. It is estimated that direct employment in this sector provides up to 80 000 jobs (SLSA, 2003).

In contrast to other countries in the region, there are far fewer other opportunities for cash-earning activities and consequently a much higher reliance upon agriculture, alongside hunting, fishing and the gathering of other natural resources for sale. Although remittances from migrant, seasonal and casual labour are important elements of many livelihood portfolios, many of these opportunities are in turn linked to the provision of agricultural labour (except in the case of migrants to the mines of South Africa, which is a phenomenon that is decreasing as the labour demands from this sector contract).

In many rural areas the only opportunities for the provision of paid labour are through the system known as win-win, where services, usually for the heavy work of clearing previously uncultivated land, are provided to families that are able to provide remuneration in the form of consumer items unavailable on the local markets, food, beer and, less commonly, cash. It has been estimated that less than 20% of rural households use hired labour (Cramer & Pontara, 1997). Even those livelihood strategies that include involvement in local crafts and trades, which in some areas have assumed an international dimension, are heavily based on access to natural resources. Natural resources also play a major part in the coping strategies that people adopt during times of crisis or shocks (Pereira & Cossa, 2001).

Figure 2.4: Small-scale farms, by province



Source: Estimated from INE (2001)

2.2.3. FARM SIZE AND AGRICULTURAL DEVELOPMENT

Since the mid-1990s state farmland was distributed to private enterprises and, to a much lesser extent, smallholders. Many of the state-operated farms near to the major population centres were occupied during the war by displaced people, often with the permission and encouragement of the authorities. These landholdings have been returned to the now privatised companies that formerly operated them or to new entrants to the scene, leading to the loss of land, trees and other resources that had formed a major part of rural people's wartime livelihood strategies. Many of the companies have little capital and investment potential, however, and the landholdings in many cases are being held for speculative rather than productive reasons.

According to a detailed assessment of land cover carried out in 1995 by the FAO, which forms the basis of the estimates reported in the previous paragraph, that only one million hectares were under permanent cultivation while a further 10 million hectares was used for short-fallow-shifting cultivation[6] and 9.1 million hectares for long-fallow-shifting cultivation – see Table 2.2. Areas of open and wooded grassland and shrub account for 21.5 million hectares, much of which is suitable for livestock if not for conversion to permanent cropping.

[6] This is defined as land used regularly for cropping with short fallow periods and at least one-third being cropped each year.

Table 2.2: Land use by province (sq km)

Province	Total area	Cultivable area	Permanent Agriculture	Shifting Agriculture	Grassland	Wooded Grassland	Shrub
Cabo Delgado	82 625	50 000	148	18 760	1 684	8 280	4 692
Gaza	75 709	4 000	2 760	14 100	6 724	15 760	11 252
Inhambane	68 615	9 000	672	15 336	1 748	8 284	2 832
Manica	61 656	29 000	68	11 456	2 404	11 524	8 092
Maputo	26 358	5 000	1 668	6 984	2 784	3 184	2 732
Nampula	81 606	48 000	864	43 524	796	2 876	2 060
Niassa	129 061	84 000	40	22 124	2 344	14 608	15 976
Sofala	68 018	22 000	836	10 336	7 072	10 840	8 648
Tete	100 724	49 000	16	16 724	4 940	18 176	19 256
Zambezia	105 008	60 000	3 072	31 876	5 060	6 612	4 000
Total	799 380	360 000	10 144	191 220	35 556	100 144	79540

The total area cultivated for food crops increased by only 0.9% per year from 1997-98 to 2003-04. Data on land use for food and cash crops presented in Table 2.2 show that about 42,500 sq km of land was cultivated in 2003-04 including land used for sugar cane, coconut and cashew plantations. Over 90% of this area – 39,300 sq km - was cultivated for food crops. Indeed, the area of food crops is reported as having declined in Maputo and Inhambane provinces. This may either be the result of misreporting or part of the longer terms consequences of the severe floods in 2000. Pressure on cultivable land is relatively low. For the whole country, the ratio of cultivated land to cultivable land is only 12%. There are large variations between provinces. At one extreme is Gaza with a cropping rate of 72%, whereas Niassa and Tete have use rates of 3% and 7% respectively. In large part, these cropping rates mirror the share of cultivable land in total land area – only 5% of the land in Gaza but 65% of the land in Niassa is classified as cultivable. Cropping rates for land devoted to shifting agriculture are also modest. On average the cropping rate in shifting agriculture is 17%, equivalent to a rotation period of about 1 year in 6. At the provincial level, Cabo Delgado has the highest cropping rate in shifting agriculture with a rotation period of about 1 year in 4.[7] Grassland is defined as land covered with non-woody vegetation. Wooded Grassland (WG) consists of grassland with a woody component that covers no more than 10% of the area. Shrub (S) is defined as land with a predominant woody component of between 0.5 and 3 m.

[7] The use rate for Maputo is reported as zero because the area of land cultivated for food and cash crops in the province (about 870 sq km) is little more than one half of the reported area under permanent agriculture (about 1670 sq km). The discrepancy may either be the result of land used for permanent pasture or under-reporting of land cultivated in 2003-04.

Table 2.3: Land use for food and cash crops by province (sq km)

Province	Crop areas planted 2003-04		Cropping rates for	
	Food crops	Cash crops	Cultivable land	Shifting agricultural land
Cabo Delgado	4,606	352	10%	26%
Gaza	2,820	69	72%	1%
Inhambane	3,300	531	43%	21%
Manica	2,782	37	10%	24%
Maputo	715	151	17%	0%
Nampula	8,760	1,046	20%	21%
Niassa	2,857	51	3%	13%
Sofala	2,373	506	13%	20%
Tete	3,319	46	7%	20%
Zambézia	7,697	501	14%	16%
Total	39,230	3,290	12%	17%

Source: FAO; INE (2001)

The area of land required for livestock grazing is subject to a large degree of uncertainty, because reported estimates of the total stock of domestic livestock differ dramatically – including figures reported by separate divisions of the Food and Agriculture Organisation (FAO) of the United Nations – both over time and for different species. To illustrate the point, it is widely stated that the total stock of cattle reached about 1.4 million in 1975, then fell by as much as 80% during the civil war and its aftermath, and is now gradually recovering. However, the FAO statistical database – FAOSTAT – reports that the total number of cattle peaked at 1.42 million in 1975 and declined to a trough of 1.24 million in 1994. According to these figures, the number of cattle rose slowly to 1.32 million in 2003. On the other hand, statistics reported by the FAO's Animal Production and Health Division (APHD) give the total stock of cattle as being only 0.24 million in 1994 with rapid growth to 0.52 million in 2000. Finally, the FAO's most recent food supply evaluation (based on a survey of smallholder agriculture) reports that the total number of cattle in 2003 was about one million (TIA or Rural Income Survey). Table 2.4 below summarises the land use and distribution in Mozambique.

Table 2.4: Land distribution in Mozambique

Ha	Families	Farms	Area (ha)	Irrigated (ha)	Title	Area cultivated
< 0,1	38.358	309	2.248	1.094	584	420.083
0,1 < 0,2	109.733	933	16.677	1.212	2.314	1.210.201
0,2 < 0,5	553.420	4.741	196.852	9.030	4.755	2.620.483
0,5 < 1,0	932.618	14.413	683.990	26.068	5.888	1.781.596
1,0 < 2,0	922.508	20.908	1.297.898	40.779	5.756	711.392
2,0 < 3,0	272.107	9.507	655.457	19.784	1.984	124.453
3,0 < 4,0	108.504	7.124	317.129	9.099	1.122	33.960
4,0 < 5,0	46.107	4.188	205.292	3.882	478	11.065
5,0 < 10,0	49.916	3.884	316.869	3.254	1.257	8.965
10,0 < 20,0	3.903	960	47.745	394	119	764
20,0 < 50,0	420	132	12.154	124	41	75
50,0 < 100,0	19	8	3.618	36	0	0
TOTAL	**3.037.613**	**67.107**	**3.755.929**	**114.756**	**24.298**	**6.923.037**

Source: CAP – INE/MADER 2005

Farmland utilisation is likely to decline as the inputs become unaffordable and the household labour supply is reduced. Land rights of women may also become increasingly insecure under patriarchal customary tenure systems (which predominate in Mozambique, despite their nominal unconstitutionality in this respect); widows may be required to return to their own families and lose the land to which they had access whilst married.

In South Africa, Groenewald (1991) cited by Van Zyl *et al.* (1995) suggests that even beyond the indivisibility of capital and managerial inputs, economies of scale may result from scale efficiencies induced by the existing agricultural marketing system through volume discounts on the purchase of inputs and volume premiums on the sale of outputs. However, he ascribes most of the perceived economies of scale to management, with larger farms having better managers. Roth *et al.* (1992) cited by Van Zyl *et al.* (1995) econometrically tested a number of models explaining the reduction in the number of farms between 1972 and 1988. They found the number of farms to be positively correlated with the ratio of real machinery costs to real gross revenue, but negatively correlated with the ratio of farm requisites (mainly non-labour inputs) to output prices. This suggests that scale efficiencies in agriculture are strongly associated with a decline in machinery cost and an increase in the profitability of non-labour inputs. Both correlations suggest that the appearance of scale efficiencies in South African agriculture is rooted in the policy distortions that led to the reduction of the real cost of capital in the agricultural sector.

Chavas and Van Zyl (1993), using non-parametric analysis and accounting for quality differences in land, found a highly significant negative correlation between farm size efficiencies and debt burden, while size efficiency and managerial ability were positively correlated.

The results show that the issue of Scale Efficiency (SE) is a complex one and is influenced by a variety of factors, of which managerial ability – the basic indivisible input in agriculture – seems to be dominant. A whole range of farm sizes, in both extensive and intensive commercial farming, was found to be scale efficient, depending on how farmers organise their specific variable- and fixed-input mix, as well as the combination of outputs they produce. Their results are consistent with the findings of Sartorius von Bach and Van Zyl (1992), who conclude that better managers have larger farms. It should be noted, however, that small farms will in general require less sophisticated management than large farms, which would explain why Chavas and van Zyl (1993) found efficient farms in all size categories. On the other hand, these results can be interpreted to mean that farm size is not really the central, but rather managerial ability.

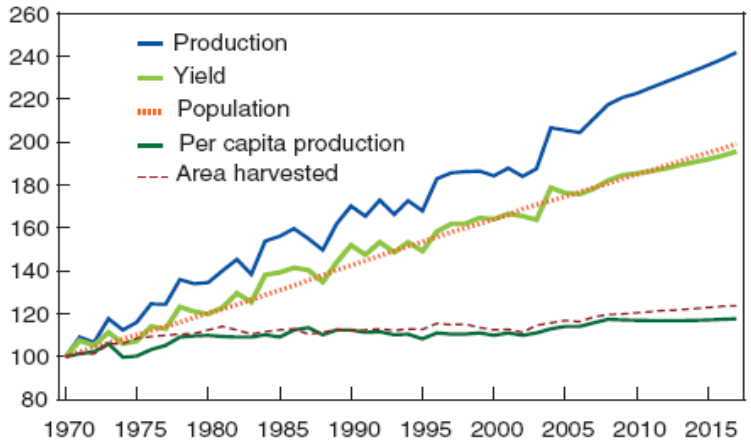
Land distribution in South Africa is among the most highly skewed in the world. Four centuries of conquest, occupation, annexation, land acquisitions, land transfers and land consolidation have resulted in a land distribution that is comparable in its inequality to those of many Latin American counties that often experienced a similar history of European conquest and settlement. What sets South Africa apart from the rest of the world, however, is the relative emptiness of much of its rural landscape, with the exception of some high-potential areas along the eastern seaboard. In most of the country, rural villages, settlement, scattered firms and homesteads of farm labourers such as those found in the rural areas of Europe, Latin America, Asia and elsewhere in Africa are rare Approximately 86% of agricultural land is held by 67,000 mostly White, large-scale farmers, supporting a rural population of 5.3 million. Consequently, the large-scale farming areas have a very low population density (about 16.2 hectares of agricultural land per rural resident). In contrast, a rural population of about 13.1 million resided in the homelands in 1988, on an area of 17.1 million hectares. Thus, 29% of South Africa's rural population (mostly farm workers and their dependants) lived on nearly 86% of the agricultural land, while 71% of its rural population lived on the remaining 14% (World Bank, 1994).

2.3. AGRICULTURAL DEVELOPMENT

Bravo-Ureta and Pinheiro (1993) emphasised that there is considerable agreement with the notion that an effective economic development strategy depends critically on promoting productivity and output growth in the agricultural sector, particularly among small-scale producers. Empirical evidence suggests that small-scale farmers are desirable not only because they provide a means of

reducing unemployment, but also because they provide a more equitable distribution of income, as well as an effective demand structure for other sectors of the economy. Consequently, many researchers and policymakers have focused their attention on the impact that adoption of new technology can have on increasing farm productivity and income (Schultz, 1964; Kuznets, 1966; Hayami & Ruttan, 1985).

Figure 2.5: Production, yield, area harvested, population, and per capita production



Source: USDA Agricultural Projections to 2017 (Trostle, 2008)

There is evidence that farm consolidation could improve family incomes in rural areas. Thus, both cash family income and imputed family income (including the value of farm products from own production consumed in the household) increase with the amount of land cultivated by the household.

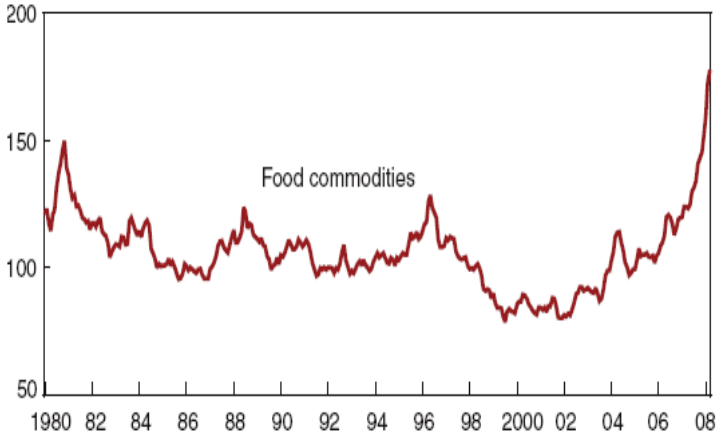
During the last decade in particular, major technological gains stemming from the green revolution seem to have been largely introduced across the developing world. However, in Africa and particularly Southern Africa, the population is still affected by chronic food insecurity. This suggests that attention to productivity gains arising from more efficient use of existing technology is justified. After 2001, prices began to rise slowly and by 2004 reached the level at which they had been in the mid-1980s. In early 2006, world market prices for major food commodities such as grains and vegetable rose sharply to historic highs and they have now reached levels more than 60% above what they were just two years ago. Retail food prices in many countries have also risen in the last two years, raising concerns around the world. No single factor has been the cause of the price run-up in food commodity prices. Some factors reflect underlying trends in supply and demand for agricultural commodities that began more than a decade ago. Other developments that have contributed to the price increase have occurred more recently.

Some factors reflect significant structural changes in supply and demand relationships; others can be interpreted as short-term shocks to global supply and demand for agricultural products. Figure 2.6 shows an index of monthly prices for food commodities, e.g. grains, vegetable oils, meats, seafood, sugar, bananas, and various other commodities that are the basis for human consumption

of staple foods. Although prices, measured in nominal dollars, trended slightly downward between 1980 and 2008, there were several brief periods (1980, 1983, 1988, and 1996) when prices did rise from the previous year.

Figure 2.6: Food commodity prices

stle, 2008)



Rural households with land enjoy higher incomes than those without land. Larger individual farms produce higher incomes and achieve higher levels of family welfare than smaller farms. This finding has naturally led to the conclusion that consolidation of individual farms (within the range of up to about 100 hectares) is a desirable process and has produced certain policy recommendations relating to land markets as a medium for farm size adjustment. In light of the difficulties of effecting meaningful impacts on the plight of poor people, there is mounting search for the 'missing link' in poverty-focused interventions, and the multidimensional nature of poverty is slowly being appreciated. For instance, poverty is no longer viewed as primarily material-cum-income deprivation. For an increasing number of observers, it also means powerlessness, voicelessness, vulnerability, exposure to risk and fear, humiliation and social exclusion.
social exclusion.

For a long time, the worsening rural poverty levels in Southern African Countries (SACs) were explained principally in terms of poor economic performance, and externally prescribed economic remedies predominated in policy prescriptions. Emerging evidence, however, shows that economic growth alone is not sufficient to bring about, in a sustainable way, the needed poverty reduction. It is particularly worthy to observe that SACs possess extremely low growth elasticities of poverty reduction[8]. This recognition does not minimise the importance of economic growth in poverty reduction and rural development. For poor countries, rapid growth is a necessary, essential and powerful tool for poverty reduction in the medium to long term. Without growth, the objective of increasing the capacities and expanding the opportunities for the poor will continue to be severely constrained by the lack of public and private resources. Growth does raise the poor people's productivity and incomes and it expands their opportunities and choices in a number of important ways.

[8] Elasticities in the developing economies of Asia are, on average, much higher than those in SACs. This has led to the argument that while economic growth is important for poverty reduction in SACs, it is definitely *not* sufficient.

2.3.1. FARM SYSTEMS AND PRODUCTIVITY

Agriculture plays a strategic role in these economies both as a potential source of long-term development and as the essential contributor to sustained food security. While agricultural productivity gains in the industrialised countries have averaged two percent per year or more in recent decades, and frequently more than that in some developing countries, most studies of SAC agriculture have indicated agricultural productivity losses during the 1970's and 1980's. On the other hand, a study by the FAO used input weights for Brazil and India to weight agricultural input changes in 47 Sub-Saharan African countries. Using this approach, the analysts calculated average annual SAC productivity gains of about 0.5% from 1961 to 1996.

In interventions that target poverty, one of the primary conceptual hurdles is to define who the poor are and, consequently, how to target them. Proper targeting of the poor has generally proved to be elusive and this is one area where more work is still required. The other challenge regards how best to ensure that there is local ownership of the interventions. This consideration brings to the fore the issues of local governance. One of the lessons from the past failures of poverty-focused interventions is the importance of avoiding a 'top down' approach to project design and implementation, as this invariably results in ineffectiveness of the interventions, while a decentralised and participatory approach has resulted in poverty reduction. The global community has recognised the development of Africa, especially Sub-Saharan Africa, as the world's foremost development challenge. In Southern African countries, agriculture contributes about 35% of the regional GNP and employs more than two-thirds of the total labour force. In most of these countries, agriculture is the largest contributor to foreign exchange, averaging about 40% in the region (Bravo-Ureta & Pinheiro, 1993).

2.3.2. ECONOMIC AND POLITICAL CHANGES

Progress in recent years in the ongoing government programme of road construction and rehabilitation has resulted in improved movement of goods among the different regions of the country, and now more maize from the centre is found in the structurally deficit south. This notwithstanding, transport costs still remain very high and make it uncompetitive to move maize from surplus areas of the north, and from central districts situated above the Zambezi River, to southern provinces, when compared with imported South African maize. At the same time, it is more profitable for these surplus areas to export maize to Malawi or Zambia, which, due to their proximity appear to be the most natural markets (Salomão, 2001).

The same problem clearly afflicts local (non-government) community organisations in management of the commons. Extreme social fragmentation in India, for example, makes cooperation in community institution-building much more difficult than in socially more homogeneous countries like Korea, Taiwan or Japan. One beneficial by-product of land reform, underemphasised in the usual economic analysis, is that such reform, by changing the local political structure in the village, gives more 'voice' to the poor and induces them to get involved in local self-governing institutions and management of local commons (World Bank, 2000).

In terms of sequencing of reforms there is some general agreement that price reforms (movement towards market-determined prices) should be attempted before the removal of marketing regulations and that measures should be initiated to promote a competitive private sector long before dismantling the public sector. For example, in order to reduce the high storage costs of large public sector marketing boards, long before attempts at privatisation, tenders can be invited from private traders to supply grains and other produce at given times and at given places, and in general encourage futures trading. In order to prevent the conversion of a public monopoly into a private monopoly, it is important to strengthen the public regulatory framework before attempts are made at privatisation (Wuyt, 2001).

Competition between public agencies and between public and private agencies should be encouraged. In the Chinese reform process, competition among public agencies of different localities was encouraged, but this competition was enforced with a hard budget constraint, i.e. bailouts of failing local enterprises in rural areas by supra-local authorities were ruled out in general. In countries heavily dependent on export crops for income, foreign exchange and public revenue, reduction of restrictions on external trade should occur only at the later stages of reform – later than domestic trade liberalisation. Imports of critical agricultural inputs like fertilisers should be liberalised at an early stage (in any case, in countries like India, the fertiliser subsidy has been less to help farmers and more to prop up inefficient domestic fertiliser firms).

Issues of land reform, credit reform and decentralisation of governance in the matter of delivery of local public goods and infrastructure that have been emphasised in this and preceding sections are, of course, to be carried out with a longer horizon in mind. Private investment in infrastructure is not likely to be forthcoming until the reforms in the pricing and user fees of infrastructural services are in operation. In post-reform India there has been a dearth of private investment in electricity generation and distribution, in spite of many inducements by the government, since the electricity rate structure for farmers remains extremely low under pressure of powerful farm lobbies (Salomão, 2001). Partnerships between the government, private sector and community organisations or

cooperatives sometimes facilitate the reform process in these matters. There are fixed costs in the building of local community organisations; once some organisation gets going in some particular aspect of rural development, the marginal cost of extending the functions of the organisation to cover other aspects may be relatively low, and there are externalities across different organisational domains. The State can act as a catalyst in the initial stages of such institution building, covering losses, pooling risks, and supplying technical and professional services towards building local capacity (Salomão, 2001).

The Chinese case also suggests that in the beginning the process should start with legitimising de facto changes already taking place in the fringes of the system before the formal onset of reforms. In the de-collectivisation (and the introduction of the household responsibility system) of 1978 the Chinese rulers were merely formalising what some farmers had already started doing on their own. It started with several households in a village in Fengyang County of Anhui Province (Wuyt, 2001). The practice was then imitated by other counties in the province and promoted by the provincial government before it was promoted by the central government. By 1984 almost all households in China were covered by this reform. In other respects decentralisation also allowed the Chinese rulers to try out new experiments in market reforms in some localised coastal areas first, long before other regions came to learn from the demonstration effects of reform success. This paved the road to reform elsewhere and made it easier for them to overcome opposition.

Even with all its limitations (of administrative capacity, as well as vulnerability to wasteful rent-seeking processes) the State can play at least the role of catalyst in the initial stages in pump-priming agricultural finance and in underwriting risks (while being careful to avoid the associated moral hazard of encouraging dependency). It can take the initiative in establishing commodity exchanges, generating and disseminating information, allowing for contingent contracts, and arbitrating in contract disputes. While the process of deregulation should continue, the regulatory powers of the State have to be enhanced in some respects, for example in ensuring the implementation of the avowed purpose of reforms to increase competition. Otherwise privatisation often involves replacement of a public monopoly with a private monopoly (World Bank, 2000).

2.3.3. AGRICULTURAL REFORMS

In the reform literature there is considerably more emphasis on agricultural pricing and marketing reforms. In developing countries both agricultural output and input prices have been heavily regulated for many years, and import-substituting industrialisation under trade protection and overvalued exchange rates have often turned the internal terms of trade against the agricultural sector. Domestic farmers in India, for example, have been largely shut out of export markets in rice

and wheat, and in Africa export taxation and restrictions have yielded for the commercial farmers a low share of the border prices (particularly for crops like coffee). On the other hand, import restrictions have artificially raised prices for some crops (oilseeds in India, maize in Africa) and diverted significant amounts of cultivated land to low-productivity uses. On the input front, water, electricity, diesel, etc. are often provided at heavily subsidised prices, inevitably leading to wasteful use of these inputs (often depleting fragile aquifers, and causing problems of water-logging, salinity, etc.).

When reform of the agricultural sector in Southern Africa began in the 1960s, many analysts predicted that farmers would become profit maximisers and, consequently, improve the productivity and efficiency of their operations. After an initial dip in agricultural production, therefore, Southern African agriculture was supposed to recover significantly. Several important investigations on Total Factor Productivity (TFP) growth in SACs have been made during the last decades. Block (2002) estimated a system of aggregated production functions with equal slope coefficients and computed TFP growth from the difference between intercepts of two consecutive production functions. He reported average annual TFP changes between -0.5% and 1.6% for Southern African countries.

There were (and still are) many restrictions on internal trade and crop movements across regions, State procurement and distribution of food grains, and requirements for storage and channelling of agricultural trade through State-controlled agencies, parastatals and marketing boards. The rationale was in terms of curbing speculation in food prices, controlling excessive price fluctuations and sudden shortages, and providing subsidised food for the poor. Some of these agencies were originally established to serve the perceived need for ensuring food security or supporting producer prices during periods of war or commodity price collapse, but, as often happens with organisational residues of history, these agencies ended up as political milch cows for powerful lobbies (Deininger & Olinto, 2000). These State agencies have often been chronically afflicted by operational inefficiencies, unreliable deliveries and payments, and low prices for farmers. Under the stabilisation programmes the prices offered were often much too low even compared to the benefits of more stable prices. In export crops, costs of marketing and taxation have been substantially higher for the same crop under marketing boards and stabilisation funds than under the free marketing system, depressing the share of border prices received by producers under the former systems.

Subsidised food distribution often catered, at high cost to the government, to the vocal urban middle classes, not the rural poor. India, for example, has a large programme of public food distribution through ‘fair price' shops, using a significant part of the government’s budgetary subsidies. It is an

extremely costly programme, as an estimated 72% of the food subsidy is used up in overheads, storage, freight and interest costs, etc. borne by the highly inefficient Food Corporation of India – yet it reaches only a tiny fraction of the rural poor. It has been estimated that for each rupee transferred to the poor in India under the public food distribution scheme, the total cost for the administration is more than five times that amount (Mitchell & Onvural, 1996).

Although many restrictions remain, food markets have been extensively deregulated in recent years, and controls over movements of crops have been somewhat relaxed. With a reduction in industrial protection and depreciation of the real exchange rate, the relative price of agricultural products has improved. The overall tax burden on agriculture has diminished significantly. The opening up of markets to private traders has lowered marketing and distribution costs, smoothed prices between local markets, and improved market integration. Price and market reforms have, however, turned out to be highly inadequate for boosting agricultural productivity. The price response of supply presumed in some of the reform programmes has been over-optimistic. Output depends a great deal on what happens to the rural infrastructure (roads, transport, irrigation, power and telecommunications, research and extension services), credit and input delivery systems, etc., not all of which will improve with better prices, without significant and autonomous institutional and organisational changes (Deininger & Olinto, 2000).

The importance (and difficulties) of asset redistribution measures like land reforms have already been mentioned. Small-scale farmers are potentially more productive in many crops, and better access to assets would have mitigated the severe problem of insufficient credit collaterals that they inevitably face. Redistributive land reforms can also provide a safety net to poor people facing the displacement effects of market reforms (loss of jobs and business, frictional unemployment, etc.). China has undergone massive and successful market reforms in the last two decades, and it can be argued that the wrenching effects on society were partly cushioned by the highly egalitarian land distribution (following the land reforms and de-collectivisation of 1978), so that even the poorest rural family bearing the brunt of reforms could fall back upon some land as a last resort. In relatively land-abundant countries, provision of credit to enable acquisition of productive assets like cattle is particularly important. For example, using a large panel dataset from rural households in Zambia, Deininger and Olinto (2000) econometrically analysed the factors that explain the relatively lacklustre performance of the country's agricultural sector since liberalisation, and concluded that ownership of productive assets like draught animals is the key constraint to higher agricultural productivity. The role played by the State and community organisations in enabling adequate provision of the non-price factors mentioned in general in the preceding paragraph becomes crucial in deciding the fate of even the price and market reforms.

One (though obviously not the only) reason why the latter reforms have to date been slow and halting in many developing countries, much to the disappointment of many of the reform missionaries of international lending organisations, is that some of the real problems which provided the rationale of government intervention in the first place (and gave rise to the domination of inefficient State agencies) have not yet been fully resolved. In particular there are many market failures (particularly in the provision of credit, insurance, information, and infrastructural services) that remain unaddressed even as the State withdraws itself. It has been quite common, for example, to find in some African countries that under the fiscal austerity programmes mandated by the international lenders, agricultural productivity has stagnated or declined, as State support to small producers (in credit, output procurement, input subsidies, etc.) has shrunk and the private sector has not quite filled the gap, particularly in activities catering to remote regions and vulnerable groups (Bardhan, 2001).

2.4. RETROSPECTIVE OF THE AGRICULTURAL SECTOR IN MOZAMBIQUE

With a total area of 786 300 km^2 and a population of 21.4 million (INE, 2007), Mozambique has a relatively low population density. It is richly endowed with natural resources, including arable land, forests, grasslands and inland water resources from its network of rivers including the mighty Zambezi, marine fisheries, minerals and hydroelectricity. As a result the economy is diversified, and agriculture, transport, manufacturing, energy, fisheries, tourism and wage remittances all make important contributions to the economy (INE, 2002).

Market liberalisation policies have been implemented since 1992 in cooperation with the IMF and the World Bank. Under a Poverty Reduction and Growth Facility (PRGF), renewed at the end of 2003, Mozambique continues to benefit from debt relief and renewed loans. At the same time, foreign grants continue to cover about one-half of public expenditure. The economic reforms have been remarkably successful in terms of the important macro-economic goals. Sustained by strong foreign investment, real GDP has been growing at rates in excess of 7% for four consecutive years following the severe economic setback caused by devastating floods (Salomão, 2001). Despite all these gains, the impact on employment and incomes has been limited, as economic growth has mainly stemmed from a few large capital-intensive projects, with the support of huge inflows of foreign investment. This includes the Mozal Aluminium Smelter in Maputo, whose production is oriented mainly to the European market; the natural gas pipeline from the coastal port of Beira to South Africa; the rehabilitation of the power lines from the Cahora Bassa hydroelectric dam to South Africa and Zimbabwe; and several projects funded by donors for road construction and other activities (Wuyt, 2001).

Forty-five percent of Mozambique's total land area is suitable for agriculture, but only 11% – around four million hectares – is estimated to be cultivated. Farming is conducted by some 3.04 million peasant families, with a small number of commercial farmers cultivating a total of less than 60,000 hectares and refurbished agro-industrial units growing 30 000 hectares of sugarcane. Consequently, agriculture provides food security and is an important source of income for 75% of the 20 million inhabitants. Mozambique's diverse soils and climatic conditions, influenced by latitude, variations in altitude, topography and proximity to the coast, offer a wide range of production opportunities. However, as agricultural systems are predominantly rain-fed, the temporal and spatial distributions of rainfall are critical to crop performance, resulting in wide-ranging fluctuations in annual crop harvests from year to year (Wuyt, 2001). In most parts of the country, the main production season extends from September to March with a short second season in the south from April to August. The farming system is characterised by aggregations of near-subsistence farm families holding an average 1.2 hectares each, who practise a manually cultivated bush fallow system, the intensity of which varies with population pressure. The extreme vulnerability of rural livelihoods was generated in part by the Mozambican civil war that lasted for 17 years after the country became independent in 1975. This war caused demographic upheavals, especially in the rural areas. About 3.5 million people were internally displaced or became refugees in bordering countries. Other consequences included the loss of lives of approximately one million people, while landmines planted throughout the countryside made it almost impossible for rural people to access their cropping lands (Devereux & Palmero, 1999).

2.4.1. AGRICULTURAL POLICY BACKGROUND

Mozambique has made tremendous policy strides in the past few years. A sound economic reform programme has been implemented, with substantial support from external partners. The transition from war to peace and from a central planning system to a market economy is reaping results. Mozambique's growth rate has accelerated and was among the highest in the world in 2001. After being heavily reliant on food aid just a decade ago, in 2003 Mozambique ranked first among 20 countries on the "optimism index" in a survey of business people active in Africa. Around 60% of Mozambicans live in a 50-kilometre-wide strip along the coast. Some 80% are rural, 90% of which live on small farms using mostly family labour which, despite their size and low technology, account for some 50% of GNP and a high share of exports. Yet, over 60% of Mozambicans live in absolute poverty. Years of failed economic policy, war and drought have left Mozambique totally dependent upon foreign assistance and struggling to achieve the rapid economic growth needed to counter poverty and high demographic growth. Structural adjustment began in 1987, with deeper market and fiscal reforms since 1992. After a post-war surge in GNP of 19%, an 'enabling environment' of

fiscal, legal and administrative reforms, including integrated employment and rural and urban development policies, is needed to promote the investment and internal economic linkages required for sustainable growth (Wuyt, 2001).

Poverty, isolation, illiteracy and disease characterise the everyday life of most Mozambicans, who often feel that the benefits of growth are not reaching them and that they are still dependent on NR. The country is also vulnerable to floods and droughts. In February and March 2000 and 2001, devastating floods killed 700 people, displaced 250 000 and put about two million people into severe economic difficulties (MADER, 2004). Annual rainfall in the north and west is adequate and reasonably reliable, producing surpluses of major crops such as maize in recent years. Rainfall of 400-600 mm in the south is less dependable, with the exception of upland areas in the west of Maputo Province. Extensive cattle production and the exploitation of natural forest and other resources traditionally complement agriculture in local farm systems, but herds decimated by war and drought are only now beginning a slow recovery (Salomão, 2001).

Mozambique has an estimated 19 million hectares of productive woodland. Tropical hardwoods are the most valuable products, although pine and eucalyptus plantations also exist. The more important species include *umbila, jambirre, chanfuta* and African sandalwood. The country's logging capacity is estimated at around 500 000 cubic metres per year. Current off-take is well below this level. Apart from the natural forests, there is potential for the development of plantation forests with around one million hectares of land with suitable conditions available. The natural potential of the sector, coupled with the present underdevelopment, offers a wide range of opportunities for investors to meet the expanding local and international demand for timber, construction materials, furniture, and pulp for the paper industry.

Rural development will benefit from actions to develop capital and infrastructure, amongst others. It can also be promoted through increased rural production, especially in agriculture. Many areas of rural development can be discussed. Expansion in production of the agricultural sector will be carried out with the support of rural extension programmes based on specific crops and technologies, as well as improvements in the financial system, whose role will be analysed. The strategy for rural and agricultural development will also focus on food security policy, which is fundamental to reducing poverty and risks to the poor. During the last few years, rapid population growth and diminished food production have affected rural areas. Food security, life expectation and human immune systems have declined rapidly, increasing the rate of infant mortality. Rural living standards have deteriorated year by year (Bardhan, 2001).

2.4.2. PERIOD BEFORE INDEPENDENCE

The overall colonial policy of strengthening macro-economic reform also extended to the agricultural sector. Privatisation continued to be a major policy objective as a means to improve productivity and reduce government subsidies on public enterprises that ran at a loss. However, the overall degree of government intervention in the economy and in agricultural markets remained significant. As a Portuguese colony, Mozambique's economy functioned predominantly as a supplier of raw material for Portuguese-based agro-industries (e.g. cotton, copra, tea, sisal and cashew) with a few notable exceptions, such as sugar, which was processed locally (Salomão, 2001). The agricultural sector comprised a few plantations, several thousand commercial concessions (settler farms with long-term, liberal usufruct rights) and approximately 1.5 million African smallholder farms. The colonialist economy operated on a system of forced labour.

Mozambican peasants were obligated to provide free labour to cotton and rice production or, alternatively, to public work projects located in various and often distant regions of the country. The institution of rural taxes induced Mozambicans to seek employment on plantations and at the mines in neighbouring South Africa. In addition to the exploitation of agriculture, the colonial authorities extracted significant revenue from transport services provided to neighbouring British landlocked colonies (presently Malawi, Zimbabwe, Zambia and Kenya) as well as from the export of prawns.

The civil war destroyed significant parts of the physical and commercial infrastructure in rural areas. Numerous roads, bridges, shops, schools and healthcare institutions were destroyed (Devereux & Palmero, 1999), causing US $15 billion worth of damages (Pitcher, 1996). According to UN calculations, the cost of the physical destruction during the 1980s amounted to 250 years' worth of exports at the 1992 level, and twice the annual influx of foreign aid (Abrahamsson & Nilsson, 1996; Devereux & Palmero, 1999). With the uncontrolled dispersion of communities, rural households lost their social networks, families were split up, and individuals were taken away from a context in which they could draw on mutual support, an important base for rural livelihoods. Mechanisms such as local norms and values, traditional rules, taboos and ceremonies that had influenced the sustainable use of natural resources and environmental protection were all abandoned, and traditional authorities that had been responsible for the dissemination of values and knowledge, especially to the younger generation, collapsed and lost their legitimacy. Indigenous knowledge of farming techniques, livestock production, and disaster prevention and preparedness were completely lost or replaced by others acquired from abroad or from other areas within the country, not always suitable for the local physical environment. As an indirect consequence the vulnerability of rural livelihoods increased, placing these communities at greater risk of natural hazards.

2.4.3. POST-INDEPENDENCE POLICIES

Post-independence policies adhered to the principle of large-scale State farming and instituted the collectivisation of peasant agriculture. The economic result was that the marketed agricultural output halved between 1981 and 1986. Alternative policies were thereafter implemented with new economic reforms and a new emphasis on market incentives. The primacy of smallholder agriculture now prevails. Some larger export crop farms have been revived through foreign direct investment and joint venture companies, such as the cotton and citrus producer Lonrho Mozambique Agriculture Company (LOMACO), which operates in several regions of Mozambique. Rehabilitation of the existing agriculture-related infrastructure, including roads, railway lines, ports, irrigation systems, and water and power supply, is a priority of the government and of the international aid agencies assisting the Mozambican agricultural sector (Negrão, 1999).

In order to provide greater production and marketing incentives to this sector, price controls on fruits and vegetables were removed and fixed prices on other agricultural commodities were increased. Mozambique joined the IMF and the World Bank and, within three years, had launched a structural adjustment package of broad market reforms known as the Programme of Ecopnomic Rehabilitation (PRE). The programme addressed macro-economic distortions and imbalances, market liberalisation and privatisation (FAO, 1997). The development of commercial agriculture in suitable areas of existing water resources and irrigation networks such as Chokwe and Massingir in the Gaza province, and Corrumana in Maputo province, is another priority of the government. Mozambique began a process of market liberalisation in the early 1980s (Salomão, 2001).

Market liberalisation: Beginning in 1988, producer and consumer prices were gradually liberalised. Many fixed prices were replaced by mandatory minimum prices and later by recommended minimum prices. The latter were to serve merely as a reference to traders and to provide some leverage for farmers. Prices of 22 agricultural products were freed in 1993, and consumer price controls were retained only on bread and wheat flour. A number of non-agricultural consumer goods, such as cooking fuel, remained and still remain subject to price controls. International trade was progressively liberalised during the same period. Cotton and cashew prices have always been controlled, even during the colonial era. However, the method of calculating border prices of cashew and cotton was adjusted to reflect the international market more closely. In accordance with the 1991 tariff code, import tariffs were simplified into five rates ranging from 5 to 35 percent. The definition of product groups was clarified and exemption criteria minimised in order to reduce the need for discretion to be used in applying tariffs. The code also stipulated that all export taxes, with the exception of those levied on raw cashews, would be limited to 0.5% in 1991 and be completely eliminated at a later stage. The government also instituted a significant reduction

in the export tax on raw cashews, which was expected to result in improved farm gate prices and increased production. Under PRE provisions, there should be no export tax on any commodity beyond the year 2000. Currently, the raw cashew tax is the only one remaining. Although export licence restrictions have been substantially reduced, the application process for import licences continues to be complex and cumbersome (MADER, 2002).

In 1996 the Mozambican government launched an ambitious commercial agricultural joint venture between South African farmers and Mozambique (MOZAGRIUS, coordinated by the Ministry of Agriculture and Rural Development), a broadly successful scheme to attract farmers from South Africa to the largest and most fertile northern province of Niassa. Farmers participating in the scheme have already settled in Niassa. There is also an influx of farmers from Zimbabwe who have settled in the Manica province. The sugar industry in Mozambique currently comprises six different companies with their own factories and cane plantations. *Açucareira de Maragra and Açucareira de Xinavan*e are located in the south of the country. The total plantation area of about 52 800 hectares is equipped with suitable irrigation systems (Salomão, 2001).

Privatisation: The 1989 privatisation programme launched the process of selling off State farms and enterprises. To date, nearly all State farms and more than 500 small-, medium- and large-scale enterprises have been privatised, including all cashew processing plants and the customs offices. *Lojas do povo*[9] have also been abolished, and the government has become progressively more tolerant of private traders. The State still has interests in sugar production, cotton ginning and fishing. Ginneries historically had contracting relationships with small-scale cotton producers. Currently, these ginneries operate under joint venture concessions with the government. The 1991 law providing for the restructuring of all State enterprises changed those firms that had not yet been privatised into "public" enterprises that are required to operate along commercial lines with improved recordkeeping and greater financial accountability.

The Foreign Investment Law, enacted in June 1993, cleared the way for greater foreign investment in Mozambique. The largest investors have to date been from Portugal and South Africa, and the most favoured sectors have been agriculture and tourism. While traditionally supplied by large estates, joint-venture sugar mills are considering contracting arrangements also with small farmers. It is important to note that while farming operations have been privatised, all land is still owned by the State (MADER, 2004).

[9] Refers to traditional *cantinas*.

Correcting macro-economic distortions and imbalances: In an effort to address macro-economic distortions and imbalances, the Mozambican Government has enacted a series of standard structural adjustment measures. Devaluation of the national currency has reduced the difference between the parallel and official exchange rates from 2 100 percent in 1989 to 3.6 percent in 1995. While devaluation makes Mozambican export crops more attractive to foreign buyers, there is a cost in terms of the increased burden of importing equipment and other material required for reconstruction and rehabilitation. Such is the case for revitalising sugar mill operations. The Mozambican government has instituted a hiring freeze, expanded and improved tax collection and reduced the level of spending on certain programmes in order to close the gap between government revenue and spending and to decrease the deficit.

Mozambique has good agricultural potential for basic grains, as well as a number of cash crops such as cashew, cotton, sisal, tea, tobacco, groundnuts, sunflower oil, citrus and vegetables. The northern portion of the country has more reliable rains and better soils, while livestock is limited to tsetse fly-free areas of the south. Communications and transport links between the north and the south are weak: at present each region is better connected to international markets. The vast majority of Mozambican farmers have approximately one hectare of land; yet, together, these plots comprise 95% of all cultivated land area. Most farmers are very poor and seasonally food-insecure. Fewer than 30% have off-farm income opportunities (MADER, 2004).

The peace accord to end the protracted civil war was finally signed in 1992. Vestiges of the war, however, haunt rural areas in the form of hidden landmines, banditry, demolished infrastructure, poverty and virtually non-existent markets for producer and basic consumer goods (Salomão, 2001). Exacerbating the problem was a severe drought in 1992. As a result, approximately 80% of total cereals available in 1992 were derived from food aid (72%) and commercial imports (8%). Since then, food aid has been slowly tapering off with lingering programmes for the extremely vulnerable, such as food-for-work arrangements on specific rehabilitation projects and the provision of seeds and agricultural tools for resettlement (MADER, 2004).

Marketing: Less than 30% of Mozambican farmers market surplus production. Groundnuts and then maize are the most commonly traded commodities. A number of significant constraints impede the diversification and expansion of agricultural marketing. Transport costs are very high, while movement throughout the country is still restricted by instances of banditry. Owing to war-related sabotage and neglect of maintenance, only 30% of the road network is suitable for travel, and storage facilities are severely limited. Warehouses of the *Instituto Moçambicano de Cereais (IMC)*, the Mozambican Grain Marketing Board, are seriously underutilised. Irregularly enforced pan-

territorial minimum reference prices prejudice the marketability of produce. The lack of liquidity and absence of rural credit limit the volume and geographic spread of trade, and transaction costs are soaring as traders resort to the use of barter. Circulation taxes and outdated and burdensome licensing requirements discourage new entrants to rural markets.

Land tenure: Mozambique's current land law dates back to the colonial period. All land is currently owned by the State, which issues 50-year renewable leases granting liberal usufruct rights whereby the holder may sell and bequeath improvements and access rights. Authority to assign access rights and the issuance of a title depends on the size of the landholding. Although the actual limits vary according to land use, smallholdings are under the jurisdiction of provincial authorities and do not require titles, while larger holdings are titled and administered by the Ministry of Agriculture and Fisheries. Holdings exceeding 10 000 hectares are in the domain of the Land Commission. Although Mozambique is generally considered a land-abundant country, only three to four million of an estimated 36 million cultivable hectares are classified both as high-quality soil and as easily accessible to markets. The more densely populated Maputo, Gaza and Inhambane provinces have imminent land constraints, especially when fuel wood is collected (Negrão, 1999).

The different types of land tenure and the land administration system prevailing in Mozambique today evolved over time from the interplay of the socio-political organisations of the various tribes, clans and families through trade, wars and incorporation; the advent of colonial rule and subsequent introduction of tree crop agriculture, as well as commercial exploitation of timber and mineral resources; and post-independence politics and urbanisation. The basic land laws and land tenure practices in Mozambique are, therefore, deeply embedded in the socio-cultural systems and political institutions of its indigenous societies, even though they have been fundamentally influenced by administrative and statutory rules of the modern State. Over time, as land became increasingly scarce, indigenous arrangements under which individual members of the lineage enjoyed general rights of access to land have been rendered untenable (Salomão, 2001).

Mozambique has immense agricultural potential, with an estimated 36 million hectares of arable land, of which only 10% is presently in productive use. The wide diversity of soil types and the diverse climatic conditions in the country are suitable for a large variety of crops. Most of the agriculture practised in Mozambique is non-irrigated. However, Mozambique's network of more than 60 rivers has allowed for the construction of irrigation schemes. Total potential irrigated area is estimated at 3.3 million hectares. The main irrigation systems are at Chokwe and the sugar plantations in Incomati, Maragra, Buzi, Mafambisse and Luambo, covering a total of some 59,000 hectares. The Zambezi Valley has great investment potential in the agricultural sector, offering both

excellent arable land and readily available irrigation. To assist in the development of this area, the government set up the Zambezi Planning Office in 1997 to promote and coordinate social and economic development. Special tax incentives are also offered (MADER, 2004).

The economic and political changes introduced in the early 1990s also exacerbated the situation of vulnerability. In 1987, when structural adjustments were introduced, State enterprises were privatised, leading to a decrease in the provision of goods and services to the poorest people, with negative impacts mostly on poor Mozambican households. Politically, the country observed changes of legislation in response to global economic and political changes. Several policies were amended and some new ones approved specifically to include a livelihood component, especially in rural communities (Salomão, 2001). The severe 2000, 2001 and 2007 floods in southern and central Mozambique, for instance, affected about 150 000 hectares of crop production. Livestock losses were estimated at about 30% of the total cattle stock in the three southern provinces (Gaza, Inhambane and Maputo provinces). Oxfam reported that 522 000 people were displaced or in areas cut off by flooding[10].

2.4.4. AGRICULTURAL PRODUCTION GROWTH

Agriculture is the backbone of the economy, providing employment for over 75% of the workforce and contributing 20.1% to GDP in 2003. The main export crops include copra, cashew nuts, sugar cane, cotton fibre and tea. Other crops such as sisal, tobacco, mafurra and girassol are also cultivated commercially (Salomão, 2001). At present the agricultural sector is still dominated by the family sub-sector, which accounts for 90% of the cultivated areas and includes 2.5 million households. This sub-sector relies on rain-fed farming and has very basic techniques resulting in low yields. The remaining arable land is cultivated by large commercial farms that concentrate on cash and export crops. In 2007 the agricultural sector engaged approximately 81% of the Mozambican labour force (INE, 2007) and contributed 34% of GDP. Mozambique's major agricultural products include millet, maize, sorghum, rice, cassava and wheat. Agricultural exports include prawns, which are a type of shellfish similar to large shrimp, cashews, cotton, tropical fruits, sugar, copra (a coconut product), citrus, coconuts, and timber.

Table 2.5 shows the sector annual growth rates 1980 – 2004. In general it is noted that the volume of imports is increasing while the agricultural labour force is decreasing. The information suggests that there is an increased need for public regulation and investments in new inputs and technologies. The laws, rules and regulations that govern the interaction of various actors in the

[10] http://www.iiasa.ac.at/Research/POP/pde/briefs/mz-agric.html

political arena are slowly being recognised as significantly influencing the nature of the relationships that emerge in countries' attempt to find solutions to the poverty dilemma. This is particularly the case for some export crops where private marketing chains tend to be monopolistic (in contrast to the case of many domestic food crop markets where there is usually more competition and lower entry barriers).

Table 2.5: Agricultural sector – Average annual growth rates (%)

	1980 - 1990	1990 - 2000	2000 - 2004		1980 – 1990	1990 - 2000	2000 - 2004
Population and Agriculture Labour Force				**Agricultural Foreign Trade Indices**			
Population and Agriculture Labour Force	0.9	3.0	1.8	Import Value	7.9	-3	10
Rural Population	0.0	1.5	-0.1	Import quantity	6.7	-2.5	10.1
Agriculture Labour Force	0.1	2.9	1.5	Export Value	-12.2	2	22.2
				Export Quantity	-11.7	3.5	15.5
Agricultural Production							
Cassava	1.1	4.8	3.9				
Maize	0.0	17.6	10.3				
Indigenous Cattle Meat	1.2	-0.5	0.3				
Agriculture and Food Production Indices							
Agricultural Production	-0.6	4.8	3.5	**Food Supply**			
Agricultural Production, per person	-1.5	1.8	1.7	Per person	-0.1	1.6	1.7
Food Production	0.0	4.7	3.2	Total	0.9	4.6	3.6
Food Production, per person	0.9	1.7	1.4				
Source: ESSGA, 2006							

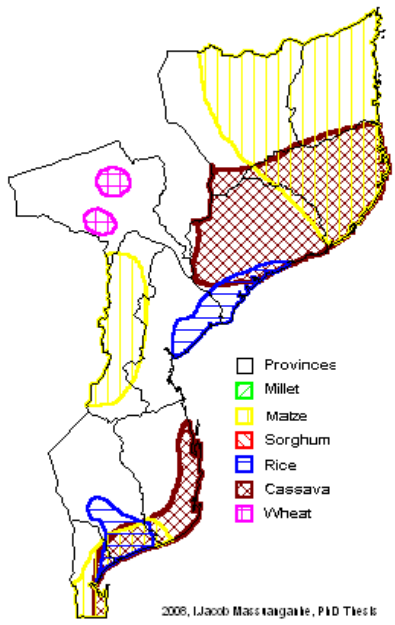


Figure 2.7: Production zones of Mozambique

Mozambique's growth and poverty reduction strategy is based on environmentally sustainable and inclusive private sector growth. But the country's public administration remains weak, despite significant reform and improvement, and it continues to face challenges of capacity and resources to deliver basic infrastructure and services and to properly enforce the consistent legal and regulatory framework essential for investment and private sector development. In 2000, for example, production of corn – Mozambique's most important crop produced for domestic

consumption – fell to 1 019 000 tons from 1 246 000 tons the year before. The productive decline related largely to devastating floods, which lasted from January to March. Conversely, debilitating droughts also frequently afflict the country, and two crippling droughts in the post-war period alone led to severe declines in agricultural production.

Such weather imbalances lead to oscillating (fluctuating) patterns of production, which, in addition to destabilising export revenue, severely restrict the country's ability to gain self-sufficiency in food production. Yields were down all over the southern region and parts of central region.

The World Food Programme[11] reported that severe dry weather in some of Mozambique's central and southern provinces placed 355 000 people in immediate need of food aid, rising to 515 000. International pricing is not the only factor that affects the stability of the agricultural sector. Weather conditions are a second, albeit just as important, element determining productive output. Further exacerbating the problem, only four percent of all land in Mozambique is arable. As a result of these problems, the country must import large amounts of rice and wheat every year.

To make matters worse, shortages in neighbouring countries have pushed food prices beyond the reach of a significant number of the rural poor. In the southern region (Gaza, Inhambane and Maputo) some good initial rains were followed by a long dry spell – resulting in virtually no rains for half the growing season. In the affected areas, a drop of more than 60% of the total expected output of cereals and grains is due to drought. The emerging domestic private sector needs access to infrastructure and finance, and must also acquire the skills, experience and innovation required to exploit new sources of growth and to compete successfully in the new world economy. Mozambique's young democracy remains fragile, and underlying political tensions continue to task nation-building and threaten national stability. The Government estimates that 60,000 hectares yielded less than 10% of their usual output. Absence of rain has also affected the second seasonal harvest (mid-June to August), which only represents 10% of annual production, but accounts for 40-50% of annual production in the lower Limpopo districts of Gaza.

2.4.5. POPULATION GROWTH AND FARMING SYSTEMS

Population density is expected to influence the labour intensity of agricultural production, including the choice of products, as well as production technologies and land management practices, by affecting the land-labour ratio (Pender, Jagger, Nkonya & Sserunkuuma, 2002). Population growth may cause expansion of cultivated agriculture into forest and/or grazing areas and reductions in

[11] WFP (2008) http://www.wfp.org/newsroom/in_depth/Africa/sa_mozambique020607.asp?section=2&sub_section=2

fallow, or it may induce adoption of land-saving products or technologies, investments in land improvement, and adoption of labour-intensive land management practices, amongst other changes. For example, an area with suitable climate and soils may have an absolute advantage in producing high-value perishable vegetables, but have little comparative advantage in this if it is remote from markets and roads. Improvements in market or road access are thus expected to favour production of higher value perishable commodities, as well as non-farm activities, and should contribute to higher incomes and welfare. Improved access to markets and infrastructure has more ambiguous theoretical impacts on land use, land management practices and resource conditions, depending on the relative impacts on costs of productive factors, and because of ambiguous effects of output prices on incentives to conserve land.

One-third of the population is considered to be *'ultra poor'*, with consumption expenditure 60% or less below the poverty line. About seven in ten Mozambicans reported consumption below the national poverty line (US $0.40 per day). About 80% of Mozambique's poor live in rural areas; about 70% of the rural population is poor, and over 90% of rural adults work in agriculture. There is significant regional variation in poverty. Sofala, Tete, and Inhambane have the highest poverty incidences, but 40% of the poor live in densely populated Nampula and Zambézia. Food insecurity, prevalent during the war, continues to contribute to malnutrition (World Bank, 2000).

This concept is similar to the concepts of farming systems and livelihood strategies, but is more general than farming systems since it incorporates non-farm as well as farm activities (as does the concept of livelihood strategies), and is dynamic since it refers to changes and not merely to livelihood strategies pursued at a particular point in time. In this research, these concepts are used to guide the research questions addressed and the methods used to answer those research questions. A preliminary report by Pender *et al.* (2002) indicates some positive differences in investment and credit for titled farmers over non-titled farmers. Farmers' yields are typically less than one-third of potential yields found on research stations, and yields of most major crops have been stagnant or declining since the early 2000s (Tanui, Russel & Alinyo, 2006). Low and declining agricultural productivity in turn contributes to poverty and food insecurity. Poor and food-insecure households may be forced to plant crops on steep slopes or may be unable to afford to keep land fallow, invest in land improvements, or use costly inputs such as fertiliser.

2.4.6. PUBLIC INVESTMENTS IN AGRICULTURE

In many developing countries, public investment in agriculture has been on the decline in the post-reform period. Given the undoubted complementarities between public and private investment in this field, it is not surprising that private investment has been slow to make up for this deficiency.

The issue of public investment will be increasingly important also in the case of biotechnology research to develop technologies in plant and livestock breeding and in native crops suited to local conditions (sorghum in Africa, millets in India) – a need that is likely to be neglected by the patent-protected multinational biotechnology companies.

Funding cuts for international public organisations like the Consultative Group on International Agricultural Research (CGIAR), once the leaders in Green Revolution research and development, have made it particularly difficult for them to serve the special needs of poor farmers. With regard to public investments in agriculture, the emphasis is shifting from massive State investment in large dams (that often cause major displacements of people, environmental damage, water-logging and salinity, and arbitrary water control operations run by a corrupt and distant bureaucracy) to better local management of existing irrigation systems and minor irrigation projects under some form of community control to improve the effectiveness of investments (Wuyt, 2001).

The Indian canal systems are large, centralised hierarchies in charge of all functions (operations and maintenance, as well as design and construction). Their ways of operation (including the promotion and transfer rules for officials, rules designed to minimise identification between the irrigation patrollers and the local farmers, and the frequent use of low-trust management and supervision methods) and source of finance (most of the irrigation department's budget comes in the form of a grant from the State treasury) are totally insensitive to the need for developing and drawing upon local social capital. In contrast, in Korea there are functionally separate organisations in the canal systems: the implementation and routine maintenance tasks (as opposed to policymaking and technical design work) are delegated to the Farmland Improvement Associations, one per catchment area, which are staffed by local part-time farmers (selected by the village chiefs), knowledgeable about changing local conditions, dependent for their salary and operational budget largely on the user fees paid by the farmers, and continually drawing upon local trust relationships.

In Mozambique, declining public investment in agricultural research and development is slowing the rate of technological progress in agriculture, and the decline of investments in maintenance and repair of irrigation and drainage systems and rural roads, and in the prevention of soil erosion, has curtailed the effectiveness of earlier investments in agriculture. The table below shows the proportional level of investment in agriculture compared with other sectors.

Table 2.6: Proportion of agricultural investment 2006 – 2010

Sectors	2006	2007	2008	2009	2010
State Bodies	9.9%	11.6%	9.8%	10.3%	8.6%
Basic Education	18.9%	18.0	19.0	19.8	21.2
High Education and Technology	3.1%	3.4	3.8	3.8	3.9
Health	19.0%	18.1	18.1	18.0	18.3
Roads	12.5%	13.4	13.8	13.6	13.9
Water and Sanitation	5.3%	5.3	5.9	5.8	5.5
Justice	8.1%	7.6	7.4	7.3	7.3
Agriculture and Natural Resources	**7.2%**	**7.6**	**7.6**	**7.3**	7.2
Others	16.0%	15.0	14.7	14.2	14.1
TOTAL	44.21%	46.46	48.03	50.75	52.83
Source: PARPA					

The same problems of low accountability to the local population afflict the volume and particularly the quality of provision of local public goods and services in many developing countries. Moser and Norton (2001) calculated scores from a detailed analysis of the institutional arrangements for decision-making and resource allocation in six important aspects of rural development in nineteen developing countries (rural primary education, rural primary healthcare, rural roads maintenance, agricultural extension, rural water supply and forestry management). Of the nineteen cases in the sample, the scores of decentralisation are particularly low for Nigeria, Côte d'Ivoire, Burkina Faso, Senegal, Bangladesh, Egypt, and the United Republic of Tanzania. Fisman and Gatti (1999) documented a significant negative correlation in cross-country data between the sub-national share of total government spending and various measures of corruption, controlling for other factors, suggesting that decentralisation can mitigate corruption. Of course, the adverse effects of lack of local accountability on the quality of public goods and services show up in even less tangible forms of leakages and targeting failures than what the measures of corruption indicate.

There are also many cases of failure of cooperation in the management of common resources in poor countries, leading to an anarchical regime in the scramble for these resources. With the erosion of the local commons – decimation of forests and grazing lands, silting and increasing toxicity of rivers and ponds, depletion of aquifers and soil erosion and desertification – life for the rural poor in many parts of the world has become more insecure and impoverished in ways that are not captured in the usual poverty estimates based on private consumer expenditure data. Many of these countries actually have a long history of balanced resource management under highly informal local community arrangements. Going beyond the impact of local accountability on the quality of service in publicly supplied facilities, it is important to note that a local community organisation, if it has a stable membership and well-developed structures for transmitting private

information and norms among the members, may have the potential for better management of common property resources (like forests, grazing lands, fisheries and minor surface irrigation works), on which the rural poor depend vitally for their daily livelihood and also for insurance in the form of a fallback source of food and fodder in bad crop years. There are several documented examples in different parts of the world of successful and autonomous local community-level management of the commons (Platteau, 1996).

2.5. THE ROLE OF INSTITUTIONS

The role that institutions should play in agricultural development has been recognised for years. Agricultural policies and the adoption of new technologies designed to enhance farm output and income have received particular attention as a means to accelerate economic development. However, output growth is not determined only by technological innovations, but also by the efficiency with which available technologies are used (Nishimizu & Page, 2004).The classic example of inefficient institutions persisting as the lopsided outcome of distributive struggles relates to the historical evolution of land rights in developing countries. In most of these countries the empirical evidence suggests that economies of scale in farm production are insignificant (except in some plantation crops), and the small family farm is often the most efficient unit of production. Yet the violent and tortuous history of land reform in many countries suggests that there are numerous roadblocks on the way to a more efficient reallocation of land rights put up by vested interests for generations.

Institutions are generally categorised into formal and informal institutions. The *formal institutions* are largely governed by the pre-decided legal setup in the form of formal norms. In certain circumstances these norms are flexible and can change over time, whereas in other circumstances they can be static in nature. Therefore there are two types of categories: One is the dynamic characteristic of the institution whereas, the other is static and inflexible in nature. The *informal institutions*, on the other hand, emerge out of the spontaneous requirements based on the needs of society. Here again some of the institutions may have a structure that may not change over time; in certain other cases the informal institutions can be highly flexible. With agriculture being a subject very close to the cultural setting and sensitive to changes in society at large, flexible informal institutions are more effective in agriculture. It is interesting to observe the changes that have taken place in the institutional structure, especially after independence. The institutional structure has changed due to various factors, mainly concerning technology, the process of commercialisation, and organisational structure.

The profile of development is influenced and also determined by the institutional setup. Institutions shape human interaction and define the choices and decisions made by the individual, community or society to achieve a satisfactory lifestyle under the given constraints. Thus institutions play a significant role in shaping and regulating human activities to optimise production and to minimise the risks associated with production systems. Any development process presumes three levels in achieving its goal. Of these, the first stage begins at the preparation for the process of development that essentially requires inducing growth in the first place. The erosion of the commons set in only with major demographic and institutional changes in recent decades, often accelerated by commercial or bureaucratic appropriation of the common resources, supplanting the traditional historical rights of local communities over these resources. Devolution of power back to these communities can succeed in regulating, conserving and maintaining these resources. In some cases – for example, in forest protection and regeneration and wasteland development in India – there are now some successful instances of joint management by the State and the local community, with the latter taking major responsibility.

2.5.1. ECONOMICS OF INSTITUTIONS

The economic institutions are induced and sustained with the help of economic parameters such as price, market, exchange and monetary interlocked interests. These institutions involve combinations of the formal and informal institutions, and are stable on the ground until economic interests change. Introduction of markets as the driving force of growth in the developing countries can be categorised as one of the major institutional departures. This assumes importance in the context of the meagre marketing infrastructure developed in these countries and the existing imperfections due to the proverbial conduit called 'middleman'. There are attempts to meet the situation arising out of the changing institutional structure under the pressure of the forces of liberalisation and the market-led growth initiatives. Some of these essentially have to be in the crucial sectors like market and credit (Rihoy, 1998).

With a view to reviving the agricultural credit delivery system, there is a need to adopt innovative approaches like the linking of self-help groups (SHGs) and non-governmental organisations (NGOs) with mainstream financial institutions. In order to rejuvenate rural credit delivery systems, the twin problems facing the system, viz. high transaction costs and poor repayment performance, need to be tackled with more fiscal jurisprudence, reserving exemplary punishment for wilful defaults, especially by large-scale farmers. In fact, insofar as the rural credit delivery system is concerned, the focus should be on strategies that are required for tackling issues such as sustainability and viability, operational efficiency, recovery performance, small-scale farmer coverage, and balanced sectoral development. Another alternative coming forth is the introduction of the futures markets.

Futures trading existed in south Asia especially for a few commercial crops such as cotton (Rondinelli, 1981). Kalirajan, Obwona and Zhao (1996) state that futures markets play an important role in determining the inventory decisions in the cash market. These act as the nerve centre for the collection and dissemination of information about the agent's expectations of the futures cash market. The major role for futures markets appears to be in reducing inter-seasonal volatility as opposed to intra-seasonal volatility. The results suggest that futures markets may indeed be a viable policy alternative for policymakers to reduce uncertainty in agricultural markets. The liberalisation of State support policy, which was designed to stabilise farmers' income, will increase risk and uncertainty to market participants, whereas the futures market, through its information role, may vastly improve storage across the seasons, thereby stabilising cash prices.

2.5.2. INSTITUTIONALISING COMMON POOL RESOURCES

Why don't the large landlords voluntarily lease out or sell their land to small family farmers and grab much of the surplus arising from this efficient reallocation? There clearly has been some leasing out of land, but problems of monitoring, insecurity of tenure and the landlord's fear that the tenant will acquire occupancy rights on the land have limited efficiency gains and the extent of tenancy. The land sales market has been particularly thin (and in many poor countries sales go the opposite way, from distressed small farmers to landlords and moneylenders). With low household savings and severely imperfect credit markets, the potentially more efficient small farmer is often incapable of affording the going market price of land. Deininger (1995) explains it in terms of land as a preferred collateral (and also carrying all kinds of tax advantages and speculation opportunities for the wealthy) often having a price above the capitalised value of the agricultural income stream for even the more productive small farmer, rendering mortgaged sales uncommon (since mortgaged land cannot be used as collateral to raise working capital for the buyer). Under these circumstances and if public finances (and the state of the bond market) are such that landlords cannot be fully compensated, land redistribution will not be voluntary (Meier & Stiglitz, 2001).

Landlords also resist land reforms, because the levelling effects reduce their social and political power and their ability to control and dominate even non-land transactions. Large land holdings may give their owner special social status or political power in a lumpy way (the status or political effect from owning 100 hectares is larger than the combined status or political effect accruing to 50 new buyers owning TWO hectares each). Thus the social or political rent of land ownership for the large landowner will not be compensated for by the offer price of numerous small buyers. Under these circumstances the former will not sell, and inefficient (in a productivity sense, not in terms of the Pareto criterion) land concentration persists.

Of course, even in the context of increasing returns to land ownership in terms of political rent, land concentration is not always the unique or stable political equilibrium. Much depends on the nature of political competition and the context-specific and path-dependent formations of political coalitions (Meier & Stiglitz, 2001). An interesting example of this in terms of comparative institutional-historical analysis is provided by Nugent and Robinson (1998). Holding constant both colonial background and crop technology, the divergent institutional (particularly in terms of smallholder property rights) was compared with the growth trajectories of two pairs of former Spanish colonies in the same region (Costa Rica and Colombia on the one hand, and El Salvador and Guatemala on the other) producing the same principal crop (coffee). Institutional economics will be richer with more such comparative historical studies (instead of more cross-country regressions) (Deininger & Olinto, 2000).

2.5.3. LAND REFORM AND ITS IMPACT ON AGRICULTURE

In many countries land reform is not high on the list of priorities in the reform agenda. Even the few economists or policy people who are persuaded by the desirability of land reforms are despondent about their feasibility. This is particularly because some of the conditions under which poor peasants work – seasonal crop cycles, spatial dispersion, covariate risks and extreme dependence on the landlords – make collective action on their part much more difficult than in the case of urban workers. Given this and the strength of opposition of vested interests, many regard the political prospects for land reform in most poor countries as bleak, and therefore drop it altogether from the agenda of poverty alleviation.

Some aspects of land reform (like extension of tenure security) may be less difficult to implement than others (like land ceilings). Besides, in the dynamics of political processes and shifting coalitions, the range of feasibility often changes, and options kept open contribute to the political debate and may influence the political process. Some policy advisors (in international lending agencies) who rule out land reform as politically infeasible are at the same time enthusiastic supporters of other policies that may be no less politically difficult; an example is the strict targeting of food subsidies and thus the cutting of the substantial present subsidies to the vocal urban middle classes. In the game of political coalition formation, a radical policy sometimes becomes implementable if it helps to cement strategic alliances, say between sections of the urban upper classes (including white-collar workers) and the rural poor.

Of course, some methods of land reform can be counterproductive, particularly in situations of land scarcity and weak organisation of the land-poor. Well-intentioned measures like abolition of tenancy often end up driving tenancy underground or leading to the large-scale eviction of tenants, and take

away a part of the agricultural ladder that the landless could formerly aspire to use to climb out of poverty. Redistributing land without adequate provision of credit and marketing facilities and extension services may make land recipients worse off, as they are obliged to burn their bridges with the erstwhile landlord-creditor patron. In recent years there is increasing support for 'market-assisted land reforms' (as opposed to confiscatory land reforms), whereby the government assists voluntary transactions in the land market through credit and subsidies to the small buyers (Bardhan, 2001).

A major problem that hinders most schemes of decentralised governance is related to distributive conflicts. In areas of high social and economic inequality, the problem of 'capture' of the local governing agencies by the local elite can be severe, and the poor and the weaker sections of the population may be left grievously exposed to their mercies and their malfeasance. The central government can also be 'captured', but there are many reasons why the problem may be more serious at the local level. For example, there are certain fixed costs of organising resistance groups or lobbies, and as a result the poor may sometimes be more disorganised at the local level than at the national level where they can pool their organising capacities. Similarly, collusions among the elite groups may be easier at the local level than at the national level. Policymaking at the national level may represent greater compromise among the policy platforms of different parties, while capture at the national level may be subject to greater media attention, and so on. When the local government is captured by the powerful and the wealthy, instances of subordinate groups appealing to supra-local authorities for protection and relief are not uncommon (Meier & Stiglitz, 2001).

2.5.4. INSTITUTIONAL CHANGES IN AGRICULTURE

In the immediate post-war decades, underdevelopment was largely attributed to deficiencies in factor endowments, particularly of capital (physical and human) and of foreign exchange to buy essential intermediate and capital goods. In the last couple of decades it has been increasingly recognised that the escape routes out of poverty are often blocked by various kinds of institutional impediments that go far beyond deficiencies in factor endowments (and are more difficult to resolve than by simple infusions of foreign aid or even increases in domestic saving). These institutions include those in the form of legal structures, customary rules, property rights, implicit or explicit contracts, and governance systems. These define the framework in which factors of production are utilised and developed (Wuyt, 2001).

Two recent strands of institutional economics have been influential in development literature. One is associated with the theory of imperfect information: the first, underlying rationale of *institutional arrangements and contracts* (formal or informal) are explained in terms of strategic behaviour under

asymmetric information among the different parties involved. This theory has been fruitfully used in modelling many key agrarian and other institutions in poor countries, which are seen to emerge as substitutes for missing credit, insurance and futures markets in an environment of pervasive risks, information asymmetry, and moral hazard. It started with the literature on sharecropping, then on interlocking of transactions in labour, credit, marketing, and land lease, on labour tying, on credit rationing, on joint liability in group lending schemes, and so on.

The second is associated with *analysis of development processes* and concentrates on comparative historical development (mainly in Western Europe and North America). North (quoted by Negrão, 1999) pointed to the inevitable trade-off in the historical growth process between economies of scale and specialisation on the one hand, and transaction costs on the other. In a small, closed, face-to-face peasant community, for example, transaction costs are low, but the production costs are high, because specialisation and division of labour are severely limited by the extent of market defined by the personalised exchange process of the small community. In a large-scale complex economy, as the network of interdependence widens, the impersonal exchange process gives considerable scope for all kinds of opportunistic behaviour and the costs of transacting can be high. Greif (2006) examined the self-enforcing institutions of collective punishment for malfeasance in long-distance trade in the late medieval period and in a comparative study of the Maghribi and the Genoese traders explored the institutional foundations of commercial development. Beyond the face-to-face village community the institutions a society develops (or fails to develop) for large-scale commercial operations, long-distance trade, credit and other intertemporal and interspatial markets, where the transactions are not self-enforcing, provide an important indicator of that society's capacity for development.

In Western societies, complex institutional (legal and corporate) structures have been devised over time to constrain the participants, to reduce the uncertainty of social interaction in general to prevent the transactions from being too costly, and thus to allow the productivity gains of larger scale and improved technology to be realised. These institutions include elaborately defined and effectively enforced property rights, formal contracts and guarantees, trademarks, limited liability, bankruptcy laws, large corporate organisations with governance structures to limit problems of agency, and what North has called ex-post-opportunism. Some of these institutional structures are non-existent or weak or poorly devised and implemented in less developed countries. In these countries the State is either too weak to act as a guarantor of these rights and institutions and/or much too predatory in its own demands, posing a threat to them (Negrão, 1999).

One of the as-yet inadequately resolved issues in institutional economics in the context of underdevelopment is why dysfunctional institutions often persist for a long period of time. Unlike the followers of the property rights school, who often displayed a naive presumption of the survival of the 'fittest' institution, the two strands of institutional economics identified earlier are quite clear in not ascribing optimality properties to the institutions as (Nash) equilibrium outcomes. Anstey (2000) and others have pointed to the self-reinforcing mechanisms for the persistence of socially suboptimal institutions when path-dependent processes are at work. Borrowing an idea from the literature on the history of technological change, one can see that there are increasing returns to adoption of a particular institutional form – where the more it is adopted, the more it is attractive or convenient for the others to conform on account of infrastructural and network externalities, learning and coordination effects, and adaptive expectations – and a path chosen by some initial adopters to suit their interests may 'lock in' the whole system for a long time to come, later denying perhaps potentially more appropriate institutions a footing (Wuyt, 2001).

In this path-dependent process, North (1990) more than others has emphasised how the interaction between the 'mental models' or social norms the members of a society possess and the incentive structure provided by the institutions shapes incremental change. One related example may be cited from the comparative study in Gallant (1999) of credit cooperatives in German and Irish history. The path-dependent process is also made more complicated by the frequent cases of unintended consequences in history. Gallant made a distinction between 'pragmatic' and 'organic' institutions. The former are the direct outcome of conscious contractual design – as in the institutional models in the theory of imperfect information or transaction cost – while the latter, like in Menger's theory of the origin of money, are comparatively undersigned, and they evolve gradually as the unintended and unforeseeable result of the pursuit of individual interests.

2.6. THE ROLE OF TRADITIONAL AUTHORITIES

Mozambique's law no. 2/97 is vague concerning traditional authorities and does not specify areas or sectors of collaboration or the bases for interaction between the administration and traditional authority. However, article 28, par. (2) makes it clear that "the local authority bodies may sound out the opinions and suggestions of the traditional authorities who are recognized as such by the communities, so as to coordinate with them activities which seek to satisfy the specific needs of these communities". Other than for the 33 urban areas that have been municipalized, there is no law, decree or *diploma* that mentions any institution that could substitute the municipality in "sounding out" the traditional authorities. The situation is even more complicated in the majority of districts, where the extension of local State bodies down to the communities is rare or is absent. In the urban areas, traditional authority is less evident than in rural ones, where institutionally, below

the Head of the Post, the physical presence of the State declines and there is more room for the manoeuvring of traditional leaders.

2.6.1. SOCIAL INSTITUTIONS PROMOTING DEVELOPMENT

The organisations promoting development have increasingly sought to interact directly with lower-level counterparts in government. With the pulling out of the State from the provision of most services and from direct involvement in productive activities, and the rise in importance of civil society and the private sector, more interaction is sought with local and regional-level organisations and institutions. The emergence and consolidation of small-scale local initiatives has been placed at the core of many current development programmes and has led to a much more important role for intermediaries, facilitators and 'brokers' of development. These actors, mediating between the rural population and project staff, are typically people who comprehend the 'project language'. Often, they are relatively younger persons who have migrated, learnt the national language well, are functionally literate and have recently returned to their village (in the case of former civil servants, frequently as a result of the downsizing of the State apparatus). In the best of cases they are the local school teachers (or extension agents), but often these intermediaries do not have much legitimacy in the eyes of the villagers, and have during their absence from the community lost touch with the natural resource base and, especially, the norms and institutions that govern it.

They are in effect the local 'development facilitators' and are important personalities who will influence local institutional development. Process documentation is one methodological tool to investigate the issues revolving around their brokerage function. There are also other clues that emerge from participatory exercises, for example a qualitative assessment of the way in which the project language finds its way into local idioms. Intermediaries may be agents or agencies (go-between institutions, favoured by most development agencies), and their role may be one of acting as filters who translate the project rhetoric not just into the local dialect but into reality on the ground – an undertaking that may appear successful to the outside, by superficially complying to donor conditions. The study of development brokerage has recently intensified in the anthropological literature. It is a function that may, of course, also be positive, as agents or catalysts of change through a demonstration effect of "how to do things differently".

The issue of the relationship between the rise of the new type of intermediary and the traditional community leaders, structures and institutions is particularly interesting and complex. Historically, the latter are the "classic" facilitators who have assured the mediation between the (colonial, then often but not always postcolonial) State and the local population, whereas, increasingly, the former are occupying the role of mediation between development agencies and the local population.

However, traditional community leaders do not normally master the tools, first of all linguistically, to bridge the rift with "modern" institutions and have thus, arguably against their will, "allowed" the appearance of the new category of intermediaries.

Platteau (1996) concluded that "collective action is probably most satisfactory when it is led by relatively young, literate persons who have been exposed to the outside world and who can find some way of collaborating with traditional structures of authority and leadership". But policymakers must bear in mind that this new type of intermediary generally follows a different agenda – in other words, he or she is usually motivated by self-interest rather than by a desire to preserve the "common wellbeing" of the community, and is not always a direct stakeholder in Natural Resource Management (NRM). The strategies of both categories of intermediaries will diverge even more substantially in areas in which cash crop production has led to significant financial gains (for example, cotton production in southwest Mali and the northeast of Mozambique) and incentives for intermediaries to take advantage of their role to (re)gain influence in community affairs (possibly after a prolonged absence).

With increasing commercialisation, miniaturisation and commoditisation, there has been a concurrent increase in the levels and expansion of accumulation strategies of an individualistic ("profit-maximising") type, often opposed to the customary community strategies of the subsistence and moral economy. However, the rationale behind the former is not necessarily in contrast with the relations of production inscribed in traditional community institutions, as a number of authors in the development literature would argue. However, since its origin lies not with traditional community institutions, but usually outside the village and generally outside of subsistence agriculture, this implies that decentralisation policy, if it is to increase access to resources for a wider percentage of the rural population, must take this into account. Private accumulation is also a quest for prestige and draws its thrust and financial support primarily from commerce, (increasingly) migration, and (decreasingly) the civil service.

In Mozambique, traditional rules and practices have not been codified into law nor spelled out, but nonetheless their respect is legally binding. Experience in Mozambique with the land demarcation process, which includes considering the boundaries of the former colonial chieftaincies, the *régulados*, with the local community definition and production systems analysis process in the context of the National Land Programme, has highlighted the important role of the FAO and other partners when it comes to stepping in as "neutral" mediators, by bringing in international experts with a legal anthropology background to articulate Western statutory law with customary rules and practices. Such personnel, who should be socially neutral – also by way of nationality, language

and technical background – may draw on the symbolic and political capital of an international agency to bridge the substantial social distance between actors at the national and local levels, as it can easily access most decision-making levels, from village civil society to the national polity.

Areas of confusion arise because one of the specific issues that are a subject of engagement between these representatives and the local administrative authorities is that of the "use and benefit of land". However, the definition of a local community in the regulations to the decree varies from that in the Land Law and is strictly related to territorial administrative divisions: district, administrative post and locality. Community representatives of these groups are therefore State-appointed, State-remunerated and of a public character, whereas local community groups in terms of the Land Law are private landholding entities.

2.6.2. DIMENSIONS OF TRADITIONAL LEADERSHIP

Traditional community leaders have status (legitimacy), based on the lineage (or tribe) as a social unit and on religious grounds, as mediators between a given ethnic group and its natural and social environment. Their prime function is to ensure peace and harmony in the rural communities within their territory. Given the vast heterogeneity of traditional community institutions, which reaches well beyond the simplistic dichotomies taken as parameters within the confines of the definition employed in the present context, the present study focuses on the *existing dimensions of leadership* in a given rural area, and on the membership dynamics of their attributes. In many traditional agricultural and pastoral societies there is the custom of not passing decisions unless there is an absolute consensus among the local elite that in effect act as watchmen over natural resource management at the village level. This unanimity rule presupposes important qualities in conflict resolution, mediation, and, especially, in negotiation and conciliation. These skills will depend much on experience, charisma, prestige and status, and are thus embodied by traditional leaders, and are the very mechanism by which one can aspire to traditional leadership. Although status may be ascribed at birth through the lines of inheritance, it will often be challenged over time, and, unless a traditional leader lives up to expectations, he or she may be relieved of his/her duty.

According to Lundin (1998), traditional authority in Mozambique includes: persons who hold local traditional power – the traditional chiefs, lower (lineage) chiefs, and chiefs of social groups; those who hold spiritual power – spirit mediums and traditional doctors, and, in Islamic areas, the *machehe*; those with knowledge of how to cure psychological, physical and social ills – traditional doctors; those who know about plants, leaves, roots, fruits, etc. - herbalists; those who know the skills for the physical survival of the agricultural community – traditional midwifes, rainmakers, ironsmiths, clay and straw workers, those who know about animal habits, the movement of water,

plant cycles, etc. and those who, to some extent, hold economic power; those who know and can work with social control mechanisms and those who control cultural transmission – chiefs, those officiating rituals, judges, elders, spirit mediums, traditional doctors, and so on. These skills or tasks can, and often do, overlap.

In north-western Mozambique, the political structure of the *vangoni* in Banga (Tsangano district, Tete central province) uses *ngoni* terminology, and includes: the *abambo* – head of the family unit (*banja*); the *ankhoswe* – head of the lineage (*limana*); the *nyakwawa* – head of the lineage territory (*mudzi*, or group of lineages); and the *mfumo* – head of a group of lineage territories, and of his own *banja*, *limana*, and *mudzi*. Within this territory, called "*regulado*" by the Portuguese colonial administration, the *mfumo* was appointed as its head, as *régulo* (a derogatory term, meaning "little king"). The *mfumo* is the head of the hierarchically highest lineage which first occupied a larger territory, and from where the occupation of relatively smaller plots by lower lineages took place. In the case of Banga and the *mfumo* Gimo, local history can be traced back to the conquest of the territory of Angônia by the *vangoni*. For the case of the *vangoni*, there exists a *nkhoswe wa makossi* – a paramount chief – who at present is Mr Sebastião M. Dahama who lives in Ulongwe in Angónia. This is a title of nobility of a formerly centralised political structure, which has mostly lost the differences to the great chiefs, but with much symbolism by way of the respect it commands.

Normally, as in the case of Banga, the *nyakwawa* is a member of the dominant lineage in the lineage territory where the population resides, with a history dating back to the period of the occupation of the territory. The *nyakwawa* is the uppermost representative of the population. In north-eastern Mozambique the *nyakwawa* is the paramount representative of the population groups. It is the basic traditional political authority in the village, responsible for the wellbeing of the village. When the territory is divided into two or more neighbourhoods, in reality two or more lineage territories, two *azinyakwawa* also exist, one hierarchically above the other. The *ankhoswe* is a small "*nyakwawa*" within the village (*aldeia*) whose tasks are restricted to his lineage. Delegated by the *nyakwawa*, he is in charge of all tasks to be carried out in the community. The *ankhoswe* is the first instance appealed to in the event of land conflict, being the person who best knows the traditional forms of resolution of these conflicts and the boundaries of the lineage-held lands (Lundin, 1998).

The social organisation of the populations of the administrative post of Netia is also based on the lineage as a social unit (called *nloko*), and the lineage chief is called *nanloko* or *humu*. Normally, the name of the *nloko* is the same as that of its chief, and is the name that will be taken on by its offspring. For example, if the *humu* is called "*mweri*", his or her *nloko* will be called *nloko na mweri* (the lineage of *mweri*); its members will be called *ananloko-a-mweri* (the members of the lineage of

mweri), or *an-anloko-a-humu mweri* (the members of the lineage of the *humu* of *mweri*). Below the lineage level we find the *erukulu* (or *irukulu*, in the plural), which in Emakhuwa means "belly"), which refers to the family unit or to the group consisting of all the children of the same mother, a feature of matrilinear social organisation. The father is the head of the *erukulu*, but his authority over the children is limited by the brother of the mother of the children, because by custom it is he who is responsible for most of the problems of the children of his sister. For the children of the couple it is the *atata* (or *azitata*, in the plural). The *makhulupale* (the elders) of the *nloko* constitute the council of elders, with the basic role of advising the *humu* and deliberating on his decisions. Each elder in the council is generally representative of the members of his *erukulu*, within which he makes decisions and may decide on minor social quarrels without previously consult the *nanloko*.

This means that in the *nloko* some elders have the status of *humu* (or *mahumu*, in the plural) at the level of their *erukulu*, and therefore play an important role. Other elders hold the right to succeed the *nanloko*, but may prefer not to and leave the position to a younger brother, while they take on the role of counsellors. This is interesting because it allows for the existence of young and formally educated chiefs, under the tutelage of the elders, who hold more symbolic authority within the community, because of their "proximity" to the ancestors. Some *azitata* hold the status of *humu*. It may happen that, through their chief, a many-member *erukulu* splits from the founding *nloko* to constitute a new *nloko*, in which case segmentation takes place. However, the force of kinship relations will ensure that the new lineage and its new leader will continue to depend on the *humu* of the founding lineage. This influence in more than one lineage leads to a situation whereby the status of *humu* is raised or changes to *mwene* – the chief of the lineage territory (Lundin, 1998).

2.6.3. TRADITIONAL INSTITUTIONS' SUPPORT OF LOCAL LIVELIHOODS

In lineage-based hierarchical societies, mechanisms for redistribution are an expression of the moral obligations of the senior members of the community who are responsible for ensuring social and spiritual reproduction, as well as its junior members, responsible for ensuring economic welfare. They are essentially networks of mutual support and solidarity, as well as clientelistic relations among kinship groups of unequal social status, nested in historical power relations and priority rights for some lineages, which are largely the consequence of who occupied the land first. The descendants of the first to settle and cultivate the land will claim superior social status, as will those who are members of a lineage who came to dominate others by battle and conquest. This leads to the configuration of local property relations and differentiated rules of access to land and other natural resources, in turn leading to the subordination and poverty of certain groups.

The privileges of one particular lineage and clan, therefore, have their roots in the ancestral domain, legitimised through religious ideology and ritual by means of the symbolic capital embodied in traditional authorities (Bourdieu, 1977). Arguments are made in favour of bypassing traditional structures and authority in NRM programme design precisely on the grounds of them not including such population groups adequately into decision-making, as working within these structures would amount to an inadmissible formal sanctioning and "institutionalising" customary male chauvinism.

Likewise, several cooperation mechanisms are at work in the relations between farmers, blacksmiths and pastoralists (concerning, for example, the fertilisation of land, the security of productive activities, and the lending of inputs), and those between users of land and its customary owners, autochthonous and allogenous. Many of the farmers – both holders of land rights under the customary regime and sharecroppers – have recently turned to rice cultivation and are increasingly engaged in the rearing of draught animals (bulls) and the "conversion" of surplus livestock to draught animals. These animals are given in trust to the transmigrating pastoralists, who engage in barter arrangements with the sedentary villagers (rice against custody and against milk). The pastoralists also enjoy access to some plots for rice cultivation themselves, and lend draught bulls to the *dafing* rice farmers.

In their role as “economic police”, the *ton(déni)* in the Mopti region in the northeast of Mali support village solidarity and mutual support networks. Their sphere of action reaches from works of collective interest, in the fields, to the management of the rice (and cereal) storage banks and emergency stock facilities to ensure food security at the village level. The relationships between traditional and State-appointed local leaders vary across regions, and there is continuing dispute over power and space. The major traditional chief in the area considers himself by tradition the "lord of the land", according to a legitimacy that is related to the symbolic power flowing from the diverse traditional norms of each region. However, with the armed conflict (1984-1992), a lot of land in Mozambique was abandoned when populations were dislocated to other areas within the country or took refuge in neighbouring countries, and in some cases the collective memory of a given area, in respect to who has customary rights over which land, was "lost". The political secretary considers him- or herself the person sanctioned by political power, claiming to have taken over leadership ever since independence in order to involve the population in development activities and to consolidate national unity and independence.

In rural Mozambique, the forms of interaction between community leaders and development managers vary considerably between regions and local settings, according to the manner in which each institution involves the communities to establish programme objectives. Since it is not

regulated, the relationship between traditional leaderships and the State depends heavily on personal attitudes. In Tsangano district, for example, the head of the Mtengo-wa-Mbalame administrative post interacts with the *mfumo* Gimo, but complains of the lack of definition at a higher level of governance, which creates problems also at the local level. It would seem as if relationships between traditional leaders and non-governmental organisations (NGOs) are good – at least in the study districts of Tsangano (Tete province), Monapo (Nampula province) and Matutuíne (Maputo province). For the most part, harmonious interactions can be traced back to the fact that the majority of NGOs have deliberately chosen to associate traditional leaders in their activities. This usually goes beyond using the participation of traditional authority to call for meetings with the local populations, and includes not only a more permanent role as intermediary, but also, beyond that, their being assigned concrete implementing responsibilities in a number of domains upon which NGOs intervene, notably land use planning and common property resource management.

In the communities of Banga and Djavula (Matutuíne district, Maputo province), since the State is *de facto* "absent", the traditional chief functions to the full extent of his or her customary range of responsibilities. In Banga there is a chairman of the locality, but not in Djavula. In Netia a political-administrative chief (the *chefe de posto*) is present, and there is an overlap in the same geographical space between the traditional chiefs and the political secretaries, as well as a duplication of tasks both in the rural areas and in the administrative post headquarters. The party secretaries fulfilled a major political role up until mid-1980, since they were linked to the village structure of the communal village's policy – an attempt to group dispersed farmers into centralised and previously demarcated areas where there would be a school, health units and other State services.

With the disintegration of the communal (collective) villages (*aldeias*) and the return of the population to their former habitat by occupying geographical space according to traditional patterns, the sphere of influence of the political secretaries diminished, or even disappeared, along with their basis of authority. At the political level, the deputies of the provincial, district and local "People's Assembly", elected in 1986 in the last general elections held under the one-party system, had as of 1999 still not been formally "demobilised". The enthroning ceremony (*mukelampa em emakhuwa*) is another way of raising the status of the head of the lineage from *humu* to *mwene*. It is a moment of learning, qualification and civic education on what from now on will be the *mwene*'s behaviour and socio-political functions (Bourdieu, 1977).

2.6.4. COMMUNITY INCENTIVES AND SECURE RIGHTS

It is necessary to consider the nature of the interface between the "community representatives" recognised by the State in terms of *Decreto* 15/2000 and the representatives of the community as a private entity with co-title over local land resources. Confusion between public and private representative roles has arisen as a result of the implementation of State decentralisation processes combined with a parallel devolution of rights to community groups in terms of, in particular, the Land Law. This has marginalised the role of those that represent the community as a private entity. Although this issue has been raised in natural resource discussions on several occasions, it is little understood within the broader realm of decentralisation programmes and initiatives. A statement that clarifies the differences between these representative roles is needed; this could come as a result of a tightly focused policy seminar that brings together policymakers working on natural resource policies and those involved in decentralisation programmes, with participation also from NGOs that are helping to support the implementation of both policy initiatives.

Indeed, there are several areas where natural resource and decentralisation policy overlap; this is possibly enough reason to justify the creation of a semi-permanent forum to debate and discuss areas of overlap and synergy. In this way some of the pitfalls of implementation to date (e.g. the proliferation of different institutions at a local level, confusion between public and private representation, etc.) might be avoided or minimised. Harmonisation of policy in this way might prove to be more effective than the present system whereby completed drafts of policies and laws are submitted for formal comment by other sector ministries. An important aspect of local community involvement in the formal management systems of natural resources is the perceived benefit to their livelihood strategies in doing so, and the incentive regime in this regard is therefore important to analyse. Institutional capacity at community level is also a key element. While the legal system and policy framework may define and enforce some rights, the administrative structures and service deliverers are often the primary institutions through which entitlements are delivered or withheld.

Knight (2002) states that information regarding the Land Law has had the effect of making people more aware of this process, a first step towards improving their capacity to challenge local actors who distort messages or withhold entitlements. Teaching villagers about national laws is allowing them to clearly see the differences between national policy and local governance. One woman interviewed stated that: *"In my opinion the local government is totally wrong, because it changes what was approved by the central government and puts it in their own words."* (Quoted in Knight, 2002). Such a distinction between local officials and national policy is important, as it has made clear to communities that local corruption can be fought (Knight, 2002). Similar conclusions were

drawn by Anstey (2000) in his observations regarding the willingness of the Sanga community guards to locally challenge powerful interests who were flouting the law. The FAO (2002) acknowledges problems of both incentive structures and capacity: *"The incentives for participation may not be sufficient to compensate the costs of engagement in community organization including the imposition for charcoal making restriction even understanding the advantage of sustainability of forests for present and future generations. Currently, there is a lot of enthusiasm among communities while the project exists to support the initiatives, but the alternative activities have not yet produced incomes to sustain people expectations and confidence to drop dependence on charcoal making. We should acknowledge the strength of organization of Goba Community and the capacity to make it work, but on the other hand, the level of illiteracy is very high and may create some limitation on communication with other stakeholders and investors"*.

Even the flagship Tchuma Tchato project was criticised from a similar perspective: *"The major problem with Tchuma Tchato was that the role of local authorities was not clearly defined, although it is recognized that they should be involved and directly benefit from the revenue distribution process. Tchuma Tchato shows us that a weak legal framework is one of the critical constraints for productive collaborative interaction between necessary parties (government institutions, communities and the private sector)"* (Foloma, 2000). Nhantumbo and McQueen (2003) point out that poverty and illiteracy militate against the participation of local communities in management regimes for natural resources; the need to satisfy basic necessities means that poor forest communities do not often have the luxury of a long planning horizon for the use of resources. They highlight the fact that there are only ad hoc initiatives in respect to building capacity for natural resource management and that there is no national strategy for this. *The main problem was the perceived uneven distribution of responsibility and mechanisms of distribution which did not integrate the equity principles for the benefit of the community.*

Land tenure rights as they operate in customary systems in Mozambique are, as in many other areas, highly dynamic and complex. They intersect with other forms of relationships in myriad ways. The implication of their recognition in formal law is that inequalities, where these exist in the "customary" systems, can be reinforced. Some, such as gender inequalities, are nominally excluded from this reinforcement since they are contrary to the constitution. However, in the absence of legislated State support for the new institutions, which steers them towards practices that do not unfairly discriminate against any group, this counts for little. The recognition of customary tenure must be done in such a manner that ensures that there is a choice available beyond narrow definitions of "traditional authority" mechanisms. In Mozambique this has been provided for through

the very broad definition allowed to groups that wish to call themselves a "local community" (Kumagwelo, 2000).

2.7. SUMMARY OF POLICY ISSUES

It is recognized that natural resources play a special role in local democratization, because local populations rely thereon for their daily livelihoods and governments rely thereon as a source of wealth. Rural living conditions have been deteriorating year by year. Recovery and progress will take time and patience to build within the Mozambican context, where both the justice system and civil society organisations are weak and disorganised and have tended to be socially removed from the community groups that they are intended to serve. However, the ability to address restrictive informal institutions is an important element in achieving a policy context that is supportive of livelihoods for marginalised sections of the community.

Two recent strands of institutional economics have been influential in development literature. One is associated with the *theory of imperfect information*: the underlying rationale of institutional arrangements and contracts (formal or informal) are explained in terms of strategic behaviour under asymmetric information among the different parties involved. This theory has been fruitfully used in modelling many key agrarian and other institutions in poor countries, which are seen to emerge as substitutes for missing credit, insurance and futures markets in an environment of pervasive risks, information asymmetry, and moral hazard. Because of her role and social status, the *apiyamwene* is always invited to provide feedback in the meetings between the chiefs and the council of elders, where the decisions that affect the lineage are taken. In this way, the customary tenure that is being recognised is nothing more than a set of rules and institutions that derive their legitimacy from within the community.

Another is associated with the *rural theory of development*: It is recognised that effective natural resource management could improve socio-economic rural status, the familiar rural incomes, yields, and local economic development. It has become more evident that while natural resources remained relatively abundant, participatory and decentralised systems are a precondition to promote practices and adopt mechanisms that contribute to providing sufficient security and ownership to the local communities. Given the importance of agriculture, the development strategy for Mozambique logically centres on the agricultural sector. In cooperation with donors, the Government has designed a five-year sector-wide programme, PROAGRI, which lays out priorities and strategies in dealing with the expansion of agricultural production, poverty alleviation and natural resource conservation.

State agencies have often been chronically afflicted by operational inefficiencies, unreliable deliveries and payments, and low prices for farmers. Under the stabilisation programmes the prices offered were often much too low even compared to the benefits of more stable prices. In export crops, the costs of marketing and taxation have been substantially higher for the same crop under marketing boards and stabilisation funds than under the free marketing system, depressing the share of border prices received by producers under the previous systems. Although many restrictions remain, food markets have been extensively deregulated in recent years, and controls over movements of crops have been somewhat relaxed. With a reduction in industrial protection and depreciation of the real exchange rate, the relative price of agricultural products has improved. The overall tax burden on agriculture has diminished significantly (Salomão, 2001). The opening up of markets to private traders has lowered marketing and distribution costs, smoothed prices between local markets, and improved market integration.

As market integration advances, there is a concomitant increase in market risks, in the need for credit for investment in crop production, storage and transportation, and in coordination among different branches of a more specialised production and marketing process. Farmers' organisations and cooperatives can play a significant role in group lending schemes (as they can overcome the inherent enforcement and information problems facing official credit agencies), in input and output marketing activities, in collecting and disseminating market information or technical knowledge, and in enhancing the collective bargaining power of small farmers in markets. While much of the discussion in the literature is in terms of broad generalities of institutional change, the next step has to be an intensive exploration of context-specific institutional details relating to property right systems, governance structures, social networks, and labour relations that work in synergy with community norms and technological and ecological compulsions. This calls for comparative-historical micro-level case studies of the institutional environment in which different countries (and regions) have achieved differential success in carrying out agricultural reforms. There are many unresolved issues in the theoretical and empirical literature on intellectual property rights (Salomão, 2001). It is necessary to prevent failure on the part of regulatory frameworks to adequately address the issue of incentives and failures as a result of the withholding of benefits by local power structures.

3. DECENTRALISATION AND GOOD GOVERNANCE

> **"It is essential that African leaders follow up on the commitments they have made to the people of Africa, and genuinely improve governance and transparency in all sectors."**
> *Kofi Annan, Implementation of the UN Millennium Declaration, 2002.*

3.1.1. OVERVIEW OF DECENTRALISATION AND GOOD GOVERNANCE

"Good governance" assumes a government's ability to maintain social peace, guarantee law and order, promote or create conditions necessary for economic growth, and ensure a minimum level of social security. The concept of "governance" is not new. It is as old as human civilization. Simply put "governance" means: the process of decision-making and the process by which decisions are implemented (or not implemented). Governance can be used in several contexts such as corporate governance, international governance, national governance and local governance. Since governance is the process of decision-making and the process by which decisions are implemented, an analysis of governance focuses on the formal and informal actors involved in decision-making and implementing the decisions made, and the formal and informal structures that have been set in place to arrive at and implement those decisions. Government is one of the actors in governance. Other actors involved in governance vary depending on the level of government that is under discussion. In rural areas, for example, other actors may include influential landlords, associations of peasant farmers, cooperatives, non-governmental organisations (NGOs), research institutes, religious leaders, finance institutions, political parties, the military etc. The situation in urban areas is much more complex. At the national level, in addition to the above actors, media, lobbyists, international donors, multinational corporations, etc. may play a role in decision-making or in influencing the decision-making process.

Governance is considered within the framework of power, process and practice and how these concepts have shaped peasant access, control and the use of natural resources. Natural resource governance systems resulted in over-centralisation, because they were crafted in the context of conquest and subjugation. Over the years, State visions of appropriate management and use of resources have largely been extended to the African peasant sector through a centrally directed structure and process. However, State control over the use and management of resources among the peasantry was and is largely ineffectual, because the State lacks the resources and capacity to enforce such controls. Much of the legislation was inherited piecemeal into post-colonial times, and amendments to date have largely de-racialised the colonial acts and policies without democratising them.

Decentralisation *is a process through which authority and responsibility for some functions are transferred from the central government to local governments, communities and the private sector***.** By means of this process, decentralised[12] institutions, either local offices of central government or local private and civil organisations (entrepreneurs, farmers, communities, associations, etc.), are provided with high levels of power when it comes to decision-making (Cistulli, 2002). Rondinelli (1981) defines decentralisation as the transfer of the authority to plan, make decisions, and manage public functions from a higher level of government to any individual, organisation or agency at a lower level. To Blair (1996) decentralisation means "reversing the concentration of administration at a single centre and conferring powers on local government". For purposes this study, decentralisation is considered the opposite of centralisation or concentration of power and involves delegation of power or authority from the central government to the periphery involving local communities (participation).

Decentralisation may take various forms. The four main forms are reported below: (i) *Political decentralisation* is associated with increased power of citizens and their representatives in public decision-making. It generally involves a representative political system based on local electoral jurisdictions and pluralistic parties. (ii) *Administrative decentralisation* is the transfer of responsibility for planning, financing and managing certain public functions from the central government and its agencies to field units of government agencies, subordinate units or levels of government, semi-autonomous public authorities or corporations, or area-wide, regional or functional authorities. (iii) *Fiscal decentralisation* is associated with the authority of the decentralised units to make expenditure decisions with funds either raised locally (e.g. user charges, co-financing with users, property taxes, borrowing, etc.) or transferred from the central government. (iv) *Market decentralisation* is the most decentralised form in as much as decision-making power is transferred from public to private organisations.

Effective decentralisation can provide exciting opportunities for democratic change at the local level and can help improve national democracy as well. Through local participation and practices such as public meetings, citizens can participate more effectively in local decision-making, gain experience in democratic processes, and hold local officials responsible for their decisions. Communities can become more pluralistic in the absence of central political control. A decentralised government can provide space for people to participate in local development. It can ensure a more efficient allocation of resources, enhance local resource mobilisation, and improve local governance. The implementation of democratic local governance principles offers significant opportunities for women

[12] This is in part because the policy thrust seeking to empower the peasant communities is supply-led, and thus defined according to the terms and processes of external agents, including funders and central governments and their functionaries.

to effectively participate in decision-making on matters that determine their living conditions, and to undertake initiatives towards improving them.

From a local community perspective, effective decentralisation concerning powers requires these same elements. However, when examined in detail, community-based and decentralised forms of management often lack representation, downward accountability and/or sufficient powers. Decentralisation plays a special role in local democratisation, because local populations that participate in management and use participatory decision-making can be a fulcrum for rural development. A combination of locally accountable representation and discretionary powers is also needed. This combined condition is rarely established. Alternative local institutions are chosen even when democratic local bodies exist. Decentralisation is a precondition to ensure participation and is considered fundamental for democratisation.

3.1.2. LOCAL PARTICIPATION AND REPRESENTATION

Participation[13], for which a case can be made on economic, political, social and cultural grounds, is now considered essential to the globalisation and modernisation processes. Considered as a fundamental part of local development, it may be defined as: *the capacity and the ability of the community to contribute to, share in and benefit from, diverse social, economic, political or other processes of the society*. Participation in development, as an indicator of decentralisation, involves in the first place the national community. Participation[14] is therefore a continuum, a permanent state that can only be achieved through providing the means for effective involvement of people in all facets of the society and actively promoting this as a matter of policy and practice (Cistulli, 2002).

This choice and the failure to transfer discretionary powers can undermine local democratic bodies and concentrate powers in the executive branch. The choices being made around natural resources appear to reflect a broad resistance of central governments to local democratisation and decentralisation of powers. Participation, as Cistulli (2002) argues, has to be planned and supported by policy and other measures. Some areas for action include: commitment by governments to the principle; a search for methodologies of effective participation for development; a commitment to fund and support target sectors and programmes; and commitment by the civil

[13] Chalfant (1984) argues that participation is therefore essential to the globalisation and modernisation processes at work today, but the end product should not result in the homogenisation of society, national or global. If cultural change is to be considered an integral part of modern development, the extent, direction and pace of change must, however, be allowed to emerge through genuine dialogue and consultation of those concerned.

[14] A case for participation can easily be made on several grounds: *economic*, [resource management; expansion of popular economies, etc.]; *political* [involvement of more sectors; scope for more equitable power allocation]; *social* [knowledge and value systems, interpersonal and group relations]; and *cultural* [creativity, tradition, innovation and evolution].

society organisations to efficiency, accountability and improved capability at the local level. The principal targets in promoting participation in development in the framework could be: the *community sector*, the *private sector*, and *non-governmental organisational accountability*.

Participatory governance is increasingly emerging as a key focal area, both in its own right and also as a means of achieving the Millennium Development Goals (MDGs) – especially poverty reduction. Despite the difficulties encountered in developing the second Action plan for the Reduction of Absolute Poverty (PARPA), it was achieved with broader stakeholder participation than before; it is also equipped with a better implementation monitoring framework and has created increased awareness within some parts of government of the need for higher quality and greater standardisation in monitoring and evaluation systems. The national and provincial Poverty Observatories have provided an important space for civil society participation in monitoring the effectiveness of the government in reducing poverty and in contributing to policy development. The government has developed a number of policy and legislative instruments relating to community involvement in local governance processes, including Decreto 15/2000 relating to the role of community authorities and the guidelines issued in 2002 on Institutions for Community Participation and Consultation (IPCCs). The establishment of these bodies runs the risk of being a mechanical process resulting in low levels of real representation of the interests and desires of the grassroots communities.

Recent experience from a number of developing countries suggests that programmes of decentralisation accompanied by parallel efforts to promote greater power and autonomy in decision-making for local communities can offer genuine opportunities to improve outcomes. From the perspective of central governments, the institutional dimensions of decentralisation often centre on defining which formal governmental institutions are to be involved and establishing an appropriate legal framework to define relationships between different levels of government.

Central governments have not generally sought to define a role for non-governmental institutions. Such institutions are often perceived to be technically backward and managerially incompetent, or to pose a direct threat to the government through political opposition. From the perspective of rural people, however, the institutional situation they confront is likely to be far more complex and varied, comprising a whole range of central and sub-national governmental agencies, parastatal organisations, as well as the full complement of nongovernmental institutions, such as religious, cultural, political, social welfare and economic organisations all with their own “rules of the game” and their own objectives.

Institutional capacity plays a central role in any decentralisation process. Failure of local governments to take advantage of the opportunities provided by decentralisation because of a lack of capacity will result in poor outcomes. Local governments and other institutions that cannot adequately administer and account for grants or effectively mobilise local resources will find those powers swiftly taken back. Decentralisation of fiscal and investment decision-making from national to provincial and local governments contributes to more efficient decision-making regarding investments, and to more efficient implementation of projects. Decentralisation of resource allocation and investment decisions to municipalities and communities should be accompanied by a clearly defined and well-disseminated system of incentives and penalties to discourage the misuse of funds (RSA, 2000).

One of the key findings referred to by RSA (2000) is that local micro politics affect how natural resource policies work in practice, and particularly how the process related to the decentralisation of powers occurs. Along with other southern African countries, Mozambique is committed to administrative and political decentralisation, but this is taking a particular form in practice. The operation of local elite networks, party connections, kin-based linkages, and relations between government and traditional authorities all play a part in affecting the degree to which decentralisation (in its various forms) leads to benefits for the poor living in rural areas. Many rural areas in Mozambique remain remote and marginalised from the political and economic mainstream and, as a result, the standard patterns of administrative and political authority do not operate. Very often there are intermediaries – local elites, NGOs, donor projects and others – that have significant influence on the way in which resources are allocated. Thus it is at the local level where bargains are made, deals negotiated and politics practised and this is where the gains or losses for livelihoods are made. With multiple and competing lines of authority, the local political context is key, and is often ignored in the standard models and assessments of decentralisation policies.

3.1.3. THE LEGAL FRAMEWORK

Decentralisation and the local governance process in Mozambique dates back to 1978. It began as part of the process of dismantling the colonial state apparatus after National Independence in 1975. The Mozambican administrative reform laws replaced the Portuguese colonial administrative structures and constructed a new system of governance structured at the national, provincial and local levels. After independence Mozambique adopted a system of centralised administration, where each and every thing was planned and decided at the centre of political power. The approach was an answer to: Meet the needs of the state; Defend/safeguard and consolidate the national independence; Achieve planned socio-economic measures; Rationally use the scarce resources; and Consolidate a unitary state. The principles for State unity were proclaimed and all

administrative institutions integrated under the same command: Law 5/78 created, in 1978, the provincial governments composed of a provincial governor, appointed by the president of the Republic, and provincial directors representing each Ministry – and only in exceptional cases a set of ministries – which was the case when a Ministry was subdivided at the central level, but it was decided that the Provincial Directorate should be shared.

In parallel to these there were central delegates for exclusively central-natured functions (major projects conducted at the central level or a service whose nature was essentially of a central responsibility), but this position was never widely utilised, usually substituted by the provincial director for most representations of central services, as happens today with the provincial directors of Registry and Notary. The directors are appointed by their respective minister, with the provincial governor being consulted in the process, and are subordinate to their respective Ministry, while at the territorial level they are subordinate to the provincial governor, in what is a dual subordination system. In 1977 and 1978 a substantial reform took place when assemblies were created at all levels, close to both the provincial governments and other administrative units at the district and the city level (Law no. 3/77). These assemblies, although theoretically assigned with full decision-making powers, did not possess full authority as stated: on the one hand they existed under a single-party regime, meaning that primacy always rested on appointed officeholders who had control over resources. With the limitations of the single-party framework in force, integrating citizens' representations at all levels of territorial division, they nonetheless operated in consultation in respect of people's perceptions.

At the district and city level, the model anticipated the existence of an appointed leader, the chairman of the District and City Executive Council (Law no. 7/78), and members of the Executive Council selected by the respective assembly to supervise work areas of the administration, a model that is still legally in force. However, just after one year after their creation, the Executive Councils were transformed into the set of Directors from the various areas of administrative activity, i.e. a Council of appointed directors, replicating the model of the central government and the provincial governments. The argument then used was the difficulty of finding people among the residents in the districts and cities and outside the administration with the required qualifications to supervise the district or city services. At the local level, assemblies were created (Law no. 1/77) that elected their chairpersons and executive councils. These are base structures without professional executive apparatus, undertaking their tasks on a voluntary basis. The existing apparatus at the administrative posts remains the Unit for the Provision of Bureaucratic Services, which leads to talk about political localities and administrative localities.

In 1986, the level of administrative posts was re-established, their number increasing to 398, although their functions and means available were not considerably developed. At its basis, the system rested on baseline organisations created at level of *bairros*, where the so-called dinamysing groups were established, in the rural areas at the level of villages constituting the locality, although neither of them had formal legislative support. In 1987 a national public debate on decentralisation and autonomy of the local government was held throughout the country and it concluded that the State was top-heavy at central level, and very weak at provincial and district levels. This national debate motivated the People's Assembly to pass Law no.2/87 of 19 January 1987. This law authorised or permitted the Council of Ministers (the Government) to formulate statutes of administrative and financial autonomy. The Cabinet was therefore authorised to grant such autonomy to bodies and institutions whose nature justified it, and which could gradually become financially self-sufficient. The aim of Law no. 2/87 was twofold: Firstly, to promote greater popular participation and accountability of the district assemblies and their executive councils, and secondly, to provide for close coordination between the Cabinet and provincial governments in the decentralisation of administrative and financial powers to districts. This second phase of local government reform came to an end after the adoption of the 1990 Mozambican Constitution.

The decentralisation process dates back to the adoption of the 1990 Constitution when the dismantling of provincial assemblies was announced, scheduled to take place at the moment of the first local elections (article 211), and State local bodies were foreseen to be composed of elected deliberative bodies and executive bodies appointed by the former. The end of the twentieth century and the beginning of the twenty-first century witnessed the onset of four movements as part of the political system consolidation: The gradual implementation of the municipal model, with the establishment of 33 municipalities; The movement towards deconcentration with the consolidation of provincial governments and a more relevant role for the districts, where the consultative committees play an important role; The acknowledgement of community authorities; The coming into play of communities as participants in political activity.

The principles for State unity were proclaimed and all administrative institutions were integrated under the same command: In 1978, Law 5/78 created the provincial governments, composed of a provincial governor, appointed by the president of the Republic, and provincial directors representing each ministry, and only exceptionally a set of ministries, which was the case when a ministry was subdivided at the central level but it was decided that the provincial directorate should be shared. In parallel to these there were central delegates for exclusively central-natured functions (big projects conducted at the central level or a service whose nature was essentially of a central responsibility), but this position was never widely utilized, usually substituted by the Provincial

Director for most representations of central services, as it happens today with the Provincial Directors of Registry and Notary.

The Directors are appointed by their respective Minister, the Provincial Governor being consulted in the process, and they are subordinated to their respective Ministry, while at territorial level they are subordinate to the Provincial Governor, in what is a dual subordination system. In 1977 and 1978 a substantial reform took place when Assemblies were created at all levels, close to both the Provincial Governments and other administrative units at the District and the City level (Law no. 3/77). These Assemblies, although theoretically assigned with full decision-making power, did not possess full authority as stated: on one hand, they existed under a single-party regime, and primacy always rested on appointed office holders, who had control over resources.

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The decentralisation process started with the adoption of the 1990 Constitution; the termination of Provincial Assemblies was announced, scheduled to take place at the moment of the first local elections (article 211), and State local bodies were foreseen, composed by elected deliberative bodies and executive bodies appointed by the former. The end of the 1900s and the beginning of 2000s witnessed the onset of four movements as part of the political system consolidation: The gradual implementation of the municipal model, with the establishment of 33 municipalities. Law no. 2/1997 establishes municipalities as territorial units, with their own representative body (Municipal Assembly) and executive organ (Municipal Council). The Municipal Assembly is composed of members directly elected by universal suffrage. The Municipal Council comprises the mayor and town councillors. The president of the Municipal Council (the mayor) is elected directly by the municipal population. The town councillors (the number of which varies depending on the size of the population of the municipality) are nominated by the mayor and at least half must be drawn from the Municipal Assembly. They are responsible for supervising the implementation of activities by the municipalities' technical departments.

The movement towards deconcentration lies with the consolidation of provincial governments and by a more relevant role of the districts, where the consultative committees play an important role, along with the acknowledgement of community authorities and the coming into play of communities as participants in political activity. Law no. 15/2000 of 20 June 2000 allows traditional authorities and leaders from other congregations to articulate with organs of the State on any matter that may arise within the jurisdiction of that particular area. Decree 15/2000 recognises community authorities as interlocutors between civil society and local State organs. The decree provides for several duties to be carried out by the recognised community authorities, including: (i) disseminating government laws and policies to community members; (ii) tax collection; (iii) registration of the population; (iv) justice enforcement; and (v) mobilising and organising communities for local development activities. The community authorities are entitled to wear uniforms and use national symbols. They also receive a monetary incentive for the taxes they collect.

National guidelines for District Development Plans (adopted in 2003) reinforce the role of the districts as units for planning and budgeting. The guidelines allow for the creation of local consultative councils to act as an interface between civil society and the district authorities in the planning process. The existence of consultative councils extends to the municipal domain at the municipality, municipal district, and urban administrative post and borough levels.

Law no. 8/2003 – LOLE (Law of Local Organs of the State) was approved in 2003 and regulation became active in 2005. The Law defines the structure and organisation of local organs of the State and enforces the district as budgetary unity giving power to plan and define priorities. The approval of the LOLE in May 2003 was a small but significant step towards increasing the autonomy of provinces and districts. LOLE gives the provincial governor and the district administrator the power to merge sectoral directorates into multi-sectoral technical teams. It also makes the district a budget unit for the first time and thereby legitimises the district as a planning unit. These two elements strengthen the independence of the districts and shift some power away from the sectors towards the local territorial authorities.

Decree no.15/2000, of 20 June 2000 allows traditional authorities and leaders from other congregations to articulate with Organs of the State for any matter that may arise within the jurisdiction of that particular area. Decree 15/2000 recognizes community authorities as interlocutors between civil society and Local State Organs. The decree provides for several duties to be carried out by the recognized community authorities, including: (i) disseminating government laws and policies to community members; (ii) tax collection; (iii) registration of the population; (iv) justice enforcement; and (v) mobilizing and organizing communities for local development activities. The community authorities are entitled to wear uniforms and use national symbols. They also receive a monetary incentive for the taxes they collect.

Social relations of importance to resource access go beyond the village confines, with a range of other institutions (local political parties, national and international NGOs, the private sector and religious entities) being important. *Régulos* have in particular derived much power and legitimacy from being used by agents as a first point of contact, but other actors can be equally important. On the other hand, the decree (Decreto 15/2000) that reinstitutes the colonial era institution of “official” traditional leadership (now termed “community representatives” and in operation countrywide) includes a land management function as one of the attributed powers. In several cases where private land applications have been made by outsiders to an area, there have been disputes as to whether the local land committee or the official “community representative” (or indeed a general meeting of community members called for the purpose) is the institution that ought to be consulted. These institutions can also mirror local-level power struggles; the land committee for Bajone is dominated by members of the local Catholic congregation, perhaps reflecting the influence of its donor “partner”, whilst the local chief (and now newly elected community representative) is a Muslim. Not surprisingly, both assert their primary right to be consulted on land issues affecting the community.

As different worldviews and knowledge systems collide during this *rapprochement*, the bottom-up formula of participation will not easily marry the essentially "top-down" framework of decentralisation. It will lead to a confrontation of social actors with a different epistemology, a different way of knowing – particularly when it comes to discussing natural resource management objectives and requirements and their devolution. The "gap" between what project documents (to take but the most concrete expression of an application of the modern knowledge system of "development") specify as "expected outputs, products, or results", and what has actually taken place, can be measured from a monitoring point of view as an indicator of sustainability – in the sense that this gap may reflect the extent of local appropriation, adaptation, and, eventually, "ownership" and therefore institutional and social sustainability. The dichotomy that often opposes indigenous knowledge to modern scientific knowledge is misleading. The Land Law contains an article according to which the mechanisms for representation of community interests in respect of land use rights are fixed by law (Article 30); Decree 15/2000 and the associated regulations do not serve this purpose, as it is not a law but merely a decree. What remains, however, is a confused situation understood in different ways by different actors. If there are differences in individuals' skills and endowments of different factors of production, markets should help in optimising factor proportions employed and thus increase overall efficiency of resource allocation.

3.2. DECENTRALISED NATURAL RESOURCE MANAGEMENT

All actors other than government and the military are grouped together as part of the "civil society." In some countries, in addition to the civil society, organised crime syndicates also influence decision-making, particularly in urban areas and at the national level. Pioneering efforts at decentralising entrustments over use and management of resources to the peasant communities have largely resulted in recentralisation at the district level, where such efforts are still practised in the trickle-down mode. This is in part because the policy thrust seeking to empower the peasant communities is supply-led, and has thus been defined according to the terms and processes of external agents, including funders and central governments and their functionaries.

Decentralised natural resource management is critical in local democratisation, because when local populations participate in management and use participatory decision-making, this can be a fulcrum for rural development. Strengthening of national capacities is vital, and local communities have to benefit from the existing resources. This could include capacity development of district and sectoral authorities to enable them to facilitate increased participation of citizens in the planning and management of existing natural resources and to stimulate local economic development. Decentralisation of the local institutions being chosen to receive powers, and also the degree and form of power transfers, do not, however, establish conditions for the more efficient or equitable use

and management of natural resources. A combination of locally accountable representation and discretionary powers is also needed. This combined condition is rarely established. Alternative local institutions are often chosen even when democratic local bodies exist. Decentralisation is a precondition to ensure participation and is considered fundamental for democratisation. Participation[15], for which a case can be made on economic, political, social and cultural grounds, is now considered essential to the globalisation and modernisation processes. Considered as a fundamental part of local development, it may be defined as: *the capacity and the ability of the community to contribute to, share in and benefit from, diverse social, economic, political or other processes of the society*.

Participation in development, as an indicator of decentralisation, involves in the first place the national community. In Angola, the FAO has initiated a number of projects helping communities to map and demarcate the boundaries of their land and to help people to obtain titles and certificates of ownership. It has worked both with national staff in government offices and householders to strengthen decentralised land management, and has also helped the government to create a new legal framework for land rights. This has been coupled with projects providing direct assistance, such as seeds and tools, to vulnerable communities (Foley, 1997).

3.2.1. NATURAL RESOURCES AND RURAL ECONOMIES

Natural resources play a strategic role in rural economies both as a potential source of long-term development and as the essential contributor to sustained food security. Many rural communities are dependent on natural resources in one way or another. Participatory natural resource management is increasingly emerging as a key focal area, both in its own right and as a means of achieving the MDGs, especially poverty reduction. Natural resources play a special role in local democratisation, because local populations rely thereon for their daily livelihoods and governments rely thereon as a source of wealth. Allocating power to local institutions and strengthening customary authorities can also play a counter-productive role in controlling and managing local resources (UNDP, 2004).

This research project attempts to uncover how participatory governance and decentralised Natural Resource Management (NRM) can be improved in rural areas and explores the implications of these findings for rural growth and poverty alleviation strategies in the region, specifically in agricultural development, food security and local/rural development. This study provides a micro-level foundation for discussions of natural resources, as well as efficiency within the local

[15] Chalfant (1984) argues that participation is therefore essential to the globalisation and modernisation processes at work today, but the end product should not result in the homogenisation of society, national or global.

economies. It analyses the relationship between access to natural resources (including the utilisation thereof) and income generation at the household level, and explores the implications of these findings for rural poverty alleviation strategies in Mozambique using data envelopment analysis and econometric specifications.

The study attempts to develop a framework to assess how to address natural resources strategies in order to support communities, organisations and (traditional) local authorities to jointly define and implement local development based on existing local potential and opportunities, particularly in building the capacity of citizens to address local development. The influence of natural resources on their livelihoods and local development is examined. Local representative bodies need to have power over their resources. The strengthening of national capacities has long been recognised as vital if local and district populations are to benefit from possibilities that might be made available through the development process. This could include capacity development of local, district and sectoral authorities, in order to enable them to facilitate increased and improved delivery of services to the populations they serve. Understanding the changing approaches to natural resource management is key when it comes to identifying appropriate strategies for managing local natural resources and dealing with conflicting benefits and the power to control and to make decisions. Emphasis is placed on natural resources as part of the population's daily livelihoods and how this can really be a source of wealth.

The notion that governance means maximising shareholder value derives from the neoclassical theory of the market economy. Many countries have chosen an institutional development strategy closer to local institutions and the rising collectivities. In order to lead this ambitious programme efficiently and measure the real stakes, these local institutions, which have till now endured many economic, political and social mutations, want to increasingly integrate the institutional domain of the society on the way of democracy. This has been noticeable for some years since the commencement of decentralisation. The basic question is to know whether the local institutions for natural resource management can face the new responsibilities, because these structures have until now lived in the shadow of the State administrations' thought and domination through village chiefs who exert a hybrid power.

Local structures are the local administration representatives and sometimes activities coordinators of local resource management, or they are members of traditional institutions. Facing the stakes and directing decentralisation, emergent local institutions wish in this way to establish themselves, and they are receptive to intellectual assimilation of the theoretical and practical tools for the process in order to play the role of real actors in the field. Mozambique is attempting to pursue an

integrated development policy that will both attract investment capital and increase local income, finances and new structure organisation. It is imperative to have an overview of the prospective future policies as important tools of economic growth and development. The overview of rural development policies is done to provide strategies and to satisfy needs, and to effect micro-economic and macro-economic changes, equity, efficiency and sustainable use, defining the following as strategic goals:

- Economic growth;
- Poverty reduction; and
- Sustainable use of natural resources.

3.2.1.1 Natural Resources and Economic Growth

Natural resources play a strategic role in rural economies, as potential sources of long-term development, as sources of income, and as essential contributors to sustained food security and rural livelihoods. Many rural communities are dependent on natural resources in one way or another. Increasingly participatory natural resource management is emerging as a key focal area, both in its own right and as a means of securing the MDGs, especially poverty reduction. Natural resources play a special role in local democratisation, because local populations rely on them for their daily livelihoods and governments rely on them as a source of wealth. Local representative bodies need power over the resources that affect their constituencies in order to become legitimate actors around which civic organisations and citizens rally for justice, sustainable livelihoods and economic improvement. Enforced property rights and security will also increase incentives for natural-resources-related investment demand and thus contribute to overall economic output. In that way, the enforcement of property rights to natural resources will provide incentives for good natural resource management. Efficient mechanisms for enforcing natural resources access and property rights exchange or transfer are a precondition to promote the productivity of natural resources, increase agricultural output, and develop the use of natural resources for credit as collateral in the transaction. Well-defined natural resources rights are an indispensable basis to increase taxpayers' contributions – an important mechanism to increase government revenue (World Bank, 2001).

According to the World Bank (2001) it is clear that natural resources are not only a basic factor of production – they also have a number of specific features. Against this backdrop, it has long been recognised that clarifying property rights can enhance economic growth through a number of channels:

- The mean macro-economic view is that the natural resources have to be provided and used by government and non-governmental institutions, local community and the private sector

for a wide range of purposes. Enforced property rights and security will also increase incentives for land- related investment and thus overall economic output.

- Efficient mechanisms for enforcing the natural resources access and property rights exchange or transfer are a precondition to promote productivity, increase agricultural output and to be able to use land as collateral for credit in transactions.
- Well-defined land rights are an indispensable basis to increase the taxpayer base – an important mechanism to increase government revenue. Low-cost mechanisms for enforcing and exchanging property rights are a precondition for well-functioning systems to use rights efficiently, either on a temporary contract or long-term basis. Both types would enhance overall output and thus welfare.

3.2.1.2 Access to Natural Resources and Poverty Reduction

Access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.), is essential for sustainable poverty reduction. Many rural communities are dependent on natural resources in one way or another. Access and tenure security are thus crucial for economic growth and the efficient and rational use of natural resources. The literature recognises that rights and ownership can increase indivisible investments (local or external), which will provide employment and income, making an important contribution to eradicating poverty. In rural areas where people depend on access and productive use of land, land access can help to improve nutritional status and provide effective insurance against shocks in consumption. In rural areas where household livelihood depends on access and productive use of land, and where much of the wealth is held in this form, the formalisation of property rights to land can, if land endowments are distributed in a relatively egalitarian fashion, imply a considerable wealth transfer to poor households (World Bank, 2001).

Similarly, citizen engagement in the management of natural resources will eliminate the need for individual owners to expend resources to defend their claims (fencing, guards, clear-cutting), thus saving scarce economic resources. Publicly enforced property rights would not only be less costly to enforce, but, to the extent that they provide greater security than private enforcement, would also increase incentives for related investment and thus overall economic output.

3.2.1.3 Sustainable Use of Natural Resources

NRM can and should play an important role in the infrastructure for sustainable development. In this context, sustainable development means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making for development. The pivotal tension of sustainable development is between the environment and the pressures of human activity. It is evident that the system of recognising, controlling and mediating

rights, restrictions and responsibilities over natural resources is the fulcrum to ensure decentralisation of natural resources.

Decentralising natural resource management and using local decision-making powers is critical to improve the revenue-generating ability of citizens and local authorities. Local representative bodies need power over the resources that affect rural sustainable livelihoods in order to become legitimate actors around which civic organisations and citizens rally for justice, sustainable livelihoods and economic improvement. The challenge of balancing these competing tensions in sophisticated decision-making requires access to accurate and relevant information in a readily interactive form. In delivering this objective, information technology, spatial data infrastructures, multi-purpose cadastral systems and natural resources information business systems will play a critically important role. Unfortunately modern societies still have some way to go before they will have the combination of legal, institutional, information technology and business system infrastructures required to support natural resource management for sustainable development (World Bank, 2001).

While it is immediately obvious that weak property rights will reduce households' incentive to manage the natural resources at their disposal in a sustainable manner, there are other channels through which land administration would affect sustainable resource management. The prevention of undesirable externalities through imposition of zoning regulations, an issue that has been widely discussed in the literature, will be impossible unless there is a basic framework of property rights and cadastral information that would, for example, permit identification of the areas where such zoning and intervention would be most appropriate (World Bank, 2001).

3.3. NATURAL RESOURCE MANAGEMENT IN AFRICA

Evidence points towards a number of clear lessons with respect to programme design, as discussed earlier. Probably the most important lesson is to increase beneficiary awareness and participation. Doing so would include shifting from a bureaucratic and centralised approval structure specifically designed for land administration towards a more integrated vision. These generic difficulties associated with natural resources in general, and land in particular, aim to increase productivity and sustainably reduce poverty, thus creating the necessity to adopt participatory and decentralised policies. Land reforms were directed towards calming social unrest and allaying political pressures by peasant organisations. These measures were often initiated in response to political pressure (or to divert attention from other problems) rather than as part of a long-term rural development strategy[8]. Land reforms were therefore often designed ad hoc, and bore little relation to actual needs on the ground, and commitment to the reforms faltered once social emergencies

had subsided. Moreover, the individuals targeted to benefit from this programme were often the politically most vocal and well-connected rather than those with the best ability to make productive use of the land, or those most deserving on poverty grounds (Rihoy, 1998).

In contrast to most past discussions of redistributive land reform, this research studies in detail the capital productivity in Southern African countries (SACs) with the intent to provide empirical evidence on the implementation of land policy and management in Southern Africa, particularly in Mozambique. Some authors (Rihoy, 1998; Singh & Gilman, 2000) argue that many of the projects are still in the early stages of implementation; the data suggests that land reform was able to target the poor. Moreover, the fact that economically successful projects reached significantly higher levels of poor people suggests that increased access to productive assets could be an important avenue for poverty reduction. Given the importance of developing a diverse and less subsidy-dependent rural sector, a suitably adapted land reform could play an important role in the restructuring of the rural sector.

At the same time, the limited progress under the current programme suggests that much of this potential is, as of yet, unrealised. The evidence points towards a number of clear lessons with respect to programme design, as discussed earlier. Probably the most important lesson is to increase beneficiary awareness and participation (Rihoy, 1998; Singh & Gilman, 2000; Spenceley, 2002). The costs of carrying out land reform were often increased by the continued existence of implicit and explicit distortions, which drove land prices above the capitalised value of agricultural profits and made it attractive for land reform beneficiaries to sell out to large farmers, thus contributing to reconcentration of holdings. Also, instead of aiming to create conditions that would improve the ability of land rental and sales markets to transfer land redistribution to more efficient users, thus using such markets to complement government land reform efforts, governments have often outlawed or severely restricted the operation of land rental (and to a lesser degree sales) markets (Rihoy, 1998).

The regulations gave rise to cumbersome bureaucratic requirements that stretched available administrative capacity and resulted in highly centralised processes of implementation. Government bureaucracies at the central level – justified by the need to provide technical assistance and other support services to beneficiaries – proved expensive and, unable to utilise information from the local level, often also quite ineffective. One of the first studies to provide both a theoretical model and an empirical investigation of the potential impact of land reform indicates that, based on district-level data from India, land reform can indeed have a positive impact on wages and employment.

Though still accumulating, empirical evidence does support some of these conclusions (Pender *et al.*, 2002).

Conceptually, one would expect productivity gains to be proportional to the improvement in work and investment incentives associated with the post-reform regime. In cases where security of tenure had already been high before the reform, where cash-rent (rather than share-rent) contracts had prevailed, and where landlords had provided tenants with access to markets for credit, inputs and outputs, one would expect static efficiency gains from land reforms to be modest and the bulk of reform benefits to come through enhanced investment incentives (and credit access on better terms) associated with land ownership. As units of production that are too large will not be able to reap the benefits deriving from the utilisation of family labour, the net benefits would, at the very least, be much lower, and it is not surprising that in the large majority of cases, productivity did not increase and labour problems were pervasive. The only exception is where already well-established plantations were redistributed to the former workers, a case that is very costly and characterised by relatively low social benefits (Rihoy, 1998).

In Ireland in the early 20th century, a large-scale "negotiated" land reform transferred 9.3 million acres (about half of the agricultural land available) from landowners to tenants, but this had a very limited impact on productivity. One reason is that land reform – *which was enacted on top of earlier legislation* – did little to alter the structure of production or increase investment incentives. Another issue, probably more important, is that land reform led to a worsening of access to credit, by limiting the ability of new landowners to mortgage land while at the same time cutting off informal credit they had earlier been able to obtain from the landlord. Severely restricted access to credit, together with insecure property rights, have also led to widespread selling of land by former land reform beneficiaries in Nicaragua – often at prices way below the productive value of the land (Cistulli, 2002).

This would be consistent with an interpretation of land reform as a piecemeal strategy by the rich to avoid the imminent threat of revolt – with backtracking as soon as the threat weakens, as modelled by Pender *et al.* (2002). Even in cases where there was a genuine commitment to break the power of landed elites, agrarian reforms were generally designed by urban intellectuals with little idea of the realities of agricultural production and a sound suspicion of the ability of small-scale cultivators to manage on their own, let alone to be able to increase productivity (Churchill, 1991). Due to the isolation and lack of access to communication technology, market and infrastructures, rural people often have little influence over policies and programmes that affect them.

It is well recognised that severe land inequalities persist in many African countries between smallholder, large-scale, and State farms, and this in itself is an important topic that needs to be addressed as part of the quest for rural poverty reduction strategies. Most of the recent policy-oriented work on land in Africa has focused on (a) how tenure type affects perceptions of security and farm productivity (Bruce & Migot-Adholla, 1994); (b) the relationship between alternative institutional arrangements for transferring land on rural growth and equity; (c) differences in productivity between large-scale and smallholder farms with implications for land redistribution (Binswanger & Deininger, 1997); and (d) inequities in land allocation between large-scale and small-scale farms in parts of Africa where settler economies were prominent (Deininger, 1998). In the Eastern and Southern African region, much of this work treats the smallholder farm sector as a relatively homogeneous "unimodal" group with small but equitably distributed landholdings, which is placed within the larger framework of a "bi-modal" distribution of land between large-scale and small-scale farming sectors.

Surprisingly little research has been devoted to understanding how land is allocated within the smallholder farm sector, and whether this in itself requires special consideration in the development of rural growth strategies in Africa. Some research (e.g. Bruce & Migot-Adholla, 1994; Deininger, 1998; Deininger & May, 1999) refer to a skewed distribution of land in many countries, and there has been longstanding reference to "rural differentiation" in the African development literature, but a clear empirical understanding of how land and other assets, as well as income, is distributed within the small farm sector in many African countries remains elusive.

In South Africa, based on a history of dispossession of its Black population, South Africa's rural sector is characterised by a highly bi-modal distribution of livelihood opportunities and a dependence of the rural economy on migrant remittances and government handouts. Development of the productive potential of the rural sector appears to be a critical pre-condition for sustainable poverty reduction. To create the environment for such a revival and restructuring of rural areas, the new government implemented, from 1994, a far-reaching programme of agricultural liberalisation. As a result of this programme, legal barriers to market entry (both domestically as well as for export) were removed and price incentives shifted towards high-value and labour-intensive crops. This created favourable conditions for a programme of land reform utilising market transactions together with a government grant, rather than expropriation, to transfer assets to the poor.

In Botswana, Community-Based Natural Resource Management (CBNRM) is a decentralised strategy that has been adopted throughout the developing world. Botswana's version is more decentralised than many and has been portrayed internationally as relatively successful. Despite its

international reputation for success, CBNRM has a complicated political position in Botswana. The policy has become a focal point for several distributional struggles. Tourism revenues associated with wildlife have sparked competition between wildlife-rich and wildlife-poor districts, wildlife communities and district councils, and district councils and the national government. Critics of CBNRM have drawn comparisons between divergent systems of rights over wildlife resources and diamonds. The designation of diamonds, other mineral resources and land as resources for the nation played an important role in building political support for the new national government. Suggestions that diamond revenues should be decentralised like wildlife revenues call into question a founding principle of nation-building and challenge the national government's main source of revenue. The politics of the situation threaten the survival of CBNRM, but also makes elimination of the programme politically inflammatory. Informed by fieldwork in 2004 and 2005, the paper draws out the link between increasing political competition, rhetorical strategies for national coalition-building, and policies affecting CBNRM (Poteete, 2007).

Since the 1970s, Senegal's natural resource potential was subject to the effects of recurring droughts. Many other factors negatively affected soil fertility and agricultural productivity: (1) pressures due to the increasing population; (2) low level of technology for agricultural production systems; (3) weak agricultural development and natural resource management and conservation policies; (4) poor coordination among the government departments active in the NR sector; and (5) limited government resources and an over-centralised, top-down decision-making process. Reports on the magnitude of the natural resources degradation revealed that 7.5% of the vegetation cover disappeared between 1980 and 1990, 82% of the fauna habitat and flora were lost between 1970 and 1986, and salt intrusion led to extensive loss of productive land and decreased agricultural production by 0.2% per person per year between 1979 and 1992. To address these problems, the government of Senegal launched four important initiatives between 1972 and 1994 to improve conditions for adopting improved NRM practices in Senegal: the 1972 national regionalisation law; the Convention to Combat Environmental Desertification, ratified on 15 October 1994; the creation of a Ministry of the Environment and the Protection of Nature in June 1993; and the Forestry Code of April 1995. In the same period, a substantial number of NGOs (associations, GIE, women and youth groups, etc.) became active in the Senegalese people's attempts to help themselves.

In Zimbabwe, the application of customary law to the environment was restricted, under statute, to civil law and land allocation. It excluded the management of natural resources. Natural resources disputes at the formal legal level may only be determined according to customary law where the dispute is civil and both parties are African, provided also that it is consistent with general law. This is quite divergent from actual practice and constitutes the first level of distortion. By excluding the

application of custom, the State has effectively denied a role for local values and priorities to inform resource utilisation and management and it has further trivialised the role given to traditional leadership. Additionally, local practices were criminalised and consequently the opportunity for collaborative and participatory management based on dialogue and partnership is lost. Colonial states in Africa used a system of legal duality – one law for the European settlers and another for native peoples – to formally exclude African people from civil and economic society. Where customary law continued to be used, its application and content was distorted to fulfil these colonial objectives.

The second level of distortion is that customary law through its application by the courts and other arms of the State was brought into the formal law arena and consequently ossified. Local systems of management are complex and vary from locality to locality, making it impossible to generalise about its content and identify a set of uniformly applicable customary law rules. Yet, this is precisely what the formal legal system sought to do. Effectively "hijacking the development of custom by robbing it of its flexibility and dynamism through a process of assigning certainty and creating rules where none existed". However, principles and procedures may be extracted from actual practice. It is important to distinguish between customary law as a State construct and customary law as a reflection of the actual values and practices of a community.

Thirdly, customary law has in many instances been harnessed and modified by the State to control local people. According to Moyo (1995), for example, the use of traditional leaders intended to replicate customary norms of land administration. However, the presence of the chiefs in the judicial and administrative structure did not result in the accurate recognition and implementation of local customs and practice. Instead customs and tradition became a means by which the local rulers and family heads bargained with the colonial State for power in their communities. Thus, in areas where the chiefs continued to have jurisdiction, new or distorted "customs" emerged. This contributed to the development of two forms of customary law – the customary law of the courts and the formal State structures, and that of the communities. This schism is less evident in the area of resource management than in personal law, as the State did not recognise custom as a source of natural resource law.

These distortions have led many to conclude that the traditional institutions cannot be representative and that there is little role to be played by customary law. The government itself came to this conclusion and focused on the creation of elected local government bodies. Although the reasons for this shift are complex and include the role of chiefs during the colonial era and, in particular, their collusion with the colonial regime, it nevertheless demonstrates the lack of

understanding about the continued use of customary law in local natural resource management. Customary law has continued to play an important role simply because it reflects actual values and priorities. Consequently it is constantly evolving. The failure to include local knowledge and values has contributed to the failure of many development projects. Indeed, the recognition of local rules and value systems may constitute the basis for successful local natural resource management.

3.3.1. COMMUNAL NATURAL RESOURCE MANAGEMENT

Communal management of natural resources is used to describe a partnership whereby two or more relevant social actors collectively negotiate, agree upon, guarantee and implement a fair share of management functions, benefits and responsibilities for a particular territory, area or set of natural resources. Decentralisation in natural resource management is centrally concerned with community agency. Concepts such as 'participatory development', 'community-based conservation' and 'social capital' all imply that a collectivity of actors in place-based relationships has the willingness and capacity to act collectively towards desired goals. Participatory institutions at the local level are also often designed with the additional objective of capacity-building, again overlooking the sources of pre-existing capacity. The success of 'participatory' projects is crucially dependent upon the collective agency of participants. While the significance of community agency is obvious and accepted, the sources for such agency are less clear. There is evidence that some project and policy interventions build community capacity, but this effect is variable across different communities, and it is hardly plausible that the target communities had no capacity or agency before the interventions.

Communal management is considered within the framework of power, process and practice and how these shaped communities access, control, and use of natural resources. Over the years, State visions of appropriate management and use of resources have largely been extended to the African communities through a centrally directed structure and process. However, State control over the use and management of resources among the local entities has been and is still largely ineffectual, because the State lacks the resources and capacity to enforce such controls. There is consensus that decades of development effort and international cooperation have not produced the results that were optimistically projected at the start of the development era. All has not been negative, as several countries may have benefited from aid; various sectors within most countries have taken economic and political advantage of space opened by the post-colonial processes, and the quality of life has improved for some. Yet slow economic growth and stagnation are still in evidence (Cistulli, 2002).

The alleviation of poverty has, in recent years, become one of the highest priorities of international development. Concurrently, the definition of poverty has evolved together with a better understanding of the nature of poverty itself and its underlying determinants. Decentralisation has been considered by many as one of the most important strategies in public sector reform agendas because in Southern Africa, decentralisation has been considered as a strategy that will bring service delivery closer to consumers, improve the responsiveness of the central government to public demands and thereby reduce poverty, improve the efficiency and quality of public services, and empower lower hierarchical units to feel more involved and in control.

The virtues of decentralisation such as democracy, popular participation, responsiveness, accountability and equity have led to the belief that decentralisation will lead to greater responsiveness to the poor. Since the poor have been excluded from politics and therefore do not have access to public goods and services, decentralisation is seen as offering greater political participation to ordinary citizens whose "voice" is more likely to increase with concomitant relevance and effectiveness of government's policies and programmes, especially in poverty reduction (Crook & Sverrisson, 2001). The relationship between decentralisation and poverty reduction depends on the targeting of poverty-reducing public investment by local government units. Local government units implement the national poverty reduction policy, narrowly or broadly defined. A narrowly defined poverty policy uses transfers of income, in money or kind, to the poor.

From a local community perspective, effective decentralisation concerning powers over natural resources requires these same elements. However, when examined in detail, community-based and decentralised forms of local natural resource management often lack representation, downward accountability and/or sufficient powers. Natural resources play a special role in local democratisation, because local populations rely on them for *their daily livelihoods and governments rely on them as a source of power*. On other hand, from a local government perspective, decentralised natural resource management and the use of participatory decision-making can be a fulcrum for rural development. Natural resources are revenue-generating as opposed to other important public services, such as infrastructure, health and education. Pioneering efforts at decentralisation and poverty reduction in rural areas involving entrustments over use and management of resources to the local communities have largely resulted in recentralisation at the district level, where such efforts are still practised in the trickle-down mode. In many developing countries, local governments or administrative units possess the legal authority to impose taxes, but often the tax base is not sufficient to undertake local investments, so they rely heavily on government transfers. The 'poor and the unschooled' participate much more widely in village-level

and contracting activities. As regards the 'gender balance', men are strongly dominant in contracting but less so in other activities.

Evidence in the literature argues that decentralisation[16] needs to be complemented by demand-driven participation, conceivably championed by civil society, to ensure genuine democratisation and empowerment in natural resource management. The challenge facing Mozambique today is how to sustain growth and reduce poverty. Many important economic reforms have been completed, but others are needed to increase private sector skills, productivity and competitiveness, and create economic opportunities for all, including the poor. Infrastructure has been built to support service delivery and the growth of markets, but more needs to be done to integrate under-served areas with high growth potential.

Decentralised natural resource management and local decision-making can, conversely, be a fulcrum for democratic change. Local representative bodies need powers over resources that affect their constituencies in order to become legitimate actors around which civil society and citizens rally for justice, sustainable livelihoods and economic improvement. Ironically, while the benefits of decentralisation stem from increased popular participation, rather than supporting new and democratic forms of rural participation and representation, many decentralisations are strengthening or reproducing top-down rural administration or inequitable and non-representative local authorities. Power over natural resources is often being devolved to non-democratic and often unaccountable or upwardly accountable local institutions such as chieftaincies.

In Zimbabwe, it was intended that decentralisation for natural resource management would be through the development of CAMPFIRE. This section argues that CAMPFIRE failed to provide for meaningful rights of participation – one aspect of which is the recognition of the diversity of stakeholders, their interests and value systems. CAMPFIRE is a State-driven local natural resource management initiative adopted in response to a legitimacy crisis of the Department of National Parks, which had come to be seen as little more than a police unit given their control and command strategies. This devolution was driven by the need to establish management systems that promoted natural resource sustainability rather than from a concern for governance systems, human sustainability or the inherent rights of indigenous people to utilise a resource. Despite these origins, CAMPFIRE'S[17] objectives focus on the development of a participatory approach that is flexible and creates long-term solutions. It sought to introduce a system of group ownership, develop institutions

[16] The decentralised entrustments are defined according to the terms and processes of external agents, including funders of projects and central government and their functionaries.

[17] http://web.africa.ufl.edu/asq/v5/v5i3a7.htm#en118#en118

under which resources could be managed by communities for their own benefit, and provide technical and financial assistance to communities to enable them to realise these objectives. The programme was a remarkable conservation success. Through practice, it restored the belief, destroyed in the colonial era, that good wildlife management could create new livelihood opportunities. In many areas the illegal use of wildlife, as defined under general law, was reduced as communities derived monetary and other benefits from wildlife management. Nevertheless, it did not fundamentally change the nature of governance in the wildlife arena.

Firstly, it failed to effectively link authority and responsibility. Communities are not involved in all levels of decision-making. Their role is generally restricted to determining which safari operator will manage the area and determining the allocation of profits. Effectively communities are little more than "gatekeepers." In return for their conservation efforts, communities are paid a dividend. Although community structures provide some opportunity for local decision-making, control is ultimate retained by the rural district councils (RDCs). The conflict around rights to wildlife demonstrates not only a need for differentiation of rights, but also the failure of CAMPFIRE to recognise local values and priorities. In many areas community members express anger over hunting rights granted to outsiders even where such hunting takes place under CAMPFIRE. Although residents appreciate the value of hunting as a revenue source, they feel that in difficult times their daily survival needs to be given preference. Decision-making that neglects these values is not only anti-democratic, but also fails to recognise the right of prior informed consent.

Secondly, CAMPFIRE did not give real rights of ownership to communities and as a consequence communities did not emerge as managerial and planning partners. Authority continues to lie with the RDC rather than with the actual user communities. This is in conflict with the trend in international law to place responsibility at the community level. Communities have often not been party to basic decisions and consequently many questions have been raised around rights of entitlement and authority. Rule systems in CAMPFIRE often have no link to local values and priorities. Failure to consult at an adequate level and with sufficient transparency has led to resentment that there may be other more powerful stakeholders whose interests override those of weaker ones. This may also be attributed to inadequate access to information.

Thirdly, those responsible for the management of CAMPFIRE at the local government level generally underestimate the capabilities of communities and consequently exclude them from management, thus effectively failing to provide technical assistance or to build local capacity as required in the Convention on Biological Diversity (CBD) and other legal instruments. Decentralisation has to seek lasting solutions to these issues of local capacity by promoting the

emergence of local leadership able to mobilise and develop local resources. Local communities need to be supported to network and forge linkages with other institutions and interest groups. Additionally, actual practice of communities needs to form the basis of capacity-building.

3.3.2. LOCAL NATURAL RESOURCE PLANNING

Planning processes are part of the institutional arrangements of decentralisation. National governments set up planning processes to coordinate between local and national development goals and to harmonise the actions of actors in different sectors, such as forest management, health services, road construction and policing, within the local arena. Planning in the local arena is needed so that local decision-makers who must allocate their funds and capacities among all of the social needs of their jurisdiction can do so in a systematic and balanced manner. Planning also helps to coordinate actions among local jurisdictions and between local, intermediate and national-level authorities.

One of the perceived advantages of decentralisation is that it is intended to improve access to decision-making for local communities by bringing planning closer to the grassroots level. Empowering local communities to be involved in planning is expected to improve the opportunity for their demands to be met, increase their control over the decision-making and resource allocation process, and enhance transparency and accountability. In this regard, principles of decentralised planning work towards ensuring the plurality of community involvement in project/programme design and implementation through, inter alia, the strengthening of the relationship between the State and local communities. Decentralisation is generally assumed to facilitate redistribution and poverty alleviation since it brings greater grassroots-level control over resources and their utilisation. While this assumption may be generally valid, its applicability under the conditions currently prevailing in an average African state needs to be re-examined more critically as experience on the continent provides limited proof in support of this. In most cases, unless it is carefully and comprehensibly handled through, for example, strong oversight-cum-accountability institutions, decentralisation can, and often has, reinforced the power of local entities/communities and has worsened spatial inequalities – a state of affairs that has had adverse implications for poverty reduction itself.

3.3.3. INSTITUTIONAL SETTING IN MOZAMBIQUE

Institutional settings of knowledge systems are described by Usher (1986) as being "The state system [deriving its legitimacy and authority from the rule of law of the nation-state] rests on a common property concept in which the state assumes exclusive responsibility and capability for managing a resource equally accessible to all citizens. The state manages for certain levels of

abundance on a technical basis, and then allocates shares of this abundance to users on an economic and political basis. The system of knowledge is based on a scientific accumulation, organization, and interpretation of data, and management problems are resolved in a technical, a historical framework. This system of management is bureaucratic, which is to say, hierarchically organized and vertically compartmentalized. Managers become distinct from harvesters, authority becomes centralized and flows from the top down. The environment is reduced to conceptually discreet components which are managed separately. As these separate management units take on a life of their own, management objectives diverge and become focused on specialized objectives: maximizing fur production, trophy production, or recreational expenditures…The indigenous system [based on self-regulation] rests on communal property arrangements, in which the local harvesting group is responsible for management by consensus. Management and harvesting are conceptually and practically inseparable. Knowledge comes from the experience of every aspect of harvesting itself – travelling, searching, hunting, skinning, butchering and eating. It is accumulated by every individual, and shared intimately and constantly within the household, the family, or whatever is the social unit of production. It is also shared and exchanged within the larger society, and handed down in the form of stories from one generation to the next. In sum, these observations, like those of the state system's, become coded and organised by a paradigm or a set of paradigms that provide a comprehensive interpretation of them" (Usher, 1986).

By way of the development agencies and the complicity of other partners, the State system penetrates the indigenous system through rural and agricultural development projects. As different worldviews and knowledge systems collide during this *rapprochement*, the bottom-up formula of participation will not easily marry the essentially "top-down" framework of decentralisation. It will lead to a confrontation of social actors with a different epistemology, a different way of knowing – particularly when it comes to discussing natural resource management objectives and requirements and their devolution. The "gap" between what project documents (to take but the most concrete expression of an application of the modern knowledge system of "development") specify as "expected outputs, products, or results", and what has actually taken place, can be measured from a monitoring point of view as an indicator of sustainability – in the sense that this gap may reflect the extent of local appropriation, adaptation, and, eventually, "ownership" and therefore institutional and social sustainability. A loss of livelihood options is also noted in the case of some private-sector development initiatives, particularly those in the tourism sector that target areas of high conservation value. Under the guise of providing support for alternative livelihood strategies and generating local wealth, some of these projects in fact have a net prejudicial impact on local livelihoods. Tourism projects, in particular, are prone to overstating the extent of community agreement and participation involved in their establishment, with one operator even claiming that

the Quirimbas National Park is the only conservation area in the world to be proclaimed at the request of the local inhabitants, despite clear independent evidence of local resentment, suspicion and marginalisation on the part of the archipelago community (Johnstone, 2003).

In Mozambique, the first phase of the Agricultural Sector Public Expenditure Programme (PROAGRI) was set up as a five-year agreement in 1998 between a major group of donors and the Ministry of Agriculture and Rural Development (MADER), based on a Memorandum of Understanding. The Memorandum committed MADER to a transformation process that was to involve the identification of core functions at all levels and the implementation of an institutional reform process and capacity-building for MADER to implement its new functions in an efficient and effective way. Eight separate components were designed as a platform for this programme and a set of "Basic Principles" was established. In addition, PROAGRI was seen as a means to introduce a more coherent and effective way of channelling and managing donor assistance to the sector, replacing fragmented donor-driven projects with a coherent programme. As far as land is concerned, over the period of the first phase of PROAGRI, the vast majority of government resources have been directed towards making provision for the private-sector uptake of land rights in rural areas, rather than on implementation of the newly introduced concepts of land delimitation and formal registration of community rights. PARPA notes that the State has the obligation to promote and enforce the sustainable use of natural resources, with the participation of communities and local government, for the benefit of the country as a whole and in order to prevent irreversible exploitation. The PARPA further states that agriculture and rural development play a key role in any strategy for poverty reduction and economic growth and it is also clear that success in this will depend on other sectors (such as infrastructure, telecommunications, markets, financial services, education and health and nutrition) that have an impact upon agricultural livelihoods in rural areas. The action plans in the PARPA are imported wholesale from the PROAGRI. Although the implication is that "agricultural development" is in fact cross-sectoral in nature, and that appropriate action in a number of sectors and cross-sectoral coordination is required, the PARPA does not elaborate on the mechanisms by which such coordination might take place (MADER, 2003).

Formal institutions

The two main role-players in respect to the regulation of natural resource use are the National Directorate of Geography and Cadastre (DINAGECA) and the National Directorate of Forestry and Wildlife (DNFFB), both within the MADER. These national directorates are represented at provincial level by service units – the Provincial Geographic and Cadastral Services (SPGC) and the Provincial Services for Forestry and Wildlife (SPFFB) – which also fall within the Directorates of Agriculture and Rural Development at this level. This is an important constraint within the

Mozambican administrative system: "dual subordination". In theory, the provincial services are responsible to both their line ministry (i.e. MADER) and to the provincial governor. In cases of disagreement it is not clear whose authority counts, and outcomes appear to depend largely on the personalities and individual power bases of those involved (independent-minded provincial governors, especially those out of reach of Maputo, have substantial autonomy). Coordination between the SPGC and the SPFFB is still lacking in many areas, although in some provinces there have been moves to implement the institutional reforms that posit the amalgamation of these institutions into a single natural resource-oriented service unit.

As part of a ministerial restructuring process following the 1999 elections, Fisheries was separated from the former Ministry of Agriculture and Fisheries and became a Ministry in its own right. The Institute for Development of Small-Scale Fisheries (IDPPE), which provides support to small-scale fisheries, has always kept separate from the management of semi-industrial and industrial fisheries and from fisheries research. The IDPPE's focus is strongly oriented towards coastal fisheries, and there is effectively no formal management of inland fisheries (except on Lago Niassa). The Ministry of Tourism (MITUR), in respect of policy and the regulation of conservation areas, and the Ministry of the Coordination of Environmental Affairs (MICOA) are also both involved in the development of policy that has a direct bearing on natural resource access. Both ministries have relatively weak provincial structures.

At a district level the structure and composition of the agricultural directorates varies widely, but is generally characterised by a very low level of human, physical and financial resources. Very few districts have specific representatives from the provincial land or forestry and wildlife services, which tend to be concentrated in the provincial capitals. For regulatory activities, therefore, the provincial offices will depend upon the participation of generalist technicians based in the districts. Representatives of the district administrative authorities also play a role in land adjudication processes, but have been less prominent in decision-making in respect to forest and wild resources. Land consultations have to be accompanied by a representative of the district administrator, although in many cases this role will be allocated to the district directorate of agriculture. At sub-district level there is even less specialist capacity and this is usually restricted to extension workers. Formal judicial structures extend only as far as district level and in many cases are absent even here. Those that do exist are beset with capacity problems; few judges have university-level training, legal texts and other important material are lacking, and corruption is recognised as a major problem (CTC Consulting, 2003). It is not easy for ordinary rural citizens, even when they are organised through a community structure, to get access to the judicial system. Factors that militate against them include:

- A lack of information on rights and entitlements, as a result of high levels of illiteracy and a lack of appropriate dissemination strategies and materials;
- The high costs involved, only partly alleviated by the potential to claim a "State of Poverty" and enjoy partial exemption from court costs;
- Scepticism regarding the objectivity of official institutions;
- The imposition of administrative resolutions by local government authorities rather than encouraging the use of judicial recourse; and,
- The lack of an empowered 'community voice.' (De Wit, 2001)

It is only since the initiation of a training and support programme for the judiciary that most district judges have become aware of the Land Law. It will still require some time before these judges can respond more successfully to needs at local level.

Community-level institutions

During the colonial period, indirect rule occurred through a system of land estates (*prazos*), either granted by the crown or taken by conquest and essentially governed as fiefdoms. The colonial administration also co-opted traditional chiefs (*régulos*) as a further instrument of indirect rule; the chiefs became the main mechanism for levying taxes, recruiting labour and allocating land outside the *prazos* and company domains. At independence, the Liberation Front of Mozambique (FRELIMO) abolished the *regulado* and replaced it with a new cell-based system of centralised democracy, with *grupos dinamizadoros*, village councils and land commissions responsible for land allocation (O'Laughlin, 2001). In some areas, notably in the southern provinces and the liberation zones of the north, this system became established with local *secretarios* holding substantial power and influence.

Geographical patterns in authority can still be discerned, although these have been disrupted by overlapping migration patterns as people fled from conflict. In general, traditional authorities appear still to be the main influential actors with respect to natural resource allocation and control. In addition to their identification with spiritual roles and mystical values, the traditional authorities are often used by NGOs as dispensers of aid and by companies as agents and generally have high stocks of social capital and influence. The extent to which traditional powers have been eroded by the official marginalisation of the *régulos* after independence varies, but there is evidence that in some areas this process led to the development of open-access systems for common pool resources that had previously been regulated through customary norms and practices.

In relation to land however, the power and legitimacy of the traditional authorities seems to have been largely maintained. The end of the war and the consequent return of displaced populations in the early 1990s proved this continuing durability of traditional institutions of land allocation and adjudication: the re-establishment of legitimate and widely accepted landholding patterns (between groups and individuals that had remained in the countryside, those that had returned and those arriving to new areas) occurred within the framework of the customary rules of the rural populations. The process occurred largely without conflict and required little intervention from formal authorities. In times of normality, the traditional authorities in an area may only be used by local people as a forum for resolving disputes. In many areas access to land can be through kinship networks or neighbours rather than through the chieftaincies. Outsiders who come to a new area in search of land would traditionally be expected to ask permission from the local traditional authorities, but in some cases this may just consist of informing them after the fact in order for the boundaries to be confirmed. Customary systems of resource tenure vary across the country and between different ethnic groups. The sophistication of these systems appears to be linked to population density and competition over resources. For example, in the central provinces local leaders can describe a complex set of rules and taboos, and the hunting and harvesting of a number of species is proscribed at particular times (SLSA, 2001).

Over large areas of the northern province of Niassa, on the other hand, where population density is extremely low, few taboos can be identified, even with respect to trees which are considered to facilitate communication with the ancestors. Where conflicts emerge, one section of the community simply breaks away and moves on and there is a reluctance to engage with either administrative or communal authority. On the other hand, in the same area, the paramount chiefs are able to describe and agree to the boundaries of their territories across most of the province. The lack of a functioning judicial system in rural areas creates further reliance upon the traditional authorities, the *Presidentes de Localidade* and the *Chefes de Posto* to serve as higher authorities if a criminal or civil matter is irresolvable at the village level. As a result, rural communities govern themselves more often by traditional laws or remembered vestiges of colonial law than by current State law (Knight, 2002).

3.4. ACCESS AND PROPERTY RIGHTS TO NATURAL RESOURCES

Understanding the linkages between access to natural resources (size and ownership structures) and access to other sources of income and capital is an essential element in the policy dialogue about food security and poverty reduction. The current framework of economic growth and development includes a general trend towards the decentralisation of natural resources rights, a

collapse of collective structures in agriculture, and a move towards reliance on natural resources as the means of local community access to participation in the development process.

Despite the removal of natural resource reform as an explicit part of the policy agenda, it is clear that the situations that led to the activation of natural resources reforms in past decades are still in place. It is still very important, therefore, to address these issues, albeit following a "market-oriented" approach. There is discordance between contemporary macro-policy initiatives and the micro foundations through which they operate. A key conclusion from analysing the impacts of macro policy through the lens of micro-economic decision-making models is that access to various forms of capital is pivotal in determining household income strategies and, therefore, in determining the likely change in household behaviours and wellbeing when households are faced with macro-policy changes. Mention of such a modelling exercise, which also offers empirical insights, should suffice to demonstrate this important revelation.

Carter (1994) conducted a simulation analysis of how various strata of the Chilean peasantry would fare in the natural resources during a period of rapid agricultural export-led growth. The exercise was based on the theoretical model of household behavioural strategies developed by Carter. A key factor in this model, and hence in defining the differentiated behaviours of various classes of rural households, is that households are stratified according to resource endowments (or asset typologies) which imply different behavioural strategies. Each stratum is differently constrained by its relative need for and ability to participate in size-sensitive rural factor markets.

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3.4.1. TYPOLOGY OF RURAL HOUSEHOLDS

The conceptual framework relies on a typology of rural households that stresses "differential income strategies based on access to land per adult member ...". The typology focused on how different forms of capital determine earnings levels. Carter (1994) looked at the "evolution of landownership structure itself ". The model and data postulate that working capital constraints (ex ante capital) combined with consumption credit constraints (ex post capital) lead the poor to the

adoption of safety-first strategies entailing the growing of basic foods (food security). This is a consequence of size- sensitive access to capital. Thus, smallholders systematically opt away from high-profit commercial crop production, which then stifles their ability to accumulate land over time. Larger farms, which do not face such constraints on capital, are thus advantaged in short-term income distribution and in long-term capacity of land accumulation via the market.

Within a similar framework, Carter (1994) reviews the issues of class basis and bias of agrarian growth in Paraguay. He again demonstrates the short-term effects on small farm participation and net employment effects which take place given a static distribution of land. More importantly, he draws attention to how resulting differences in economic returns across variously sized farms might cause a structural change in the ownership distribution of land via the operation of imperfect land markets that favour medium-sized to large farms. Furthermore, Bruce (1994) cautions that "... in the long run, if a household is investment-poor [asset-constrained] but not welfare-poor [absolute income standard], it may lead to natural resource degradation that eventually causes the household to become welfare-poor ...". In summary, it can be said that asset typologies define rural classes according to asset portfolios, which tend to stratify according to farm size groups. Therefore, different farm size groups will be observed to use different behavioural strategies (income strategies). These differences will affect the outcomes of macro-economic policy decisions and, hence, must be recognised and taken into consideration at the point of policy design.

A typology of rural households includes proletarian, semi-proletarian, peasant and capitalist family farms and hierarchical capitalist farms. These farms differ in particular in their capacity to increase access to natural resource holdings and financial capital and to decrease reliance on off-farm employment for survival. The latter three forms of farming also differ significantly with regard to the types of labour employed on farms. The implications of this typology for participation in the natural resources market are striking and are discussed under natural resource markets as a means of access for the rural poor.

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Since the early 1980s, titling (and the registration of titles in a public registry) is regarded as the best way to protect ownership rights – in other words, the best form of tenure security. Titling and registration is the highest level of formalisation of ownership rights in private property tenure systems. Where private property as a tenure form is not dominant, however, titling has little consequence or utility because holders of natural resources acquire tenure security through other mechanisms (e.g. membership in a group or family). This explains why in some areas, titling programmes either have little impact, unintended effects, or quickly become outdated (for example, title documents are not kept up to date when property is transferred). It also explains the low participation rates in some supply-driven titling efforts, e.g. in Honduras (Carter, 1994).

He hypothesised that greater security of ownership raises farm productivity and, as a result, the market value is higher for titled land than for an identical parcel that is not titled. Given the importance of land, there is a lot of interest in how its price is determined and how its price in turn influences other aspects of the economy, i.e. determination. The most commonly recognised benefit from the titling and registration, besides the tenure security bestowed on the property owner, is the use of those secure ownership rights as collateral to solicit credit. Formal lending agencies, such as banks, often require not only that property being used as collateral be titled, but that the title be

registered. In fact, the rationalisation for the cost of titling and registration programmes is that they put capital into the hands of people with little wealth and a low income, leading to increased investment and productivity by these families. Greater tenure security, theoretically, has two impacts: increased agricultural productivity and more dynamic markets. Titling is expected to facilitate transfers, stimulate the market and increase the supply on the market; it can thus be a mechanism for redistributing and making natural resources more accessible to *natural resourceless* and poor farmers. Feder, Onchan, Chalawong and Hongladarom (1988) argue that titles reduce the uncertainty over the entitlement of owners to maintain or transfer rights and, in turn, affect the price and scope of transactions.

3.4.2. GENDER AND ACCESS TO NATURAL RESOURCES

The position of women as a commonly marginalised group may be changing as a result of the messages transmitted by the Land Law, although there are community groups that contend that this marginalisation never existed in customary systems. In all four of the communities studied by Knight (2002) in Manica, community elders of both genders firmly insisted that according to local custom, widows had a clear right to remain on their lands after the death of their husbands. For them, the Land Law's insistence that widows and unmarried women have the right to have their own land was merely another example of how the Land Law mirrors their own customary rules. She contends, however, that the Land Law is deeply affecting gender dynamics in other ways and is shifting the balance of power within households, particularly in relation to resource-management decisions:

"Female members of the drama group in Musiyanharo reported that after learning about the land law, their husbands allowed them more freedom. One woman explained the changes that have come about as her husband has learned and understood the land law, saying, "Long back, without knowing this new land law, my husband was not able to give me the permission to sell any of our family production. But now that he knows that it is written in the land law that women have their rights to use the land, now I am free to decide on my production and also to sell it, and I am also free to do this community work" (Knight, 2002).

Noticeable shifts are also occurring in respect to participation in community meetings. In fact, women's participation in the dissemination meetings held by ORAM in Zambézia, which was monitored over a period of two years, outstripped that of men. Knight notes that there is still much to be done, however, and quotes one female interviewee as saying: *"When women are working, the men approve that the women have their own pieces of land, but when it comes to harvest time, the men say, "You are my own, and so whatever you are harvesting is also my own"* (Knight, 2002).

Lucas (2001) identifies two primary forms of conflict in respect to natural resources: those arising between local community groups and third-party interests from outside the community, and those occurring between community members (or neighbouring community groups), with the former identified as having a far greater negative impact on the livelihoods of the rural poor. In common with other studies, this research identifies the fact that many contemporary conflicts have historical roots that can reach back to early colonial conquests and usurpation of land rights. Where this is not the case, the conflict very often arises between new investors seeking to rehabilitate pre-existing farms and infrastructure, many of which, in the period since independence, have been abandoned and subsequently occupied by local people. Other conflicts arise as a result of locally incompatible land uses, as evidenced by the many conflicts in Zambézia province that occur between rice-growing local communities and livestock-owning investors.

The traditional authorities have a predominantly greater role in the resolution of conflicts that occur between community members or between neighbouring groups. Very often, these institutions will coexist with the "community courts", whose foundations lie in the people's courts introduced by post-independence legislation. These function as a court of first instance in a local area. Cases that are impossible to resolve at this level can be referred to similar courts at a higher level in, for example, the administrative post. The "judges" are elected locally and in many cases comprise the local political/administrative functionaries and office bearers of organisations such as the Organisation of Mozambican Women (OMM). Although the institution is largely respected and is recognised to play an important role, there are accusations of corruption in some areas. Similar comments were made in relation to the traditional dispute-resolution processes, but here there appears to be a higher level of acceptance that the parties to a dispute must contribute something to the chief. Payments are recognised as "costs" rather than as inducements for a favourable verdict.

The legal incorporation of customary tenure rules into dispute-resolution processes has been a crucial step. Unruh (1996), who evaluated agro-forestry techniques in Nampula, noted the important role served by the existence of older cashew trees in identifying the legitimacy of claims to particular pieces of land and claimed that "the widespread presence of cashew on smallholder land in this province allows these trees to provide evidence of land ownership, and constitute legitimate evidence for dispute resolution". It furthermore appears that this incorporation is a two-way process and that some elements of the Land Law are now being integrated into local customary rules for resolving disputes: *"The law has begun to be actively adopted into local conflict-solving strategies, both for internal conflicts and during external conflicts. In every community studied, leaders reported*

that local leadership structures have begun referring to the land law when resolving internal disputes. Furthermore, many villagers expressed variations of this statement, made by a man in Dororo: 'For us to have power, we have to stick to the legal procedures!' Such sentiments are proof that communities are embracing legal strategy, understanding that not only is it possible for them to make the jump to state-based procedures and legal process, but that it is also necessary" (Knight, 2002).

Historically, land ownership in many Yemeni communities has been associated with tribal kinship relations, but the socially marginal *hijra* population groups are not viewed as part of the kinship unit, and are thus not entitled to land ownership under customary rules (Carter, 1994). Participation in decision-making related to the affairs of the local community in general, and NRM in particular, depends on individual and group relations to agricultural land ownership. The landless do not usually participate in the decisions concerning natural resource management. This does not mean that members of marginal groups cannot own land at all, but that they can do so only on as individuals, not as groups. Compared with rural areas in Mali, women usually designate three female leaders to represent the interests of all women during meetings. Under certain circumstances, the village chief delegate's one of his counsellors to join them in order to analyse together the meeting agenda, as no amendments can be made to decisions already taken. Women are increasingly represented within village associations and play an ever more important role in decision-making during general assemblies. In Ouassoulou village there are secret associations among widowed women called *"mousso koma"*, one of the protective institutions of the people and their property, and its help is appealed to whenever a danger threatens the community: caterpillars, drought, epidemics, etc. In Seeno they serve, although rather discreetly, as a vehicle of expression for women's opinions regarding NRM.

The matrilinear areas in northern Mozambique present a picture whereby women are more integrated into community affairs – even though in many patrilinear areas women are dynamic and increasingly important actors in the informal market in the cities including Maputo, the national capital. Matrilinear descent is not the same as matriarchy, but the matrilocal factor among the *amakhuwa*, for example, places women in a more favourable position in society than does the patrilocal nature of the patrilinear societies in the south and centre of the country. It is important to note in addition that the greater or lesser participation by women in domestic decision-making is also frequently conditioned by the internal hierarchy of an age group, and the consequently lower status of recently married women compared to the high social status conferred by motherhood of adult children.

In the matrilinear areas of Banga and Netia (in the Monapo district of Nampula province), one notes the important role played by women in the households, particularly in the management of agricultural production with the decision-making power they hold regarding the amounts to offer and/or to sell, and regarding the granaries, which are linked to the responsibility women have to prepare food for the children throughout the year – an activity that presupposes the availability of basic foodstuffs. However, there is inequality between women and men even in matrilinear areas, for example during the rites of widowhood. Within the largely traditional role of women in Netia, the role of the *apiyamwene* of the lineage deserves to be highlighted. She is a socio-political leader of prominence and always by the side of the lineage chief (the *humu*), in her quality of "mother of mothers", whereby she is the symbol of the origin of the family group. As "mother of mothers", the *apiyamwene* is the person whom other women of the lineage consult and approach with their concerns. She is the intermediary through which others from the lineage, particularly its younger members and other women, pass their concerns on to the lineage chief, including, if applicable, criticisms regarding improper behaviour of the chief.

Under Mozambique's current Land Law, land is owned by the State, which issues 50-year renewable leases granting liberal usufruct rights whereby the holder may sell and bequeath improvements and access rights. In the Forestry and Wildlife Law, local communities are permitted to register a zone as a sacred forest and have it declared as such (thereby imposing limits on its use by third parties), but this is also subject to administrative discretion, this time at the level of the provincial governor. Authority to assign access rights and the issuance of a title depends on the size of the landholding. Although the actual limits vary according to land use, smallholdings are under the jurisdiction of provincial authorities and do not require titles, while larger holdings are titled and administered by the Ministry of Agriculture and Fisheries; and holdings exceeding 10 000 hectares are in the domain of the Council of Ministers. Although Mozambique is generally considered a land-abundant country, only 3 to 4 million of an estimated 36 million cultivable hectares are classified as good-quality and easily accessible to markets. The more densely populated Maputo, Gaza and Inhambane provinces have imminent land constraints, especially when fuel-wood collection, hunting and grazing needs are factored in. Small farmers are of the opinion that natural resources (especially land) do not create added value and incentives to promote agricultural development (e.g. access to credit or as co-investment assets).

3.4.3. SECURITY OF PROPERTY RIGHTS

Natural resource tenure may be defined as the terms and conditions on which natural resources are held, used and transacted. Natural resources tenure reform refers to a planned change in the terms and conditions (e.g. adjustment of the terms of contracts between natural-resource owners and

tenants, or the conversion of more informal tenancy into formal property rights). A fundamental goal is to enhance and to secure people's natural resources rights. This may be necessary to avoid arbitrary evictions and natural "*resourcelessness"*; it may also be an essential precondition for rights holders to invest in natural resources and use them sustainably. In South Africa, tenure reform is a component of a national natural resources reform programme, which also embraces the restitution of natural resources to people dispossessed by racially discriminatory laws or practices, and the redistribution of natural resources to the poor (World Bank, 2001).

In Southern Africa, tenure reform must address a range of problems arising from settler colonisation and dispossession. Many of the areas referred to as communal were deliberately created to further colonial policies. They served as reservoirs for cheap migratory labour. Proposals for the reform of customary systems must accommodate livelihoods that continue to be spatially fragmented (World Bank, 2001). In South Africa and Namibia, a factor complicating attempts to dismantle the apartheid map is the complex and unstructured nature of the legislation governing the communal areas (CAs), much of which has yet to be repealed. The differing systems of property rights pertaining to private and communal natural resources are a related problem.

It is now recognised that universal provision of secure natural resources rights promotes investment. Indeed, what is needed is that rights are transparent and that these rights can, within the existing physic-geographic, institutional and legal environment, be enforced in a cost-effective manner. Due to the importance of natural resources tenure security, the community has to be protected by the State, using correct legislation. It is, however, necessary to define practical mechanisms to judge the performance of the economy and to define, if natural resources are abundant, how to use them to promote growth in the economy, reduce poverty, promote investment, increase employment and increase GDP (see Stiglitz, 1993; Frisvold & Ingram, 1995; Harson, 1995). It is well accepted in the literature that more secure property rights could affect productivity by (i) improving households' security of tenure and thus their ability (and readiness) to make investments; (ii) providing better access to credit; and (iii) reducing the transaction costs associated with land transfers. Security of property can be considered as follows:

- Secure long-term individual property rights are directly linked to higher demand for investment, and will cause individuals' incentives in output- and productivity-associated natural resources use to improve. Rural land rights studies suggest that this can increase not only agricultural investment but also households' ability to engage in off-farm activities and thus contribute to broader rural diversification, thus making a direct contribution to the reduction of poverty. This can provide lessons for other countries.

- A second issue relates to *credit access* and investment incentives. In addition to augmenting demand for investment, secure formal land ownership can increase the supply of investment credit from formal sources, thus making an important contribution to the evolution of financial markets in more general terms.
- Regarding *transferability*, written records of land ownership allow verification of the ownership status of land at low cost, thus reducing the scope for asymmetric information about land ownership and quality and making land transactions cheaper to implement. The reduction of transaction costs will increase "revenues", bringing the number of efficiency-enhancing transactions closer to the optimum and helping to establish a more viable financial system. The ability to transfer land between users may be of limited importance in the early stages of development, but only when there is little heterogeneity of skills across the population, and as long as non-agricultural opportunities and inter-regional migration are limited, or in marginal environments where no land market exists.

3.5. LAND POLICY IN MOZAMBIQUE

In 1979, the first Land Law (Law no. 6/79 of 3 July) was enacted, giving to the State organs, down to the level of the locality, the role of allocating land for habitation and agrarian uses. The traditional authorities did not have a role according to this law. Formally, traditional authorities did not exist. Under the framework established by the 1979 Land Law, a person seeking to acquire land and land-use rights was expected to contact the local-level-elected structures as described above, in order to help them identify unoccupied land, and then to contact the local representation of the State organ responsible for administrating land, namely the DINAGECA. The applicant could show interest in acquiring land-use rights directly to the local representation of DINAGECA (normally at provincial level) and the DINAGECA representative would then verify in the national or provincial cadastral atlas whether there is a registration of occupation on the requested area. If this process is successfully, its ultimate result is the issuing of a land-use title.

A constitutional debate was initiated in 1990, largely as a result of decisions taken at the 5th FRELIMO Party Congress. As a result of this debate, a new Constitution was approved in November 1990; several important changes to the Constitution related to natural resource ownership and related principles of use and management. Article 35, the first article of Chapter 4 (Economic and Social Organisation) in the Mozambican Constitution is deals with the public domain of the State and entrenches the concept that the State is the paramount owner of the natural resources occurring within its territorial limits.

The Constitution recognises the obligation of the State, in the national interest, to develop the land of which it is the paramount owner and to determine the conditions under which citizens (and others) may access these resources for their use and enjoyment. The Constitution is unequivocal in its stipulation that land ownership is vested in the State and that no land may be sold, mortgaged, or otherwise encumbered or alienated. However, the same provision also stipulates that the use and enjoyment of land shall be the right of all the Mozambican people. The conditions under which citizens may enjoy such rights are the prerogative of the State, which is constitutionally obliged to develop specific laws governing these conditions (Negrão, 1999).

The Constitution also introduces qualifications and limitations on the eventual content and nature of these conditions (or mechanisms of access). Firstly, it stipulates that rights of use and enjoyment may be granted to individual or collective persons, *taking into account its social purpose*. Secondly, there is a constitutional directive to the effect that direct users and producers must be afforded priority and that the laws developed by the State may not permit use and benefit rights of land to be used to favour situations of economic domination or privilege to the detriment of the majority of citizens. Most importantly, however, the 1990 Constitution obliged the State, for the first time, to recognise rights acquired through inheritance or occupation. It was this amendment that heralded the subsequent revision of the Land Law and led to the legal recognition of customary and other rights to land. Through this amendment, Mozambicans could finally cease to be squatters in their own country (Negrão, 1999).

3.5.1. POLICY FORMULATION

The process of developing the 1995 national land policy and the main elements that emerged in this and the subsequent legal instruments have been well described by Negrão (1999) and Tanner (2002). It is important to note briefly, however, some of the elements of the process that have led to its being held up as a model in consultation and consensus-seeking amongst diverse groups within Mozambican society, and praised in particular for the space that was created during the process for the voice of the poor and the marginalised. Firstly, the policy development process was led by an Inter-Ministerial Land Commission created by statute and involving nine separate ministries and coordinated by a Technical Secretariat. Meetings of the Technical Secretariat were attended by organisations representative of diverse interest groups: The Rural Association for Mutual Assistance, the National Peasants' Union, church-based groups, national academic institutions, and the private sector and land specialists. The Rural Mutual Help Organisation (ORAM) and National Small-Scale Farmers' Union (UNAC) enjoyed the status of "*permanent invited members*" to the Technical Secretariat. This structuring of the policy development process meant that non-governmental organisations were for the first time involved in legal reforms. Indeed, the 1996

National Land Conference to discuss the draft law, involving 200 participants from government, private sector, aid agencies, academic institutions and international and national NGOs has been called "...an exercise in democratic participation hard to equal...anywhere, north or south" (Tanner, 2002).

Secondly, a broad-based campaign to raise public awareness and understanding was undertaken by some 200 different NGOs, churches, associations and cooperatives, and appropriate and well-targeted materials were developed to put across the messages of the campaign. Thirdly, the important implementation elements of the new law, contained within the Technical Annex, were subjected to an iterative process of action-learning by the piloting of some of the procedures in the field. Although the new law was espoused as a Mozambican law made by Mozambicans, it is questioned whether the same would have happened with political pressure by donors and international technical assistance. The ability of civil society to interact and feed into policy formulation processes was increased by their vertical linkages (a form of social capital) with donors and others who were able to apply pressure so that the processes were transparent, open and consensual. Despite considerable work, the legal instruments have been promulgated and appear to be undergoing a process of "harmonisation" with other sector legislation. The regulations, however, were published in 2002 and it was obvious that there had been some improvements as a result of the more inclusive approach. The development of policy in respect to community rights within national reserve areas is unclear. This is an issue that has a potentially massive impact upon the livelihoods of many thousands of people who are resident in areas that are, or are currently being declared as conservation areas (Negrão, 1999).

3.5.2. NEW POLICY TOOLS AND CONCEPTS

The 1995 Land Policy was built upon a set of principles that highlighted the need for greater protection of existing land-use rights and the establishment of an environment within which the rural poor could increase the benefits from the most common form of natural capital available to them: land. The policy was consciously designed to have a positive impact on the livelihoods of the rural poor. It resulted in the legal recognition of local community groups and of their land use rights, the incorporation of community representatives into formal institutional processes of land adjudication, and the establishment of legislated participatory methodologies that permitted community members to register their rights in the national cadastre, either as individuals or as groups of co-titleholders. The Forestry and Wildlife Policy is also geared towards the greater involvement of local communities in the management of natural resources and ensuring that they benefit from those resources. There are some important similarities and equally important differences between the

actual legislation that resulted from the adoption of these new policies. The aim of this section is to briefly highlight some of these issues.

The Land Law introduced a concept of "local communities", which related directly to a spatial area within which a group of people lived and used resources. The Technical Annex introduced a legally prescribed methodology for the identification of the community and the related areas – a process that was intended to be in the hands of the particular community and to be one largely of self-definition (with safeguards such as obligatory consensus with neighbours, etc.). Thus the communities could be anything from a traditional unit based on membership of a clan or chieftaincy to a simple group of neighbours (CTC Consulting, 2003).

The Forestry and Wildlife Law imports the Land Law's definition of a "local community", but treats the community as a form of public body that has a legitimate interest in resource management, rather than a private body (as in the Land Law) that holds actual private-use rights to a resource. It adds hunting as one of the areas considered as safeguarded by the local community. This is a positive change, since it recognises a further purpose for which customary user rights have existed. However, the Forestry and Wildlife Law only recognises these customary rights to forestry and wildlife resources for *subsistence* purposes.

Instead of recognising more fully an inherent right to the resources (which could then not only be safeguarded by the community, but used by them as a natural capital asset with which they could negotiate), the law establishes a licensing framework for development and exploitation of such resources on a commercial basis. In doing so, it contains elements that put it beyond the reach of most of the existing national forest companies, let alone community groups that might wish to follow this route. In addition, the Forestry and Wildlife Law has introduced a level of confusion regarding the nature of the community as an entity, since it appears to be treating such groups as a form of public body that has a legitimate interest in resource management, rather than as a private body (as in the Land Law) that holds actual private-use rights to a resource. The Regulations to the Environmental Framework Law adopt a different definition of local community. In this law the community is defined as a "group of people situated in the area of influence of a proposed activity and that is not confined necessarily to a village or to a district".

3.5.3. CONSULTATIONS AND REPRESENTATION

Perhaps one of the most important aspects introduced by the new policies was that of mandatory consultation processes with local community groups, important largely because of the scale and breadth of application. By requiring applicants (and government agencies) to consult with local

groups that were potentially affected by the request for natural resource use rights, the balance of power was shifted away from the State, which had previously held the prerogative of deciding upon the occupation and use status of resources, and towards the direct users of those resources. Both the Land Law and the Forestry and Wildlife Law require these consultations, although they are termed a "renegotiation" in the latter law. One of the improvements to the Regulations for the Forestry and Wildlife Law was that the communities were also to be involved in the decisions related to the adjudication of the "simple licences", which had not been a requirement in the earlier drafts.

The inclusion of such a mandatory process meant that prima facie opportunities were created for negotiating agreements between the rights holders (local communities) and those who wished to gain access to resources. As such the consultations are "a critical 'development moment' for both the local population and the investor – one side gets benefits and an incentive to live peacefully with the newcomer; the other gets local cooperation and a secure environment to invest in" (Tanner, 2002).

Community benefits

The Land Law recognises customary rights and gives them the force of formal legal rights, whilst also encouraging the growth of private sector "take-up" of land -use rights. It creates an enabling environment that allows local communities and investors to negotiate agreements around land-use rights, with the State's role limited to ensuring that minimum standards are applied in these negotiations, that registration complies with technical standards, and that the taxation system functions effectively. The benefits to local communities are envisaged as coming in the form of payments or benefits to them as a result of negotiating the third-party use of "their" natural capital.

Conversely, the Forestry and Wildlife Law creates an enabling environment that draws local communities and the private sector into decision-making forums that have management powers over resources. These resources are still owned by the State, however, which recognises no customary or inherent right to them, except in certain limited ways (e.g. the right to subsistence-level use). Here, the benefits to local communities come from a royalty paid by the State from the revenue that it collects for use of the resources, as well as a say in how the resources are managed.

Local communities

It has been said that the two laws are essentially the same: rather than directly securing a role for local communities in the development and exploitation of natural resources, they create an enabling environment in which this can happen. This is true, but hides an important difference in approach.

When a resource has multiple stakeholders with conflicting objectives and differential power, it is common for governments to work out co-management arrangements. In this way they seek to strengthen local organisation, to provide technical assistance, and to mediate the overlapping and conflicting claims on the resource. This allows governments to exercise a regulatory role and to retain control over components of the resource of direct value to the State. In Mozambique, there are multiple stakeholders with conflicting objectives in land as much as in forest and wildlife resources and yet it is the forest and wildlife sector that has taken the classic co-management approach. The land policy has elements of co-management, but these are linked to the specific allocation of use rights in community areas and integrated into systems that permit community registration of rights (Negrão, 1999).

3.5.4. PARTICIPATION IN RESOURCE MANAGEMENT

In addition to the mandatory consultations where user rights are to be allocated to private users, the new policies highlight the involvement of local communities in more general management decisions – through the Community Management Councils (COGEPs[18]) and in the resolution of conflicts (specifically mentioned in the Land Law). Again, there is a difference in approach, since the decision-making powers that community groups may exercise over forest and wildlife resources operate within the co-management framework and have the nature of a public right to participation in State-mandated structures, whereas their rights to manage land resources, in terms of the Land Law, are recognised as private "unadulterated rights" over the land within their jurisdiction. The Forestry and Wildlife Law and the Regulations contain provisions that permit the delegation of resource management powers over forestry resources to community groups.

The nature of new rights

Communities have no right to register their rights or to force the State to certify them; their registration and certification is subject to administrative discretion. Under the Land Law a community may only delimit their land and request its registration in the cadastral atlas if the district administrator approves this. Although the wording in the regulations is positive ("...at the request of local communities...the right of use and benefit of land acquired by occupation...can be identified and registered in the national cadastral atlas") and although there is nothing in the law or the regulations that stipulates that the process is subject to State approval, the Technical Annex introduces this requirement by including within the pro forma documentation an obligatory process that must be approved by the district administrator. The Technical Annex, including the pro forma documentation, is a legal instrument and therefore represents a legal requirement in the registration

[18] Envisioned in the Forestry and Wildlife Law

of land-use rights acquired through occupation. This has led to the blocking of registration of community rights, e.g. the Maputo Elephant Reserve authorities retrospectively reduced the area that had been delimited by a community (Nhantumbo, 2002).

3.6. LAND TENURE AND RURAL HOUSEHOLDS

3.6.1. LAND RIGHTS, TITLING AND TENURE SECURITY

It has been argued that titling and/or registration of ownership rights to natural resources increases the tenure security and brings about more land productivity, because: (i) increased tenure security provides incentives to invest time, labour and capital in natural resources (making improvements) and agricultural production (buying inputs); (ii) titled natural resources can be used as collateral to secure credit (capital) for investment, thus making credit more abundant; and (iii) Titling facilitates natural resource transfers, resulting in natural resources moving into the hands of more productive farmers.

The impact of titling and tenure security on credit availability and agricultural productivity can be broken down into supply and demand effects. Demand effects occur when the acquisition of a natural resources title increases the farmer's security and certainty that he or she will be able to maintain possession of the natural resources and benefit from investments that improve productive capacity. Improved security is hypothesised to enhance investment incentives and increase the demand for capital and variable inputs complementary to capital and thereby raise agricultural productivity (Feder *et al.*, 1988). Supply effects result when the provision of a secure and legal natural resources title improves a farmer's access to cheaper and longer-term institutional credit because the natural resources can be pledged as collateral for loans. Output on securely owned (i.e. titled) parcels is consequently expected to be greater than on untitled parcels because of a greater use of inputs of capital and other variable production factors and potential shifts to more capital-intensive crops. Thus, the combined demand and supply effects, it is hypothesised, result in higher farm productivity on titled natural resources and also raise the price that titled natural resources can command in the natural resource market.

The rationale provided by Feder *et al.* (1988) for natural resources titling, however, ignores a number of other factors that shape farm productivity and may affect the desired outcomes of titling programmes. Osborne and Trueblood (2001) argue that, in addition to ownership security, farmers' investment decisions are affected by a number of factors such as alternative investment opportunities, accessibility of production inputs, the farmer's present debt structure and overall profitability of farming, and the availability of investment capital. These factors are dependent on agricultural and macro-economic policies. Moreover, the assumption that credit is available must be

seriously questioned. In an environment of imperfect capital markets, small farmers' access to credit is rationed and a title to natural resources may not overcome the obstacles to obtaining access to institutional credit.

Furthermore, under some conditions, the provision of natural resources titles may work to the disadvantage of smallholders. As Carter (1994) points out: "If titled land operates as collateral then foreclosure and land loss is a real possibility. The threat of land loss is of course supposed to mitigate moral hazard problems associated with credit contracts. But in a stochastic agricultural environment which lacks insurance markets, the farmer faces a genuine erogenous probability of loss of titled and mortgaged parcels." In the case of land, under these circumstances, the impact of land titles on individual investment incentives and productivity is likely to be greater for wealthier farmers whose land size and wealth (access to other assets) leave them favourably situated with respect to capital and insurance markets. For smallholder farmers, the potential benefits of land titles may be overwhelmed by market access problems, leaving little incentive for title acquisition.

While definitive and conclusive studies on the long-term effects of land titling on the agrarian structure still need to be undertaken, assessments and studies undertaken in the last decade seem to indicate that titling, in and of itself, does not increase credit transactions, improve production levels on titled land or increase the number of land transactions (Osborne & Trueblood, 2001). A preliminary report by Pender *et al.* (2002) indicates some positive differences in investment and credit for titled farmers over non-titled farmers.

In Angola, one of the central problems regarding land rights is that, without an increase in investment, the land that people have access to is insufficient to support them and their families. The solution to this is not, however, simply to give them more land. As one land rights expert has noted, the average Angolan family needs a minimum of about two hectares of farming land to sustain itself, but it is difficult to cultivate such an area without animal traction, proper irrigation and fertilisers. This problem becomes even more acute for female-headed households, orphans, and other vulnerable groups. The issue of land rights and tenure security, therefore, needs to be seen in a social and economic, as well as a civil and political, context. There have been reports of land-grabbing in rural Angola and there are general concerns about the lack of transparency with which land is being allocated. The Ministry of Agriculture has stated that, up until 1999, more than two million hectares of land in the whole country had been granted to commercial farmers, but that this largely remains unused. Foley (1997) states that during interviews conducted for his report in the Bie and Huila provinces, it was reported that there had been some instances where land close to towns had been taken over illegally, but that there was no shortage of arable land in more isolated

rural areas where there were no roads and that it was effectively impossible to farm on a commercial basis. At the moment there is little economic incentive for rural land-grabbing. However, given that so few people have documents proving their right to be on their own land, there is a danger that this could increase if strategies to improve the rural economy are successful. The issue of rural land rights therefore needs to be tackled holistically by increasing people's security of tenure at the same time as promoting economic investment in the land. One policy without the other will not help people; if implemented together, they could lead to a virtuous circle where greater tenure security leads to greater investment, which in turn promotes economic and social development (Foley, 1997).

3.6.2. LAND AND THE IMPACT OF MARKET IMPERFECTIONS

The nature of land and the multiple uses to which it can be put and the complex relationships it generates perhaps make it one of the most difficult assets to value. For one thing, land cannot be moved from one point to the other. Therefore, it is not possible to move it from a land-surplus area to a land-deficit area in search of better prices. In and of itself, land has limited market value outside the specific purpose for which it is desired. Van Schalkwyk (1992), cited by Van Schalkwyk and Groenewald (1993), Van Schalkwyk (1995) and others, described the procedures for capitalising the various rewards of a farm as a basis for determining the value of the farmland. As can be expected, the factors that influence farm productivity will have an influence on the value of farmland through their impact on the achievable earnings. Thus, changes in agricultural returns, inflation and real interest rates, capital gains and debt acquisition are all assumed to exert some influence on the level of prices of agricultural land. In much the same way, factors that influence demand for, and supply of, land will, through their impacts on the slopes of the curves, determine the variations in the price of land.

Land ownership provides investment incentives and, through the ability to sell, a basis for using land as a collateral in credit markets. The ability to formally prove ownership at low cost and, based on this, to transact land in sales markets, will thus be important to facilitate the emergence of financial markets, producers' access to formal credit, and the restructuring of bankrupt enterprises. However, the fact that in environments where credit markets do not work well, land sales markets are more likely to lead to undesirable outcomes and that, therefore, market imperfections or other distortions in other markets could give rise to the emergence of efficiency-reducing outcomes such as speculative purchases, distress sales, and deprivation of small producers, has often led governments to intervene in the functioning of land sales markets.

The classical example for such undesirable outcomes is the case of distress sales of land, which arise in situations where, with limited access to markets for credit and insurance, the poor (who do

not have access to credit and insurance markets) may be forced to sell off land in periods of distress to maintain their consumption or survival in periods of shocks (e.g. bad harvests, accidents, etc.). Normally the impact of such distress sales is exacerbated by fluctuations in land prices whereby the poor would have to sell at low prices during disaster (when there is little effective demand) and buy during normal times when prices are high again. This makes it difficult or impossible for them to recover from those asset losses in better years (Bidinger *et al.* 1994 cited by World Bank, 2001). This possibility of transactions in the land sales market being driven by lack of access to markets for credit and insurance, rather than cultivators' productive efficiency, is illustrated by Cain (1981), comparing land transactions in Indian and Bangladeshi villages with very different access to risk-coping mechanisms over the 1960-80 period. In villages that had access to a safety net programme, the poor were able to use the land market to augment their landholdings by buying from richer farmers who sold land to undertake productivity-enhancing investments (digging of wells, purchasing of pumpsets, children's education and marriages). By contrast, where such consumption-smoothing devices were absent, the majority of land sales market activity was accounted for by distress sales (World Bank, 2001).

In agrarian societies, land is not only the main means of generating a livelihood but often also of accumulating wealth and transferring it between generations. The way in which land rights are assigned therefore determines households' ability to produce their subsistence and generate marketable surplus, their social and economic status (and in many cases their collective identity), their incentive to exert non-observable effort and make investments, and often also their ability to access financial markets or to arrange for smoothing of consumption and income. Given this context, markets in which to exchange rights to land can provide a low-cost means to effect transactions that would bring this factor of production to its most productive use. The institutions governing the functioning of land markets will affect the transaction cost associated with such exchanges, the magnitude and distribution of the benefits generated by them, and the incentives for rational economic agents to undertake efficiency-enhancing transfers and land-improving investments. Furthermore, since land is one of the best collateral assets available, clearer property rights and greater ease of their exchange are likely to affect the emergence and efficiency of financial markets. This implies that land markets have an essential role in the broader process of economic development (Bruce, 1994).

Credit market imperfections would not only make it more likely for small producers to sell their land in periods of distress, but would also make it more difficult for those without assets to enter the land sales market as purchasers. The reason is that mortgaged land cannot be used as collateral for working capital, implying that the owner will be unable to repay a loan merely out of increased

income from the agricultural production. In addition, the value of the ability to use unmortgaged land as collateral in formal credit markets will be capitalised into land prices, with the consequence that the equilibrium price of land at given credit costs will exceed the present discounted value of the income stream that can be produced from the land. The importance of the ability to sell land, as well as the extent to which other markets function well, increase with economic development and are generally more relevant in urban than rural areas. To create a system of land rights that can effectively respond to these challenges, Mexico has replaced wholesale prohibitions on land sales and rentals with a system that allows local communities to choose the type of property rights regime they want to be under. Experience shows that fears according to which liberalisation of land markets would lead to a wave of sales are often overblown (World Bank, 2001).

Having clarified the concept of property rights in land, we turn to land sales and rental markets. To do so, we consider the main factors affecting participation in those markets, in particular characteristics of the agricultural production process, labour supervision cost, credit access, the risk characteristics of an individual's asset portfolio, and the transaction costs associated with market participation. These factors will affect land sales and rental markets differently; in particular, even if owner-operated farms are more productive than wage-labour operated ones, the sales market will not necessarily shift land to them. This implies that in environments where financial markets are imperfect, land market operation needs to be considered within a broader perspective focusing on access to other markets and the availability of alternative assets. We note that, in general, land rental markets would be less affected by these problems, because renting out does not preclude the landlord from utilising land as collateral to access credit, which could then be passed on to the tenant in an interlinked contract. Removing obstacles – often government regulations or imperfections in other markets – that prevent smooth functioning of land rental markets, and taking measures that enhance potential tenants' endowments and bargaining power, can considerably increase both the welfare of the poor and overall efficiency of resource allocation (Deininger & Olinto, 2000).

The productivity advantage of small farmers who rely predominantly on family labour rather than on less-motivated hired workers who have to be supervised would imply that, in the absence of imperfections in other markets, a functioning land market should facilitate efficiency and equity, thus enhancing transfers from large to small producers or from ones with lower management skills to better operators. However, land sales transactions could be efficiency decreasing if, due to policy-induced credit market distortions, large owners' advantage in accessing credit would offset the productivity advantage of owner operators or if, due to the inability to insure, significant landholdings are not part of poor people's optimal asset portfolio. Thus, before actions to activate

the land market are undertaken, careful empirical investigation of the functioning of financial markets and insurance mechanisms, and possibly steps to improve their functioning, might be in order.

Deininger and Olinto (2000) found that even if imperfections in markets for credit and insurance reduce the scope for the land sales market to bring about improved land allocation through land transfers from large to small producers, such allocation should – in a frictionless world – be facilitated through the land rental market. One possibility would be an interlinked contract whereby the landlord uses the credit access provided by land ownership to provide the tenant with working capital as part of the rental contract. High transaction costs – part of them related to government regulation – reduce the extent of land rental transactions in a number of countries. A coherent system of property rights that guarantees security of tenure to cultivators, facilitates access to land by the poor, and encourages investment to increase sustainability and productivity, is of overriding policy importance in two types of settings. In countries making the transition from communal to more individualised forms of land ownership there is need for a flexible, stepwise and decentralised approach that acknowledges differences in demand for tenure security based on diversity across regions and agro-climatic conditions. This implies the need for a legal framework that permits evolution of land rights towards individualised tenure as the need emerges with commercialisation and land scarcity. Secondly, in situations where land tenure arrangements have been severely disrupted either by civil strife and war, by collectivist land reform, or by land-grabbing of influential individuals (e.g. Uganda, Tanzania), an approach that adjudicates among overlapping claims and establishes clear ownership rights to land at minimum cost is needed.

Land registration and titling systems are often perceived as an important element in a policy seeking to promote tenure security and to facilitate more effective land markets. This is because official documentation provides better protection to an owner's property rights, and eliminates the asymmetric information that curtails land market transactions. However, experience with titling programmes has shown that in sparsely populated areas the cost of introducing formal titling systems may outweigh the benefits and that the administrative infrastructure needed to effectively implement such rights was not available. Similarly, formal documentation is not crucial where customary tenure systems provide sufficient security to facilitate the level of investments and land transactions that are relevant for the prevailing economic environment, and where credit markets are not yet developed to the point where collateral use is necessary (Deininger & Olinto, 2000).

Past interventions have often underestimated the cost and administrative requirements of providing tenure security through formal title and have given little thought to the scope for alternative means

to provide such security. Community-based approaches whereby a whole area is demarcated and internal administration of land rights (including provision of documentation by local authorities) is left to the community may in many cases provide a cheaper alternative to formal titles (Platteau, 1996). However, the critical precondition for such an approach to work is that consistent implementation of this arrangement is feasible, that decentralised institutions are accountable and effective, and that the certificates awarded by such authorities are legally recognised, entailing a possibility of converting them into more formal titles at a later stage (Bruce, 1994).

3.6.3. EFFICIENCY AND CUSTOMARY TENURE SYSTEMS

African land tenure is characterised by a coexistence of customary and statutory rights that need harmonisation. Access to land by rural people is not only essential for food production, but it also maintains the fabric of social relations. The effects of this have been persistent insecurity, when control over land was used as a tool of social engineering. This brutal process – especially in Mozambique and Lesotho – coupled with the continuing centrality of the State, is an enduring issue. It has contributed to poverty and has created a lack of understanding of gender relations. To resolve the land issue will need more than a technical solution. Bureaucratic thinking on land is not related to the social-political context, and debates and policy initiatives are fragmented (DFID, 1999). Customary tenure systems or variations thereof are dominant in most countries of Africa. In indigenous areas of many African countries, the main characteristic of communal tenure is that the land is owned by the community rather than the individual and that market exchanges (through sale or rentals) are normally limited to the community. The unsettled nature of the land question is common across Southern Africa. At present every country has a major land question. Land commissions, law reform and land reform are being undertaken throughout the region. An extremely unsettled political situation is being created by contests for land within states, between states, and within communities. There are tenure insecurity, environmental insecurity, and institutional uncertainties.

The challenge ahead is to create a vision in which land is considered as an integrated part of development, and a basic human right. Land access is important for security, and governments must provide support to people in this era of globalisation. Should we not be talking about a regional land question? A dialogue within the Southern African Development Community (SADC) is needed to ensure this, as in most cases, the change will depend on financial support by donors. Discussions during the 1999 workshop of the UK Government's Department for International Development (DFID) reaffirmed the tenacity of African customary tenure systems, and the need for national policy and legal frameworks to incorporate them. It was recognised by all, including representatives of the World Bank and other donors, that individual land titling must no longer be

viewed as a necessary condition for agricultural development and enhanced investment in the land. There are now some good examples of home-grown approaches that allow selective titling and the registration of customary land rights – including communal resource rights – based on genuine demand from land users and rural communities.

There is a trend among nation states towards acknowledging the advantages of customary systems of tenure, and the UK, along with other donors, has recognised that individualised forms of tenure are not necessarily the best way to increase agricultural productivity in sub-Saharan Africa. African land tenure is characterised by a coexistence of customary and statutory rights that need harmonization. Access to land by rural people is not only essential for food production, but it also maintains the fabric of social relations (DFID, 1999). The case of Ethiopia illustrates that equal access to land cannot necessarily be provided for all, and radical egalitarianism involves risks of land fragmentation, loss of rural employment and a reversion to subsistence production. Moreover, State ownership of land and periodic State-led redistribution programmes can create insecurity, undermining incentives to invest. Creation of non-agricultural employment is central to poverty reduction, and rights to land should be located amongst rights to a wider set of entitlements to urban and rural livelihoods.

In South Africa, Van Schalkwyk (1995) shows that the deregulation of the agricultural sector was actually part of an economy-wide financial sector liberalisation that began in the early 1980s to mitigate the macro-economic effects of the past agricultural support policies. It must be borne in mind that this era also witnessed the intensification of the global condemnation of the repressive regime in South Africa that was being expressed in stifling economic sanctions and almost complete curtailment of contacts with the regime. Without a doubt, therefore, the forces that led the South African government to consider agricultural restructuring were multiple, coming from both their own policy actions and the impact of the global fight against apartheid.

Another systematic study of the changing policy environment at this time by Claasen (2000), cited by Ajuruchukwu (2006), to analyse the situation of the group of 114 black farmers who participated in the land settlement scheme in the former black “homeland” of Qwaqwa in 1989. These 114 farmers were mostly selected from Agriqwa, a non-profit government corporation, which was founded for the sole aim of establishing these “emerging” or “beginning” farmers. The agency provided financial and technical assistance to the newly settled farmers each of whom had been allocated between 350 and 450 hectares of farmland. Infrastructure for improved modern farming was also installed and farmers received frequent advisory visits from officials. Value-adding activities seemed to be popular and profitable among emerging farmers. This experiment seemed

to debunk the notion of the black farmer as not being responsive to economic incentives and was actually so steeped in tradition that he would be unable to be weaned from a subsistence mode of production. It was clear that these emerging farmers possessed the will and ingenuity to make a success of agriculture in the area.

The role of land reform in economic development has generally been examined against this backdrop (De Janvry, 1984). There are more empirical studies, including those undertaken by the World Bank, which provide cross-country evidence on this matter, the most notable being World Bank (2001). Using cross-country regressions, these studies have demonstrated that when the distribution of land ownership is unequal, economic growth proceeds at a much slower pace, if at all. In all those countries of Southern Africa which have experienced enforced land alienation at the hands of Europeans, the repossession of alienated land by African citizens remains a central national and agrarian objective. Land acquisition for redistribution and restitution has been given priority. Tenure reform in the communal areas has had to take second place to the redistribution of white farms. So dominant is the imperative to repossess land, that insufficient attention has been devoted to post-settlement planning and support. Thus the livelihoods and the land rights of incoming settlers have too often remained insecure (Adams, Sibanda & Turner, 1999).

In Southern Africa, tenure reform must address a range of problems arising from settler colonisation and dispossession. Many of the areas referred to as communal were deliberately created to further colonial policies. They served as reservoirs for cheap migratory labour. Proposals for the reform of customary systems must accommodate livelihoods that continue to be spatially fragmented. In South Africa and Namibia, a factor complicating attempts to dismantle the apartheid map is the complex and unstructured nature of the legislation governing the communal areas (CAs), much of which has yet to be repealed. The differing systems of property rights pertaining to private and communal land are a related problem (Sjaastad & Bromley, 1997).

Sjaastad and Bromley (1997) stressed that under conditions of low population density when payoffs from land-related investments are limited; the investment disincentives associated with communal tenure are likely to be low as people will not tend to invest under either system of tenure. With increasing scarcity of land, many communal tenure systems recognise property rights to land improvements such as trees or compensate for improvements made upon redistribution of land, thus attenuating tenure-related investment-disincentives (Sjaastad & Bromley, 1997). It is also pointed out that, while communal systems prohibit land transactions with outsiders, rental and often even sale within the community (and possibly beyond) is normally allowed, providing scope for efficiency-enhancing transfers. In this sense supposedly backward communal tenure arrangements

provide greater flexibility and scope for efficiency-enhancing transfers than many of the closed "joint stock companies" founded in Eastern European countries where members can neither physically identify their share nor decide on its temporary or permanent alienation to other producers. Moreover, they are often quite dynamic and evolve over time. World Bank research has greatly contributed to this revised attitude (e.g. Migot-Adholla, Hazell, Blarel & Place, 1993; Bruce & Migot-Adholla, 1994).

Land access and security of property rights systems are normally limited to the private sector. This limitation may reduce investment incentives. To facilitate economic growth and prevent the static and dynamic efficiency land losses, studies and frameworks have to be carried out to recognise the multiple land functions. While systems prohibit land transactions, communities will permanently continue practising traditional land use, and investment opportunities in the communal areas will be low. In other ways the system does provide flexibility and scope for efficiency-enhancing transfers. It is now recognised that universal provision of secure land rights promotes investment. Zimbabwe and other countries in the region operate on a dual legal system in which the received Roman Dutch law operates side by side with customary law. The two legal regimes also determine the tenure regimes that exist in Zimbabwe and the SADC countries. Under customary tenure, active occupation and usage of the land is the main evidence of ownership or an existing interest in the land. Under this tenure regime, access to land is contingent upon tribal or community membership controlled by the chief, and this allows for varying degrees of access to the fundamental resource by women. Under the customary tenure, women have secondary access through marriage or such other relations with the male members of the community and this access can be denied once the relations are no longer smooth – e.g. in the case of divorce or the death of the spouse.

Foley (1997) states that Angola gained independence from Portugal in November 1975, prompting a massive exodus of Portuguese settlers. Thousands of plantations were abandoned, and were promptly "nationalised" by the new government. According to Foley (1997), "All natural resources existing in the soil and subsoil, in internal and territorial waters, on the continental shelf and in the exclusive economic area, shall be the property of the state, which shall determine under what terms they are used, developed and exploited … Land, which is by origin the property of the state, may be transferred to individuals or corporate bodies, with a view to rational and full use thereof, in accordance with the law … The state shall respect and protect people's property, whether individuals or corporate bodies, and the property and ownership of land by peasants, without prejudice to the possibility of expropriation in the public interest, in accordance with the law … Any nationalization or confiscation carried out under the appropriate law shall be considered valid and

irreversible for all legal purposes, without prejudice to the provisions of specific legislation on reprivatization."

The Land Law 1992 (Law no. 21-C/92) based itself on the former colonial cadastral record, which has not been updated since independence, and tried to restore some order to rural land relations. There was little public debate, however, and it was approved without much scrutiny. The country was still at war and the Popular Movement for the Liberation of Angola – Party of Labour (MPLA) retained a monopoly of power in the areas that it controlled. Angola's legislature was still unelected and civil society practically non-existent at the time. The law's preamble stated that local community land rights would be protected, and recognised some different forms of tenure. However, it remained heavily based on the old ideals of state central planning principles, requiring, for example, that land conceded by the government must be "put to effective use", and retaining the right to subject production to the "requirements of national development". The attempt to make security of land tenure dependent on land use was based on a general hostility towards both the concept of private ownership and the social and economic position of rural smallholder producers – a hostility shared by many of Africa's post-colonial governments. Similar provisions, which attempt to boost agricultural production through coercion, can be found in the early land laws of a number of other African countries. The law also failed to include customary land rights in rural areas, or the rights of those living in informal settlements in urban and peri-urban zones, and was unclear about the legal status of communal land. Urban land issues were also almost completely ignored, despite huge population drift to the cities. One observer concluded that the law "was not rooted in any formal, written policies that might have explained the priorities to be promoted through land use, tenure or transactions … it was not so much a land law as a set of regulations for access and titles" (Foley, 1997).

3.6.4. TENURE REFORM IN THE COMMUNAL AREAS

Opinions differ regarding the relative merits of indigenous customary tenure systems and those based on Western concepts involving the registration of individual ownership. In the 1980s, the policy debate on the individualisation of tenure focused on economic development. In the 1990s, the focus turned to the sustainable use of land resources. Both these arguments tend to underestimate the importance of customary land tenure systems, which are an integral part of the social, political and economic framework. Above all, they overlook the unintended effects of undermining land tenure systems that protect poor and vulnerable members. They also tend to disregard the empirical evidence that traditional tenure systems can be flexible and responsive to changing economic circumstances. Individualisation has occurred autonomously with population pressure and commercialisation (Migot-Adholla et al., 1993).

There are undoubtedly "tenure hotspots" where, if the rights of the more vulnerable members of society are to be protected, change must not be allowed to take place in a legal and administrative vacuum. Rihoy (1998) describes how, in Zimbabwe, competing and ineffective attempts by both government and NGOs, frustrated by weak local administration and disingenuous central government interventions, have failed to resolve land tenure problems in the absence of constitutional and legal principles governing land in the Community Associations (Cas). Studies in South Africa demonstrate the increasing breakdown of customary management arrangements and the often dysfunctional mixture of old and new institutions and practices.

People are often uncertain about the nature of their rights and confused about the extent to which these are affected by institutions and laws. Tribal commonage is passing to open access, and rights to homestead plots and fields are becoming increasingly insecure. Tenure insecurity is most acute among those using land to generate income, especially women. Profit-making from agriculture and small business activity in the CAs are not clear rights. As soon as informal land markets become accepted, people with allocation authority – usually men with connections to those in power – emerge as squatter patrons or warlords (Schuh & Norton, 1991).

In countries where policy and legal frameworks still discriminate, it would be desirable to work towards recognition of such tenure arrangements; in the context of a national land policy framework, much time has been spent discussing legal changes in the absence of mechanisms of implementation. The Mozambican administrative reform laws replaced the Portuguese colonial administrative structures and constructed a new system of governance structured at the national, provincial and local levels. After independence Mozambique adopted a system of centralised administration, where each and every thing was planned and decided at the centre of political power. The approach was intended to be an answer that would meet the needs of the state, defend/safeguard and consolidate the national independence, achieve planned socio-economic measures, use the scarce resources rationally, and consolidate a unitary state. After more than five years of public debate and technical assistance, the Mozambique Assembly of Republic adopted a new land law on 31 July 1997. There have been some significant differences as compared to the 1975 land law in that:

- Local communities must be consulted prior to approving a concession request within their territory, and local communities should participate in the resolution of land conflicts involving private interests;
- It defines the mechanisms for representation and for the exercise of the local communities with regard to the right of land use and benefit, and it recognises the customary (non-

written) forms of evidence in the resolution of land disputes between second and third parties; and

- It creates possibilities for co-titling of land for women and men.

The transformation from subsistence- to market-oriented production has created dramatic changes in the socio-economic relations of the resource users in community areas of Mozambique. Tique (2000) noted that those changes in the use of natural resources, including land and forest resources, reflect the overall ongoing challenges in other sectors of the economy, towards a reallocation of productive resources from the traditional channels to the open market. Resource degradation can in turn contribute to poverty and food insecurity.

3.6.5. TENURE SECURITY AND INVESTMENT INCENTIVES IN AGRICULTURE

Land is not only a basic factor of production, it also has a number of specific features such as indivisibility, lack of mobility, and lumpiness, which distinguish it from other factors. Against this backdrop, it has long been recognised that clarifying property rights to land can enhance economic growth through a number of channels: (i) Both measurement of land parcels and the enforcement of property rights to land are clear public goods. Maps as well as a cadastre and associated land records can, once established, be used by government institutions and the private sector for a wide range of purposes. Their public availability will prevent wasteful spending and duplication by these actors. Similarly, public enforcement of property rights to land will eliminate the need for individual land owners to expend resource to defend their claims (fencing, guards, clear-cutting), thus saving scarce economic resources; (ii) Publicly enforced property rights would not only be less costly to enforce, but, to the extent that they provide greater security than private enforcement, also increase incentives for land-related investment and thus overall economic output.; (iii) Low-cost mechanisms for enforcing and exchanging property rights to land are a precondition for well-functioning markets to exchanges land rights, either on a temporary (rental) or a permanent (sales) basis. Both types of exchange would enhance overall output and thus welfare.

Understanding the linkages between access to land (size and ownership structures) and access to other sources of income and capital is an essential element in the policy dialogue about food security and poverty reduction. The current framework of economic growth and development includes a general trend towards the privatisation of land rights and a collapse of collective structures in agriculture, as well as a move towards reliance on land markets as the means of peasant access to participation in the development process. A typology of rural households is defined, including proletarian, semi-proletarian, peasant and capitalist family farms and hierarchical capitalist farms. These farms differ in particular in their capacity to increase access to landholdings

and financial capital and decrease reliance on off-farm employment for survival. The latter three forms of farming differ significantly also with regard to the types of labour employed on their farms.

The problem with policy models, according to Carter (1994), is that they "... generally abstract from these features [market failures, transactions costs, etc.] and postulate instead the existence of perfect markets with exceptions such as surplus labour, price regulation ...". This statement is made in the context of showing how consideration of micro-economic features, such as whether or not a household is a net buyer or net seller of a farm commodity, matters for the distribution of the benefits and costs of the North American Free Trade Agreement (NAFTA). Increasing attention has since the early 1980s been given to land titling as a means of increasing tenure security. The titling of land (and the registration of titles in a public registry) is considered by many to be the best way to protect ownership rights to land – in other words, the best form of tenure security. Land titling and registration is the highest level of formalisation of ownership rights in private property tenure systems. Where private property as a tenure form is not dominant, however, land titling has little consequence or utility because landholders acquire tenure security through other mechanisms (e.g. membership of a group or family). This explains why in some areas titling programmes either have little impact or unintended effects, or quickly become outdated (for example, title documents are not kept up to date when property is transferred). It also explains the low participation rates in some supply-driven titling efforts, e.g. in Honduras.

Greater tenure security, theoretically, has two impacts: increased agricultural productivity and more dynamic land markets. Titling is expected to facilitate land transfers, stimulate the land market and increase the supply of land on the market; thus, it can be a mechanism for redistributing land and making land more accessible to landless and land-poor farmers. Feder *et al.* (1988) argued that land titles reduce uncertainty over the entitlement of owners to maintain or transfer land rights and, in turn, affect the price and scope of land transactions. The funding of an effective system of land rights management is a precondition for securing the land rights of poorer citizens, both in the CAs and on private land. While communities can be expected to allocate their own resources for this purpose, government should ensure that adequate measures are in place to protect people from exploitation by elites. At the outset, when systems are being established, funds also have to be found for public information, the training of officials, community facilitation, dispute resolution, etc. (Adams *et al.*, 1999).

3.6.6. POLICY DISTORTIONS IN THE AGRICULTURAL SECTOR

The impact of policy distortions in the agricultural sector can be appreciated from the fact that, instead of specialisation in the labour-intensive production of high-value crops and agro-exportable

products that one would expect given the country's natural endowment, South Africa's agricultural sector focus on crops (e.g. wheat) is not in line with its comparative advantage and has very low potential for employment generation. In the relatively small homeland areas, millions of poor relied on scarce natural resources to complement remittances and pensions from "outside" as part of a survival strategy. On white commercial farms, by contrast, abundant natural resources were used by a small number of the "privileged" to produce increasing surpluses. There is agreement that, even though these policies allowed the country to achieve self-sufficiency in food and create a highly technified agricultural sector, the costs – in social as well as economic terms – of doing so have been very high (Deininger, 1998).

To reverse this trend and establish a more diverse rural structure, a liberalisation programme was initiated to (i) further reform the input and output marketing system; (ii) reduce concentration in the agro-processing sector; (iii) restructure the system of rural financial intermediation; (iv) revise land subdivision legislation and other legal acts that had been established with the express goal of discriminating against the black population; and (v) upgrade agricultural support services and invest in an improved physical and social infrastructure in the former homelands. These measures set in motion a serious decline in the profitability of "traditional" crops, an increase in productivity due to a shift to higher value production, and a dramatic increase in the number of indebted farms (Bruce, 1994). In South Africa, following a number of earlier legal interventions with similar goals, the Native Lands Act of 1912 prohibited the establishment of new farming operations, sharecropping or cash rentals by blacks outside of the reserves, which made up only 7.7% of the country's area. Inside the reserves, an artificial form of "traditional" tenure with maximum holding sizes and restrictions on land transactions was imposed, giving considerable power to collaborative local chiefs. Subsequent policies of "black spot removal" transferred the majority of black farmers who had legitimately owned land outside the reserves into 5 homelands or *bantustans* where tenure restrictions, high population density, and lack of capital and market access made commercial agriculture virtually impossible (Bruce, 1994).

Labour laws that discriminated against blacks in favour of White workers, and generous capital subsidies to White farmers, contributed to successive evictions of large parts of the Black population from White farms, where they had been employed as labour tenants and farm workers (Binswanger & Deininger, 1997). While the Native Lands Act was repealed in 1993, the momentous task of a comprehensive reversal of the other policies and their consequences was left to the government that entered power following the 1994 elections. In attempting to do so, this government had to contend not only with the extremely unequal land distribution (the average amount held per person was 1.3 hectares by Blacks compared to 1 570 hectares by Whites). This

was exacerbated by the lack of any local government structure, widespread absence of administrative capacity, and the legacy of misdirected agricultural policies, which included subsidies to capital and fertiliser, public sector marketing monopolies, and a legislative environment that undermined the operation of factor markets.

The sustainable livelihoods framework put forward by Cramer and Pontara (1997) helps analyse the strengths of particular systems of land tenure, and of their evolution. The framework is useful when considering options for change and their likely impact on people's asset status. Their access to capital assets, including finance, land, natural resources and social capital, determines how and how far livelihoods can be enhanced. Where financial resources are lacking, social capital can provide the basis for a range of livelihood opportunities, including customary access to land and natural resources and opportunities for the poor to sell their labour. For those relying largely on local rural resources for their livelihood, a secure place to live, free from threat of eviction, with access to productive land and natural resources are essential for rural livelihoods in the region. These elements are broadly located in the customary land tenure categories: "the holding" and "the commons".

The case for government intervention undoubtedly varies greatly throughout Southern Africa. The extent to which rural people are able informally to adjust tenure to suit their livelihood purposes is likely to depend on the extent to which land rights have been disrupted by past interventions and by enforced overcrowding under colonial and apartheid regimes. In parts of South Africa, the "informal" situation on the ground is getting out of hand and effective reform is urgently needed. On the other hand, in rural Lesotho where there are more modest expectations about official systems and the rule of law, all kinds of arrangements are made and informal tenure systems are not a significant constraint on rural livelihoods, though they are on urban and peri-urban ones. There is a need for more information on how people in the Southern African region are "muddling through" and how functional or dysfunctional each situation is (Cramer & Pontara, 1997).

According to Tique (2000) those changes in the use of natural resources, including land and forest resources, reflect the overall ongoing challenges in other sectors of the economy, towards a reallocation of productive resources from the traditional channels to the open market. It is hypothesised that when community institutions are more meaningfully integrated into decentralised rural development initiatives, the net benefits outweigh the net costs, provided that their role is formalised to the appropriate extent, clarified, and endorsed by all stakeholders involved. As a new institution these consultations are beset with myriad problems. In some cases they do not take place at all or they may perform in a perfunctory manner. Local elites may manipulate the process.

Local administrative structures may not provide supportive guidance. By tradition, the local authorities are considered the "lords of the land", according to a legitimacy that is related to the symbolic power flowing from the diverse traditional norms of each region. Their control of rice plantations, for example, provides customary institutions with new forms of customary leadership.

This is so much so that the traditional loan principle is increasingly regarded as a risk, due to the fact that after a few years the borrowers claim rights of inheritance, invoking national legislation, by which all land belongs to the state, and calling into question the rights of the lender. Experience has pointed to an increased role of certain traditional community institutions, particularly those involved in land management and conflict resolution, legitimised by their symbolic link to, and power over, the territory.

3.7. SUMMARY OF POLICY ISSUES

The policy framework for natural resource management changed dramatically in the last two decades. "Governance" moved to the centre of development debates in the 1980s. By the mid-1990s environmental governance and sustainable development had become key concepts influencing environmental management. Devolution and participation emerged as important issues in development and environmental thinking. This coincided with increasing concern by governments and non-governmental actors about the success of natural resource management, and resulted in a global trend to participatory approaches.

The concept of governance, like development, is both a political and a technical term. This conflates the normative and prescriptive with the descriptive and analytical, and consequently refers to both an end state and a process. Governance may be conceptualised in many ways – including structural constructions, dynamic approaches and objective-driven strategies. Alternatively, and as in the approach taken here, governance may be thought of as the relationship between civil society and the state, and thus fundamentally different from the concept of government. It covers the whole range of institutions and relationships involved in the process of governing.

Defining the relationship between the State and civil society and their respective roles has become a core issue in development theory; participation, accountability, local institutions, local practices, indigenous knowledge, policy, gender equity, tenure and fair and equitable decision-making processes became key focuses. This shift from centralist development strategies to locally driven development has been complemented by a corresponding shift in the rights and obligations of various parties. Participation may take many forms. It occurs along a continuum from active consultation to complete transfer of authority and responsibility to stakeholders. Devolution,

decentralisation or deconcentration may promote participation because they focus on creating lower levels of decision-making. Decentralisation can be defined[19] as "any act in which a central government formally concedes power to actors and institutions at lower levels in a political and territorial hierarchy. It involves the creation of a realm of autonomy in which a variety of lower-level actors can exercise some autonomy. It is fundamentally different from deconcentration. Deconcentration occurs when powers are devolved to appointees of central government". The increasing downward linkages of governments towards sub-national government may be a strategy to reassert control and is not necessarily driven by a concern for rights.

Natural resources play a strategic role in rural economies both as a potential source of long-term development and as the essential contributor to sustained food security. Many rural communities are dependent on natural resources in one way or another. Understanding the linkages between access to natural resources (size and ownership structures) and access to other sources of income and capital is an essential element in the policy dialogue about food security and poverty reduction. Farmers feel that natural resources (especially land) do not create added value and incentives to promote agriculture development (e.g. access to credit or as co-investment assets). The economic implication is that rural income continues to fall and poverty is increasing. In general, the correlation between *availability, accessibility and utility* of natural resources is controversial, and in many cases it is affected by political regimes, excessive centralisation, and bureaucracies.

Natural resources tenure may be defined as the terms and conditions on which natural resources are held, used and transacted. Natural resources tenure reform refers to a planned change in the terms and conditions (e.g. adjustment of the terms of contracts between natural-resource owners and tenants, or the conversion of more informal tenancy into formal property rights). From local community perspective, effective decentralisation concerning powers requires these same elements. However, when examined in detail, community-based and decentralised forms of management often lack representation, downward accountability and/or sufficient powers.

Many African processes of devolution have not been taken to their logical conclusion, so that local grassroots interests are able to fully exert themselves. The key problem seems to be that these initiatives were not about devolution, but were instead a means to achieve other objectives including conservation, legitimacy and more effective government. However, given the rhetoric about devolution and empowerment that has accompanied these initiatives, communities have been sent mixed messages about their rights vis-à-vis traditional interests and state interests, which

[19] http://web.africa.ufl.edu/asq/v5/v5i3a7.htm#en12#en12

has created a level of expectation and discontentment. It is clear from the experience of all these initiatives that their future (and their success) lies in addressing these expectations and thus redefining governance relations.

The right to public participation, as developed in these agreements, is significantly different from the established legal concept of public participation, which was based primarily on a right to object to decisions, but offered no role in decision-making. This approach was reactive and was based on indirect representation. The emerging right of participation is proactive in that it creates opportunities for individuals and groups to participate in the formulation of management strategies and the implementation thereof. Participation, as a legal concept, has evolved in the context of an environmental management framework that recognises the importance of effective representation, the inclusion of the full diversity of stakeholders and the recognition of their value and knowledge systems, the linkage between authority and responsibility, capacity-building, accountability and transparent administrative procedures including access to information and due process. Recognised stakeholders include women, indigenous people, workers and trade unions, farmers, youth and children, as well as business and the scientific community. There is also recognition of the rights of local communities and indigenous people.

The recognition of customary law seems to be important, because at the level of local communities it is evident that traditional leaders and practices do assert themselves and that many of these reflect sound resource utilisation controls and practices. Yet these are not incorporated into land-use considerations or management plans, except at ad hoc informal levels. The creation of village assemblies and the new roles of the chiefs seem to offer some opportunity for local approaches to resource management to be formally included in planning. However, this potential is constrained because the value basis, i.e. customary law, on which this approach is developed, is not legally recognised. Village assembly initiatives will need to fall firmly within the boundaries of national law, which defines rights of access, management and use. For these institutions to play a meaningful and empowered role in natural resource management, the ambit for decision-making needs to be broadened. One approach suggests that national law should facilitate rather than prescribe. This would allow institutions to define rules for management that are locally appropriate.

Mechanisms and systems of participation need to be creatively considered if the initiatives discussed here are to be improved and to acknowledge local rights. The emerging international regime identifies some key issues. The starting point of many multilateral environmental agreements is that the full diversity of interests related to resource management must be acknowledged – systems for acknowledging these and for mediating and negotiating between

different perspectives need to be created. This suggests that the recognition of customary law and values might offer opportunities for more effective participation. In conclusion, the process of developing appropriate structures for local conservation must be seen as just that – a process. The challenge facing conservation initiatives is to move beyond a focus on benefits to finding a place within the broader "culture" of humanity. Humanity is at the end of the day not just about having food in one's stomach, but rather recognising the totality of what makes us human – it is about development, governance, health, integrity and human dignity. Conservation efforts need to start bringing all these aspects together.

Finally, despite a lack of evidence of productivity effects, there is evidence of a significant impact of decentralised and participatory policies in development. This could reflect the capitalised value of the costs of acquiring a land title, as well as perceived implications of title for tenure security and access to credit. Land reform measures for communal land should underpin the adaptability and responsiveness of existing customary systems and should not constrain local coping strategies; the measures should be flexible and gradualist with regard to the role of traditional authorities. The focus for land administration reform should be defined, paying special attention to the legal status and economic activities of women and the poor, who are often disproportionately dependent on the commons. Land reform is a time-consuming process requiring thorough public consultation and careful preparation. Long-term budgetary commitment is needed from governments and (political sensitivities permitting) from donors.

4. ECONOMIC THEORY OF EFFICIENCY

> "There is considerable agreement with the notion that effective economic development strategy depends critically on promoting productivity and output growth in the agricultural sector, particularly among small-scale producers".
> Bravo-Ureta and Pinheiro (1993)

4.1. INTRODUCTION

Following the work of Debreu (1951), Farrell (1957) and Färe, Grosskopf and Lovell (1985), technical efficiency is defined as the proportional rescaling of inputs or outputs that would bring the firm to the production frontier. The methodology presented is rooted in the seminal article by Farrell (1957). In this analysis it is hypothesised that the special characteristics of the farm economy influence a country's social and political environment, and therefore the political processes that determine key policies. If this hypothesis is correct, it provides a strong justification for focusing specifically on agricultural and agrarian policies.

Efficiency is a measure of a unit's ability to produce outputs from a given set of inputs. The efficiency of a Decision-Making Unit (DMU) is always relative to the other units in the set being analysed, so the efficiency score is always a relative measure. A unit's efficiency is related to its radial distance from the efficient or efficiency frontier. It is the ratio of the distance from the origin to the inefficient unit, over the distance from the origin to the composite unit on the efficient frontier. The efficiency frontier represents "best performance" and is made up of the units in the data set that are most efficient in transforming their inputs into outputs. The units that determine the frontier are classified as being 100% efficient. Any unit not on the frontier has an efficiency rating of less than 100%. Empirical production functions, empirical production envelopes and envelopment surfaces are all terms analogous to efficient frontier (Banxia, 1993).

The analysis of economic efficiency complements Total Factor Productivity (TFP) studies by providing performance measures for evaluating production activities (Lovell, 1993) and by helping to identify the determinants of inefficiency, all of which are useful in guiding extension activities, research and technical support (Tupy, Freitas & Esteves, 2003). In the context of national agricultural production, studies of economic efficiency can also shed light on the speed and geographic spread of agricultural modernisation and productivity growth. For example, efficiency analysis can tell us if UFs with the largest TFP indices are also the most efficient, or if temporary disequilibria caused by the adoption of new technologies (Schultz, 1964) has influenced the

efficiency levels, or if areas of low-productivity agriculture produce efficiently given factor endowments and relative prices (Schultz, 1964).

The deterministic approach was initiated by Aigner and Chu (1968), who estimated a Cobb-Douglas production frontier through linear and quadratic programming techniques. Radial measures focus on the maximum feasible equiproportionate reduction in all variable inputs, or the maximum feasible equiproportionate expansion of all outputs. The measure is defined as one minus the maximum equiproportionate reduction in all inputs that still allows continued production of given outputs. In some circumstances it is desirable to convert the Debreu measure to equiproportionate output expansion with given inputs; the conversion is straightforward (Lovell, 1993). Thus the analysis of technical efficiency can have an output-augmenting orientation or an input-conserving orientation. The allocative, or price, component refers to the ability to combine inputs and outputs in optimal proportions in light of prevailing prices (Lovell, 1993).

A total of 30 studies from 14 different countries were examined. The country that received most attention was India, and rice was the most studied agricultural product. The average Technical Efficiency (TE) index from all the studies reviewed is 72%. The few studies reporting allocative and economic efficiency show an average of 68% and 43%, respectively. These results suggest that given existing technology, there was considerable room to increase agricultural output without additional inputs. Several of the studies reviewed have sought to explain farm-level variation in TE. The variables most frequently used for this purpose have been farmer education and experience, contacts with extension, access to credit, and farm size. With the exception of farm size, the results reveal that these variables tend to have a positive and statistically significant impact on TE. Thus, considerable effort has been devoted to measuring efficiency in developing country agriculture using a wide range of frontier models. Despite all this work, the extent to which efficiency measures are sensitive to the choice of methodology remains uncertain (Bravo-Ureta & Pinheiro, 1993).

There is evidence that farm consolidation could improve family incomes in rural areas. Thus, both cash family income and imputed family income (including the value of farm products from own production consumed in the household) increase with the amount of land cultivated by the household. Households with land enjoy higher incomes than rural households without land. Larger individual farms produce higher incomes and achieve higher levels of family welfare than smaller farms. This finding has naturally led to the conclusion that consolidation of individual farms (within the range of up to about 100 hectares) is a desirable process and has produced certain policy recommendations relating to land markets as a medium for farm size adjustment.

Donner (cited by Bruce & Migot-Adholla, 1994:2) questioned the appropriateness of customary tenure systems for an agriculture that is capitalising and adopting new technology to increase productivity. Harrison (1987) argued that because customary systems are deeply embedded in cultural and political systems and generally offer members of particular social group overlapping multiple rights of land use, they tend to exclude non-members of the group from transactions in land. Bravo-Ureta and Pinheiro (1993) emphasised that there is considerable agreement with the notion that effective economic development strategy depends critically on promoting productivity and output growth in the agricultural sector, particularly among small-scale producers. Empirical evidence suggests that small farmers are desirable not only because they provide a source of reducing unemployment, but also because they provide a more equitable distribution of income, as well as an effective demand structure for other sectors of the economy.

The post-World War II land reform distributed land of most large estates to the rural population, creating agriculture of smallholders. The fragmented farm structure produced by this reform did not undergo significant adjustment during later regimes due to a lack of land markets. Although transactions in agricultural land were never prohibited, various administrative restrictions and high legal costs prevented the development of functioning land markets in the decades after World War II. This situation, combined with the acknowledged inefficiency of agriculture, beg the questions of farm fragmentation and consolidation.

In the 1960s the “poor but efficient hypothesis”, advanced by Schultz (1964), generated a great deal of empirical work designed to test the allocative or price efficiency of peasant farmers. In the early 1970s, Schultz published two important papers developing a dual profit function model to measure both allocative and technical efficiency. Meanwhile, a separate body of efficiency literature evolved based on a seminal paper written by Farrell in 1957. Farrell’s original work has given rise to a host of related models known collectively as frontier methodology. The distance function D(x, y, T, a) is of special interest in the measurement of production efficiency and productivity. The analysis of economic efficiency has typically cantered on the TE, AE and Scale Efficiency (SE) of production decisions (e.g. Färe *et al.*, 1994).

Evidence of a total of 30 studies from 14 different countries was examined by Bravo-Ureta and Pinheiro (1993), and the average TE index from all the studies reviewed was 72%. The few studies reporting allocative and economic efficiency show an average of 68% and 43%, respectively. The results suggest that there is considerable room to increase agricultural output without additional inputs and given existing technology.

4.2. CONCEPTUAL AND ANALYTICAL FRAMEWORK

4.2.1. CONCEPTUAL FRAMEWORK

About fifty years ago, Michael Farrell (1957) introduced a methodology to measure Economic Efficiency (EE), Technical Efficiency (TE) and Allocative Efficiency (AE). In this methodology, EE is equal to the product of TE and AE, which defines the ability to produce a predetermined quantity of output at minimum cost for a given level of technology. According to Farrell (1957), TE is associated with the ability to produce on the frontier isoquant, while AE refers to the ability to produce at a given level of output using the cost-minimising inputs ratio (Bravo-Ureta & Pinheiro, 1997).

Debreu (1951) introduced another measure of technical efficiency. His measure is a radial measure of technical efficiency. Radial measures focus on the maximum feasible equiproportionate reduction in all variable inputs, or the maximum feasible equiproportionate expansion of all outputs. The measure is defined as one minus the maximum equiproportionate reduction in all inputs that still allows continued production of given outputs. A score of unity indicates technical efficiency because no equiproportionate input reduction is feasible, and a score less than unity indicates the severity of technical inefficiency. In some circumstances it is desirable to convert the Debreu measure to equiproportionate output expansion with given inputs; the conversion is straightforward (Lovell, 1993).

Data Envelopment Analysis (DEA) can be either input oriented or output oriented. In the input-oriented case, the DEA method defines the frontier by seeking the maximum possible proportional reduction in input usage, with output levels held constant. In the output-oriented case, the DEA method seeks the maximum proportional increase in output production, with input levels held fixed. The two measures provide the same technical efficiency scores when a Constant Return to Scale (CRS) technology applies, but are unequal when Variable Returns to Scale (VRS) is assumed. Hence the choice of orientation is not a major issue in the present case. It appears to be fair to assume that, in agriculture, one usually attempts to maximise output from a given set of inputs, rather than the converse.

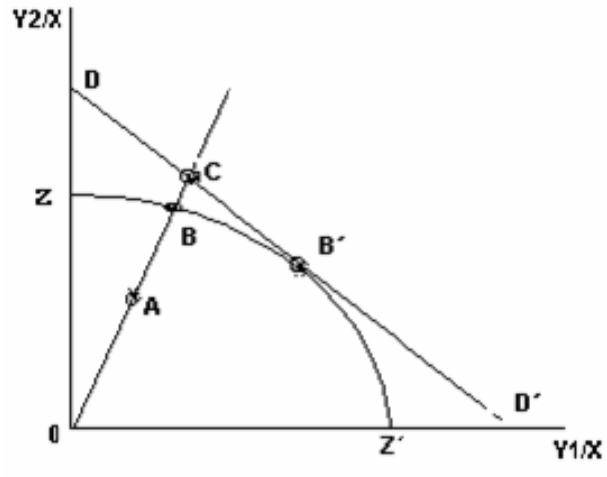


Figure 4.1: DEA output-oriented model

A is technically inefficient since it is located on the interior of the production isoquant for output level y_o; that is, the same output could have been achieved with fewer inputs (X_1 and X_2), given the best practice frontier. Point B is technically

efficient since it on the isoquant for output y_o; however, this point is not allocatively efficient since it is not a cost-minimising point, like point **B´.** Since point B´ is both technically efficient and allocatively efficient, it is economically efficient.

Koopmans (1951) provided a formal definition of technical efficiency: *a producer is technically efficient if an increase in any output requires a reduction in at least one other output or an increase in at least one input, and if a reduction in any input requires an increase in at least one other input or a reduction in at least one output*. Thus a technically efficient producer could produce the same outputs with less of at least one input, or could use the same inputs to produce more of at least one output (Lovell, 1993). Koopman's definition of technical efficiency is a relative notion – relative to best-observed practice in the reference set to comparison group. According to Farrell (1957), TE is associated with the ability to produce on the frontier isoquant, while AE refers to the ability to produce at a given level of output using the cost-minimising inputs ratio (Bravo-Ureta & Pinheiro, 1997). Thus a technically *in*efficient producer could produce the same outputs with less of at least one input, or could use the same inputs to produce more of at least one output (Lovell, 1993).

The latter, "purely" technical, or physical, component refers to the ability to avoid waste by producing as much output as input usage allows, or by using as little *input* as *output* production allows. Thus the analysis of technical efficiency can have an output-augmenting orientation or an input-conserving orientation. The allocative, or price, component refers to the ability to combine inputs and outputs in optimal proportions in light of prevailing prices (Lovell, 1993). The role that agriculture should play in economic development has been recognised for years. The adoption of new technologies designed to enhance farm output and income has received particular attention as a means to accelerate economic development (Schultz, 1964; Kuznets, 1966; Hayami & Ruttan, 1985). However, output growth is not only determined by technological innovations but also by the efficiency with which available technologies are used. The potential importance of efficiency as a means of fostering production has yielded a substantial number of studies focusing on agriculture (Bravo-Ureta & Pinheiro, 1993).

Lovell (1993) examined the technical, allocative and economic efficiency for a sample of 220 farmers located in four irrigated cropping districts in Southern Africa. Separate Cobb-Douglas probabilistic production frontiers were estimated for each district. The average TE, EE and AE measures reported were 84%, 70% and 53% respectively. Based on these measures the author concluded that technical inefficiency associated with qualitative variables caused a 40-50% loss in farm profits, while the loss in profits due to allocative inefficiency was only around two percent.

4.2.2. FRONTIER FUNCTION METHODOLOGY

Farrell (1957) extended the work initiated by Koopmans and Debreu by noting that production efficiency has a second component reflection: the ability of producers to select the "right" technically efficient input-output vector in light of prevailing input and output prices The piece-wise-linear convex hull approach to frontier estimation was initially proposed by Farrell in 1957, but was considered by only a few authors in the two decades following Farrell's paper.

The original frontier function model introduced by Farrell (Färe *et al.,* 1994) uses the efficient unit isoquant to measure economic efficiency, and to decompose this measure into TE and AE. In this model, TE is defined as the firm's ability to produce maximum output given a set of inputs and technology. Stated differently, technical inefficiency reflects the failure of attaining the highest possible level of output given inputs and technology. It is important to distinguish TE from technological change, where the latter reflects an upward shift of the production function or a downward shift of the unit isoquant. AE (or price efficiency) measures the firm's success in choosing the optimal input proportions, i.e., where the ratio of marginal products for each pair of inputs is equal to the ratio of their market prices. In Farrell's framework, EE is a measure of overall performance and is equal to TE times AE (i.e. EE = TE X AE).

The large number of frontier models that have been developed based on Farrell's work can be classified into two basic types: parametric and non-parametric. Parametric frontiers rely on a specific functional form, while non-parametric frontiers do not. Another important distinction is between deterministic and stochastic frontiers. The deterministic model assumes that any deviation from the frontier is due to inefficiency, while the stochastic approach allows for statistical noise. The deterministic parametric approach was initiated by Aigner and Chu (1968), who estimated a Cobb-Douglas production frontier through linear and quadratic programming techniques. This procedure was further developed by Lovell (1993), who introduced the probabilistic frontier production model. Lovell estimated a series of frontier production functions dropping at each stage the extreme observations.

Another class of deterministic parametric models is the statistical production frontier proposed by Jeffrey, Schupp and Taylor (1997), in which technical efficiency is measured by a one-sided disturbance term. When explicit assumptions for the distribution of the disturbance term are introduced, the frontier is estimated by the maximum likelihood method. If no assumptions are made concerning the distribution of the error term, the frontier can be estimated by the Corrected Ordinary Least Squares (COLS) method, which entails neutrally shifting the frontier upwards (i.e. the intercept only) until no positive error term remains. The stochastic frontier production model

incorporates a composed error structure with a two-sided symmetric and a one-sided component (Aigner, Lovell & Schmidt, 1977; Lovell, 1993). The one-sided component reflects inefficiency, while the two-sided error captures the random effects outside the control of the production unit, including measurement errors and other statistical noise typical of empirical relationships.

The estimation of a stochastic frontier function can be accomplished in two ways. Firstly, if no explicit distribution for the efficiency component is made, then the production frontier can be estimated by a stochastic version of COLS. If an explicit distribution is assumed, such as exponential, half-normal or gamma, then the frontier is estimated by Maximum Likelihood Estimation (MLE). According to Greene (1980), MLE makes use of the specific distributions of the disturbance term and are thus more efficient than COLS. The initial inability to calculate individual firm efficiency measures from the stochastic frontier model was overcome by the work of Lovell (1993).

More recent developments in frontier methodology include multi-equation models based on production, cost or profit function specifications. Other recent extensions of the stochastic frontier approach are models that take advantage of panel data structures (Battese & Coelli, 1995). A major advantage of panel data models is that there is no longer need to assume that inefficiency is independent of the regressors. In addition, these models do not restrict the efficiency term to follow a specific distribution for the inefficiency term while making these restrictions testable propositions.
Radial measures focus on the maximum feasible equiproportionate reduction in all variable inputs, or the maximum feasible equiproportionate expansion of all outputs. The measure is defined as one minus the maximum equiproportionate reduction in all inputs that still allows continued production of given outputs. In some circumstances it is desirable to convert the Debreu measure to equiproportionate output expansion with given inputs; the conversion is straightforward (Lovell, 1993). Thus the analysis of technical efficiency can have an output-augmenting orientation or an input-conserving orientation. The allocative, or price, component refers to the ability to combine inputs and outputs in optimal proportions in light of prevailing prices (Lovell, 1993).

Shephard's (1970) distance functions have guided much of the development in productivity analysis and efficiency analysis. Färe *et al.* (1985) have shown how the Farrell efficiency indexes are closely related to Shephard's distance functions. In a multi-input multi-output framework, Shephard defines two distance functions: an input distance function that rescales all inputs toward the frontier technology, and an output distance function that rescales all outputs toward the frontier. However, in some situations, this attainability assumption may not be satisfied, especially if some inputs or outputs are not essential. This can greatly limit the empirical usefulness of the methodology. To

illustrate, consider Chalfant and Gallant's (1998) investigation into productivity growth and efficiency in industrialised countries. Using Shephard's output distance function, the authors were unable to report empirical estimates of technical change and SE for Ireland because the associated data did not satisfy the attainability assumption. This suggests a need to extend Shephard's distance functions. Shephard's distance functions have been generalised in a number of ways. Graph measures of production efficiency have been developed by Färe *et al.* (1985). For example, they defined a "Farrell graph technical efficiency index" that rescales both inputs and outputs equiproportionally.

Other extensions of Farrell technical efficiency include a "generalised Farrell graph" measure proposed by Färe *et al.* (1985), non-radial efficiency measures discussed by Färe *et al.* (1985), a "Farrell proportional distance" measure defined by Briec (1997), and the shortage and benefit functions developed by Chalfant and Gallant (1998). Briec's (1997) "Farrell proportional distance" function and Luenberger's (1992) shortage function are the same: they both allow the rescaling of inputs and outputs in any particular direction. As such, they provide a broad generalisation of Shephard's distance functions. They include as special cases most measures of technical efficiency found in the literature (Briec cited by Bravo-Ureta & Pinheiro, 1993).

Thus it appears desirable to rescale inputs and outputs in a more flexible way than done in Shephard's distance functions. The Luenberger-Briec approach provides a general framework for doing so. However, it does not provide clear guidance for choosing the rescaling direction for inputs and outputs in efficiency analysis. Also, while the Farrell efficiency measures can be easily interpreted in terms of average cost, such interpretation is not straightforward as in the Luenberger-Briec approach. This is somewhat unfortunate, since average cost is a basic concept found in all production economics textbooks and commonly used in empirical economic analysis. This suggests considering a rescaling scheme for inputs and outputs that extends Shephard's distance functions while retaining the intuitive average cost interpretation of the Farrell indexes.

The generalised Shephard's distance function considers the simultaneous rescaling of both inputs and outputs. The direction of rescaling depends on a single parameter that can vary between 0 and 1. As special cases, the parameter taking the value 0 (1) implies only input (output) rescaling. Thus, the generalised distance function nests as special cases both Shephard's input and output distance functions. It applies without Shephard's attainability assumption, thus widening the range of applications of distance functions in economic analysis. This proposed approach also resolves the current dilemma concerning which Shephard's distance function (i.e. the input distance function, or the output distance function) to use when the technology departs from constant returns to scale.

4.2.3. DETERMINISTIC PRODUCTION FRONTIERS

4.2.3.1 Parametric Frontiers

The primary parametric approach is the stochastic frontier approach (SFA) (Aigner *et al.*, 1977; Lovell, 1993). The large number of frontier models that have been developed based on Farrell's work can be classified into two basic types: parametric and non-parametric. Parametric frontiers rely on a specific functional form while non-parametric frontiers do not. Another important distinction is between deterministic and stochastic frontiers. The deterministic model assumes that any deviation from the frontier is due to inefficiency, while the stochastic approach allows for statistical noise. The deterministic parametric approach was initiated by Aigner and Chu (1968), who estimated a Cobb-Douglas production frontier through linear and quadratic programming techniques. De Meza and Gould (1992) measured technical efficiency through a deterministic Cobb-Douglas production frontier obtained by linear programming. A major objective of the study was to analyse the roles of information and modernisation in the production process of 40 cotton farms in Tanzania. Using correlation analysis, De Meza and Gould (1992) found that technical efficiency had a high positive association with both general modernisation and information.

De Meza and Gould (1992) investigated technical efficiency for a sample of 37 Tanzanian cotton farmers. A Cobb-Douglas production frontier, derived by linear programming, yielded a 66% average level of technical efficiency. These results led the authors to conclude that, in contrast with the "poor but efficient" hypothesis advanced by Schultz (1964), production in traditional agriculture suffered from significant inefficiencies. Lusigi and Thirtle (1997) used the COLS procedure to estimate a deterministic Cobb-Douglas production frontier model to investigate efficiency in Nepalese agriculture. A model where the dependent variable was the total value of rice, maize, millet and wheat production yielded an average technical efficiency level of 80%. Separate frontiers were estimated for rice and maize, which revealed average efficiency levels of 84% and 67%, respectively. Based on the efficiency measures obtained from the equation for all crops, correlation analysis showed that nutritional levels, income and education were significantly related to TE, while no relationship was found for farming experience. The study suggested that technical efficiency gains could be attained through extension and education, and that the introduction of new technologies has been a key element in raising productivity in Nepalese agriculture.

Shapiro and Muller (1977) measured technical efficiency through a deterministic Cobb-Douglas production frontier obtained by linear programming. A major objective of this study was to analyse the roles of information and modernisation in the production process of 40 cotton farms in Tanzania. Using correlation analysis, the authors found that technical efficiency had a high positive

association with both general modernisation and information. Shapiro (1983) investigated technical efficiency for a sample of 37 Tanzanian cotton farmers. A Cobb-Douglas production frontier, derived by linear programming, yielded a 66% average level of technical efficiency. These results led the author to conclude that, in contrast with the "poor but efficient" hypothesis advanced by Schultz (1965), production in traditional agriculture suffered significant inefficiencies.

Lusigi and Thirtle (1997) examined the technical, allocative and economic efficiency of a sample of 220 farmers located in four irrigated cropping districts of the Pakistani Punjab. Separate Cobb-Douglas probabilistic production frontiers were estimated for each district. Taylor, Drummond and Gomes (1986) formulated a Cobb-Douglas deterministic frontier production function to analyze the impact of a World Bank sponsored credit program on allocative and technical efficiencies for a sample of Brazilian farmers. The production frontier was estimated using both COLS and maximum likelihood (statistical frontier) assuming that, in the latter case, the non-negative farm effects had a gamma distribution. Estimates of technical efficiency for farms participating in the credit programme versus non-participants revealed no major differences between the two groups, Moreover, participants exhibited allocative efficiencies slightly lower than the rest. Hence, these results imply that this credit programme was not successful in improving farm-level efficiency.

To summarise, the parametric studies, five of which relied on the Cobb-Douglas functional form, as reported by Lusigi and Thirtle (1997), found efficiency measures ranging from 27% to 63% with an average of 43%. The results revealed that, although there was no significant difference in output efficiency across farm size groups, informational efficiency was very low for the small farms. The results suggest that marked improvements could be attained by the diffusion of information about the standard crop-production technology. The parametric studies, five of which relied on the Cobb-Douglas functional form, reported efficiency measures ranging from 17% to 84% with an average of 63%. The average allocative and economic efficiency for the two studies in this group reporting these measures as 68% and 32%, respectively.

4.2.3.2 Non-Parametric Frontiers

The only application found in literature of a non-parametric frontier methodology to farm data from a developing country is the study by Ray (1985), who used linear programming to measure efficiency for a sample of 63 West Bengal farms. The efficiency measures were decomposed into output or technical efficiency, and into informational efficiency. The latter was defined as the ratio between optimal output given the existing technology and optimal output when additional technology information is available. Univariate and multivariate statistical tests were conducted to compare the performance of three farm groups classified according to size.

The results revealed that although there was no significant difference in output efficiency across farm size groups, informational efficiency was very low for the small farms. The author suggested that marked improvements could be achieved by the diffusion of information about the standard crop-production technology. The nonparametric approach known as DEA was developed by Charnes *et al.* (1978). There have been a few studies comparing the parametric and nonparametric approaches. The advantages and disadvantages of each approach are well known. The SFA allows one to obtain parameter values and statistical significance levels, and separate random noise from efficiency levels. However, SFA is criticised sometimes for requiring an arbitrary specification of the functional form and efficiency distribution (Bravo-Ureta & Pinheiro, 1993).

4.2.4. CROSS-SECTIONAL FRONTIERS

Several of the efficiency studies performed using stochastic methodologies have focused on Indian agriculture, a subject that has captured the attention of economists for a long time. The earliest stochastic frontier function study using Indian data appears to be the one by Kalirajan (1981). This author explored TE in paddy production for a random sample of farms located in the state of Tamil Nadu by estimating, using maximum likelihood, a Cobb-Douglas production frontier. A second-step analysis showed that management practices and contacts with local extension agents had a significantly positive impact on technical efficiency. Huang and Bagi (1984) examined the TE of a sample of 151 farms in the Punjab and Haryana states of India, based on a translog production frontier estimated via maximum likelihood. The study showed an average TE level close to 90%, while the performance of small vs. large farms was almost equal.

Kalirajan and Shand (1985) estimated a Cobb-Douglas production frontier by maximum likelihood for a random sample of 91 paddy farmers from the Coimbatore district in the Indian state of Tamil Nadu. In a second-step analysis, where farm-level TE was the dependent variable, these authors found that the level of schooling was not statistically significant in explaining differences between maximum and actual yields. However, the farmers' non-formal education, defined as their understanding of current technology, had a significantly positive role on productivity (Chavas & Cox, 1999).

4.3. ANALYTICAL PROGRAMMING MODEL

4.3.1. DATA ENVELOPMENT ANALYSIS - DEA

The deterministic approach was initiated by Aigner and Chu (1968), who estimated a Cobb-Douglas production frontier through linear and quadratic programming techniques. The method received wide attention only after the publication of the paper by Charnes *et al.* (1978). DEA involves the use

of linear programming methods to construct a non-parametric piece-wise surface (or frontier) over the data. Efficiency measures are then calculated relative to this surface. The piece-wise linear convex hull approach to frontier estimation was initially proposed by Farrell in 1957, but was considered by only a few authors in the two decades following Farrell's paper. The deterministic approach to the measurement of efficiency, i.e. DEA, defines a frontier envelopment surface for all sample observations following a mathematical programming model.

DEA is a method of constructing production frontiers without specifying the production technology proposed by Charnes *et al.* (1978). The efficiency of a DMU is measured relative to all other units, with the simple restriction that all of them are on or below the efficient frontier. More specifically, it is a linear programming methodology that uses data on outputs and inputs to construct complete linear production surfaces. The frontier surface is obtained by a series of linear programming problems, one for each observation (DMU) in the sample (Rao & Coelli, 1999). The measure of the inefficiency of each DMU is given by the distance between each point and the production frontier. In the present study, an input-oriented DEA was used to define the frontier based on the maximum possible proportional reduction in input usage, holding output levels constant for each observation.

In this research, DEA was chosen as the analysis technique for a number of reasons, including the fact that: (i) There is no restriction on the types of variables that can be included in the analysis; (ii) When using DEA the variables can be measured in different units; and (iii) DEA measures technical efficiency, defined as the successful implementation of a production plan, and therefore any deviations from the plan are noticeable. A linear programme is solved for each unit to determine its relative technical efficiency.
Jeffrey *et al.* (1997) state that the DEA procedure is also useful because it allows a comparison of units without assuming that the most efficient unit is producing at its full potential. While other methods of estimating technical efficiency exist, such as using regression analysis to estimate technical efficiencies given generalised frontier production functions, DEA does not constrain units to produce along an estimated production function of a particular functional form, nor does it constrain the analysis to one measure of output.

The heart of the analysis lies in finding the "best" virtual producer for each real producer. If the virtual producer does better than the original producer by either making more output with the same input or making the same output with less input, then the original producer is *inefficient*. Some of the subtleties of DEA are introduced in the various ways that producers A and B can be scaled up or down and combined. DEA represents a promising methodology for efficiency measurement that

can estimate a single relative performance metric (relative efficiency) for entities that have multiple inputs and multiple outputs (Jeffrey *et al.*, 1997).

Efficiency concepts are commonly used to describe the performance of production units. There are two reasons to measure the efficiency of natural resources using DEA. First of all, efficiency estimates are success indicators – performance measures whereby production units are evaluated. Secondly, it is only by measuring efficiency and separating their effects on production that hypotheses concerning the sources of efficiency or productivity differentials can be explored.

According to Sexton (1986) DEA is useful in situations where (a) there are multiple outputs and multiple inputs, and (b) there is no objective way to determine the efficiency of a family based upon a single efficiency index formula. In such cases, more than one family may be technically efficient while producing different amounts of products and using different input levels. Sexton (1986) states that DEA measures the efficiency of a family or organisation as the "ratio of its total weighted output to its total weighted input". Families have considerable flexibility in determining the weights to be used in evaluating their efficiencies, allowing families to use different combinations of inputs to produce different combinations of outputs according to their preferred weights.

4.3.2. THEORETICAL MODELLING APPROACH

The objective function of the linear programming formulation for determining technical efficiency for a family using DEA is expressed as a fractional objective function where family *k* maximises the utility of natural resources, its technical efficiency h_k, the ratio of total weighted output by total weighted input. The method adopted (DEA) assumes that the inputs and outputs have been correctly identified. Usually, as the number of inputs and outputs increase, more DMUs tend to get an efficiency rating of 1 as they become too specialised to be evaluated with respect to other families. On the other hand, if there are too few inputs and outputs, more DMUs tend to be comparable. Sexton (1986) argues that DEA is an appropriate method for analysing technical efficiency and is expressed as:

$$\text{Maximize } h_k = \frac{\sum_{r=1}^{s} u_{rk} Y_{rk}}{\sum_{i=1}^{m} v_{ik} X_{ik}}.$$

This is a fractional objective function where family *k* maximises its technical efficiency h, the ratio of total weighted output divided by total weighted input. The term u,~ represents the output weights for output r and family *k,* and Y,~ denotes output r produced by family *k. Xi~ >0 is* the amount of input *i* used by family *k,* and v,~is the family weight placed on input i by family *k.* The family chooses the

weights u,~ and v,~ subject to a constraint that no other family j will have a technical efficiency measure greater than 1 if it uses the same weights, such as:

$$\frac{\sum_{r=1}^{s} u_{rk} Y_{rj}}{\sum_{i=1}^{m} v_{ik} X_{ij}} \leq 1, \qquad j = 1, \ldots, n.$$

The selected weights cannot be negative; thus:

$$u_{rk} \geq 0, \qquad r = 1, \ldots, s;$$

$$v_{ik} \geq 0, \qquad i = 1, \ldots, m.$$

The fractional linear program is transformed into an ordinary linear program so that the objective function (1) is maximised subject to constraints (2), (3), (4), and (5):

$$(1) \qquad \text{Maximize } h_k = \sum_{r=1}^{s} u_{rk} Y_{rk}$$

subject to:

$$(2) \qquad \sum_{r=1} u_{rk} Y_{rj} - \sum_{i=1} v_{ik} X_{ij} \leq 0, \qquad j = 1, \ldots, n;$$

$$(3) \qquad \sum_{i=1}^{m} v_{ik} X_{ik} = 1;$$

$$(4) \qquad u_{rk} \geq 0, \qquad r = 1, \ldots, s;$$

$$(5) \qquad v_{ik} \geq 0, \qquad i = 1, \ldots, m.$$

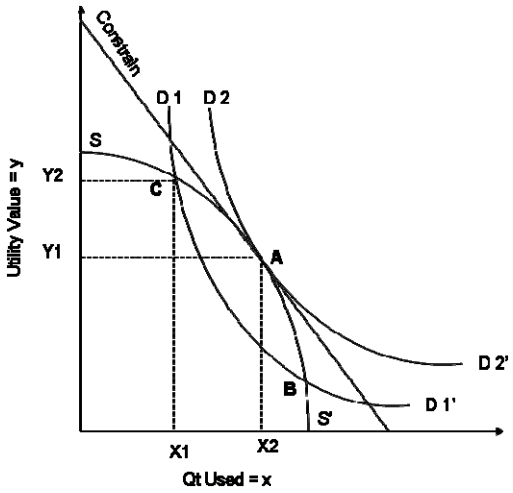
Unit *k* maximises its weighted output subject to the above constraints: (2) that other families' weighted outputs are not greater than their weighted inputs, (3) that unit *k's* total weighted inputs sum to 1, and (4)-(5) that individual input weights are greater than or equal to zero. Weights are determined by the individual units. With the DEA technical efficiency method, the unit is not penalised for diversifying its operation or specialising in the production of a certain output. Likewise, the unit is not penalised if it decides to use an alternate set of inputs. The efficiency of a DMU is simply the ratio of the inputs to the outputs, and is constrained by qualitative influences.

4.3.3. INSTITUTIONAL FRAMEWORK

The potential importance of efficiency as a means of fostering production has yielded a substantial number of studies focusing on agriculture (Bravo-Ureta & Pinheiro, 1993). The results suggest that there is considerable room to increase agricultural output, given existing technology, without additional inputs. Variables related to quality were also used to identify factors influencing agricultural inefficiency. Public policies (*P*) include the nature of the state and the power of interest groups, or of attitudes and ideologies, to influences policy outcomes.

Various theories and models, denoted by lower-case Greek letters, explore the relationships between the variables. The models include static economic models (ε), accumulation models (α), behavioural theories (β), and political decision models (π). Models of political economy differ according to the variables (both endogenous and exogenous) included and the behavioural assumptions employed.

Figure 4.2: Factor Allocation Model



In Figure 4.2, Utility Value (UV) represents the outcome segment resulting from the efficiency level of resource allocation. Quantity Used (QU) represents the level of resources used in productive activities. Segment SS' represents the supply side – the total resources available. D_1D_1' and D_2D_2' represent the level of demand. **A** represents the efficient level of resource allocation, while **B** and **C** represent inefficient levels of resource allocation. If the level of demand increases as a result of an increment in the level of investment (business opportunities) the curve D_1D_1' moves in an ascendant direction.

Policy outcomes (*X*), which include variables such as the allocation of rights of different groups, state organisations, and public expenditure patterns, influence economic outcomes (Y). Policy outcomes are considered to be institutional factors related to governance, participation, local power and authorities (local governments), and grassroots organisations and structures (civil society and local communities) that are the real agents of local governance (www.eldis.org/static/doc9693.htm).

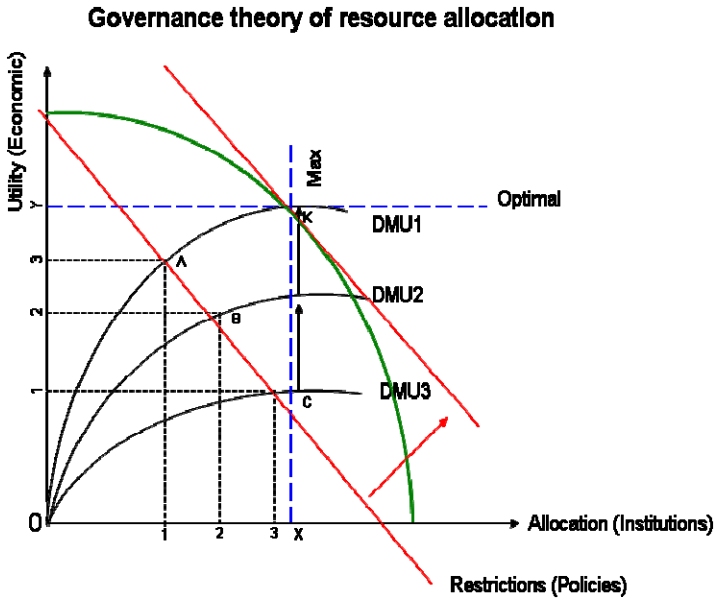
4.3.4. RESOURCE ALLOCATION MODEL

Following similar studies, Bruce (1994) describes the research methodology using descriptive, theoretical, philosophical and analytical models, based on economic principles. Based on that reference, resource allocation is modelled assuming that resources are limited (supply) and that there are qualitative influences of institutional and political nature that affects the utility of the resources. Demand will only be effective if the DMUs maximise the utility of the allocated resources (*equilibrium point K*).

Exogenous influences arise from restrictions related to policy aspects, and institutional aspects also influence the allocation of resources, e.g. participation of the local community in the management of local resources (consultation processes). This approach is based more on maximisation of the utility of resources. This framework follows Bingxin *et al.* (2002) who hypothesised that African countries are poorer not because of cultural or geographic factors, but mostly because of less sound institutions and development policies that affect production.

Agricultural production is characterised by heterogeneity, seasonality and spatial dispersion, large variations in weather and prices caused by policy influences, and well-known informational asymmetries, as well as limitations to the application of purely economic theories. Institutions and policies, as well as customary and traditional influences and informational asymmetries have major consequences in the markets. Identification of sources and effects is essential to the institution of public and private policies designed to improve performance.

Figure 4.3: Resource Allocation Model



The governance theory of efficiency was developed due to limitations of the traditional economic theory of supply and demand, and the *capitalism* analytical framework, in contrast to the inexistence of a framework that supports the social dimension of development (*socialism* approach), and this could be why capitalism has dominated the economic theories while socialism collapsed due to a lack of economic and analytical frameworks.

Under the resource allocation model of utility maximisation, it is recognised that the economic optimal point (A) captured by pure economic estimations does not necessarily satisfy the social optimal point (C), due to qualitative influences, e.g. governance, policies and institutions. The level of utility portrayed by A uses less resources, while the social optimum C uses more resources. It is assumed that efficiency will be determined by both economic and social equilibrium (K).

Specialisations of different DMUs with different potentialities and of different agro-ecological situations are also considered. Governance aspects are discussed in the sense that in a market economy, the economic theory of demand and supply defines the optimum as the equilibrium point, while descriptive theoretical models, where market solutions are not applied, are influenced by qualitative variables like policy outcomes (*X*), which include variables such as the allocation of rights of different groups, state organisations, and public expenditure patterns that influence economic outcomes (*Q*), (such as flows and prices of outputs). Accumulation alters material conditions (*M*) – the quantity and composition of the capital stock and the labour force, the distribution of wealth, and the technology of agricultural production. External variables also emanate from nature or from other countries, and include shocks (*S*), technology options (*T*), ideas (*I*), and opportunities for trade, borrowing, and alliances with other countries (*F*).[20]

This is consistent with Bravo-Ureta and Pinheiro (1993) who emphasised that there is considerable agreement with the notion that effective economic development strategy depends critically on promoting productivity (efficiency) and output growth with existing technology. The presence of shortfalls in efficiency means that output can be increased without requiring additional conventional inputs and without the need for new technology. This suggests that these factors should be considered in determining the causes of agricultural productivity performance.

It is important is to consider the design of these institutional mechanisms and what they were expected to achieve. Governance framework does not mean advocating strong states or centralism, but in a market economy, it means having the state intervene on behalf of the poor (regulatory and sound policies) and allowing them to participate actively in local development (producing and accessing services). This will enhance the effectiveness and efficiency of public interventions by the central government, who are distant from the point where needs are felt and service delivery is needed.

4.4. EMPIRICAL POLICY EVIDENCES

Mozambique is still highly agrarian, with more than 80% of the labour force employed in agriculture. However, despite its large share in employment, agriculture contributes less than 30% to the country's gross value added. Agricultural productivity is thus far below the average for the economy, and policymakers continue to focus on ways of improving productivity and the efficiency of capital. Low productivity is a general feature of the inherited agriculture in former socialist countries in Africa. This feature is commonly attributed to the weaknesses of the collective form of organisation

[20] Each of the symbols represents a multidimensional vector of similar variables. For example, *T* refers to many technologies.

that was dominant in most of the region in the past era. Yet Southern Africa countries are unique among transition countries in this respect: Agriculture was not subjected to sweeping collectivisation – such as in Eastern Europe and China – after World War II, and individual farms have consistently controlled about 80% of agricultural land in this country. Low agricultural productivity is thus low productivity of individual farms, not collectives or cooperatives.

Between 60 and 80 percent of cultivated land in all the provinces is concentrated in units ranging between 0.2 and one hectare. This suggests that there is considerable room to increase agricultural output without additional inputs and given existing technology. The results of efficiency literature based on frontier methodology are generally consistent with the notion that human capital plays an important role in farm productivity in developing countries; consequently, public investments designed to enhance human capital can be expected to generate additional output even in the absence of new technologies. The fact that significant increases in output could be achieved by making better use of available inputs and technology does not mean that research designed to generate new technology should be overlooked. Bravo-Ureta and Pinheiro (1993) noted that the evidence presented in their paper suggests that there is much room for improving economic efficiency, using a domestic best practice standard, and that the magnitude of the input market distortions is in some cases quite severe.

5. ESTIMATIONS AND DATA ANALYSIS

5.1. INTRODUCTION

This chapter provides the estimation measurements and analysis and adopts a two-step approach. The first step is to estimate technical efficiency using the non-parametric Data Envelopment Analysis (DEA). In the second step, in order to determine the factors affecting efficiency, regression estimations are measured. Variables are segregated to measure the influence in overall efficiency. The major methodological advantage of this procedure is that it enables the comparison of two different production technologies, rather than an analysis of a single production frontier derived from all families, as was the case with most previous research. While general empirical results are provided rather than a precise family-level quantification of economies of scope, the results provide an application to production, as well as to other influences such as agro-ecological factors and human capacity, which most probably affects the governmental policies.

5.2. THEORETICAL BACKGROUND TO THE DEA MODEL

In the case of a process with a single input and a single output, productivity is the ratio of the unit's outputs to its inputs. DEA does not measure productivity; it measures the efficiency of the production process. Productivity is a function of production technology, the efficiency of the production process and the production environment. DEA maximises the output adopted when it is the goal to maximise the output from a fixed number of inputs. The concept of technical efficiency relates to the question of whether a firm uses the best available technology in its production process. Assume that the firm is observed using inputs-outputs (TE ε [0, 1]). Following the work of Debreu (1951), Farrell (1957), Farrell and Fieldhouse (1962) and Färe *et al.* (1985), Technical Efficiency (TE) has been defined as the proportional rescaling of inputs or outputs that would bring the firm to the production frontier. This suggests using the generalised distance function as an index of technical efficiency. Besides TE and Allocative Efficiency (AE), Scale Efficiency (SE) is a determinant of Economic Efficiency (EE). The SE[21] of the firm can be motivated from free entry and exit conditions in the industry, and its implications for long-run equilibrium (Baumol *et al.*, quoted by Chavas & Cox, 1999). It is closely linked with zero profit, which is a necessary condition for long-run equilibrium under free entry and exit. Long-run equilibrium is typically defined as a situation where there is no incentive for entry or exit into the industry. Clearly, under free entry, any positive profit provides an incentive for firms to enter the industry. Thus, in the absence of barriers to entry or exit, there is no incentive for entry or exit in the industry only if firm profit is zero (Chavas & Cox, 1999).

[21] Distinction is sometimes drawn in the literature between scale efficiency and size efficiency.

5.2.1. MODELING EFFICIENCY APPROACH

The measurement of productivity and efficiency has been a topic of considerable interest in economics. Much research has focused on the analysis of TE, AE and SE of production activities (e.g. Debreu, 1951; Färe *et al.*, 1985), and the analysis of technological progress and productivity. Farrell's (1957) efficiency indexes have been commonly used in empirical research on production efficiency for two reasons: they can easily be combined into an overall efficiency index, and they have an intuitive interpretation in terms of cost ratios or average cost ratios.

It is well known that in many countries land prices exceed the capitalised value of farm profits (Binswanger, Deininger & Feder, 1995). This is not surprising in peri-urban areas, where land has many alternative uses. Yet the phenomenon is prevalent even far from cities, because, in addition to the profit stream available from farming, land provides other services to the owners, and these are capitalised into land prices. Where insurance markets are imperfect (because of the combination of covariance and moral hazard problems), land provides value as collateral. Land provides additional services, serving as an inflation hedge, a tax shelter (due to the preferential treatment of agriculture in income and property tax systems), and collateral to obtain access to subsidised credit. Consequently, many researchers and policymakers have focused their attention on the impact that the adoption of new technology can have on increasing farm productivity and income (Schultz, 1964; Kuznets, 1966). Over the past two decades at least, major technological gains stemming from the green revolution seem to have largely been introduced across the developing world. However, in Africa and particularly in Southern Africa, the population is still affected by chronic food insecurity. This suggests that attention to productivity gains arising from a more efficient use of existing technology is justified (Bravo-Ureta & Pinheiro, 1993).

The presence of shortfalls in efficiency means that output can be increased without requiring additional conventional inputs and without the need for new technology. Empirical measurements of efficiency are needed in order to determine the magnitude of the gains that could be obtained by improving performance in agricultural production with the given technology. Lovell, Richardson, Travers and Wood (1994) argue that technically, economies of scope occur when the costs of producing a specific output vector Y jointly are lower than the costs of producing the same output vector separately under the restriction of orthogonal nonnegative output vectors (Yi):

$$C(Y) < \sum_{i=1}^{m} C(Y_i), \quad for\, Y = \sum_{i=1}^{m} Y_1$$

Diseconomies of scope occur when that inequality is reversed. In the case of production, the output vector may be divided into production system (YI), production output (YP) and production output

(YF). Economies of scope exist when the inequality holds and the separate production of outputs comes at a higher cost than joint production – consociation:

$$C(Y_I, Y_P, Y_F) < C(Y_I, 0, 0) + C(0, Y_P, 0) + C(0, 0, Y_F)$$

If this applies to production, an integrated market solution with only one firm is favourable to an institutional arrangement wherein the infrastructure manager is institutionally separated from production units. Furthermore, the estimation technique compares two different production frontiers of separated and integrated family units rather than analysing one frontier derived from all families, as was done in most previous work, and thus incorporates different production technologies. By modelling a production technology as an input distance function, one can investigate how much the input vector can be proportionally reduced while holding the output vector fixed. Assuming that the technology satisfies the standard properties listed in Färe and Primont (1995), the input distance function can be defined as:

$$D_I(x, y) = \max\{\theta : (x/\theta) \in L(y)\},$$

Where, the input set L(y) represents the set of all input vectors x that can produce the output vector y. The function is non-decreasing, positively linearly homogeneous and concave in x, and increasing in y (Lovell *et al.*, 1994). From $x \varepsilon L(y)$ follows $DI(x, y) \geq 1$. A value equal to unity identifies the respective firm as being fully efficient and located on the frontier of the input set. Values greater than unity belong to input sets within the frontier, indicating inefficient firms.

5.2.2. DATA AND DESCRIPTIVE STATISTICS

The data was collected using a structured survey of 192 farms (corporate and private farms), based on the data of a rural household survey conducted by the Agriculture National Directorate between 1996 and 2005, selected by random sampling and covering 20 districts in ten different provinces subdivided into 3 macro regions: South, Central and North. A panel model was constructed for two time periods to control for unobserved heterogeneity and also to investigate inter-temporal changes. The first period of the inter-temporal dataset used is from the Economic and Social Plan (PES) 2005 – 2009. In addition, based on that dataset information, the following panel data is forecast on for the second period 2010 – 2015. For each individual variable, an incremental level is assumed year by year. Because the survey covers samples of the Mozambique population, the figures derived are only estimates of efficiency levels in the whole population, based on information derived from the INE (National Statistics Institute).

Mozambique is one of the poorest countries in the world. More than 80% of the population is concentrated in rural areas, and an even higher proportion depends on agriculture for survival. Agriculture contributes around 30% of Gross Domestic Product (GDP), with most production coming from the family sector, which covers more than 3 million families. For this reason, agriculture and rural development must be a priority in the strategy for poverty reduction and broad-based growth. The principal objective of rural development is to increase income-generating opportunities, especially for the family sector. The generation of income depends on agronomic advances to raise productivity, but also, and fundamentally, on access to and management of natural resources. Table 5.1 below provides descriptive statistics (means) of individual characteristics.

Table 5.1: Summary of Statistics

Poverty		*Economic Growth*		*Population*	
Mean	0.39306	Mean	0.102	Mean	19766123
Standard Error	0.025194	Standard Error	0.007376	Standard Error	547625.3
Median	0.384419	Median	0.096947	Median	19684523
Standard Deviation	0.087274	Standard Deviation	0.025552	Standard Deviation	1897030
Sample Variance	0.007617	Sample Variance	0.000653	Sample Variance	3.6E+12
Range	0.266599	Range	0.073926	Range	5788923
Minimum	0.273401	Minimum	0.074	Minimum	17000000
Maximum	0.54	Maximum	0.147926	Maximum	22788923

Source: Author, based on PARPA projections

Table 5.1 analyses the individual influence of the variables and the relationships between them based on PARPA projections. Econometric analysis aids in identifying the determinants, given the actual poverty rate of 54%, which is expected to be around 27.3% by the year 2015 (GoM, 2005). These estimates are subject to sampling error, which will vary with the size of the sample (larger samples produce lower sampling variability). From the characteristics we can deduce that:

- At 95% confidence, economic growth and population are both possible determinants and consequences of efficiency. There is roughly a more than 90% chance that economic growth is a determinate factor, while with the population variable, the true value for the whole population is unpredictable. On average the expected level of economic growth considered is roughly 10% during the period of the estimate.
- The survey targeted the answers to its questions to be 95% accurate with a 10% error margin. With the interactions of population and economic growth – given unpredictability –

the institutional feature is needed for sound functioning and for protection against external shocks not considered in this model (e.g. the effects of HIV, disasters and other external factors).

5.2.3. PRODUCTION ESTIMATIONS

The 192 surveyed farm units (corporate, cooperative and private farms) were aggregated per province and analysed comparatively to geographic influences (agro-ecological conditions) on production and productivity as evidence for efficiency analysis. With the aggregation of family units, the cumulative data on farm units per province revealed that between 60 and 80 percent of production is concentrated in Northern Mozambique, which has comparative advantages (more production in a smaller cultivated area). This could be reflected in (a) the higher technical efficiency of both partnerships and family farms with implications for provincial production, and (b) the fact that the difference in technical efficiency is especially important in production. These results suggest that there is considerable room to increase agricultural output given existing technology, without additional inputs. Table 5.2 summarises the combined production, productivity and area cultivated per province of the surveyed farms.

Table 5.2: Farm unit production efficiency

Provinces	Number of Farms Surveyed	Maize		Cassava		Beans		Peanut		Average	
		'000 Ton	%		%	'000 Ton	%	'000 Ton	%	Productivity (kg/ha)	Área (ha)
Niassa	20	59	6	11	2	4	3	4	3	1,30	1,81
C. Delgado	22	194	19	70	14	7	6	24	19	1,27	1,64
Nampula	19	170	17	205	41	33	29	64	50	0,97	1,21
Zambézia	20	147	14	153	30	8	7	8	6	0,76	1,35
Tete	17	131	13	1	-	2	1	1	1	0,70	1,83
Manica	15	91	9	2	-	1	1	1	1	0,89	2,13
Sofala	17	97	9	18	4	5	5	4	3	0,64	2,17
Inhambane	18	67	7	32	6	34	30	14	11	0,21	2,56
Gaza	22	43	4	11	2	14	12	6	5	0,26	2,28
Maputo	22	20	2	1	-	5	4	1	1	0,16	2,01
TOTAL	192	1019	100	504	100	113	100	127	100	0,72	1,82

Source: Author, based on survey data

Compared to evidence from the literature (MADER, 2004), in Mozambique food insecurity is reportedly increasing in many rural areas, with low and declining yields of food crops. The

productivity advantage of small farmers who rely predominantly on family labour rather than on less-motivated hired workers who have to be supervised would imply that, in the absence of imperfections in other markets, this should facilitate efficiency and equity. Despite these findings, the analysis to date is not sufficient to make a judgment concerning the impact on efficiency measures.

5.3. EMPIRICAL RESULTS OF EFFICIENCY

5.3.1. FARM UNIT EFFICIENCY ESTIMATES

The study examined the technical, allocative and economic efficiency for a sample of 10 provinces of Mozambique. For a sample of 192 farmers, using a translog stochastic production frontier – using the same technology that Bravo-Ureta and Pinheiro (1993) and Bravo-Ureta and Evenson (1994) used to estimate a Cobb-Douglas total value product frontier to analyse – the study found that the average EE, TE and AE for the sample were 11.6%, 83.0% and 13.7%, respectively. Table 5.3 revels the results from the Data Envelopment Analysis Program (DEAP) Version 2.1 (for detailed estimations, see Annexure 3).

Table 5.3: Farm unit efficiency

Units	TE	AE	EE
Mean	0.830	0.137	**0.116**
Variable (Average)	**Original Value**	**Slack Movement**	**Projected Movement**
output 1 (Production Value)	95.000	0.000	**103.057**
input 1 (Hours)	79.000	-59.866	**19.134**
input 2 (Labour)	56.000	0.000	**56.000**
input 3 (Area)	41.000	-12.057	**28.943**
input 4 (Wage)	4.000	0.000	**4.000**

Note: TE = technical efficiency
AE = allocative efficiency = EE/TE
EE = Economic efficiency (Cost Efficiency)

Source: DEAP calculations (detailed in Annexure 3)

Based on DEA estimations of the 192 observations undertaken, it was also found that the results of technical efficiency show an estimated average of 83.0% for the sample of unit farmers, with a low of 58.8% and a high of 100%. Input-specific AE indicated that farmers were inefficient with respect to all inputs. The estimates indicate that the differences in technical efficiency between farm units, on the other hand, are smaller than would be expected based on theories that explain the "optimality of the family farm" because of transaction costs in labour contracting. The question that

emerges locally is: What can be done to increase efficiency? There is evidence that qualitative factors could influence family incomes in rural areas. Thus, both cash family income and imputed family income (including the value of farm products from own production consumed in the household) increase with the farming system and the amount of land cultivated by the household.

The mean allocative and economic efficiency indices are respectively 13.7% and 11.6% for the DEA parametric approach in constant returns to scale (CRS). Thus the results estimated both reveal considerable inefficiencies in production. The analysis of the role of various firm-specific factors in productive efficiency suggests that farm size has strong negative effects on efficiency levels. Similarly, based on that result, by operating at the efficient frontier the sample producers would be able to reduce their production area depending upon the method and returns to scale considered. The stochastic frontier production function model reveals that the quantity of time used and the quantity of area cultivated are direct factors affecting the output efficiency, while the number of labourers used and the salary paid are insignificant factors given the fact that the farms use a family labour force. On the basis of the findings, the study suggests that in order to increase the level of the projected output keeping all other variables constant, attention should be paid to establishing an environment conducive to the creation of means to reduce the negative effect. This negative effect could be the result of misuse of the allocated area or inappropriate use of existing conditions (natural resources).

Table 5.4: Farm unit frequency distribution of efficiency

Efficiency (%)	Technical Efficiency		Technical Allocative		Economic Efficiency	
	No[a]	%[b]	No[a]	%[b]	No[a]	%[b]
≥0;≤10	0	0.00%	96	50.00%	123	64.06%
>10;≤20	0	0.00%	72	37.50%	51	26.56%
>20;≤30	0	0.00%	11	5.73%	8	4.17%
>30;≤40	0	0.00%	5	2.60%	4	2.08%
>40;≤50	0	0.00%	2	1.04%	1	0.52%
>50;≤60	3	1.56%	1	0.52%	1	0.52%
>60;≤70	13	6.77%	2	1.04%	1	0.52%
>70;≤80	55	28.65%	0	0.00%	0	0.00%
>80;≤90	75	39.06%	2	1.04%	2	1.04%
>90;≤100	46	23.96%	1	0.52%	1	0.52%
TOTAL	192	100.00%	192	100.00%	192	100.00%
Mean (%)	19.2	-	19.20	-	19.20	-
Minimum (%)	0	-	-	-	-	-
Maximum (%)	75		96.00		123.00	

a The number of farms.

b The percentage (rounded) of total farms.

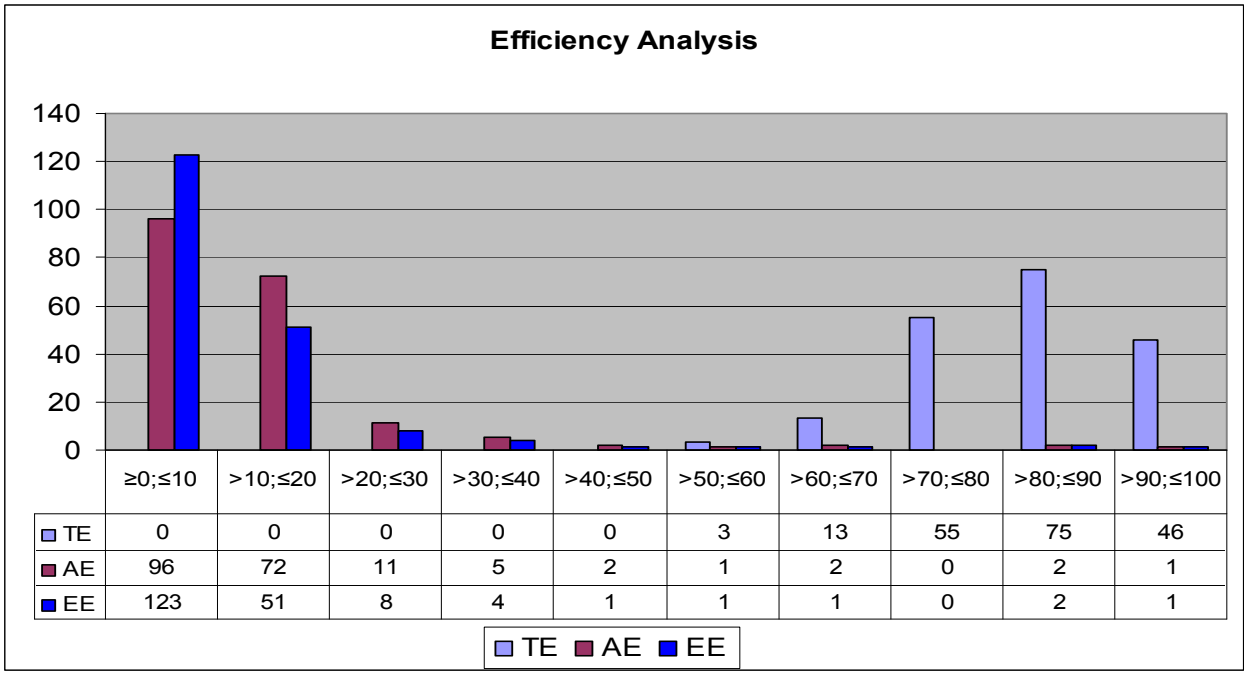
Source: Author, based on survey data

The results derived from Table 5.4 indicate that technical efficiency (TE – CRSTE) indices range from 0 to 75 percent for the farms in the sample, with an average of 19.2%. This means that if the average farmer in the sample were to achieve the TE level of his/her most efficient counterpart, then the average farmer could realise a 50.5% cost savings (i.e. 1 − [19.2/75])[22]. The combined effect of technical factors shows that the average economic efficiency level for this sample is 19.2%, with a low of 0.52% and a high of 64.06%. These figures indicate that if the average farmer in the sample were to achieve the EE level of his/her most efficient counterpart, then the average farmer could experience a cost saving of 84.39% (i.e. 1 − [19.2/123]). In sum, it is evident from these results that SE could be improved substantially.

Figure 5.1 summarises the frequency distribution of TE, EA and EE efficiency analysis of 192 farmers. It is denoted that while there were more farms in the 0.6-1.0 category, a significant number of farmers had very low allocative efficiencies – in the 0.6–0.10 range. Of the five farmers, there were only four with EE.

[22] Average farm cost saving calculated as = 1-(mean/variation), where variation could be maximum or minimal.

Figure 5.1: Farm unit frequency distribution of efficiency



	≥0;≤10	>10;≤20	>20;≤30	>30;≤40	>40;≤50	>50;≤60	>60;≤70	>70;≤80	>80;≤90	>90;≤100
TE	0	0	0	0	0	3	13	55	75	46
AE	96	72	11	5	2	1	2	0	2	1
EE	123	51	8	4	1	1	1	0	2	1

Source: Author, based on survey data

Figure 5.1 presents the stochastic frontier production and production function model used to predict the farm-level technical, allocative and economic efficiencies respectively. The predicted technical efficiency and economic efficiency are the basis for estimating the allocative efficiency of the farms. Estimated results, however, show that farms in the study area are technically efficient (TE) given the value obtained from the analysis, meaning that farmers are producing the maximum physical relationship between outputs and inputs.

In contrast, the analysis reveals an inefficiency measure disaggregated into EE and AE, meaning that TE appears to be more significant than AE as a source of gain in EE, which means that the farms are maximising production and incurring a high level of costs. The policy implication of these findings points to the fact that the farms in the study area are inefficient in allocating their resources considering their scope of operation and the limited resources, which cyclically will have an impact on the level of production.

5.3.2. AGGREGATED RESULTS PER PROVINCE

The TE and SE scores are both equally good predictors of economic efficiency, and are also correlated with each other. As a combination of desegregated farm-unit data per province shows, at least 4 provinces (Niassa, Zambézia, Manica and Maputo) that have high technical efficiency

scores tend to also have high allocative efficiency scores. Therefore, these provinces, which are not known for their enthusiasm for reform, have relatively high technical and allocative efficiency scores (recall that the data being analysed is for corporate use and for cooperatives and private farms or plots). Table 5.4 provides a summary of estimates and an aggregated data analysis of the efficiency measures in Mozambique.

TE per province ranges from 0.202 to 1.00 (CRSTE), with an average of 0.60. Inputs could on average be reduced by 40% if all operations were to produce along the production frontier. About 40% of the observations are technically efficient, and 60% of the observations exhibit technical efficiency measures greater than 0.80. At variable returns to scale, TE ranges from 0.78 to 1.00, with an average of 0.933. Approximately 90% of the observations exhibit efficiency measures greater than 0.80. Four observations are technically efficient. Scale efficiency (SE) varies from 0.25 to 1.00, with an average of 0.62. Over 80% of observations exhibit scale measures less than 0.95. The production frontier results indicate that on average, 62.9% of the farms are technically more efficient. These findings are consistent with the results shown in Table 5.5, where on average the frequency distribution range is between 60% and 75%.

Table 5.5: DEA estimates by province

Provinces	Code	**Number of Farms Surveyed**	**Technical Efficiency**		**Scale Efficiency**
			Crste	Vrste	
Niassa	1	20	0.930	0.984	0.945
Cabo Delgado	2	22	0.495	0.871	0.568
Nampula	3	19	0.392	0.860	0.456
Zambézia	4	20	1.000	1.000	1.000
Tete	5	17	0.995	1.000	0.995
Manica	6	15	1.000	1.000	1.000
Sofala	7	17	0.430	0.974	0.441
Inhambane	8	18	0.202	0.784	0.258
Gaza	9	22	0.231	0.853	0.271
Maputo	10	22	0.354	1.000	0.354
TOTAL		**192**			
Average			0.603	0.933	0.629

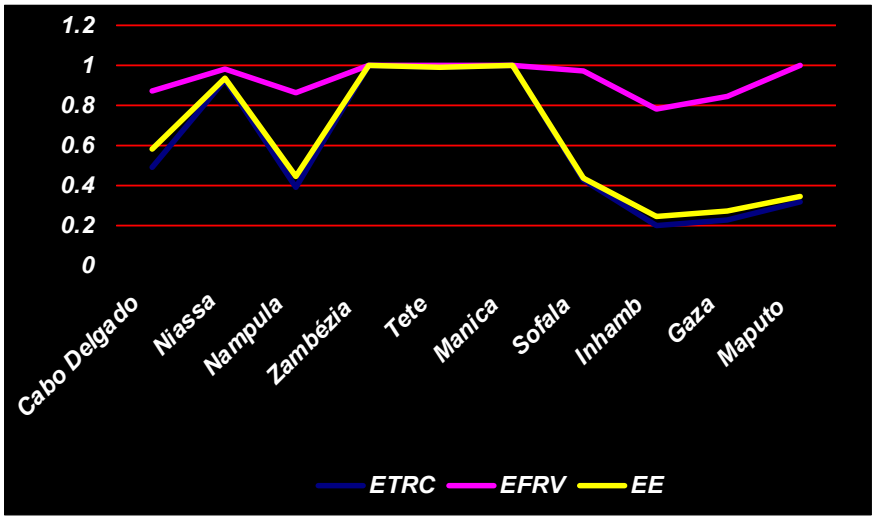
Cod: crste = Constant Returns of Scale
vrste = Variable Returns of Scale
scale = Scale Efficiency = crste/vrste

Source: Author, based on survey data

5.3.3. GEOGRAPHIC ANALYSIS OF TECHNICAL EFFICIENCY

In general, the efficiency distribution shows that the major concentrations of farm units are operating at 80-85% level of efficiency. The analysis supports the hypothesis that family farms and partnerships (mostly working with family labour) have an advantage in agricultural production because of lower labour transaction costs. As demonstrated in Table 5.5, TE measures range from 0.202 to 1.00 (CRSTE), with an average of 0.60. Inputs could on average be reduced by 40% if all operations were to produce along the production frontier. About 40% of the observations are technically efficient, and 60% of the observations exhibit technical efficiency measures greater than 0.80.

Figure 5.2: Geographic distribution of efficiency analysis



In general, the results show that significant increases in output could be achieved by making better use of available inputs and technology, which does not mean that research designed to generate new technology should be overlooked.

Similar conclusions were drawn by Bravo-Ureta and Pinheiro (1993) who noted that there is much room for improving economic efficiency, using a domestic best practice standard, and that the magnitude of the input market distortions is in some cases quite severe. However, land sales transactions could be efficiency decreased if, due to policy-induced credit market distortions, large owners' advantage in accessing credit would offset the productivity advantage of owner operators or if, due to the inability to insure, significant landholdings are not part of poor people's optimal asset portfolio.

Qualitative variables have a considerable influence on efficiency. The theoretical and practical foundation of traditional authority is generally of a symbolic religious nature, and is given legitimacy only by the communities themselves (often finally endorsed through bodies such as councils of elders). They are thus "grassroots institutions" that in effect have to negotiate their power day-by-day, and therefore embody a degree of flexibility that may be extremely useful for the efficient management of natural resources. This statement was also demonstrated by Lundin (1998) who argues that: "[In Mozambique] a certain measure of integration at some sectoral levels exists already, for example in the case of agricultural extension, health, and the work of the NGOs. But it is diluted in the personal attitudes of people and the attitude of the established power holders present in the different zones of the country. There exists no formalization of this integration in laws, decrees, or sectoral directives."

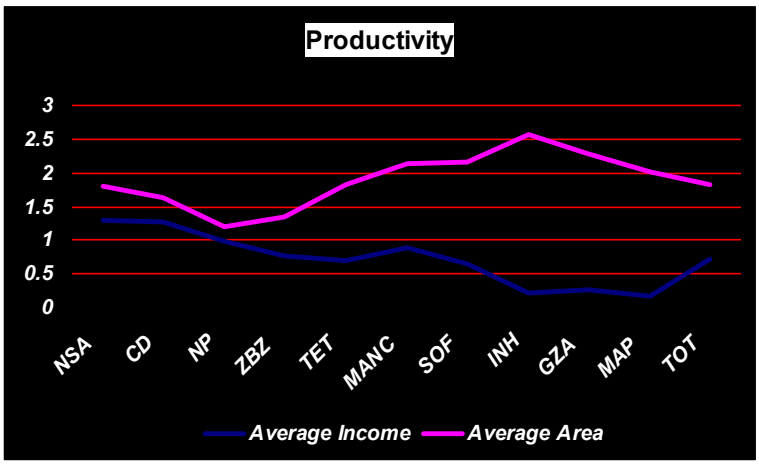
5.3.4. GEOGRAPHIC ANALYSIS OF SCALE EFFICIENCY

The findings based on the observations reveal that on average, production in the provinces is 0.60 technically efficient. Thus, the same quantity of resources may be utilised with 40% less cost if all operators were to produce on the minimum cost frontier under constant returns to scale. This conclusion suggests that the economic theory of the commons is an important strand of thinking about efficient use of natural resources. It is conventionally indicated that common property rights are inconsistent with efficient utilisation of natural resources in the absence of some form of government intervention, and that given the impediments to effective intervention, private property rights are a better bet.

Under the output-oriented approach, which conditions the scale properties on the input vector, it is found that decreasing returns to scale, on average, indicate a too-large input vector for the majority of the firms. Furthermore, considering that scale inefficiency is due to decreasing returns to scale, a significant but small negative correlation between scale inefficiency and economies of scope can be shown (average farmer cost saving of 50%). Therefore, on average, a possible bias of the estimated scope economies of the integrated units/families only applies as a downward bias, affecting the economies of scope negatively, if at all. Firms have considerable flexibility in determining the weights to be used in evaluating their efficiencies, allowing firms to use different combinations of inputs to produce different combinations of outputs according to their preferred weights; therefore, more than one firm can be technically efficient. Scale differences among the integrated firms and ”virtually” integrated firms, and possible related differences in returns to scale, do not cause an upward bias in the economies of scope estimations. The returns to scale of the integrated firms are estimated by using the SE method.

The analysis shows that on average, all the northern provinces of Mozambique have considerably higher scale economies in crop production. Efficiency is even higher because of agro-ecological conditions associated with higher scale efficiency. Farm associations (partnerships) have turned out to be the most efficient production organisations, because they combine the advantages of low transaction costs with family labour and low hired labour input with optimal scale economies. The results of the efficiency literature based on frontier methodology are generally consistent with the notion that human capital plays an important role in farm productivity in developing countries; consequently, public investments designed to enhance human capital can be expected to generate additional output even in the absence of new technologies. Traditional authority is an institution that is legitimised in community settings, in the sphere of a community civil society of an agricultural base. In the event of this instrument of legitimisation being transferred from a civil to a state level, this authority would lose its intrinsic assets and would probably become frozen in time.

Figure 5.3: Geographic influences of scale: Analysis per province



Since the estimations of the average technical efficiency of each province reveal the dynamics of the restructuring changes, technical efficiency exhibits the poorest performance, either because individual farmers were more likely to leave the poorer performing farms or simply because they went bankrupt. It was found that the average efficiency of the provinces increased due to forced institutional change and social incentives (organisational restructuring, participation and inclusiveness). Most provinces lack mechanisms to minimise risks due to price variability, thus discouraging investment in agriculture associated with a lack of infrastructure and agricultural services. In all the provinces investigated, there is no evidence that the land market is a determinant when it comes to improving farm productivity.

As Bravo-Ureta and Pinheiro (1993) noted, there is considerable agreement with the notion that effective economic development strategy depends critically on promoting productivity and output growth in the agricultural sector, particularly among small-scale producers. Empirical evidence suggests that small farmers are desirable not only because they provide a means of reducing unemployment, but also because they provide a more equitable distribution of income, as well as an effective demand structure for other sectors of the economy. The presence of shortfalls in efficiency means that output can be increased without requiring additional conventional inputs and without the need for new technology. If this is the case, the empirical measures of efficiency are necessary in order to determine the magnitude of the gains that could be obtained by improving performance in agricultural production with the given technology. The next section investigates the factors influencing efficiency.

5.4. FACTORS AFFECTING EFFICIENCY

5.4.1. ECONOMETRIC MODELING

It is recognised that governance influences access to and management of natural resources in Mozambique. Fieldwork has shown that the significance of the hypothesis is constrained by the fact that in the specific rural areas under review, the presence of the state has historically been limited in the past two decades. The decentralisation approach changed the paradigm, and positive effects are emerging at local level as a result of government restructuring. The extent to which the greater role played by traditional structures has been determined by market failures is very difficult to disentangle in causal relationships, and thus it would make more sense to speak of selected "institutional failures". To delve deeper into this matter, one can follow what is known in the literature as “second-step” estimation (Bravo-Ureta & Pinheiro 1993) by using econometric specification.

This section presents the Maximum Likelihood Estimation (MLE) of the production function parameters based on econometric specifications. The regression coefficients are the average amount by which the dependent increases when the independent increases by one unit and other independents remain constant. MLE has been used in past technical efficiency studies (as prescribed by Sexton, 1986), and is used here. A censored two-limit tobit model (as discussed in Greene, 1993), with limits of 0 to 1 on the dependent technical efficiency variable, is also used.
Measures of technical efficiency are used in a regression analysis to estimate those factors that are most important in determining a firm’s technical efficiency. Measures of technical efficiency are used in a regression analysis to estimate those factors that are most important in determining a firm’s technical efficiency. Equation (1) presents the regression equation that estimates the relationship between exogenous variables and technical efficiency, formulated by a general conceptual model where family efficiency (FE) rate is given by:

$$\mathbf{FE = f\ (EF,\ IF,\ SF,\ PF)} \qquad \mathbf{(1)}$$

FE represents the technical efficiency score, and F(δ) indicates the operator. Following Rupasingha and Goetz (2003), variables hypothesised to affect technical efficiency include a vector of economic factors **EF**, individual-level factors **IF,** social factors **SF**, and “political” factors **PF**. These are estimated in the model below by alternatively using levels and rates of change in family poverty rates as dependent variables. The econometric model is summarised as:

$$\boldsymbol{FE = \Omega\ (W) + X\beta + \varepsilon_i.} \qquad (2)$$

Where:

FE denotes an *nx*1 vector of the dependent variable, *X* represents an *nxk* matrix containing the determinants of efficiency (EF, SF, PF, IF), and *W* is spatial weights, as explained above. Scalar ρ is a spatial autoregressive parameter and β denotes the *k* parameters to be estimated for the explanatory variables. The other specification is the spatial error model (Rupasingha & Goetz, 2003). If the error term, ui, is found to be non-spherical, it is decomposed into a pure noise component, vi, and an efficiency component, ui. The expression of technical efficiency relies on the value of the unobservable ui, which must be predicted.

These predictions are obtained by deriving the expectation of the appropriate function of ui conditional on the observed value of vi - ui (Jondrow, Lovell, Materov & Schmidt, 1982; Battese & Coelli, 1988; Battese & Coelli, 1992). Assumptions must be made about the shape of the efficiency score distribution. The most commonly used distributions have been the half-normal (Aigner *et al.*, 1977) and truncated normal, although the gamma distribution has also been recommended (Greene, 1980). For panel data models, there have been a few different proposals about how to model inefficiency patterns over time. This study uses the exponential time model proposed by Battese and Coelli (1995). The essential idea behind the stochastic frontier model is that $\boldsymbol{\varepsilon_i}$ is a "composed" error term (Aigner *et al.*, 1977). This term can be written as:

$$\boldsymbol{\varepsilon_i = Vi - Ui} \qquad (3)$$

where *v* is a two-sided ($-\infty < v < \infty$) normally distributed random error ($v;N[0, \sigma_v^2]$) that captures the stochastic effects outside the farmer's control (e.g. weather, natural disasters, and luck), measurement errors, and other statistical noise. The term u is a one-sided ($u \geq 0$) efficiency component that captures the technical inefficiency of the farmer. In other words, *u* measures the shortfall in output *Y* from its maximum value given by the stochastic frontier $f(Xi; \beta) + v$. This one-sided term can follow such distributions as half-normal, exponential, and gamma (Aigner *et al.*, 1977; Greene, 1980).

It is considered an efficient unit as a vector of a multiple regression equation, which is used to account for (predict) the variance in an interval dependent, based on linear combinations of internal dichotomous, and dummy independent variables. Multiple regression can establish that a set of independent variables explains a proportion of the variance in a dependent variable at a significant level (significance test of the coefficient of determination R^2), and can establish the relative predictive importance of the independent variables (comparing beta weights). In power terms it can

be added as independent variables to explore curvilinear effects. Given the estimate of the production function and the efficiency component ui, the observed output of farm i, yi, can be filtered for noise by subtracting the efficiency component from the technically efficient output, f(**x**i;ß):

$$\mathbf{y = yi - vi = f(xi;ß) - \varepsilon_i.} \quad (4)$$

Since the Cobb-Douglas production function was found to be an appropriate representation of the technology, the optimal input use ratios of a cost-minimising farm are independent of output. This property can be used to calculate the technically efficient input set by substituting y for output in the factor demand equations, x*(y,w), and using shadow prices derived from the observed input ratios. The dual cost function is then used to derive the economically efficient input set (with observed prices, rather than shadow prices).

Cross-product terms can be added as independent variables to explore interaction effects. One can test the significance of difference between two R^2's to determine whether adding an independent variable to the model helps significantly. Using hierarchical regression, one can see how variance in the dependent variable can be explained by one or a set of new independent variables, over and above that explained by an earlier set. Of course, the estimates (β coefficients and constant) can be used to construct a prediction equation and generate predicted scores on a variable for further analysis.

Multiple regression shares all the assumptions of correlation: linearity of relationships, the same level of relationship throughout the range of the independent variable ("homoscedasticity"), interval or near-interval data, and data whose range is not truncated. In addition, it is important that the model being tested is correctly specified. The exclusion of important causal variables or the inclusion of extraneous variables can markedly change the beta weights and hence the interpretation of the importance of the independent variables.

5.4.2. ECONOMETRIC SPECIFICATION

Following the Rupasingha and Goetz (2003) formulation of a general conceptual model on family efficiency rate, the econometrical multiple regression model is given as:

$$\boldsymbol{E_i = \beta_0 + \beta_i X_i + \varepsilon_i.} \quad (5)$$

The parameter β denotes the *k* parameters to be estimated for the explanatory variables, where β0 is the level of the poverty determined by other factor not considered in the model, and the term $\boldsymbol{\varepsilon_i}$ is the error specification of the model. The $\boldsymbol{\beta}$'s are the regression coefficients, representing the amount the dependent variable Ei changes when the independent changes. $\boldsymbol{\beta_0}$ is the constant, where the regression line intercepts the y axis, representing the level at which the dependent Ei will

be when all the independent variables are 0. The standardised version of the ***β*** coefficients is the beta weights, and the ratio of the beta coefficients is the ratio of the relative predictive power of the independent variables. Associated with multiple regression is R^2, which is the percent of variance in the dependent variable, explained collectively by all of the independent variables. The empirical model of analysis based in econometric analysis can be formalised in the following equation:

$$E_i = ß_0 + \beta_1 X_1 + \ldots + \beta_6 X_6 + \beta_4 D_1 + \ldots + \beta_n D_n + \varepsilon i. \quad (6)$$

Specified as:

$$E_i = ß_0 + \beta_1 Econg + \beta_2 InternalResources + \beta_3 Pop + \beta_4 GoodGov + \beta_5 ExtResources + \beta_6 CapB + \beta_7 Years + \beta_8 UNDP + \beta_9 UNCDF + \beta_{10} DBS + \varepsilon i. \quad (7)$$

Where:

E_i = Dependent variable denotes an *nx*1 vector of the dependent variable – Production efficiency;

X_1 = Economic growth (EconG) – a positive and significant sign on the EconG estimate would provide evidence that it is an effective input in increasing efficiency;

X_2 = Internal resources (state budget), with a positive influence in terms of government investment in different sectoral areas (e.g. agricultural infrastructures);

X_3 = Population growth (Pop) – the variable *POP* is hypothesised to have a positive influence on efficiency;

X_4 = Good governance – the role of institutions and local authorities;

X_5 = External resources (multilateral loan) – it is hypothesised to have a positive impact with an unexpected impact in the long run;

X_6 = Capacity-building – it is hypothesised to have a positive impact on efficiency;

X_7 = Years – it is hypothesised to have a positive impact on a farm's technical efficiency due to learning from past experiences, meaning that the technology is transferred;

X_8 = UNDP contribution – it is hypothesised to have a positive impact on efficiency;

X_9 = UNCDF contribution – it is hypothesised to have a positive impact on efficiency;

X_{10} = Direct budget support – it is hypothesised to have a positive impact on efficiency;

εi = Error term.

5.4.3. DEFINITION OF VARIABLES OF THE MODEL

The determinant factors of the model estimated are explained in the table below:

Table 5.6: Determinant factors of the model

Variables	Description
• Economic Growth	Economic growth is the increase in the value of goods and services produced by an economy. It is conventionally measured as the percentage rate of increase in real gross domestic product, or *GDP*. Growth is usually calculated in *real* terms.
• State Budget Allocation (Internal Resources)	The state budget optimises the required level of investment to maximise the expected utility stream. The composition of the state budget is the local revenues and other contributions. Budget generally refers to a list of all planned expenses and revenues.
• Demography (Population)	Demographic factors are directly correlated with poverty-reduction targets. Demographic analysis can relate to whole societies or to groups defined by criteria such as education, nationality, religion and ethnicity. It includes the study of the size, structure and distribution of populations, and how populations change over time due to births, deaths, migration and ageing.
• Bilateral Support (G-19) (External Resources)	Aid is inversely correlated, meaning that while the aid contribution increases, the level of poverty is reduced. Bilateral support is the allocation, within a system, of available resources amongst the various functions that need to be performed.
• Multilateral Support (UNDP + UNCDF)	UNDP + UNCDF support is inversely related to poverty, meaning that while the aid contribution increases, the level of poverty is reduced. The UN support aims to promote decentralisation and local development, including capacity-building and infrastructure (Local Development Fund).

The quantitative data analysis was selected from the PARPA budget allocation (2006- 2009). All indicative data from 2010 – 2015 was predicted by the annual expected increase rate $(1+i)^n$. It is hypothesised that the level of population (demographic trends) will increase proportionally on average at 2.7% per year.

Dummy variables are considered[23]: Qualitative data was selected from governance trends and expectations. The table below describes the qualitative variables.

[23] **Dummy variables** are a way of adding the values of a nominal or ordinal variable to a regression equation. (e.g. Yes = 1 if hypotheses is accepted, and 0 if otherwise).

Table 5.7: Description of qualitative variables

Variables	Description
• Good Governance: The role of institutions	Yes = 1 and Opposite =0, assuming that by 2010 a high level of institutional influence will be achieved, including autonomy and local empowerment. It is hypothesised that governance aspects (policies and institutions) will have different technical efficiencies. The influence of institutions is defined as a representative and inclusive system established to strengthen the process of government, ensuring accountability, transparency, advocacy, participatory decision-making and the direct interaction of citizen groups with government. Good governance can thus be seen as the achievement of greater efficiency, representation, accountability and transparency.
• Capacity-Building	Yes = 1 and Opposite =0, assuming that capacity-building influences service delivery at local level. Capacity-building means the ability of institutions to satisfy the group's needs and demands, and the variable is considered critical in achieving more rapid economic development and improving standards of living at local level.
• Budget Support (Aid)	Yes = 1 and Opposite =0, assuming that a considerable portion of the budget is assumed to come from international development partners (G-19), channelled via the central government. While aid increases there is a positive influence on economic growth. It is hypothesised that donor funds are employed in government systems and sector-wide approaches. This should be used in combination with set performance targets on the part of budget holders.

Estimating the level of inefficiency attributable to firm-level failures in terms of organising and optimally utilising available inputs provides important implications for firms themselves to address internal weaknesses before they opt for solutions from external bodies.

5.4.4. ESTIMATIVE OF THE REGRESSION

This involves Ordinary Least Squares (OLS) and Maximum Likelihood (ML) Estimation of the production function parameters. The OLS function provides estimates of the "average" production

function, while the MLE model yields estimates of the stochastic production frontier. The similarities of the slope parameters across equations confirm that the frontier function represents a neutral upward shift of the average production function. These results are consistent with the findings of Bravo-Ureta and Rieger (1990) and Bravo-Ureta and Evenson (1994). Moreover, all parameter estimates are statistically significant at the 1% level for the two models. Table 5.8 below presents the results of the OLS and maximum-likelihood two-limit tobit estimations.

Table 5.8: Parameter estimations

ORDINARY LEAST SQUARES (OLS) AND MAXIMUM LIKELIHOOD (ML) PARAMETER ESTIMATES				
Variables	**OLS Estimates**	**Standard Error**	**MLE Estimates**	**Standard Error**
Intercept	-3.40556125	0.062564116	-3.55655445	0.061684545
X1	-2.87884054	0.076153413	-2.40545812	0.065856545
X 2	2.41E-06	7.54E-08	2.11E-06	6.58565E-08
X3	2.52E-07	4.22E-09	3.15E-07	3.68785E-09
X 4	-2.69E-05	8.67E-06	-2.29E-05	7.38745E-05
X 5	-7.43E-06	1.84E-07	-7.15E-06	1.39385E-07
X 6	-0.00725178	0.000172446	-0.00787868	0.000146542
X 7	-0.12526788	0.001453887	-0.25260217	0.001487025
X 8	-1.39E-07	4.79E-08	-1.09E-07	5.14543E-08
X 9	-9.11E-06	1.56E-07	-9.97E-06	1.66543E-07
X 10	0.010335259	0.000286038	0.03006529	0.000238215
Function coefficient	0.77	-	0.78	-
F-Statistic model	6.22	-	-	-
Adjusted R^2	0.71	-	-	-
λ	-	-	0.975	-
σ^2	-	-	0.517	-
	-		(0.221)	-
Log likelihood	-	-	34.36	-

The level *of coefficient determination* (R^2), adjusted to 71.0%, shows a highly significant interaction effect, the same as for any other variable. The ratio of the standard error of u (σ_u) to the standard error of v (σ_v), known as lambda (λ), is 0.97. Based on λ, the derive gamma (γ) measures the effect of technical inefficiency in the variation of observed output ($\gamma = \lambda^2 / [1 + \lambda^2]$. The estimated value of γ is 0.49, which means that 49% of the total variation in farm output is due to technical inefficiency.

The function coefficient measures the proportional change in output when all inputs included in the model are changed in the same proportion. The function coefficient for both the OLS and ML

estimates is approximately 0.78, which indicates that returns to size are decreasing. Restricted least squares regression was used to formally test the null hypothesis of constant returns to size. The computed F statistic is 6.22, which exceeds the critical F value of 4.02 at the 5% level of significance. Consequently, the null hypothesis of constant returns to size was rejected. A number of factors or characteristics could be cited as possible causes for efficiency variation among different firms. In our case, some of the firms were exporting their products to the external market while others were not. The possible hypothesis that could emerge from this condition is that enterprises operating in a more efficient way were able to export their products to the international market. The other possibility could be related to size. Large firms may enjoy relatively higher scale economies and operate more efficiently than otherwise.

The results indicate that:

- Variable X_1 (*economic growth*) and variable X_5 (external resources – *aid support*) are important determinants of an individual's production efficiency.
    - The donor support will still be critical to achieve MDGs, meaning that the country will require that donors fulfil their pledges to take steps towards increasing their official development assistance at least by 0.5% per year. The same is the case with multilateral contributions. The effects are largely stated in terms of influence in local development through institutional and human resources capacity for planning, implementing, monitoring and evaluating at the district level.
    - The decreased share of public resources allocated to agriculture is often explained by the poor image of the sector. It is perceived as stagnating, mainly constituted by subsistence farmers and not offering good opportunities for dynamic business. A considerable share of public resources is also often spent on subsidies of private goods (e.g. agricultural commodities, private investment) to the detriment of public goods.
    - The level of investment (US $46.662 million) expected from multilaterals is reflecting a great impact at local level. The investment per capita by 2015 is expected to be US $1.7 per habitant, converted into infrastructures and capacity-building at the local level.
- Variable X_2 (*internal resources*) is inversely related to poverty reduction, meaning that the level of increase is not sufficient to support poverty-reduction strategies.
    - The result suggests that the government should be more engaged in terms of creating a suitable fiscal environment in view of collecting more revenues. District finances are one aspect to be considered in that challenge.
    - The study showed that increasing public goods is likely to promote economic growth directly (as factors of production) and indirectly (through its positive effect on private investment). Government budget cuts made in the wake of structural adjustment

programmes have affected agriculture more than other sectors. The share of agriculture in government budgets declined from around 5% in 1990/91 to 3.5% in 2004/5.

- This gravely affected public investment in agriculture and the capacity of public institutions. Political unrest and armed conflict have strongly affected agriculture in a number of provinces by preventing farmers from producing, displacing populations, destroying infrastructure and littering the countryside with mines.

Interpreting ß for dummy variables (qualitative): Dummy variables and their interpretation under alternative forms of coding are discussed below.

- Variable X_4 (*good governance, institutions*) reveals a direct impact on poverty alleviation. The result is consistent with the idea that decentralisation and local governance are critical to promote local development.
  - The role of institutions and governance in creating an attractive climate for private-sector development, including anti-corruption programmes and the institutional reforms needed to generate private investment and job creation, are critical in poverty reduction.
  - Poor governance and weak institutional capacity have resulted in poor policies incapable of addressing the challenges of agriculture and rural development. Malfunctioning and inefficient markets (frail private sector, high transport costs, weak information systems, poor regulatory framework) are also a factor.
  - The flow of aid to agriculture and rural development has declined in the last 4 years after PROAGRI I. Current flows are insignificant compared to identified needs; more resources are allocated to food aid than to agriculture and rural development aid, while analysis suggests that investing in agriculture would reduce the need to resort to food aid in the future. As a result, capital and productivity per agricultural worker are lower in Mozambique than in any other region of the world.
- Variable X_{10} (*direct budget support)*: While poverty is reduced each year, the impact of DBS will increase the output to 0.0103, meaning that the variable will have a negative impact considering the human and institutional capacity.
  - The estimation suggests a major impact of projects in local development. Donors should continue to provide project financing. In addition, to increase alignment, strengthen country capacity and reduce costs, donors should strive to increase – where appropriate – the resources they provide for budget support and sector-wide approaches.
  - Both donors and governments should take concrete steps to adjust staff and management incentives to motivate and be consistent with the use of harmonisation,

alignment, and managing for results, involving all partners – donors, countries and civil society organisations (CSOs) – that should together explore ways to increase the constructive engagement of CSOs at all stages of the harmonisation, alignment, and managing-for-results agendas.

5.4.5. MODEL SIMULATION

Goodness of fit of these estimates is most easily assessed by means of simulation. The basic principle behind the simulations is to make random draws from the uniform distribution in which the random values are converted to simulated durations, via the inverted survivor functions. This has been applied by Aassve, Burgess, Chesher and Propper (2002). Fortunately, simulating a system of simultaneous hazards is quite similar to the case of single equation models with repeated spells, or any fully sequential model, such as the competing risk model.

Table 5.9: Model simulation

	OUTPUT (Y)	INPUTS (X)									
Number of Observations	Poverty	Econ growth	Internal Resources	Pop	Good Govern	External Resources	capacity Building	years	UNDP	UNCDF	DBS
2004	54.000%	0.0750	22,373.45	17,000,000.00	0	19,733.40	0	0	32861000.00	3000.00	1
2005	50.760%	0.0770	23,551.00	17,459,000.00	0	20,772.00	0	1	33,518,220.00	4300.00	1
2006	47.714%	0.0740	26,665.00	17,930,393.00	0	25,863.00	0	2	34,188,584.40	4,515.00	1
2007	44.852%	*0.0799*	31,194.00	18,414,513.61	0	28,128.00	0	3	34,872,356.09	4,740.75	1
2008	42.160%	*0.0863*	34,331.00	18,911,705.48	0	28,980.00	1	4	35,569,803.21	4,977.79	1
2009	39.631%	*0.0932*	39,141.00	19,422,321.53	0	29,983.00	1	5	36,281,199.27	5,226.68	0
2010	37.253%	*0.1007*	41,098.05	19,946,724.21	1	31,482.15	1	6	37,006,823.26	5,488.01	0
2011	35.018%	*0.1087*	43,152.95	20,485,285.76	1	33,056.26	1	7	37,746,959.72	5,762.41	0
2012	32.917%	*0.1174*	45,310.60	21,038,388.48	1	34,709.07	1	8	38,501,898.92	6,050.53	0
2013	30.942%	*0.1268*	47,576.13	21,606,424.97	1	36,444.52	1	9	39,271,936.90	6,353.06	0
2014	29.085%	*0.1370*	49,954.94	22,189,798.44	1	38,266.75	1	10	40,057,375.64	6,670.71	0
2015	27.340%	*0.1479*	52,452.68	22,788,923.00	1	40,180.09	1	11	40,658,236.27	7,004.25	0

	b0	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
-537.1%	-3.405561	-0.425856	0.126231	5.731869	-0.000027	-0.298577	-0.007252	-1.377947	-5.650507	-0.063829	-
Variables (2015	-3.4056	0.1479	52,452.6835	22,788,922.9976	1.0000	40,180.0876	1.0000	11.0000	############	7,004.2469	-
Parameters	Coefficients	(2.878841)	0.0000024	0.0000003	(0.0000269)	(0.0000074)	(0.0072518)	(0.1252679)	(0.0000001)	(0.0000091)	0.0103353
Increment	6%	8%	5%	2.7%	N/A	5%	N/A	N/A	2%	5%	N/A

Despite the fact that the principle remains the same, simulating a system will necessarily involve a higher level of complexity. Some lessons can be learned from the simulation:

- ***Economic growth and state budget:*** Table 5.9 shows that by 2015 the expected level of output can be reached at 27% (considering the target of 50%). Economic growth increases at a minimal level of 8% per year. The challenge is to achieve the level of 14% by 2015. The level of economic growth has an impact in terms of local capacity of investment, meaning that the state

budget (internal resources) should increase by more than 5% per year. The simulation shows a major impact when internal resources increase at a level of 10% per year.

- ***Aid (budget support):*** Donor contribution still plays a critical role in poverty alleviation. The expected minimal level to satisfy the need of an annual poverty decrease of 6% should be roughly 5% per year. More domestic and foreign investments associated with economic growth should encourage development partners to increase budget support. However, many analysts believe that had an investment in agricultural development, equal to the volume of resources used during emergencies, been made during normal years, it would have had a positive impact on the economy, which would have rendered food aid unnecessary.
- ***Multilateral contribution:*** A positive and significant dependence in the dependent variable (poverty rate) indicates that the UNDP's and UNCDF's influence is still critical. UNDP and UNCDF investment should be situated at the minimal level of 2% (in terms of technical assistance and capacity-building) and 5% (in terms of capital investment) respectively.

5.4.6. PREDICTION OF DIFFERENCE SCENARIOS

The question associated with prediction is: "*What will happen if the variables changed at a faster or slower pace, and what are the consequences?*" In general it is noted that addressing the constraints and exploiting opportunities for agriculture and rural development will require considerable public support, in terms of both additional resources and policy reforms. In the prediction, a number of variables are analysed: (i) Donor support, (ii) Level of investment – internal support, (iii) capacity-building, and (iv) governance aspects.

a) ***Donor budget support:*** Tapping this potential will depend on the ability of central and local governments to create the right conditions for farmers to take the initiative and invest and trust in the functioning of markets that will remunerate their efforts fairly. The results of this study show that the machinery-intensive nature of corporate districts may have limited capacity for harmonising, aligning donor support to the national budget, and managing for results. In that sense: (i) Donor support should be reflected in development, meaning that funds must be used as agreed and that priorities in the poverty strategies must be adhered to; (ii) Governments must offer assurances that they will transfer capacity and resources and pursue sound financial management so that donors are not "*writing a blank cheque for economic mismanagement*"; (iii) Farming technology may be inappropriate, given the current low cost of labour relative to machinery and fuel. Given the proper institutional reforms to allow for more factor mobility, private plot farming over time might evolve into large-scale, capital-intensive agriculture.
b) ***Internal resources:*** Generating income to support the level of investment is critical. The issue of public investment will be increasingly important also in the case of agricultural development in

infrastructure, plant and livestock breeding, and in native crops suited to local conditions. Climatic changes and droughts affecting Mozambique are some expected constraints that might influence the allocation of internal resources. There are also many cases of failure of cooperation in the management of common resources, leading to an anarchical regime in the scramble for these resources. With the erosion of the local commons – decimation of forests and grazing lands, silting and increasing toxicity of rivers and ponds, depletion of aquifers and soil erosion and desertification – life for the rural poor in many parts of the world has become more insecure and impoverished in ways that are not captured in the usual poverty estimates based on private consumer expenditure data. Research becomes more important for agriculture, and as issues of patent-protected pricing and appropriateness of commercially developed technology to the agro-climatic and economic environment become salient, one will need more theoretically informed empirical analysis of the various trade-offs involved case by case.

c) ***Capacity-building – Social capital:*** This variable has the potential to influence the utilisation of natural resources. It is clear from the analysis conducted that there are considerable opportunities for expanding the utilisation of natural resources (e.g. land under cultivation, increasing yields through better management of water and soil resources, and use of improved technology). An oft-quoted statistic of Mozambican agriculture is that private plot farming provides more than 50% of the value of all agricultural production in Mozambique, while using less than 10% of all available arable land. The Mozambican government has only recently started to publish data on peasant and family farming. This reflects a bias of the Mozambican government towards large-scale, machinery-intensive farming.

d) ***Governance aspects (institutions and policies):*** Examining the implications of policies and regulations in more detail would be of importance, as removing unjustified interventions is likely to go a long way towards improving resource allocation in agricultural systems characterised by an efficiency-reducing transfer of land from small to large producers. With the emphasis on livelihood resources and outcomes, as well as institutional processes, multiple entry points for development interventions are suggested by the framework. These range from more conventional options focused on supporting access to particular livelihood resources to allow for the more effective pursuit of particular livelihood strategies (or combinations), to more complex alternatives arising from the social analysis of “messy” institutional arrangements. Rather than focusing solely on conventional interventions (transfer of technologies, skills, etc.), the sustainable livelihoods approach emphasises getting the institutional and organisational setting right, with emphasis on both formal and informal mechanisms. Such an approach will hopefully improve the effectiveness of conventional interventions while extending the range of options across livelihood strategies.

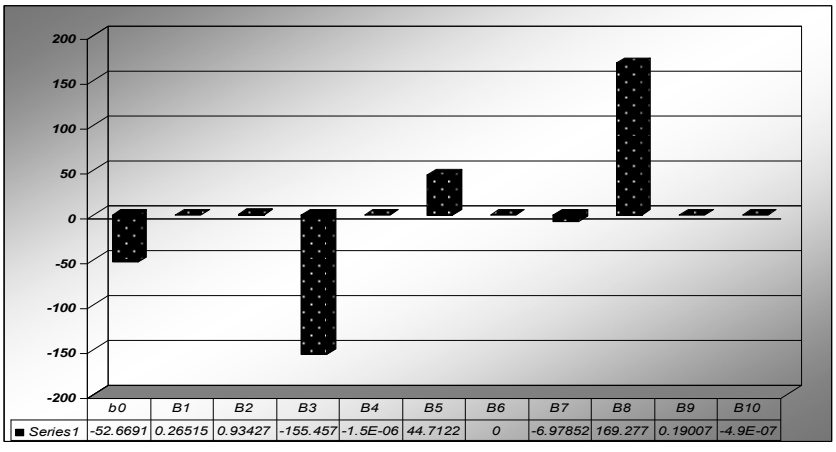
5.5. DISCUSSION OF THE EVIDENCE

5.5.1. TRENDS OF QUANTITATIVE INFLUENCE OF THE ESTIMATIONS

According to the study, since the returns to scale are not significantly different from one, the increase in output that could be expected from using the same amount of inputs would be the same. Furthermore, according to the allocative efficiency estimates, for the same output target, costs could be reduced (from DEA results). The results suggest different patterns of relationships that could relate as much to the nature of the variables as to policy effects manifested by the presence of the dummies. For instance, the results suggest that real interest on debt and real farm debt, which had a negative relationship in the previous estimate, consistent with economic theory, turned out to relate positively to real farmland prices in the presence of the annual dummies. However, this positive relationship was shown not to be statistically significant.

Both parametric and non-parametric calculations support this conclusion. It should be emphasised that the efficiency differences within regions are considerably smaller than the literature typically assumes, and it has been predicted that the difference will decline further during transition. While further research is required to provide a conclusive answer, the current analysis suggests that the main reason for the pre-reform inefficiency of the collective farms was the socialised economic environment, rather than the intrinsic problems of large-scale farming.

Figure 5.4: Variables with a long-term effect



In general, it is found that unless the variable population and internal resources have an inverse relationship, all variables considered are statistically significant in the output. It should be noted that the data used in this study was available only for corporate farms. Results tend to be in favour of financial decentralisation in the accomplishment of efficient allocations regarding different local preferences concerning local public goods and services. If each local government can establish the taxes and the package of benefits in favour of citizens from the local community, efficiency and social wellbeing could be maximised.

The largest distortion affecting input use is probably Mozambican farmers' inability to secure credit to replace their labour-saving machinery with labour-intensive machinery (due to the poor financial performance of the agricultural sector and the credit market). This means that farmers often find that they perform better by implementing the old machinery-intensive agricultural practices rather than responding to market incentives, which would require the emphasis of labour-intensive practices. All inputs were found to contribute to low allocative efficiency, reflecting markets that function poorly. The main source of allocative efficiency was the large cost share of oil products. The large cost share of fuel implies that Mozambican farmers purchased more than the efficient proportion of fuel compared to other inputs.

This study estimated a stochastic and deterministic production frontier and used non-parametric techniques to calculate the technical and scale efficiency of family farms, partnerships and the large-scale successor organisations (LSOs) of the collective farms (CFs). The results indicate that LSOs display lower levels of technical efficiency than partnerships and family farms. Although this confirms the theory that family farms and partnerships deal better than LSO's with the agency-managerial problems that arise as a result of the difficult metering of effort in agricultural production, the difference in technical efficiency is small and declining over time. Moreover, family farms are scale inefficient compared to both partnerships and LSOs, because they are still too small to exhaust all scale economies. Farms organised as partnerships are superior to all other organisational forms regardless of the measuring technique used.

The study provides an alternative analytical approach based on non-measurable variables (qualitative measurements), using contingent valuation survey data proposed by Harson (1995). Examining the utility theoretical foundations of the models, it was found that qualitative variables substantively influence the level of efficiency related to natural resource management and ultimately its impact on the agricultural sector. In terms of the knowledge systems' institutional settings, it was found that the role of institutions and governance in creating an attractive climate for private-sector development, including anti-corruption programmes and the institutional reforms needed to generate private investment and job creation, is critical in poverty reduction. It was found that poor governance and weak institutional capacity have resulted in poor policies incapable of addressing the challenges of agriculture and rural development.

The State system (deriving its legitimacy and authority from the rule of law of the nation-state) rests on a common property concept in which the state assumes exclusive responsibility and capability for managing a resource equally accessible to all citizens. The state manages for certain levels of abundance on a technical basis, and then allocates shares of this abundance to users on an

economic and political basis. The system of knowledge is based on the scientific accumulation, organisation and interpretation of data, and management problems are resolved in a technical, a-historical framework. This system of management is bureaucratic, which is to say, hierarchically organised and vertically compartmentalised. The physical closeness of traditional authorities to their "constituency" allows for the application of a set of rules and norms that will rarely be out of touch with the ecological reality and the management and conservation requirements of the resources in their territory. The role of the customary leadership as regards responsibilities outside of the conventional traditional sphere is thus undefined, due to this overlap and the gap in the existing laws. The big chiefs should understand the importance of the role of the traditional authorities, and in order to collaborate with them, it is necessary to better understand and know who is the authority at local level.

The social capital of communities in Mozambique, mainly in rural ones, is a capital that originates, grows and develops in a productive system exogenous to the laws of the modern state. When the state is absent, or is kept out, it is this capital that sustains the system of production and reproduction of social groups, and of the communities. It circulates in a stock exchange of social contacts and rests on group loyalties based on kinship, ethnicity and religion, or, to a lesser extent, political affiliation. The exercising of power by traditional chiefs attending to their personal interests and the interests of the community is based on the process by which (hereditary) political power is constantly legitimised through actions and practices that satisfy community interests, which the community reattribute in turn with a counter-provision of services.

In lineage-based hierarchical societies, mechanisms for redistribution are an expression of the moral obligations of the senior members of the community who are responsible for ensuring social and spiritual reproduction, as well as its junior members, responsible for ensuring economic welfare. They are essentially networks of mutual support and solidarity, as well as clientelistic relations among kinship groups of unequal social status, nested in historical power relations and priority rights for some lineages, which are largely the consequence of who occupied the land first. The descendants of the first to settle and cultivate the land will claim superior social status, as will those who are members of a lineage who came to dominate others by battle and conquest.

5.5.2. THE INFLUENCE OF GOVERNANCE POLICIES

In practice, sector programmes have been slow to adopt government systems. However, there are cases where funds are largely disbursed via government systems. In order to overcome central, provincial and district government capacity, broad coalitions that bring together a diversity of interest groups from different sectors of society and government could provide an effective

institutional forum for the promotion of democratic decentralisation. Such coalitions are needed to counterbalance the centralising tendencies of national governments, and as such might serve as important political allies for the long-term development of a real, democratic decentralisation.

Leadership structures must be assessed and informed by local settlement histories, which contribute to determine institutional inclusion and exclusion. Cross-country comparisons, although in a context of adherence to different legal systems, will still be of use, to the extent that the recording and endorsement of local organising practices is based upon certain "cultural traits" common to agricultural and merchant societies. In relation to these traits, among the myths to be dismantled is that the customary authority structures they produce are gender-biased, atavistic, opaque, unaccountable, unchecked and necessarily "undemocratic": when applying the "modern" criteria of "good governance" to traditional structures, most of them fare surprisingly well – rather, their roles are tied to different mechanisms for participation, social inclusion and decision-making on Natural Resource Management (NRM).

The new framework maintains the unitary system of government, but it places the responsibility for the delivery of public services primarily at the district level. At the same time, the authority of provinces is limited to the implementation of essential inter-district functions such as the provision of specialised education and training, control of communicable diseases, spatial planning, and environmental control. The new fiscal arrangements afford provincial and district governments more certainty in the availability of transferred resources and more discretion over their use. For example, the lack of a coherent sectoral policy / strategy makes it difficult to monitor progress in decentralisation, notably in relation to the implementation of the Action Plan for the Reduction of Absolute Poverty (PARPA) and the transformations envisaged within the Public Sector Reform, whose strategy document clearly mentions an increasing role of local governments in the execution of policy and programmes.

The process of decentralisation has highlighted the fundamental dilemma of upholding the government's dual role as promoter of change and insurer of stability and consensus. Creating conditions in the public sector that promote a culture of continuous improvement, foster innovation and capitalise on individual and team performance is in itself an ongoing challenge for governments. However, governments are also required to constantly maintain stability while stimulating change and innovation.

It is often the most appropriate level for effective government intervention to meet a variety of public welfare needs and to stimulate economic efficiency. It also serves as a vehicle to permit such

variation in the mix of government-delivered services as is necessary to respond to local needs and diversity. Local government is therefore central to the establishment and maintenance of responsive government and the sustaining of the democratic state.

Through local participation and practices such as public meetings, citizens can participate more effectively in local decision-making, gain experience in democratic processes, and hold local officials responsible for their decisions. It may give greater voice and representation to citizens, stress local ownership as an effective instrument of implementation, and bring greater grassroots-level control over resources and their utilisation. It is important to realise that, no matter how "parallel" the two institutional setups and the different production systems they govern may seem at first glance, some sort of informal articulation and communication normally exists between the traditional and modern sphere, often on land matters. With the probable exception of land conflict resolution, for which decision-making is more focused and ultimately usually lies with only one key authority, at all echelons there is a multiplicity of decision-making levels that frame traditional institutions. The involvement of traditional community leaders brings natural resource claims and conflicts closer to illiterate persons, who rarely dispose of the many resources necessary to bring to bear their civil rights over livelihood assets through formal government channels and do not understand all the rules and regulations, and the rights and duties that come with them.

They may not have any such rights under national statute law, which does not recognise traditional usufruct. The village is not usually recognised as a legal entity, yet it is at this level that we find the traditional institutions that could sustain genuinely community-based natural resource management. As different worldviews and knowledge systems will run, or flow, into each other under decentralisation and devolution, the dichotomy that often opposes "indigenous knowledge" to "modern science" is misleading, and the participatory evaluation of both would appear a fundamental starting point when analysing the dynamics of adopting new technologies, or new management and decision-making procedures. Arguably, community participation must take into account the norms upheld by traditional leaders, which implies that "win-win" scenarios are usually rare at any level and that some trade-offs are unavoidable.

The mode of "ownership" will be reflected in local interpretations of, and expectations from, the decentralisation process, which should be explored, as they may augur well or not, so that early "remedies" can be sought. Since for the time being it remains the most visible manifestation of decentralisation at the village level, local perceptions are much related to the process of restructuring administrative territories as geographical units. Information is provided below on why traditional leaders should be involved in the decentralisation and restructuring process. The extent

to which this may be happening anyhow (by default) is part of the research hypothesis that guided the fieldwork, which has not been found to be relevant in all countries. This leads to the configuration of local property relations and differentiated rules of access to land and other natural resources, in turn leading to the subordination and poverty of certain groups.

The devolution of powers of natural resource management to local groups has been complicated by a parallel process through which the government has been reinstituting the institution of "indirect rule" through "community representatives". This legislation was not submitted to Parliament, but was issued as a decree from the Council of Ministers. The decree essentially reappoints the traditional chiefs as legally recognised representatives of community groups, although it mentions that these representatives can also be the Bairro or village secretaries or other leaders "legitimised as such by their respective communities". The decree and the associated regulations contain no clear procedures for how this choice of representatives is to be made, except for the provision that where a community has "legitimised" both a traditional authority and a "civic" leader (such as a Bairro secretary), it is the community that decides who has precedence. Research conducted in Zambézia in 2001 revealed that the implementation of the decree was understood rather differently by the local authorities who stated that they were "calling all the chiefs in the area to reinstate them" (SLSA, 2001).

5.5.3. SOCIAL AND CULTURAL INFLUENCES

In the case of Mozambique, Hanlon (1998) writes that: "Traditional leaders clearly retain power and influence in many areas, and marriage and inheritance are often covered by customary law. Practices vary widely throughout Mozambique, but in many areas women are discriminated against in terms of land and [other] inherited property. There was a strong move at the time of the end of the war in 1992 to pay more attention to traditional leaders and the land commission draft [of the new land law] specifically recognized 'customary systems'. This was criticized at the land conference as supporting discriminatory and backwards systems. The Council of Ministers withdrew these references and substituted [them with] the concept of 'local community'. This still leaves space for customary law where it retains a recognized role, but does not enshrine it in law."

From the point of view of this objective, traditional leadership, based on regional-ethnic criteria, and the creation of chasms between national institutions and institutions of local power, could endanger the fostering of this citizenship. In addition to being a natural space (that can be characterised through agro-ecological data), a territorial area is a social product, and it is necessary to specify which is the traditional unit of social organisation for agricultural production, as this will have repercussions for the management of managing food security and rural development. Genuinely

participatory planning should take into account not only important local conceptions of poverty and wellbeing, but also those of "space" and spatial organisation.

Traditional authorities in Mozambique have always been present in their communities of origin, acting often "undercover" in community life. If anything has contributed to the reinforcement of their role, one could point to the fact that the state has not yet managed to provide services to the rural areas, schools, hospitals, law and order, and so on. However, even if the state will be able to eventually fulfil the role of facilitating development and market mechanisms to structure commercialisation, it is likely that traditional authority will persist in its capacity of community leader. It is an important part of the cultural universe of Africans; the structuring of the personality of an individual is in a certain way related to this authority. Thus, it is more likely that the role of traditional authority will be rearranged within the social dynamics of community life, with greater, the same, minor, or even without contact to the modern state.

NRM and village development committees have become ubiquitous, but their social legitimacy must be analysed, as must the way in which their including traditional authority would modify decision-making mechanisms (and the interface with local government). This inclusion can take place in direct or in less direct ways, but should always be accompanied by the provision of flexibility in institutional arrangements that can be revised. Committees should not be newly created, but, if possible, existing institutions used, and, if necessary, adapted: in many areas a point of "saturation" with "artificial" committee structures has been reached (some call it "committee-mania") oblivious to farmers' time constraints. Within the time constraints of development agencies there is a need to promote more thorough work on feasibility analyses and longer term investigations, which can also take place alongside project activities.

6. POLICY & INSTITUTIONAL ISSUES

6.1. INTRODUCTION

Mozambique became an independent state in 1975 after an armed struggle waged against the Portuguese colonial state that lasted over 10 years. The legacy left to Mozambique at the time was characterised by extreme underdevelopment of most rural areas and an externally focused economy that was dominated by the provision of transport routes, tourism services and migrant labour to neighbouring countries in the region. The Liberation Front of Mozambique (FRELIMO) sought to sweep away this legacy by taking command of the economy, setting production quotas for all sectors, and running the former colonial farms and plantations as large-scale state enterprises.
The ensuing period, between 1977 and 1987, was an "intense but brief" phase of building a centrally planned economy. As a result of the relative brevity of this period, the rural economy remained pretty much in its pre-independence state. Although drastic changes took place in the ownership of land (with state farms replacing colonial plantations and settler farms), the conditions under which most of the rural population operated remained the same, particularly in relation to the relative importance to their livelihoods of off-farm incomes and subsistence production (Wuyt, 2001).

6.2. RURAL LIVELIHOODS IN CONTEXT

The legal and policy framework regarding natural resources is still evolving and presents good opportunities for strengthening community rights. However, there are some areas of concern; some important policy instruments still need to be put in place and the application of these policies and regulations has major shortcomings, in terms of both of capacity and commitment. Ongoing decentralisation processes and devolution of rights and responsibilities to local communities is revealing the tensions in Mozambique where land and natural resource policy mixes the powerful role of the state with the need to strengthen community rights. Devolution of rights policy is being driven more by informal "pilot" and ad hoc approaches than through central-level processes, and in fact there are pressures to move in the opposite direction, where powerful interests are involved (World Bank, 2003).

The approach taken during the era of central planning, which treated the rural population as a homogenous group of subsistence producers operating outside of the cash economy, failed to capture the complexity of rural peoples' livelihoods. Remittances from migrant, seasonal and casual labour occupied (and continue to do so) a significant part of the livelihoods of many of the rural population, albeit to different extents in different parts of the country. The model of a homogenous peasantry remains dominant, however, in the post central-planning phase of reform and

reconstruction, though it now comprises a mass of "smallholder producers" rather than "subsistence producers". The existence of this homogenous peasantry is largely a fiction; on the contrary, the picture is highly heterogeneous. Livelihoods are constructed from various survival strategies and diverse forms of "income-gathering" (Tanner, 1996). The difficulty of analysing rural livelihoods, and understanding the characteristics of the rural poor and the mechanisms that may be needed to improve their conditions, lie precisely in this complexity.

Evidence from estimations shows how most rural livelihoods in Mozambique, while highly dependent on access to natural resources, are not constructed on the "narrow" use of land for cultivation. It examines the extent to which new natural resource policies in Mozambique have taken cognisance of this diversity, and looks at some of the initial evidence of the impact of these policies. It advances the proposition that some of the initial gains made from policy developments in the land sector, which were cognisant of livelihood diversity amongst the rural poor in Mozambique, may now be being rolled back by more narrowly constructed policy narratives in respect of the forms of access and rights frameworks of other natural resources and other sector legislation.

6.2.1. THE VULNERABILITY CONTEXT OF RURAL LIVELIHOODS

Major changes have occurred in the context in which rural livelihoods have been constructed in Mozambique over the past 20 years, many of which have enhanced the vulnerability of the majority of the rural population. These changes have impacted upon the natural, physical and social capital that is available to the rural poor. They include the widespread destruction of the war, the introduction of economic structural adjustment policies, the advent of market forces and a liberalised economy at the end of the war, the increasing onset of a severe HIV/AIDS epidemic, prolonged periods of drought, and more recently, devastating floods and climatic events.

Smallholder farmers face a range of hazards that pose a threat to their productivity and farm-based livelihood strategies. These hazards include declining soil fertility through the practice of slash-and-burn agriculture. According to MADER (2002), there are significant threats to crops and livestock from diseases, insect infestations, weeds and storage pests. Cattle and goats were decimated by the war, and as populations recover, there are concerns about the capacity of veterinary support services. External shocks such as global commodity price volatility and the continuing shrinkage in migrant labour opportunities in South Africa have the potential to significantly reduce rural incomes.
Other threats include floods and droughts. The areas most vulnerable to drought are those in the central and southern parts of the country (Maputo, Gaza, Inhambane, Northern Manica and Southern Tete). It is estimated that around 60% of the country has a higher than 30% probability of the occurrence of drought. Flood risk affects over 1.7 million hectares at an altitude of less than 20

meters above sea level and within 10 kilometres from the principal hydro-basins. The areas most at risk of flooding are those around the Zambezi, Pungue and Buzi rivers, and, to a lesser extent, those surrounding the Limpopo and Incomati (MADER, 2002).

Mozambique's agricultural sector has suffered from several changes in direction since independence, as well as the massive disruption from the war. At the end of the war, the severe lack of basic services and rural infrastructure was a binding constraint on agricultural growth. Many rural areas with large populations and considerable agricultural potential continue today to have extremely difficult access to the national road network. The International Monetary Fund (IMF) review of the implementation of the Action Plan for the Reduction of Absolute Poverty (PARPA) in 2003 stated that the "nationwide coverage of transitable highways is still fragile, however, which has discouraged private-sector investment and slowed the development of rural markets for agricultural inputs and products" (IMF, 2003).

Rural trading is therefore beset with problems of transport availability, at costs that make Mozambican trading comparatively disadvantaged. A number of studies have identified market access and prices as the most important determinants for agricultural production. Physical capital in the form of the network of small stores (*cantinas*) that existed during the colonial period has been decimated – these used to offer the option of bartering agricultural produce for consumer goods and agricultural inputs, and provided an important bulking-up function. They may also have offered small-scale production or consumption credit to local people. Now, many farmers have to travel long distances to local markets where their bargaining position is weak.

Since the mid-1990s state farmland was distributed to private enterprises and, to a much lesser extent, smallholders. Many of the state-operated farms near to the major population centres were occupied during the war by displaced people, often with the permission and encouragement of the authorities. These landholdings have been returned to the now-privatised companies that formerly operated them or to new entrants to the scene, leading to the loss of land, trees and other resources that had formed a major part of rural people's wartime livelihood strategies. Many of the companies have little capital and investment potential, however, and the landholdings in many cases are being held for speculative rather than productive reasons.

HIV prevalence rates were estimated at 12.2% in 2000, with the highest rates in the central region (INE, 2002). The impact over the coming years is likely to increase the vulnerability levels of many households, as families are affected by illness. Some families are likely to lose land, or to get much less benefit from the land than was assumed. The burden of care for family members who fall ill will

largely be placed upon female members of the household, who are also predominantly those involved in agricultural production. Family savings will be consumed and assets sold to help pay for medical expenses. Farmland utilisation is likely to decline as the inputs become unaffordable and the household labour supply is reduced (Drimie, 2002). Land rights of women may also become increasingly insecure under patriarchal customary tenure systems (which predominate in Mozambique, despite their nominal unconstitutionality in this respect); widows may be required to return to their own families and lose the land that they had access to whilst married. It is noticeable that the higher rates of infection also coincide with those areas where there is most competition for land; the major international transport corridors and the peri-urban areas (ibid). In addition, AIDS has already begun to affect the people working within land and natural resource administrations and related institutions, as well as those involved in the supply of essential goods and services or those that provide markets. The implications for institutional capacity to carry out functions will be several: impacts in terms of productivity, on finances and on human resources (Drimie, 2002).

6.2.2. PUBLIC POLICY AND NATURAL RESOURCES

Public policy has long appreciated that access to shared or "common" natural resources is crucial to local livelihood strategies. Many of the rural poor depend directly on shared natural resources, yet they often live in ecologically marginal areas and have limited and insecure rights to natural resources. *A recurrent question in the rural development debate has been: How are poverty, local governance and access to natural resources linked and what are the policy implications of these linkages*? A principal conclusion has been that decentralised natural resource management regimes will enhance both sustainability and equitable access to natural resources by the poor.

Through local participation and practices such as public meetings, citizens can participate more effectively in local decision-making, gain experience in democratic processes, and hold local officials responsible for their decisions. In short, local development can emerge. Participation, for which a case can be made on economic, political, social and cultural grounds, is now considered essential to the globalisation and modernisation processes. It may give greater voice and representation to citizens, stress local ownership as an effective instrument of implementation, and bring greater grassroots-level control over resources and their utilisation.

It is important to realise that, no matter how "parallel" the two institutional setups and the different production systems they govern may seem at first glance, some sort of informal articulation and communication normally exists between the traditional and modern sphere, often on land matters. With the probable exception of land-conflict resolution, for which decision-making is more focused and ultimately usually lies with only one key authority, at all echelons there is a multiplicity of

decision-making levels that frame traditional institutions. The involvement of traditional community leaders brings natural resource claims and conflicts closer to illiterate persons, who rarely dispose of the many resources necessary to bring to bear their civil rights over livelihood assets through formal government channels and do not understand all the rules and regulations, and the rights and duties that come with them.

They may not have any such rights under national statute law, which does not recognise traditional usufruct. The village is not usually recognised as a legal entity, yet it is at this level that we find the traditional institutions that could sustain genuinely community-based natural resource management (NRM). As different worldviews and knowledge systems will run, or flow, into each other under decentralisation and devolution, the dichotomy that often opposes "indigenous knowledge" to "modern science" is misleading, and the participatory evaluation of both would appear a fundamental starting point when analysing the dynamics of adopting new technologies, or new management and decision-making procedures. Arguably, community participation must take into account the norms upheld by traditional leaders, which implies that "win-win" scenarios are usually rare at any level and that some tradeoffs are unavoidable.

NRM and village development committees have become ubiquitous, but their social legitimacy must be analysed, as must the way in which their inclusion of traditional authority would modify decision-making mechanisms (and the interface with local government). This inclusion can take place in direct or in less-direct ways, but should always be accompanied by the provision of flexibility in institutional arrangements that can be revised. Committees should not be newly created, but, if possible, existing institutions used, and, if necessary, adapted: in many areas a point of "saturation" with "artificial" committee structures has been reached (some call it "committee-mania") oblivious to farmers' time constraints. Within the time constraints of development agencies there is a need to promote more thorough work on feasibility analyses and longer term investigation, which can also take place alongside project activities (MADER, 2004).

The mode of "ownership" will be reflected in local interpretations of, and expectations from, the decentralisation process, which should be explored, as they may augur well or not, so that early "remedies" can be sought. Since for the time being it remains the most visible manifestation of decentralisation at village level, local perceptions are much related to the process of restructuring administrative territories as geographical units. Information is provided below on why traditional leaders should be involved in the decentralisation and restructuring process. The extent to which this may be happening anyhow (by default) is part of the research hypothesis that guided the fieldwork, which has not been found to be relevant in all countries.

Empirical evidence from MADER (2004) shows that a variety of different locations suggests that rural households do indeed engage in multiple activities and rely on diversified income portfolios. In sub-Saharan Africa, a range of 30-50% reliance on non-farm income sources is common; but it may reach 80-90% in Southern Africa. In South Asia, on average, roughly 60% of rural household income is from non-farm sources; however, this proportion varies widely between, for example, landless households and those with access to land for farming. In sub-Saharan Africa, reliance on agriculture tends to diminish continuously as income level rises, i.e. the more diverse the income portfolio the better-off is the rural household. Elsewhere, a common pattern is for the very poor and the comparatively well-off to have the most diverse livelihoods, while the middle ranges of income display less diversity.

It is widely agreed that an ability to diversify is beneficial for households at or below the poverty line. Having alternatives for income generation can make the difference between minimally viable livelihoods and destitution. However, diversification does not have an equalising effect on rural incomes overall. Better-off families are typically able to diversify in more favourable labour markets than poor rural families. Total income and the share of income derived from non-farm sources are often positively correlated. Different income sources may have strongly differing impacts on rural inequality. For example, unequal land ownership may mean that a policy focus on crop income favours the rich above the poor; however, greater access to non-farm wage income would have the reverse effect. The conventional wisdom for many years has been that rising output and incomes in agriculture itself are the catalyst for diverse non-farm activities in rural areas. However, in sub-Saharan Africa this has rarely been the case, since most household-level diversification is not just non-farm but non-rural in character.

6.2.3. NATURAL RESOURCE AND LIVELIHOOD STRATEGIES

Mozambique is essentially an agriculture-based economy. The war resulted in increased pressure on land near major towns of the coastal zones and safe rural areas, but out-migration to areas of origin has since occurred. With improvements to rural security and the tertiary road network has come increasing clearance of land for cultivation. Of the total area cultivated, it is estimated that about 90% is under production systems of the so-called “family sector”. The remainder is used by other agents: agribusiness firms (particularly sugar, tea and cotton) state/private joint ventures, cooperatives and private individual farmers. Most agriculture is rain-fed, and in the southern and central provinces of Mozambique rain falls erratically and most of it only during a short period of the year.

The use of natural resources in livelihood strategies is not limited to agriculture and the full-time cultivation of land, i.e. the low level of land that is cultivated paints a false picture of the actual area that is important to the rural poor. Other natural resources are collected, processed and/or marketed by many families, either as a predominant activity or as part of a diversified portfolio of livelihood strategies designed to spread and minimise specific risks. These include resources such as bush meat, honey, clay, roots and tubers, medicinal plants, building materials, thatching grass, firewood, and the production of charcoal and salt. Forests, in particular, provide a range of resources central to people's livelihoods. The majority of the population remains in settlements dispersed widely throughout the country's forests. This is in marked contrast to other African countries, where colonial policy had been to relocate people from the forests to roadside communities. The effect in Mozambique is that a much higher percentage of the population lives in isolated forest communities that are directly dependent on access to surrounding forest resources and the health of forest ecosystems for survival. Mozambicans rely on woody biomass, for example, for nearly 85% of their total energy consumption (IMF, 2003).

6.3. DECENTRALISED MANAGEMENT AND RURAL LIVELIHOODS

Mozambique possesses extensive natural resources and a rich biodiversity. Agro-climatic conditions allow a variety of crops and multiple land-use systems. Its significant river basins provide great potential for improvement to land productivity, through large irrigation and drainage systems. The resources are inadequately used, rural income continues to fall, and poverty is increasing. In recent years, rapid population growth and declining food production have affected Southern Africa. Food security, life expectation and immune systems have been declining, thus rapidly increasing the rate of infant mortality. The rural standard of living has been deteriorating year by year. Net incomes and livelihoods have been taken away, leading to the adoption of informal systems and subsistence agriculture. *Why? Does Decentralised Natural Resource Management have the potential to meet the objective of empowerment of the poorest in all contexts? Under what conditions will it work*?

In theory, decentralisation should improve resource allocation, efficiency, accountability and equity, by linking the costs and benefits of local public services more closely. This coincides with a general consensus among natural resource practitioners that centralised management has often failed National governments sometimes have legal authority over vast forest areas that they are unable to control. Integrated rural development projects often failed, because they were top-down projects that did not take local people's needs or desires into account.

Decentralisation, community rights and sustainable use of natural resources are some of the key motifs that organise the development discourse of our times. Local boards functioned as units of governance for rural areas with a variety of tasks assigned to them, including, in some provinces, the management of land and soil improvement. The genealogy of natural resource management paradigms is far more complex than that for decentralised governance. For one, the chronologies of management and/or regulatory initiatives of different resources such as forests and soil do not correspond. Secondly, one of the domains for this study – watersheds – includes within it a set of different resources (such as land and water, but also sometimes forests and grasses) that need to be studied separately. The concept of institutions in many good-governance debates has mostly stopped at the level of sub-national authorities (local governments), and rarely does the concept extend sufficiently to civil society and grassroots organisations and structures that are the real agents of local governance. In many cases, institutional development has sought to be linked to popular participation through local government structures, community development programmes and district planning, before these links are explored. It is important to consider the design of these institutional mechanisms and what they were expected to achieve (IMF, 2003).

6.3.1. RURAL GOVERNANCE PERSPECTIVE

Good governance does not mean advocating strong states or centralism, but in a market economy it means having the state intervene on behalf of the poor (regulatory) and allowing the poor to have a voice (devolution). This will lead to enhanced effectiveness and efficiency of public interventions by the central government, which is distant from the point where needs are felt and service delivery is needed. Local governments know the needs and desires of their constituents better than national governments, while at the same time it is easier for constituents to hold local leaders accountable. Decentralisation should also promote democracy by "bringing the state closer to the people," increasing local participation and building social capital. The goals of decentralisation largely coincide with the needs of effective natural resource management. Local people are more likely to accurately identify and prioritise their environmental problems.

The key issues in rural development relate to the judicious use and management of the resource base on which the rural people depend for their livelihoods. This is to ensure that while present economic activities draw dividends from the natural resource base, they do not draw down on the natural capital (i.e. the ecosystem goods and services) so that future generations will continue to depend on it. As found by Negrão (2002) rural governance plays a vital role in ensuring this. The rural poor will remain poor unless they are able to produce surplus and sell it under the most favourable market conditions, or to divert their surplus labour to economic activities that are not based on primary resources. Good rural governance should be able to provide services such as

timely market information for producers to benefit from market changes, as well as open up opportunities for a broader based rural economy to diversify livelihood strategies.

The role of rural governance in providing these services remains important, particularly to rural communities that are both physically and economically isolated. Lack of informal and formal education restricts the capacity of rural people to take advantage of alternative job opportunities. The incidence of chronic ill-health due to poor accessibility to and affordability of health services and its effect on reducing rural labour productivity has been grossly underestimated (Flores, 2001). Recent experience from a number of developing countries suggests that programmes of decentralisation accompanied by parallel efforts to promote greater power and autonomy in decision-making for local communities can offer genuine opportunities to improve outcomes. Decisions about the management of natural resources should be delegated to the local authorities – a downstream approach. From the perspective of central governments, the institutional dimensions of decentralisation often centre on defining which formal governmental institutions are to be involved, and establishing an appropriate legal framework to define relationships between different levels of government.

Central governments have not generally sought to define a role for non-governmental institutions. Such institutions are often perceived to be technically backward and managerially incompetent, or to pose a direct threat to the government through political opposition. From the perspective of rural people, however, the institutional situation they confront is likely to be far more complex and varied, comprising a whole range of central and sub-national governmental agencies, parastatal organisations, as well as the full complement of non-governmental institutions, such as religious, cultural, political, social welfare and economic organisations, all with their own “rules of the game” and individual objectives. Institutional capacity plays a central role in any decentralisation process (IMF, 2003). Failure of local governments to take advantage of the opportunities provided by decentralisation because of a lack of capacity will result in poor outcomes. Local governments and other institutions that cannot adequately administer and account for grants or effectively mobilise local resources will find those powers swiftly taken back. Decentralisation of fiscal and investment decision-making from national to provincial and local governments contributes to more efficient decision-making regarding investments, and to more efficient implementation of projects. Decentralisation of resource allocation and investment decisions to municipalities and communities should be accompanied by a clearly defined and well-disseminated system of incentives and penalties to discourage the misuse of funds (RSA, 2000)

6.3.2. INSTITUTIONAL ARRANGEMENTS AND NATURAL RESOURCE MANAGEMENT

Under decentralisation reforms, in a sense that all actors are involved at local levels in inclusive structures, power is transferred from central government to institutions and actors at lower levels of political and /or administrative authority. The rationale behind decentralisation is that these reforms foster increased efficiency and equity in development activities. By virtue of their proximity to the people they serve, democratic local institutions are likely to have access to better information about local conditions and a better understanding of local needs and aspirations, and to be more easily held accountable by local populations. Decentralisation does not mean transferring and centralising the decision-making process at local level – it implies moving decision-making closer to the people and requires that citizens have a voice and exit options for local governance (political decentralisation). In addition, the local governments that are elected should be allowed home rule in fiscal, regulatory and administrative matters (fiscal and administrative decentralisation). All of these elements must be in place to ensure effective decision-making at the local level. The holistic approach ensures that all pieces of the puzzle fit together - i.e. the desired balance in autonomy and accountability is achieved while providing incentives for cost efficiency. This balance might not be achieved under piecemeal reform.

The choice of institutional setup for supporting Decentralised Natural Resource Management (DNRM) should be guided by the administrative systems that national governments have decided to put in place for different natural resources. In situations where jurisdiction over a natural resource is poorly defined and a general devolution process is already being implemented, or when the resource is already under local government jurisdiction, the appropriate institutional choice for support is likely to be *devolution.* Conversely, if the natural resource is under the domain of a politically strong line ministry, devolution might be politically infeasible, which leaves *deconcentration/delegation* as the most realistic model for actual promotion of DNRM.

Moreover, deconcentration/delegation need not be the final result. It could rather be considered a (pragmatic) first step towards devolution of natural resource management. Whether the legitimate interests of, say, pastoralists and indigenous peoples, who are local minorities or traditionally roam/move through large areas, are served better through devolution or deconcentration/delegation of natural resources is an open question, since both models are primarily based on geographically defined rather than interest-defined communities. Whichever institutional setup is chosen, special provisions will probably be needed to accommodate the interests of minorities, seasonal and occasional resource users, as well as public authorities with direct or indirect stakes in the natural resource.

With regard to the knowledge systems' institutional settings, it was found that institutions and governance policies have a role in creating an attractive climate for private-sector development, including institutional reforms needed to generate an enabling environment for local development. It was found that poor governance and weak institutional capacity have resulted in poor policies incapable of addressing the challenges of agriculture and rural development, with a major impact in terms of malfunctioning and inefficient markets (frail private sector, high transport costs, weak information systems, poor regulatory framework).

6.3.3. DECENTRALISATION INITIATIVES WITH REGARD TO NATURAL RESOURCES

The decentralisation of natural resource management and the use of local decision-making powers are considered critical in improving the revenue-generation capacity of citizens and local authorities. Local representative bodies need powers over the resources that affect their sustainable livelihoods and economic improvement. Natural resources play a strategic role in rural economies both as a potential source of long-term development and as the essential contributor to sustained food security. Many rural communities are dependent on natural resources in one way or another.

The devolution of powers of natural resource management to local groups has been complicated by a parallel process through which the government has been reinstituting the institution of "indirect rule" through "community representatives". This legislation was not submitted to Parliament, but was issued as a decree from the Council of Ministers. The decree essentially reappoints the traditional chiefs as legally recognised representatives of community groups, although it mentions that these representatives can also be the Bairro or village secretaries or other leaders "legitimized as such by their respective communities" (IMF, 2003). In the decree and the associated regulations there are no clear procedures for how this choice of representative is to be made, except for the provision that where a community has "legitimised" both a traditional authority and a "civic" leader (such as a Bairro secretary), it is the community that decides who has precedence. Research conducted in Zambézia in 2001 revealed that the implementation of the decree was understood rather differently by the local authorities who stated that they were "calling all the chiefs in the area to reinstate them".

The Land Law contains an article that states that the mechanisms for representation of community interests in respect of land-use rights are fixed by law (Article 30); the decree 15/2000 and the associated regulations therefore cannot serve this purpose, since it is not a law but merely a decree. What remains is a confused situation understood in different ways by different actors. The theoretical and practical foundation of traditional authority is generally of a symbolic-religious nature, and is given legitimacy only by the communities themselves (often finally endorsed through

bodies such as the Council of Elders). They are thus "grassroots institutions" that in effect have to negotiate their power day-by-day, and therefore embody a degree of flexibility that may be extremely useful for the efficient management of natural resources. The physical closeness to their "constituency" allows for the application of a set of rules and norms that will rarely be out of touch with the ecological reality and the management and conservation requirements of the resources in their territory. In West Africa, for example, in the case of negotiating and managing transmigrant cattle corridors, this flexibility is vital if ecological degradation and social conflict are to be avoided. It may also ensure that cultural rights are respected within the complex ethnic mosaic of most rural societies in Africa, including matrilinear and patrilinear groups.

In Mozambique, traditional chiefs act as mediators between a given ethnic group and its environment, and their relationship to the land is determined by the location of the burial places of the ancestors of a given lineage (or tribe). Traditional community leaders are the symbol of an intimate alliance with their territory. The primary function of such traditional authorities is to ensure peace and harmony in the rural communities within their territory. Thus, a "bad" chief or sheikh would be someone not able to ensure this, for example during celebrations when people consume alcohol and fights may break out. The main tasks of traditional authorities revolve around mediating in land-conflict resolution and regulating access to land. Solutions are normally reached among the parties involved, often with the mediation of the respective local lineage chief(s) or sheikh. It is only when the latter are unable to reach a verdict acceptable to everyone that the traditional chief or the grand sheikh (*sheikh daman*) is approached. He or she is acknowledged to have ultimate knowledge of the customary geographical boundaries, and will reach a decision in consultation with his or her counsellors (Tanner, 1996). In performing these services, traditional leaders have obligations and duties without any rights. There is no reward for the work they carry out for the institutions of the government, for organisations or companies, which occupy their time to the detriment of their fields.

In Mozambique, making land claims before the traditional authorities usually takes the form of oral testimony by credible witnesses, and state institutions in charge of land administration are rarely approached for conflict resolution, unless one of the parties derives the legitimacy to substantiate their claim from modern legislation rather than customary rights and thus stands to gain from their involvement. There is in fact a broad (and not necessarily consistent) repertoire of norms and laws that the shrewder and better-informed individuals can draw upon and interpret to their own advantage. The resolution of land conflict, therefore, becomes somewhat unpredictable, and the involvement of traditional authorities does not *a priori* guarantee that outcomes favour the aggrieved party. Rather, results are determined by a dialectic relationship between traditional norms and

individual behaviour, and may be strongly influenced by political considerations. In Mozambique, the vital role of customary institutions in supervising access to land, particularly amidst recent waves of thousands of people returning after 1992 with the end of the civil war, has been documented (Tanner, 1996).

With regard to traditional leadership, the unification of Yemen in 1990 has brought together two very diverse sets of government policies. In the Republic of Yemen's administrative and local power structures it is the sheikhs who at village and sub-district level represent both the local population and the state. The government administration is only represented by the district chief, two levels higher up, who exerts authority by confirming or rejecting the choices made at the local level according to customary rules (Mundy, 1995). Traditional leadership includes sheikhs, *akels* (wise men), *amins* (religious authorities who organise the collection of the *zakat* Islamic tax), religious leaders (*hijra* or *sada*), and, related to water management, *mukaddams* or *almudawels* (for details, see Othman & Messer, 1999). Although households are directly involved in NRM, traditional leaders assist them in solving community-level problems related to land disputes, the distribution of irrigation water, and the practices of the traditional *hema* rangeland management and conservation system. The influence of such leadership is increasingly re-emerging in Southern Yemen.

Land conflict is not usually inspired by the intent of appropriation, and the notion of private property of land is almost unknown. Given the mode of settlement and the numerous marriage ties, non-autochtonous population groups are not considered "strangers" and enjoy equal rights and duties. The Domain and Land Tenure Code CDF) states that land on which customary tenure rights are applied has no property value and belongs to the domain of the state, and that the application of customary tenure rights is confirmed, as long as the state does not require the land on which these are applied. The code affirms that "customary chiefs, who regulate land use on the part of families and individuals according to custom, may in no case use their functions to claim other rights over the soil other than those resulting from their personal use, in conformity with custom" (Tanner, 1996).

Throughout the country the political-administrative figure of the political party secretary persists, a post that was created after independence in order to carry out party political tasks at local level, but also to replace the traditional chief in his role as a link between the population and the state administration. At community level, only the chiefs and not the political secretaries have the legitimacy to see to traditional matters. Furthermore, in the perception of rural communities, many administrative matters also fall within the domain of the traditional chiefs because of their symbolism, such as in the case of land and of conflicts without bloodshed. Throughout the country

there persists a coincidence or overlapping between the political secretary and various levels of traditional authority in terms of geographical space and political-administrative functions, which are: mobilising the population to take part in local development activities; solving minor social disputes that arise in "their" areas; notifying and channelling to the competent institutions any problems they cannot solve and those outside their sphere of competence; passing on guidelines from the local administration to "their" population; involving the population in agricultural production; mobilising the population for sanitation work; opening landfills and building latrines; supporting vaccination campaigns; collecting taxes (also a task of *régulos*); and meeting with the population to listen to problems (Tanner, 1996).

The role of the customary leadership as regards responsibilities outside of the conventional traditional sphere is thus undefined, due to this overlap and the gap in the existing laws (Lundin & Alfane, 1999): “The big chiefs should understand [the importance] of the role of the traditional authorities... to collaborate with them... it is necessary to better understand and know who is the authority at local level”. When it comes to a comparative study based mainly on fieldwork in Yemen, Mali and Mozambique, the question to ask is: Is there anything amongst these very different countries that can be meaningfully compared at all, and, in the affirmative, for what use? The metaphor used in methodological discussions is often that of “comparing apples and oranges” – or can we go to scale, and compare them as “fruit”? This researcher argues the latter, namely that if the issues are placed in a context of current policy challenges for rural development, we must not shy away from such complex concerns. Rather than the unit of analysis and timeframe, what needs to be modified and relaxed is the intent of such a normative output: it cannot pretend to do more than give clues and insights, directions for consideration, reflection on the part of policymakers, and further action-research for validation and consolidation, for made-to-measure solutions.

6.3.4. CONSULTATIONS AND PARTICIPATION IN NATURAL RESOURCES MANAGEMENT

One of the most important aspects introduced by the new policies was that of *mandatory consultation processes* with local community groups. These are now necessary in every single application for natural resource rights in rural areas. The consultation process is an important opportunity for the establishment of a potential long-term partnership between a local community and private-sector investors in rural areas and is of primary importance in reducing the potential for later conflict. As a new institution these consultations are beset with myriad problems. In some cases they are not taking place at all, or they may be performed in a perfunctory manner. Local elites may manipulate the process. Local administrative structures may not provide supportive guidance. Structural problems exist, such as the inclusion of a mandatory financial “incentive” for the community group and the lack of a system for capturing the terms of agreements and

monitoring compliance. Further research conducted in Zambézia revealed a high awareness on the part of communities of the requirement that they be consulted on new applications for private land-use rights within their areas. However, they registered complaints regarding the quality of consultations that have taken place to date and record that in some instances there are other "local structures" that are consulted in their name (Bila & Nhantumbo, 2002).

Even where local administrative structures may take a more neutral role in respect to the consultations, there is very little acceptance of the need to provide community groups with support and information that would assist them in making informed choices in the negotiations. Very rarely, if at all, do Provincial Geographic and Cadastral Services (SPGC) representatives who attend the consultations come equipped with maps and registers that show the extent of actual and pending private landholdings in a community area, and it is in fact rare for even the district administrations to have access to this kind of information. Innovative and progressive solutions are not advanced by local state structures, which are often looking for quick-fix solutions rather than long-term agreements that they will then be required to monitor. Thus, as a report from Cabo Delgado province states: "In reality, the new law has not turned out quite as well as planned. While it does defend community land rights, it has not produced the close relationships between investors and rural communities that its designers envisioned. Instead of contracts spelling out ongoing financial relationships between investors and communities, the practice of one-off (compensation) payments continues, leaving community members with a short-term flush of cash and long-term loss of their lands". There is also very minimal recording of the nature and elements of any longer-term agreements that may be being made, making the monitoring and enforcement of these an extremely unlikely scenario in the future.

Bila and Nhantumbo (2002) point out that community consultations in the forestry sector are more complex in comparison with those regarding land resources, largely as a result of issues of scale. Forest concessions can cover hundreds of thousands of hectares distributed across district boundaries and covering various administrative posts and dozens of villages. They further note that given the apparent complexity and variety of stakeholders and interests involved in such large areas, it would be expected that the consultations would raise a range of issues and expectations. However, "the consultation reports of those [concessions] already approved appear very simple and are not clear on the methodology used nor the principles used in the [consultations]" and it would seem that "the consultations were merely done to obtain a 'rubber-stamp' [from the community]" (Bila & Nhantumbo, 2002).

There is in fact little experience of consultations in forestry applications, given the fairly recent enactment of the regulations and the fact that most of the existing applications were in fact already authorised (despite their nominal illegality). However, concession agreements may proceed without operators taking on any meaningful obligations vis-à-vis the affected communities: "Other villagers lament that community leaders have negotiated away their forests in exchange for gifts such as a bicycle or food. Concessionaires admit that they often arrive in areas to begin harvesting and find villagers who have heard nothing of the concession. When problems arise after operations begin, such as the inadvertent destruction of crops as a result of tree felling, communities apparently find it impossible to speak with people at a level within the company who can make reparations. An oft-stated view is that the consultation processes act as a powerful disincentive to investment in rural areas, but it appears to be rarely the case that a community will reject an application during consultation. Most community groups in fact welcome the potential presence of a new local actor with resources and social capital that they do not possess, perceiving this to be a positive impact upon local development.

6.3.5. LOCAL PARTICIPATION AND COMMUNITY CONSULTATION

There is also anecdotal evidence that suggests that the intensive targeting of community groups by non-governmental organisations (NGOs) and civil society campaigns, coupled with the comparative lack of a state-driven process of disseminating information, has created a situation in which the local populations' awareness of the regulatory framework is in fact greater than that of local administrative structures – also at a district level. This is equally true within the forest sector. Conclusions from the consultation process carried out also identified similar obstacles: (1) Government agents did not have access to the laws, or the capacity to disseminate information to local community groups; (2) Laws had not been translated into local languages; (3) NGOs involved in dissemination did not always understand the concepts and principles in the law; and (4) High levels of illiteracy were an obstacle to dissemination (Tanner, 1996).

One of the most important aspects introduced by the new policies was that of *mandatory consultation processes* with local community groups. These are now necessary in every single application for natural resource rights in rural areas. The consultation process is an important opportunity for the establishment of a potential long-term partnership between a local community and private-sector investors in rural areas and is of primary importance in reducing the potential for later conflict. Further research conducted in Zambézia revealed a high awareness on the part of communities of the requirement that they be consulted on new applications for private land-use rights within their areas. However, they registered complaints regarding the quality of consultations that have taken place to date and record that in some instances there are other "local structures"

that are consulted in their name. After the initial land delimitation exercises undertaken in 1999 as part of the piloting processes of the Technical Annex, the level of government finance, resources and involvement in this area of implementing the new policies has been extremely limited. Most land delimitations since this time have in fact been undertaken through off-budget donor-supported exercises that have been implemented by various NGOs, with government participation occurring as a reimbursed service to these groups.

Indeed, although there was apparently considerable support for the resource and funding requirements that would be needed to implement and test the new poverty-focused elements of the law (not least through PROAGRI) it soon became apparent that the government considered these to be of secondary importance and embarked instead upon a drive to attract outside investment and to facilitate the allocation of private land-use rights. *Pro forma* expenditure plans may include allocations for information dissemination and delimitation, but *actual* expenditure has been minimal over the last few years. This has been characterised as "a tendency within the more conventional thinking of PROAGRI towards a dualist view of 'family' sector (community) land use and new, private sector land needs" (DFID, 1999).

Despite limited government funding for the proactive delimitation of community land, a considerable number of delimitations has been completed in various parts of the country, largely through the support of NGOs. Information on and monitoring of the implementation of these delimitations has been fragmented and partial, notwithstanding the recent DFID-funded appraisal of the land sector, which included a specific review of completed delimitations throughout the country (CTC Consulting, 2003). This review stated that the total of delimited areas now stands at 162; 59 of these have been issued with certificates and 24 have a full land title, implying that they were demarcated rather than delimited. One of the gaps left by the dissolution of the Inter-Ministerial Land Commission is a central collection point for the monitoring of the implementation of this aspect of the new law, a gap that has not been filled by the National Department of Geography and Cadastre, which is still battling to provide the country with an efficient and transparent register on private landholdings.

In the mid-1990s, the policymakers were keen to highlight the flexibility of the land law and technical annex: that the community (as an entity that can register land-use rights) need not necessarily be a group that pays allegiance to a traditional paramount chief (*régulo*) and that the boundaries of delimited areas need not follow old "traditional" boundaries from the colonial period, nor present-day administrative divisions. The "community" can choose its own name, define its membership according to broad and flexible guidelines, and appoint its own representatives, free of any

stipulations in the law. The challenge of "how to (legally) recognise a group without converting it into something else" seems to have been an important consideration in the framing of the law. In implementation, however, it appears that the vast majority of delimitations that have been completed are being defined along the lines of the old colonial-era *regedorias* or are defining and refining the zones of influence of traditional chiefs and authorities at various levels (Tanner, 1996).

The issue of scale is perhaps one of the most important considerations in relation to the effectiveness of delimitation exercises and their actual and potential impact upon livelihoods. In general, common property management regimes are predisposed for success when the group of users is small and the resources not too extensive. Reasons for this include the low cost of the intra-group enforcement of rules, extra-group exclusion, easy detection of problems and infractions, better coordination and participation in decision-making. The Mucombwe case had a small group, containing a population of over 600 people, and the area that was delimited covered 3,000 hectares. In contrast, some of the delimitations completed in Zambézia have covered very large areas of land with considerable populations. Again, this appears to be as a result of the enduring nature of the concept of *regulados* and *regedorias*. The "entry point" used by the Rural Mutual Help Organisation (ORAM) for the delimitation exercises in Zambézia, for example, has tended to be through the locality (State) structures and the "recognised" traditional authorities, many of which are identified through the use of old colonial-era registers or maps (Norfolk, Nhantumbo & Pereira, 2003). Well-entrenched notions of administrative and traditional boundaries tend to be the dominant defining characteristics of the "community groups", despite a policy framework that would allow for a much wider range of potential associations.

The extent to which the process of delimiting community land forms part of a "joined-up" implementation approach, which has as an objective the integration of the poor in the social and economic development of an area, has also been of concern. Many delimitation processes to date have been criticised for having been undertaken in isolation and without a clear vision of how the exercise would form part of further, obviously necessary, processes of local planning and development. To a certain extent this situation has come about as a result of two main drivers: (i) An objective articulated by some NGOs that considered the defensive implementation of the law as necessary in order to secure and protect land rights from outside encroachment; and (ii) A programmatic imperative on the part of some NGOs to deliver on targets set as a result of donor agreements.

6.4. THE ROLE OF LOCAL AUTHORITIES

Local authorities play a critical role in development. They are composed of different systems and segments, and define the drivers of development. By looking at how agents, institutions and

structures shape and are shaped by one another, it becomes possible to engage with political interests and power relations and to come to terms with how political choices and demands influence policy outcomes and institutional incentives, rules and patterns. The aim is not merely to do routine stakeholder analysis, but to come to an understanding of the processes through which interests are mediated, decisions made and resources allocated. This concept also offers and requires a longer-term perspective rather than solely a focus on short-term poverty reduction. It facilitates a more fundamental impact on patterns and directions of change. It also holds the potential to sensitise, work with local preoccupations, systematise the timing for initiatives, build synergy between pro-poor policies and a broader growth/development/modernisation agenda, and engage with wider groups of opinion.

6.4.1. THE DRIVERS OF CHANGE

Development literature and concepts are good at identifying *what* needs to be done to improve the lives of the poor in developing countries, but they are not always clear about *how* to make this happen most effectively. The Drivers of Change (DoC) approach, developed by the UK Government's Department for Inernational Development (DFID)[24], is a concept to identify, describe and to better understand the interaction between them (agents, institutions and structures). Typically, development agenda has sought to bring about change through technically sound programmes, supported in-country by individual champions of reform or change. Increasingly, the importance of understanding the underlying political systems and the mechanics of pro-poor change has been acknowledged. In particular the role of institutions – both formal and informal – and underlying structural features is being recognised.

The core point of the DoC approach is that local situations and local history should be the point of departure for development and policy change in any given society that has distinguished between structures, institutions and agents as drivers of continuity and change:

(i) **Agents** are actors, individuals and organisations that pursue particular sets of interests. *Agents* refers to individuals and organisations pursuing particular interests, including the political elite, civil servants, political parties, local government, the judiciary, the military, faith groups, trade unions, civil society groups, the media, the private sector, academics, and donors.

(ii) **Institutions** are frameworks of rules governing the behaviour of agents (i.e. markets, cultural patterns, legal and administrative frameworks, and norms). *Institutions* include the rules governing the behaviour of agents, such as political and public

[24] http://www.grcexchange.org/g_themes/politicalsystems_drivers.html

administration processes. They include the informal as well as formal rules. Institutions are more susceptible than structural features to change in the medium term.

(iii) **Structures** refer to the relationships and dynamics underlying the economic, social and political fabric of the country and its resource endowments as reflected in the distribution of assets, economic processes, social relations, ingrained political legacy and form of government. *Structural features* includes the history of state formation, natural and human resources, economic and social structures, demographic change, regional influences and integration, globalisation, trade and investment, and urbanisation. These are deeply embedded and often slow to change.

6.4.2. ANTHROPOLOGIC AND SOCIOLOGIC PERSPECTIVES

Scholars of anthropology and sociology have been creative in interpreting political movements and in offering conceptualisations for their understanding (Lundin & Alfane, 1999). Local governance has also followed from the same process. Revitalised local institutions have asserted the supremacy of civilian authority. The process has reinforced the recognition of the traditional system as a means of empower local authorities and has allowed people to come together and discuss diverse local problems within the forums that have drawn upon and strengthened their local institutions. Local government units are working in partnership with these traditional structures to support the development aspirations articulated by area residents. Working within their traditional norms and institutions enables people to understand and readily come to terms with change. Having the support of technically qualified personnel facilitates the capacity- and knowledge-building required for dealing competently with the new tasks of modernisation and development. The resulting blend of capacity and legitimacy enables people to participate fully in development enterprises, deriving the best possible results in the process. The example of some districts of Mozambique illustrates how traditional institutions can be strengthened and redirected toward activities concerned with autonomous self-development and how such constructive engagements can be promoted by governments and by non-governmental organisations (Tanner, 1996).

Traditional authorities are informal and local institutions in a given territory. Traditional institutions are important to people in many parts of the developing world and especially, though not exclusively, among indigenous peoples. Traditional institutions such as indigenous cooperation groups, councils of elders, and customary laws and mediators are important for resolving disputes, enforcing widely agreed standards of behaviour, and uniting people within bonds of community solidarity and mutual assistance. As such, they embody important forms of social capital, representing forums wherein local communities can unite together and act collectively. Traditional

authority includes those who hold local traditional power – the traditional chiefs, the lesser lineage chiefs, the chiefs of social groups, those who hold spiritual power, the traditional doctors, the herbalists, those who know the essential skills for the basic physical survival of the community, those who know and can work with the mechanisms of social control, and those who control cultural transmission. These powers, skills or tasks can, and usually do, overlap in the person of more than one individual (Lundin, 1998).

However, traditional institutions are rarely included within plans of development that are formulated for the most part in national capitals. Planners have mostly disregarded the potential for collective action that inheres within these institutions, partly because of ignorance and partly also because development, which is seen as "modernisation", is often regarded as antithetical to tradition in any form. On their own part, too, leaders of traditional institutions have been reluctant to adapt to new concerns. The incursion of modern activities and forms of governance is often seen as challenging the prerogatives of these institutions. It is exceptional, thus, to find traditional institutions taking an active role in regional development activities. It is even more unusual to see such institutions working closely in cooperation with technical personnel of government agencies.

Traditional leadership as part of the above-mentioned systems, in its form before external interference, operated on the principle of community participation, consultation, consensus, and an acceptable level of transparency through the village council or open tribal consultative meetings. These principles are not too different from the ones which modern democracies prescribe as essential for democracy! It might serve a purpose, therefore, if African countries that are striving to achieve good governance could look with renewed focus to the role of traditional leaders, and pay specific attention to the similarities between the principles of traditional governance and the aspirations of new democracies the world over (Venson, 1995:2).

In South Africa, traditional authorities also provide a challenge for new rural councils. The African National Congress (ANC) originally took the position that traditional authorities would undermine democracy and that this illegitimate institution should be phased out. This position changed as the ANC realised that traditional authorities have a strong pull on their constituents – it is estimated that traditional authorities have jurisdiction over 18 million people or 40% of the population (Botha, 1994, cited by Galvin, 1999). Traditional authorities vary in their level of local acceptance among provinces and within provinces, depending on the extent to which they were used by the apartheid regime and whether they were ever a part of the local culture. In KwaZulu-Natal, the Eastern Cape and parts of the Northern Province, where they do play an important role, their relationship with the

new local government structures is uncertain. Although the White Paper has confirmed the *ex officio* status of councils, it is not clear what will really happen (Galvin, 1999).

In Mozambique, the Portuguese colonial administration defined land boundaries and territories for their own intents and purposes; at that time many traditional chiefs lost authority over "their" own population, while other chiefs gained power over a population over which they had no traditional rights. Many of the chiefs became associated with, or new ones were appointed by, the colonial regime under what was in effect indirect rule to undertake a number of jobs and functions. According to the six-year research project by the Ministry of State Administration (MAE), "(...) after a generation this task [of acting as middlemen] came, in the collective unconscious, to form part of the very nature of being a traditional chief, even though this is not the case" (MAE, 1996 – parenthesis added). The FRELIMO government of post-independence Mozambique opted for a policy of exclusion of traditional authorities from power, replacing them with party secretaries, accountable directly to the party leaders in national government. There exists, however, evidence that customary institutions were never *de facto* completely or always without real influence in the rural areas, although details on their position and relationships within the social structure are rather locality specific (Messer, 1998).

Before and during the 17 years of civil war that ravaged the country, the armed Mozambican National Resistance (RENAMO) took advantage of the FRELIMO stance toward traditional authorities to win them for their cause, collaborating closely with them. Therefore, the degree of local legitimacy of traditional authorities varies tremendously, and reflects the history of their interaction with the Portuguese colonial regime, and the FRELIMO government and RENAMO opposition after independence. Colonial territorial divisions that used to be ruled by the traditional authorities were replaced by new territorial divisions with new rulers. In the first two years of independence, the new local-level authorities who replaced traditional authorities were the Dynamising Groups (GDs). GDs were popularly elected officials at workplaces in urban and rural neighbourhoods. They also existed at the level of circle, village, locality, and district (Hanlon, 1984). The formation of GDs constituted a step forward in the construction of rural democratic governance in relation to the colonial past. Contrary to the traditional authorities, these new officials were elected directly by the people they ruled, and their composition was more inclusive and less dependent on racial, tribal, gender and age conditions. For instance, both black and white Mozambicans could become members of GDs. A person from one ethnic-linguistic background, man or woman, young or old, could integrate GDs in another location, if the electorate had found that he/she was best in that position. This was an important departure from colonial times when,

under the rule of the traditional authorities, women and the youth were often excluded from the decision-making process (Tanner, 1996).

The institution and the role of traditional authorities have changed over time (in some areas from the pre-colonial time up until now). As what we find today is the result of past actions, we must go back and examine the history of each particular area of the country if we want to understand the current dynamics in relation to traditional authorities. For example, where there are disputes of power today among traditional authorities, we may be in a position of understanding the origins of the dispute with respect to the history of that area. Moreover, the "terminology" related to traditional authority varies countrywide and it has changed with the history. This is also a critical aspect to take into account while seeking ways of better understanding the issue of traditional authorities. The anthropologist Lundin (1998) argued that members of "African communities" in Mozambique perceive the institution of traditional authority "as the true and real representative institution of the territoriality". The role to be played by traditional authorities in the society she characterised is seen as "culturally diverse". This position is that "the meaning and function of 'traditional authority' has been transformed many times over with changes in the larger political contexts in which local institutions have existed". As consequence of that, an understanding of the issue of traditional authorities can only be achieved through a close examination "of its variegated and contentious history", taking into account "local contexts" and "using terminology with greater geographical and historical precision".

6.4.3. LOCAL INSTITUTIONS AND RURAL LIVELIHOODS

The role of customary institutions in supervising access to land, particularly amidst recent waves of return migration, has been observed. Under the new land law, passed by parliament in September 1997, individuals or communities can acquire land rights through occupancy and use of a piece of land for a period of at least ten years, or by occupying land according to "customary norms and practices", provided these are not contrary to the constitution. However, "the nature and capacity of community-based land management institutions is an issue, as is the question of the articulation between customary and formal state authority, at locality and district level" (Quan, 1999). Great care is needed to achieve an appropriate balance of respect for traditional authorities and their role in representing the interests of local communities, while still aiming to redress grievances that emerge from these same institutions. For example, in the case of projects promoting individual land titling for women in patrilinear societies – without doubt a laudable and often crucial development objective in itself – if the project were to end or go awry, these women may no longer be able to claim support from their communities, which they would have had under the traditional mode of access to land.

In the two northern communities of Netia and Banga, in the Nampula and Tete provinces respectively, the families depend primarily on subsistence agriculture, sale of agricultural products (cotton, potatoes) and beer-brewing for food and income. In the southern villages (Massoane and Djavanhane in the Maputo and Gaza provinces, respectively) with less and more irregular rainfall, and in close proximity to South Africa, families depend more on remittances, off-farm labour, livestock and common property resources, such as wild fruits and the sale of firewood, as well as subsistence agriculture. Massoane has particularly severe food security problems largely explained by the invasion of elephants in the crop fields. The level of consumption varies greatly within and between the four villages. The annual consumption per adult equivalent has been documented as US $108 in Djavanhane, US $ 79 in Banga, US $ 72 in Netia and US $ 45 in Massoane (Tanner, 1996). By consumption quartile, the values range from US $175 for the richest households to US $21 for the poorest. The main sources of income for the poorest households are remittances and working for others (*ganho ganho*), as well as the sale of forest products. The poor also reduce consumption and seek assistance from relatives and through forms of mutual assistance.

Data on participation in local institutions and their perceived importance to households, as presented by Lundin and Alfane (1999), show that the most important local institution, particularly for women, is the church, followed by traditional authorities and political parties. In terms of informal traditional institutions, Mozambican rural society is replete with different types of local arrangements between people of relatively lower and higher economic status. There are many different forms of mutual assistance based on social norms of reciprocity. Local institutions have survived a long history of repression and civil strife in Mozambique and are now being revitalised under a more liberalised regime, and in the absence in rural areas of formal economic and social institutions. Local agricultural institutions are relatively ineffective in helping the landless (nearly 36% of the sample) and marginal farmers (30% of the sample) to break out of poverty. Sharecropping is typically practised on unfavourable terms that do not allow the sharecropper to accumulate and escape day-to-day survival. This is an instance where local institutions (village dairies) provide a means for the poor to take advantage of increased demand for milk resulting from higher incomes among the urban and landed rural population since economic reforms initiated in the early 1990s. Participation by the poor, especially in dry areas, is nevertheless constrained by limited access to fodder to feed their animals.

The government-supported “fair price” shops provide basic foods at subsidised prices under various targeting schemes, and are a vital means of covering food deficits for the poor. There are also many informal arrangements between the poor and better-off households that enable the poor to

survive despite extremely precarious livelihoods and low wage rates. These arrangements, rooted in mutual dependency and social norms, include giving domestic work to the poor, making loans of cash or food, advancing wages to trusted labourers, providing meals and tea to farm workers, and assisting in emergencies (Quan, 1999).

With regard to household participation in local institutions and arrangements with socio-economic wellbeing, using local classifications of poverty and wealth, it was found that in general, there are few barriers to participation in these institutions, and the poor and women are well represented. An exception may be political parties that appeal to the richer families, mainly men (Tanner, 1996). Even the fees required for church membership do not appear to present a significant barrier to participation of the poor because of options for contributing free labour instead of food or cash. In a multivariate analysis, higher levels of consumption were significantly correlated with land area farmed and literacy of the head of the household, but not with participation in local institutions. Further exploration of these institutions in the next section, however, shows their importance for social cohesion, food security, and village mobilisation for collective action. All three communities have established community enterprises to log and market from their common property resources. In economic terms, the enterprises have not prospered as a result of inadequate technology and low efficiency, and the few decent jobs created have not been sufficient to reduce out-migration from the region. Nevertheless, these enterprises continue to be a vital part of community life. Profits are invested in highly valued public goods, roads, water, rural electrification, and cultural-religious traditions and fiestas, thus supporting "*the continuity of the traditions and political and civic-religious structures of the indigenous culture*" (Quan, 1999).

6.4.4. THE ROLE OF TRADITIONAL AUTHORITIES

Since the Peace Accord in 1992, political events in Mozambique have called into question which type of policies to adopt vis-à-vis traditional authorities. Under economic liberalisation policies, the latter will be conceded more latitude as the state continues to withdraw many of its former support structures from rural areas; furthermore, decentralisation may provide a new window of opportunity for "bottom-up" sustainable development. Laws 5/78, 6/78 and 7/78, of 22 April 1978, replaced the colonial administrative structure and introduced a system of governance resting on three levels: national, provincial and local (cities and districts). By 1983 it was publicly and officially recognised that the administrative system was excessively centralised (Guambe 1998). Thus, in 1987, further steps towards decentralisation were taken, and on 13 September 1994 Law 3/94 established the Local Government Reform Programme of municipal administration. This programme, encoded in the *lei dos municípios*, includes the principle of "respect for, and collaboration with, traditional

authorities", which was kept expressly minimal and loose, to allow for flexibility to adapt to the diversity of the phenomenon of traditional leadership in Mozambique.

The theoretical and practical foundation of traditional authority is of a symbolic-religious nature, and is ultimately given legitimacy only by the communities themselves (endorsed through councils of elders). They are thus "grassroots institutions" that in effect have to negotiate their power day-by-day, and therefore embody a degree of flexibility that may be extremely useful for the efficient management of natural resources. The physical closeness to their "constituency" allows for the application of a set of rules and norms that will rarely be out of touch with the ecological reality and the management and conservation requirements of the natural resources in their territory. In West Africa, experience with the "*gestion des terroirs*" approach has shown that, for example in the case of managing and negotiating transmigrants' cattle corridors, this flexibility is vital if ecological degradation and social conflict are to be avoided. It may also ensure that cultural rights and local self-determination are respected within the complex ethnic mosaic of Mozambican society, including, for example, matrilinear and patrilinear groups (Quan, 1999).

Traditional chiefs have legitimacy, on religious and lineage grounds, as mediators between a given ethnic group and its environment. The primary function of traditional authorities is to ensure peace and harmony in the rural communities within their territory (*território*). Thus, a "bad" chief would be someone not able to ensure this, for example during celebrations when people consume alcohol and fights break out. Mediating in land-conflict resolution and regulating access to land are thus the main tasks of traditional authorities. Most of the time solutions are reached among the parties involved, often with the mediation of the respective local lineage chief(s). Only when the latter are unable to reach a verdict acceptable to everyone is the traditional chief approached. He or she is acknowledged to have ultimate knowledge of the customary geographical boundaries, and will reach a decision in consultation with his or her counsellors (Bourdieu 1977).

State institutions charged with land administration are rarely approached for conflict resolution (Mucussete, 1996), unless one of the parties stands to gain from their involvement, as when they derive legitimacy to substantiate their claim from modern legislation rather than customary rights. There is in fact a broad (and not necessarily consistent) repertoire of norms and laws that the more shrewd individuals can draw upon and interpret to their own advantage. The resolution of land conflicts, therefore, becomes somewhat unpredictable, and the involvement of the traditional authorities does not guarantee that outcomes favour the poor. Rather, results are determined by a dialectic relationship between traditional norms and individual behaviour, and may be strongly influenced by political considerations. Switching legal arena to influence the outcome of disputes is

an opportunity that is more difficult to seize for the poor than it is for better-off and informed rural households (Quan, 1999).

In practice, the actions of party secretaries and traditional authorities continue to coincide, and include, amongst others, the task of teaching agricultural production techniques. In many areas (e.g. Banga and Djavula) the former have disappeared altogether. Traditional authorities also contribute significantly to the maintenance of social capital, for example by mediating accusations of witchcraft (in northern Mozambique: *ufiti*) and other similar conflicts. Such accusations are frequent and occur from the bottom to the top of the social hierarchy, from the poor to the rich. This implies that individual accumulation of wealth takes place within the texture of both vertical and horizontal solidarity bonds in a given community. Therefore, as a result of witchcraft accusations, the accused will be exhorted by the traditional authority or some other form thereof (e.g. a local tribunal), to allow for some redistribution of their economic wealth, either through the networks of mutual assistance (*ayuda mutua*), or, more indirectly, by paying for healthcare, school fees, funerals, marriages, etc. This type of "transfer" is also sought in relations with the state. For example, a widow in Banga (Tsangano district, Tete province) in charge of five children solicited the help of the local chief (*nyakwawa*) to approach the local administrator (*chefe do posto*) to be exempted from paying school fees. The administrator rejected her case with the justification that her children were young and healthy, and therefore they could open up fields (*machambas*) and cultivate them to pay for the fees. This example shows that for the most marginalised segments of rural society, traditional chiefs remain an important "interface" with local government officials to enlist certain types of services and support (Lundin & Alfane, 1999).

In lineage-based hierarchical societies, mechanisms for redistribution are an expression of the moral obligations of the more senior members of the community who are in charge of ensuring social and spiritual reproduction, as well as its more junior members in charge of ensuring economic welfare through adequate levels of agricultural production and trade. These mechanisms are essentially networks of mutual support and solidarity, as well as clientelistic relations among kinship groups of unequal social status. The historical power relations and priority rights of some lineages are largely the consequence of who occupied the land first; the descendants of the first to settle and open up fields will claim superior social status, as will those who are members of a lineage that came to dominate others through battle and conquest. Dominance and privileges of one particular lineage and clan, therefore, have their roots in the ancestral domain, legitimised through religious ideology and ritual by means of the symbolic capital embodied in traditional authorities (Bourdieu, 1977). This leads to the configuration of local property relations and

differentiated rules of access to land and other natural resources, in turn leading to the subordination and poverty of certain clans.

6.4.5. RELATIONSHIP BETWEEN STATE ORGANS AND TRADITIONAL LEADERS

There are a variety of actors at the local level that pursue the same agenda as traditional leaders. These are structures such as the consultative councils, women's groups, youth groups, etc. While often targeting the same group of people, it is rare to find these structures in constant communication with one another in the new dispensation. Traditional leaders were going about their daily functions just as they had done in the past; however, their practices often affronted the post-1994 constitutional ethos. After the 2007 floods for example, the government recognised that traditional authorities played an important role. The way in which traditional authorities are seen by the government and other organisations working at local level has undergone a small positive change. In many administrative posts, traditional authorities are now invited to attend monthly meetings where they are encouraged to report to the head of administration on problems and progress in their area of jurisdiction. The problem they report most frequently is hunger.

There is concern among many people that the institution of traditional leadership is so inherently undemocratic that it simply does not have a place in an open democratic society. In support of this view, those against traditional leadership point to the hereditary nature of traditional leadership, the lack of representation of youth and women, as well as the unconstitutionality of some of the practices and sentences in the traditional court. Indeed, there is a great deal to take issue with in the institution of traditional leadership. As we have seen from the Mokopane case, some of the procedural aspects can be faulted for unjustifiably infringing on the rights of the disputants. Yet there seems to be more positive than negative aspects about the chief's court, and criticism levelled against the traditional court should therefore be balanced against the need not to disregard the immense contribution that the institution makes to governance. This kind of reasoning should inform the approach to the democratisation of the institution of traditional leadership, and efforts to bring it in line with the constitution (Bourdieu, 1977).

A disturbing factor is that many traditional leaders see their authority as diminishing. For example, some traditional leaders have stated that young members of traditional communities do not recognise traditional leaders. As one traditional leader put it: "There cannot be control, because these days we have 'setshaba ka gare ga setshaba' (a community within another community)." He cited the example of people who are aligned to civics and prefer civic leaders to traditional leaders. Many traditional leaders state that they are frustrated because they are powerless when it comes to ruling people who stay within the area of their jurisdiction. For instance, if one member of that

community comes to the traditional leader and lays a complaint against another, the traditional leader cannot do anything more than request such a person to come to his office. Should this person refuse to attend, the traditional leader can do nothing more. This problem was ostensibly overcome by a legal provision making it an offence to refuse to attend when called by a traditional leader. This could be restricted to issues of immediate concern to traditional leaders, so that when approached by individual members of the community, he/she will be able to give informed advice, take appropriate steps and/or refer the individual member to the relevant place for assistance. It is crucial for traditional leaders to be reasonably informed, as members of the community frequently approach them for advice.

For instance, traditional leaders are aware that corporal punishment is no longer permissible, but are at a loss as to how to deal with cases that in the past would have been dealt with through corporal punishment. As another example, traditional leaders are conscious of the fact they are no longer at liberty to order the resettlement of any person from the community when they do not comply with the community's mores and regulations. Traditional leaders express this as the doom visited upon communities by "ditokelo" (rights). While this uncertainty among traditional leaders is understandable in many respects, it appears to be founded on many misconceptions, as well as the actions of opportunistic individuals in communities who hold traditional leaders to ransom. For instance, a shebeen (liquor-selling establishment) owner who sells liquor throughout the night and plays loud music within a residential area is for all intents and purposes breaking the law. Firstly, the illegal sale of liquor by such a person constitutes an offence, and secondly, if licensed, remaining open throughout the night and playing loud music in all likelihood constitutes a violation of the licence conditions.

The community, therefore, has a right to act against such a person. A traditional leader becomes an embodiment of the community; members of the community affected by a problem will therefore approach the traditional leader to seek relief. Unfortunately, the shebeen owner in this example may wave the constitution at the traditional leader and say that he/she has the right to earn a living.
Comfortingly, after an inexplicable *de facto* marginalisation of traditional leaders, there seems to be a growing willingness to accommodate them (Bourdieu, 1977). This willingness is matched by eagerness on the part of traditional leaders to be fully integrated into the current order. The appropriate question to ask in dealing with traditional leadership is: How do we integrate them into "the mainstream" as opposed to "should we integrate them?" (Negrão, 2002). Traditional leaders are at the centre of development in rural areas and then the role of traditional leadership cannot be ignored. This is a role they have always played, as demonstrated by traditional leaders facilitating the building and maintenance of schools and clinics within their respective traditional authorities and

representing the local communities. This representation should provide the necessary checks and balances to deal with suspicions that some traditional leaders and their courts are biased. Such bias could be against women or against people not related to the traditional leader (Quan, 1999).

Equally so, traditional leaders have a responsibility to perform safety and security duties, as well as the administration of justice. Both structures are based at the local level of government and are relatively accessible. At the same time, both are represented at provincial and national government levels. Traditional leaders and local municipalities, therefore, stand to contribute significantly to crime prevention. It is with the above in mind that it is recommended that local municipalities, in close consultation with traditional leaders – if not working together on the project as equal partners – should develop a comprehensive crime-prevention strategy in line with the provisions of the national and provincial crime-prevention strategies. The obvious advantage of such a locally engineered crime-prevention strategy is that it will be relevant to local needs and priorities. Furthermore, the proximity of local municipalities and traditional leaders to traditional communities puts them in a good position to understand the socio-economic dimensions that may be contributing to crime in that particular locality. While other role players, such as the provincial department responsible for safety and security, remain important, their role should be to facilitate and/or complement initiatives and programmes led by municipalities and traditional leaders.

It is clear that traditional leadership as an institution will remain part of the post-1994 dispensation. It is also evident, from this monograph, that traditional leaders have not been integrated into the major crime-prevention policies of the country. For their mere indispensability, there is a need to reconcile the political and the institutional decentralisation process with public-sector management reform. The role and importance of civil servants at sub-national levels of government must be considered. A general observation may be made in this regard (Bourdieu, 1977): Decentralisation of the public service (administrative decentralisation) should take place in concert with political decentralisation. The absence of decentralisation, or only partial decentralisation of the public service, may compromise the links between that public service and its corresponding political structures on the same horizon or tier of government (Quan, 1999). This may result, for example, in a public service that is only incompletely accountable to the political authorities on that tier; or it may require the corresponding political authorities to bear a level of responsibility for the performance of the public service that is inconsistent with the actual authority and control that these political authorities enjoy. A permutation of this consideration exists in South Africa, in which provincial public servants are formally in the employ of a single national public service, and in which remuneration levels and employment conditions are negotiated between public service unions and

the central government. This has compromised the ability of provinces to manage their large workforces, or to take into account specific regional conditions (Bourdieu, 1977).

It appears that the role of kings in land administration was more visible after a conquest of a certain territory or at the period of organisation and reorganisation of the kingdom. In such cases, it was the king who divided his kingdom into chieftaincies ruled by his relatives. In this way, the king allocated and distributed land rights to his relatives who would also allocate and distribute land rights to other people under their jurisdiction in name of the king (Quan, 1999). The king also intervened in cases of land disputes involving his kingdoms' chieftaincies and those chieftaincies of other neighbouring kingdoms, because all land of the kingdom belonged to him. Although continuing allocating and distributing land for their subjects, traditional authorities had lost much of their power deriving from customary law and practices, because their decisions regarding land could be revoked by the colonial administration. If a certain area of land under the jurisdiction of a traditional authority figure was required to be allocated to Portuguese interests, the traditional authority's opposition to the granting of that land could be disrespected (Sachs & Welch, 1990).

Policymakers in Mozambique realise the importance of making decentralisation, and the implementation of the new land law, as participatory and transparent as possible, creating an enabling environment to tap social capital for local development efforts. "(...) Land policy issues raise fundamental questions of rural governance, and the law itself requires further legislation to clarify exactly how rural communities can hold land, women's land rights, and the roles of the various forms of customary authority in Mozambique" (Quan, 1999). Following the MAE (1996) research project, the government is currently giving more thought to what the articulation between traditional authorities and the state could look like. For the time being, no legislation exists that addresses this important issue directly, and the only law (2/97) mentioning traditional authority at all pertains to urban settings.

6.4.6. REVITALISING TRADITIONAL INSTITUTIONS FOR NATURAL RESOURCE MANAGEMENT

In many countries, traditional leaders also continue to play a critical role in controlling access to land. This is obviously of central concern to the majority of Africans who still rely directly on their land for survival, as well as to many urban Africans who continue to maintain roots in rural communities, in part by retaining access to a piece of land – the closest many have to an insurance policy or pension plan. Management of the continent's land resources has long been a controversial topic. On the one hand, many economists have called for massive and immediate privatisation of ownership in order to rationalise investment in agriculture. Others argue that traditional tenure systems, usually managed by local chiefs, may be better aligned with African cultural and social

norms, and more protective of the most vulnerable in rural communities. A number of studies have suggested that even where privatisation has been introduced, many communities have, to varying degrees, ignored or circumvented modern tenure systems and continued to rely on traditional tenure norms.

An effective meld between traditional institutions and technical agencies of the government was achieved in the project implemented in the Cordillera Administrative Region of the Philippines that had ancestral land demarcation and regional development as its objectives. Traditional institutions had remained alive in this region, enabling people to cope with centuries of exploitation at the hands of a distant and unsympathetic state (Quan, 1999). After the laws of the country were amended and indigenous people were given rights of self-determination over all natural resources within their ancestral domains, the same traditional institutions were called upon to enforce these rights. It is not easy to forge such understandings and working arrangements between traditional institutions and government agencies (O'Laughlin, 2001).

Working with traditional institutions, each community team gathered documentary proof on land ownership. While results differ from place to place, on the whole these initiatives have worked everywhere to improve the functional interplay between national law and local custom. Considerable gains have been reported from various project locations. Communities within the municipalities have started implementing their resource management plans and are mobilising external support for undertaking projects that have been identified (Quan, 1999). Alternative models of development have emerged as people of different origins have asserted their separate visions for the future. Several communities have influenced the government to grant permits for micro-scale instead of large-scale mining, and for micro-hydroelectric and irrigation projects within their ancestral domain area. They have also proposed tramlines for transportation in place of road construction through fragile forests. They are planning to institute a programme of education and training that allows such concerns to be addressed amongst themselves and with a larger group of area residents (O'Laughlin, 2001).

There are several reasons why traditional authorities remained marginalised despite evidence that they were operating in other parts of the country. Firstly, in some areas of Mozambique, especially in urban and urban-like settings but also in rural areas, there were structures elected from 1975 onwards (secretaries of the village, ward/bairro or circle) that worked with the people after independence and during the war. Some of these elected structures enjoyed the sympathy of the local populations. Another example of changing customary law and practices comes from cotton-cultivation areas of Northern Mozambique. In these areas, patrilineal systems of land tenure were

imposed and enforced by colonialists and traditional authorities, to people governed by a matrilineal land tenure system (O'Laughlin, 2001). The majority of traditional authorities were appointed according to hereditary laws of succession, but they were also dependent on confirmation by the colonial government. With regard to heads of groups of villages, they were also appointed following customary laws of succession, but depended on the approval of the colonial administrators for their coronation. This means that a traditional authority appointed according to the customary law of succession could not be coroneted by the Portuguese if they judged him not capable of representing their interests. In the course of their duties, traditional authorities had to meet all the demands of the colonialists to maintain their positions. These demands included the collection of taxes and the recruitment of their subjects for forced labour (O'Laughlin, 2001).

Such action was likely to bring social tensions and endanger the government's support. Even without formal status, in some areas traditional authorities were disputing power with elected structures. The government might have been seeking a strategic solution that it hoped might not worsen the current situation. The Land Law (Law no. 19/97) was drafted after a long period of consultation and debate (Tanner, 2002). It recognised the allocation and distribution of land according to customary systems of land tenure available in the country. As under customary systems of land tenure, land allocation and distribution is effected by the lineage heads. The land law of 1997 evidently recognised the role of traditional authorities, particularly lineage heads, in land-allocation issues. In fact, what the land law of 1997 did was to formalise what was happening in practice on the ground. As argued in Chapter 3, in many rural areas the heads of lineages continued distributing land under their control to members of their families. All the roles of the traditional authorities on land, which are covered by the customary systems and are not against the constitution, were recognised by the Land Law of 1997.

However, the Land Law did not exclude post-independence authorities from land allocation. According to the Land Law and its regulations (Decree no. 66/98) the formal way of land allocation is as follows: A person seeking to acquire land in the rural area contacts theSPGC or the district representation and then registers that intention (Tanner, 2002). The SPGC will verify within the Cadastre Atlas whether there is a record of occupation in the area in question. If there is no such record, the process will proceed and a formal application will be opened, depending on the local context of the area where land is being requested, under the formal process. Traditional leaders deal with matters relating to every aspect of life within the traditional community. It is this elasticity that puts traditional leaders in a position to interact with every state department, as well as NGOs and community-based organisations (CBOs). This is a potential role identified by Decree no. 15/2000.

This Decree introduced the concept of the community authorities (*autoridades comunitárias*), which it defines as traditional chiefs, secretaries of ward (bairro) or village, and other leaders legitimised as such by respective local communities. The introduction of this concept allows the government to recognise traditional authorities while at the same time maintaining the post-independence structures. As already stated, beyond traditional authorities there are ward (bairro) and village secretaries elected during the 1970s and later who continue to exist and to work (Tanner, 2002). The framework of this Decree is highly influenced by Lundin's (1998) approach. In respect of the means of legitimising the traditional authorities, the regulations of Decree no. 15/2000 state that it will be done according to "the rules of the specific community". The government gave to the community the freedom to decide on this according to local custom and practices. With regard to the hierarchy between community authorities, the regulations point out that if in a community a traditional chief and a bairro or village secretary are legitimised, it will be the respective community defining the level of hierarchy between them. It is one of them who will represent the community before the government. However, the regulations do not clarify how the community will define hierarchies. Decree no. 15/2000 provides a set of rights that community authorities on duty will enjoy: i) To be recognised and respected as representatives of the respective local communities; ii) To be able to use symbols of the Republic; iii) To participate in official ceremonies locally organised by state administrative authorities; and iv) To wear a uniform or personal badge.

Under Decree no. 15/2000, areas of articulation of local state organs and community authorities include land use. Its regulations set fourteen main duties of traditional chiefs and secretaries of villages or bairros. However, it is silent on defining the precise roles of traditional authorities on land allocation and distribution. Even regarding duties that were indicated, there is an overlap between what traditional authorities will do and what community authorities will perform. This overlapping and lack of clarity is leading to confusion. In respect of land, who will have the role of allocating land – traditional authorities or elected structures? For example, if an individual migrates to a certain territory where there are recognised traditional authorities and elected structures, who may he/she approach to acquire land? Shall he/she go to traditional authorities or elected structures? The Decree and its regulations did not make these issues clear. It is still too early to analyse whether there has been change in land-distribution procedures in the community as a result of the formal recognition of traditional authorities, because that recognition took place only two years ago (Tanner, 2002). The heads of the lineages continue distributing land that they control as in colonial and pre-colonial periods. However, control of land allocation for outsiders at the time of doing fieldwork for this study was still in the hands of the post-independence local-level authorities.

6.5. THE NEW RURAL DEVELOPMENT PARADIGM

The modernisation paradigm, which for many decades dominated agricultural practices, policies and science, is gradually being replaced by a rural development paradigm. The emerging rural development paradigm calls for, amongst other things, a new approach to policymaking, steering and control – in other words, for a new approach to rural governance. The need for new forms of rural governance is embedded in current political and scientific debates on shifts in multilevel governance that occur in a variety of socio-economic domains.

The notion of endogenous development, as suggested by Bassand, Brugger, Bryden, Friedman and Stuckey (1986), has been put forward in opposition to traditional understanding, or in other words the 'modernist' notion of development – this defines the new inclusive rural development paradigm. Endogenous development is understood as the hypothesis that improvements in the socio-economic wellbeing of disadvantaged areas can best be brought about by recognising and animating the collective resources of the territory itself. According to Brugger (1986) "the new meaning of development, that is, qualitative and structural indicators, and not just quantitative and monetary measures, are used as criteria… [and] cultural, social, political, and ecological values as well as social costs and long term effects are combined" for endogenous development (cited in Bassand *et al.*, 1986:39).

This concept as a development approach was created as an alternative to the practice of central authorities in designing interventions that deal with sectors of social and economic life in isolation from each other and/or which assume that socio-economic problems can be solved by standard measures, regardless of location or culture. Here the emphasis has been very much upon what areas can do for them, and support and assistance has been geared towards the enablement of local economic growth (OECD 1996/2). According to Lowe, Ray, Ward, Wood and Woodward (1998) the basic characteristics of the endogenous model of rural development are as follows: (i) Key principle – the specific resources of an area (natural, human and cultural) hold the key to its sustainable development; (ii) Dynamic force – local initiative and enterprise; (iii) Function of rural areas – diverse service economies; and (iv) Major rural development problems – the limited capacity of areas and social groups to participate in economic and development activity.

6.5.1. THE INFLUENCE OF INSTITUTIONS AND ORGANISATIONS

Understanding institutional processes allows for the identification of restrictions/barriers and opportunities (or "gateways") to sustainable livelihoods. Since formal and informal institutions (ranging from tenure regimes and labour-sharing systems, to market networks or credit arrangements) mediate access to livelihood resources and in turn affect the composition of

portfolios of livelihood strategies, an understanding of institutions and organisations is therefore key to designing interventions that improve sustainable livelihood outcomes. Most previous approaches to looking at rural livelihoods have only cursorily asked these questions (Tanner, 2002). In part, this has been a disciplinary bias whereby economic analysis has concentrated on exploring the quantitative relationships between measurable variables. For example, the agricultural economics and related literature has many examples of detailed analysis of the relationships between, for instance, economic assets, indicators of agricultural intensification, and poverty levels. This remains important, and is a significant component of work on sustainable livelihoods.

The "new rural paradigm" requires a change in the policy infrastructure conception and efficient implementation mechanisms, and a movement away from the traditional hierarchical administrative structures and institutional arrangements. Designing rural development policy for different communities involves pooling the knowledge held by multiple actors and increasing the use of partnerships between the public, private and voluntary sectors. There is a focus on local specificities as a means of generating new competitive advantages, such as amenities (environmental or cultural) or local products (traditional), as well as more attention to quasi-public goods or "framework conditions" that support enterprise indirectly. It requires coordination to encourage the various institutional and managerial systems that formulate and implement rural policy to work together, and political commitment to overcome sectoral tendencies. Integrated rural policies work – the place-based approach helps foster local level public-private partnerships and integrate new stakeholders and resources (Tanner, 2002). These initiatives are developing a culture of cross-sectoral cooperation within central and local governments and thus more coherent policy initiatives. More importantly, there is recognition that a place-based approach requires more bottom-up as opposed to top-down initiatives. This produces new ways of coordinating vertically across levels of government, and a better use of local knowledge.

6.5.2. PLANNING FOR SUSTAINABLE LIVELIHOODS

Planning and implementing a sustainable livelihoods approach is therefore necessarily iterative and dynamic. A simple framework, such as the one presented here, combined with the integrative analysis derived from participatory field-level analysis, may help in this challenging process by highlighting key issues, questions and contradictions, as well as pointing towards areas where actions may proceed and common goals can be achieved. Planning for what combination of interventions is most appropriate in a particular site presents some major challenges. For a start, defining what a sustainable livelihood is in a particular context is always open to debate. As discussed earlier, the sustainable livelihood definition encompasses a range of different criteria, some of which may conflict. "Sustainable livelihoods" is thus a normative concept made up of

multiple and sometimes contested elements. Negotiating what is a sustainable livelihood among the variety of stakeholders must therefore be a first task in any intervention process.

Negotiations, for instance, may have to take place over the focus for intervention. Should this be at the area level, or focused on particular villages or households or on identified target groups or individuals? The framework can be used for analysis at different scales and, in turn, it may highlight some key dilemmas and trade-offs. For example, when focused at an area level, different priorities may emerge than when focused on targeted groups, individuals or sectors. Since there is also such a range of intervention options possible, and trade-offs between these are always evident, negotiation and discussion must continue throughout any intervention process. It also requires the active participation of all different interested parties in the processes of defining meanings and objectives, analysing linkages and trade-offs, identifying options and choices and, ultimately, deciding what to do.

In the case of rural development, there is heavy dependence on the primary resource base as a source of rural livelihoods, and it is likely to remain so in the foreseeable future in most developing countries. Whether rural economic activities are agriculture, forestry or fishery based, increasing pressure to produce more using less land, water, forest and biodiversity resources raises concerns that human economic activities may not be sustained in the long term when the natural resource base is being eroded. Capability, equity and sustainability are the fundamental means and ends to sustainable livelihoods (Tanner, 2002). Capability is the ability to perform certain basic functions, to cope with stresses and shocks, and to find and make use of livelihood opportunities. Equity is more equal distribution of assets, capabilities and opportunities, and an end to discrimination. Sustainability is the ability to maintain and improve livelihoods while maintaining or enhancing the assets on which livelihoods depend.

Planning for future livelihoods implies placing value on the future. However, the future is often undervalued due to discounting, lack of democratic representation of future generations, and an inability to predict future trends (e.g. population, technology, social change). Enhancing livelihood intensity is possible. There is now better understanding of complex, diverse and risk-prone agriculture that can be enhanced by diversification with interlinking enterprises. Degraded resources have been proven to present immense livelihood potential for the poor, and they are protected by their low value to others.

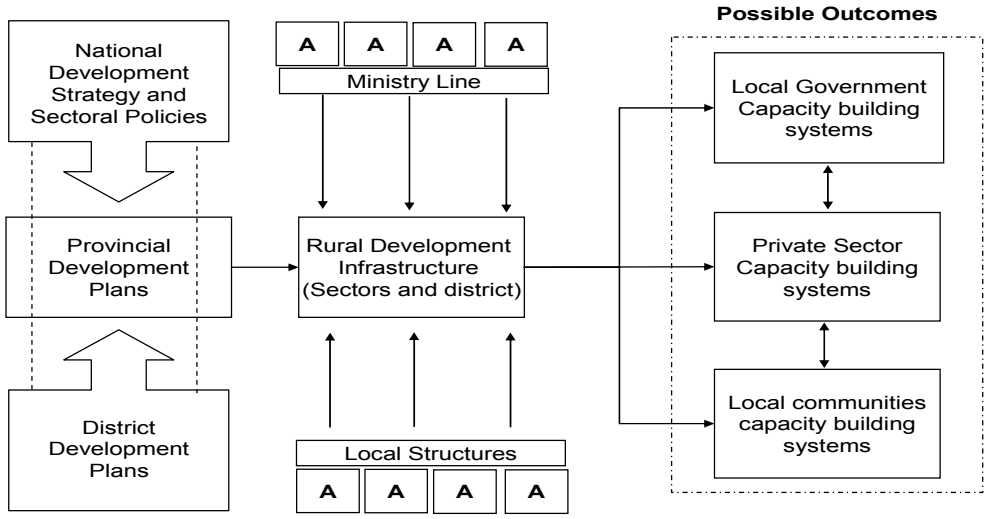
Many small-scale economic opportunities other than farming can be generated locally, and this can result in a synergy of recirculation of income. Optimising this synergy of recirculation should be a

central priority. Net sustainable livelihoods is a measure of the number of environmentally and socially sustainable livelihoods that provide an adequate living in a context, less their negative effect on the benefits and sustainability of the totality of other livelihoods elsewhere. This does not require a precise measure of "how much", but rather that relative values, weightings or trends can be usable for decision-making.

6.5.3. TOWARDS AN INTEGRATED RURAL DEVELOPMENT STRATEGY

Rural development is understood to be multidimensional, encompassing improved provision of services, enhanced opportunities for income generation and local economic development, improved physical infrastructure, social cohesion and physical security within rural communities, active representation in local political processes, and effective provision for the vulnerable. Rural development in this context is thus much broader than poverty alleviation through social programmes and transfers (Pender, 1996). The concept places emphasis on facilitating change in rural environments to enable poor people to earn more, invest in themselves and their communities, contribute toward maintenance of the infrastructure key to their livelihoods; in short, to identify opportunities and to act on them. A successful strategy will thus make people less poor, rather than more comfortable in their poverty. Integration has been a goal of rural development programmes for many decades. Most of these failed to achieve the desired synergy, because they failed to *design a mechanism for integration*. Rural development is difficult to integrate, because it cuts across traditional sectors and involves all levels of government.

Figure 6.1: Integrated Rural Development Framework



Source: Author

The figure above reflects what can be considered an integrated rural development system, where the vision is both sectoral and territorial, with the involvement of the three key actors: Local government, civil society, and private sector (small and medium enterprises). An effective mechanism for integration will specify what happens at the various levels, who does what, and how the integration will be accomplished (Pender, 1996).

There is a dire need to resuscitate the rural economies and advance the cause of rural areas as *potential engines of economic growth* that would contribute towards their own development and the broad national development agenda. A strategy to achieve growth must be founded on an understanding of how rural areas grow. Although the specific processes vary over time and space, the general dynamics are understood in terms of sources of growth and linkages that spread and multiply the initial impulse. Growth in agriculture, tourism, forestry and other primary activities that bring incremental earnings into rural areas generates additional incomes through linkages in expenditure and employment.

6.5.4. SUPPORTING LOCAL INSTITUTION-BUILDING

Developing strong representative rural institutions is now widely recognised as being one of the central pillars without which rural economic development cannot take place. A key governance challenge is to build the political will and institutional capacity to promote sustainable livelihoods and this requires a particular focus on developing practical linkages to translate national policies, laws and regulations into action at the local level. Support for local institutions to strengthen their ability to deliver services (government) and to make claims on entitlements (citizens) is an area on which there needs to be considerable focus in the years ahead. This paper has shown how local politics have a far greater impact in practice than the design of decentralisation policies at national level and therefore much greater attention should be paid to the issue of building and strengthening the social and political capital of the rural poor than at present (Pender, 1996).

If decentralisation and devolution are to be effective in promoting sustainable resource management, there have to be effective management institutions in place at the level to which authority has been transferred. These institutions need to be genuinely representative, transparent and accountable to the constituencies they represent. A critical component of the decentralisation/devolution process is ensuring that these local-level institutions are effectively empowered through an appropriate legal framework. A prerequisite to the successful functioning of such institutions is a clear and commonly understood definition of the membership of the group that such institutions represent. Whilst this is a policy issue that has not been dealt with clearly and consistently by the new policies to date, it is also an implementation issue that has been little

considered. Some of the examples covered in this paper indicate that in several cases, despite an effective legislative framework, implementation has been undermined by lack of a coherent strategy.

There is also a clear and related need for more and broader investments in human capital that cut across classes and gender and support transformative processes within community-level institutions. As Bingen (2000) points out, "...human capital investments offer the promise of enabling people to liberate themselves from the 'ties that exclude'...". Research findings quoted here reveal that investments in human capital can provide women and other marginalised groups in a society the opportunity not only to build and strengthen their other assets, such as social capital, but also to use them as a means of enhancing their livelihood strategies. The process of modifying informal institutions in this way can be slow, and often conflict-ridden. Its success in practice often depends on access to an effective legal system and the existence of supportive community-oriented service organisations and resources.

6.6. FINDINGS AND POLICY IMPLICATIONS

Mozambique is still highly agrarian, with more than 80% of the labour force employed in agriculture. However, despite its large share in employment, agriculture contributes less than 30% to the country's gross value added. Agricultural productivity is thus far below the average for the economy, and policymakers continue to focus on ways of improving productivity and the efficiency of capital. Low productivity is a general feature of the inherited agriculture in former socialist countries in Africa. This feature is commonly attributed to the weaknesses of the collective form of organisation that was dominant in most of the region in the past era. Agriculture was not subjected to sweeping collectivisation after World War II, and individual farms have consistently controlled about 80% of agricultural land in this country. Low agricultural productivity is thus low productivity of individual farms, not collectives or cooperatives. Agriculture continues to have a major share in the rural economy and is extremely important for the incomes of rural households: both farmers and wage earners. Since the reforms there has been a shift in the cropping pattern away from food crops and towards cash crops. This is likely to adversely impact the food consumption of the poor – especially those who receive payments in kind for farm labour or as sharecroppers. In order to prevent this it is very important that the availability of food grains through the fair-price shop system be maintained and improved.

Informal groups such as savings groups, labour groups, cattle-rearing groups, women's groups and youth groups are important and play a significant role for the landless and poor. These can be used as a basis for addressing a range of social and economic development needs. The participation of

women in the membership and management of different institutions is extremely limited and needs to be substantially improved. In general, greater and more active participation by all members in the institutions needs to be encouraged. With the reforms, the economic environment has become considerably more challenging and competitive for many local institutions and organisations. At the same time the management of the institutions is purely local, resting heavily on individuals who have no specialised training. There is a great need to plan, develop and conduct good training programmes for the management and staff of these institutions in order to improve their knowledge and skills in running their organisations in a competitive market economy.

Although the case of Mozambique is instructive with respect to the inclusion of traditional institutions in decentralisation policy, it would seem too early to allow for a qualified assessment of this hypothesis. The integration of traditional structures into decentralised rural development initiatives has until present only been observed on a relatively minor scale, and this only fairly recently. By taking local development plans and regional policies as a starting point, an assessment of the benefits and costs of such an articulation will depend on the objectives to be achieved. No generalisation can be extrapolated from the present research findings as such, but locality-specific examples have been given to illustrate which points of the state-civil society interface need to typically be investigated.

The management of land resources and legal arrangements concerning land tenure have been matters of heated dispute among Mozambican policymakers and external agencies over the past decade. From an economic perspective the central issue of the land debate concerns the best strategy for promoting the intensification of agriculture, focusing on the expansion of more capital-intensive forms of land use aimed at production for the market rather than for subsistence. Within this overall theme, a major point of contention concerns the respective roles of commercial medium-scale and large-scale farming that is highly market oriented, and small-scale “family” farming that has been, at least in the past, less capital-intensive and more concerned with meeting subsistence needs. The social dimension of the debate arises from concerns about poverty alleviation and the distribution of the gains from agricultural change. Mozambique remains a relatively rural country, and a large majority of the poor depend upon small-scale agriculture for their livelihood. Thus, for many commentators, it has been critical that new institutional arrangements affecting land tenure should protect or enhance the existing rights of poor households that rely upon access to communal land to meet their subsistence needs (Pender, 1996).

Accepting the importance of sustaining and promoting small-scale agriculture as a core element in programmes for poverty alleviation and economic development, there is still considerable scope for

differences in emphasis in the design of appropriate land policies. The role of shifting agriculture is central. There is no doubt that small farmers will respond to opportunities to enhance their incomes, provided that the risks associated with climatic variability can be managed. However, some observers believe that existing arrangements for land tenure combined with shifting agriculture hinder and thus slow down the adoption of more capital- and input-intensive forms of small farming, either by limiting the access of small farmers to sources of finance or by diffusing incentives to invest in improving or sustaining soil fertility (Tanner, 2002). It is not enough to protect the interests of some vulnerable groups if the arrangements limit the capacity of many farmers to accumulate capital and adopt new methods of production. As Mozambique is a relatively land-abundant country, the predominant forms of agricultural production are land-intensive with heavy reliance on shifting crop production and extensive livestock grazing. While elements of this pattern of land use will persist for several decades, achieving sustained growth in agricultural incomes must depend upon the intensification of land use relying upon the application of more human and physical capital combined with higher levels of material inputs – seeds, fertilisers, pesticides, etc. The transfer of skills and resources required for the successful adoption of improved agricultural technologies is a part of the story. However, the accumulation of land-related stocks of capital such as on- and off-farm infrastructure for managing water resources, improving soil fertility, storing and processing crops, and extending access to markets will be the critical challenge. Land policies must provide appropriate incentives to promote the transition away from land-extensive modes of agricultural production.

6.6.1. LAND ISSUES IN MOZAMBIQUE

The generic difficulties associated with land reform were, in past reform efforts, often exacerbated by implementation-related issues. Instead of aiming to increase productivity and sustainably reduce poverty, many past land reforms were directed towards calming social unrest and allaying political pressures by peasant organisations. They were often initiated in response to political pressure (or to divert attention from other problems) rather than as part of a long-term rural development strategy. As a consequence, land reforms were often designed ad hoc and bore little relation to actual needs on the ground, and commitment to them faltered once social emergencies had subsided. Moreover, the individuals targeted to benefit from these programmes were often the politically most vocal and well-connected rather than the ones with the best ability to make productive use of the land, or the most deserving on poverty grounds.

The sensitivity and complexity of tenure issues and concentration on land redistribution have caused some governments in the region to neglect tenure reform. Land tenure reform must be built on a thorough understanding of the livelihood strategies of those intended to benefit. It should not

be assumed that the inadequacies of tenure laws and/or administrative support constrain livelihoods in practice. Tenure reform measures for communal land should underpin the adaptability and responsiveness of existing customary systems and not constrain local coping strategies. Land tenure reform policy should be flexible and gradualist with regard to the role of traditional authorities. As far as possible, responsibility for land rights management should be devolved to the rights holders. Land tenure reform must pay special attention to the legal status and economic activities of women and the poor, who are often disproportionately dependent on the commons. Despite the complexities, tenure reform to sustain their access to the commons is essential.

Land tenure reform is a time-consuming process requiring thorough public consultation and careful preparation. The necessary institutional development is likely to take decades. Long-term budgetary commitment is needed from governments and (political sensitivities permitting) from donors. External support is likely to be conditional upon appropriate constitutional and legal frameworks. To keep it in context, policy to reform land tenure must be developed alongside policies, resources and financial incentives to help the building of more sustainable livelihoods, including non-land-based activities. Interventions may have to focus on the more densely settled areas and be phased to give priority to situations that are a direct threat to livelihoods or political stability.
In contrast to most past discussions of redistributed land reform, this research provides empirical evidence of the actual implementation of land policy and administration in Southern Africa, particularly in Mozambique. Although many of the projects are still in the early stages of implementation, the data suggest that land reform was able to target the poor. Moreover, the fact that economically successful projects reached significantly higher levels of poor people suggests that increased access to productive assets could be an important avenue for poverty reduction. Given the importance of developing a diverse and less subsidy-dependent rural sector, suitably adapted land reform could play an important role in the restructuring of the rural sector.

This has not only eliminated an important opportunity for landless individuals to acquire farming experience, but has also resulted in the need to develop complex regulations to implement land reform. These regulations gave rise to cumbersome bureaucratic requirements that stretched available administrative capacity and resulted in highly centralised processes of implementation. Government bureaucracies at the central level – justified by the need to provide technical assistance and other support services to beneficiaries – proved expensive and, unable to utilise information from the local level, often also quite ineffective. One of the first studies to provide both a theoretical model and an empirical investigation of the potential impact of land reform indicates that, based on district-level data from India, land reform can indeed have a positive impact on wages and

employment. Though still accumulating, empirical evidence does support some of these conclusions (Pender, 1996).

Conceptually, one would expect productivity gains to be proportional to the improvement in work and investment incentives associated with the post-reform regime. In cases where security of tenure had already been high before the reform, where cash-rent (rather than share-rent) contracts had prevailed, and where landlords had provided tenants with access to markets for credit, inputs, and outputs, one would expect static efficiency gains from land reforms to be modest and the bulk of reform benefits to come through enhanced investment incentives (and credit access on better terms) associated with land ownership. As units of production that are too large will not be able to reap the benefits deriving from the utilisation of family labour, the net benefits would, at the very least, be much lower, and it is not surprising that in the large majority of cases, productivity did not increase and labour problems were pervasive. The only exception is where already well-established plantations were redistributed to the former workers, a case that is very costly and characterised by relatively low social benefits.

This would be consistent with an interpretation of land reform as a piecemeal strategy by the rich to avoid the imminent threat of revolt. Even where there was a genuine commitment to breaking the power of landed elites, agrarian reforms were generally designed by urban intellectuals with little idea of the realities of agricultural production and a sound suspicion of the ability of small-scale cultivators to manage on their own. As a result of the isolation and lack of access to communication technology, market and infrastructures, rural people often have little influence over policies and programmes that affect them. Polices and programmes have had little effect in rural areas when it comes to introducing changes in livelihoods, increasing local income, and providing alternative subsistence methods.

Local authorities should be concerned about the sustainable development of their communities. Tourism may play a greater or lesser part, according to the area's location, resources and market circumstances, as well as the general desires and aspirations of the community. In summary, the main recommendations are that local authorities should: (i) Prepare (where applicable) and integrate participatory tourism development agenda into district planning, with income generation being the most important motive for participation by local communities; (ii) Develop and maintain permanent partnerships (community-private-sector partnerships). Local control appears to be a necessary component for creating and maintaining the link between conservation and tourism. Ownership rights and those enterprises, including tour operators and local service providers who understand the realities of the marketplace and of running a viable business, are involved in

planning sustainable development; (iv) Support the sustainable use of resources and initiate environmental actions on different levels to conserve the environment while tourism is developing.

6.6.2. ACCESS TO LAND AND IMPLICATIONS FOR THE AGRICULTURAL SECTOR

Understanding the linkages between access to land (size and ownership structures) and access to other sources of income and capital is an essential element in the policy dialogue about food security and poverty reduction. The current framework of economic growth and development includes a general trend towards the privatisation of land rights and a collapse of collective structures in agriculture, as well as a move towards reliance on land markets as a means of peasant access to participation in the development process. Despite the removal of land reform as an explicit part of the policy agenda, it is clear that the situations that led to the activation of land reforms in past decades are still in place. It is still very important, therefore, for these issues to be addressed, albeit following a "market-oriented" approach (Shearer, Lastarria-Cornhiel & Mesbah, 1991).

There is discordance between contemporary macro-policy initiatives and the micro foundations through which they operate. A key conclusion from analysing the impacts of macro policy through the lens of micro-economic decision-making models is that access to various forms of capital is pivotal in determining household income strategies and, therefore, in determining the likely change in household behaviours and wellbeing when faced with macro-policy changes. Mention of two such modelling exercises, which also offer empirical insights, should suffice to demonstrate this important revelation. A key factor in this model, and hence in defining the differentiated behaviours of various classes of rural households, is that households are stratified according to resource endowments (or asset typologies), which imply different behavioural strategies. Each stratum is differently constrained by its relative need for and ability to participate in size-sensitive rural factor markets. A typology of rural households is defined, including proletarian, semi-proletarian, peasant and capitalist family farms and hierarchical capitalist farms. These farms differ in particular in their capacity to increase access to landholdings and financial capital and decrease reliance on off-farm employment for survival. The latter three forms of farming differ significantly also with regard to the types of labour employed on the farms. The implications of this typology for participation in the land market are striking and are discussed under "Land markets as a means of access for the rural poor" (Pender, 1996).

Their conceptual framework relies on a typology of rural households that stresses differential income strategies based on access to land per adult member. Their typology focused on how different forms of capital determine earnings level. Their model and data postulate that working

capital constraints (*ex ante* capital) combined with consumption credit constraints (*ex post* capital) lead the poor to the adoption of safety-first strategies entailing the growing of basic foods (food security). This is a consequence of size- sensitive access to capital. Thus, smallholders systematically opt away from high-profit commercial crop production, which then stifles their ability to accumulate land over time. Larger farms, which do not face such constraints on capital, are thus advantaged in short-term income distribution and in long-term capacity of land accumulation via the market. More importantly, he draws attention to how resulting differences in economic returns across variously sized farms might cause a structural change in the ownership distribution of land via the operation of imperfect land markets that favour medium-sized to large farms.

- A significant part of the demand for commercial farming focuses on the extensive grazing of cattle and other livestock. There seems to be substantial pressure on existing range grassland resources in at least two provinces – Tete and Manica – at present, and this situation is likely to get considerably worse during the next decade. While there should be no difficulty in accommodating demand for grazing on permanent pasture and in mixed farming, the development of extensive range grazing should be discouraged in most provinces. The exceptions could be those that have ample underutilised range grazing such as Cabo Delgado, Niassa, Sofala and Zambézia.
- There is very little information on existing stocking rates and land-use patterns set in the context of accessibility and infrastructure provision. A study referred to by Pender (1996) regarding land use in the Manica district (the largest district in the Manica province by population) carried out by Cruzeiro do Sul shows the critical importance of transport infrastructure. Within zones of moderate to good soil quality, existing smallholder agriculture is concentrated in areas close to the major transport corridors. The same is true for land licensed for commercial farming, even to the extent of licences being acquired in areas with poorer land but better access by road. While the Manica province faces a prospect of considerable land pressure in future, there are significant areas of land categorised as having moderate to good soil quality that are not currently farmed, either because they are unattractive for small farmers and/or as a consequence of difficulty of access. This reinforces the standard economic point that the management of land resources is as much about the development of infrastructure – in particular roads – as it is about legal aspects of land rights and policies. This dimension has been neglected in recent debates both inside and outside Mozambique.

The titling of land (and the registration of titles in a public registry) is considered to be the best way to protect ownership rights to land, in other words, the best form of tenure security. Land titling and

registration is the highest level of formalisation of ownership rights in private property tenure systems. Where private property as a tenure form is not dominant, however, land titling has little consequence or utility, because landholders acquire tenure security through other mechanisms (e.g. membership of a group or family). This explains why titling programmes in some areas have little impact, or unintended effects, or quickly become outdated (for example, title documents are not kept up to date when property is transferred). It also explains the low participation rates in some supply-driven titling efforts, e.g. Honduras (Negrão, 1992).

Greater tenure security, theoretically, has two impacts: *increased agricultural productivity* and *more dynamic land markets*. Titling is expected to facilitate land transfers, stimulate the land market and increase the supply of land on the market; thus, it can be a mechanism for redistributing land and making land more accessible to landless and land-poor farmers. Land titles reduce the uncertainty over the entitlement of owners to maintain or transfer land rights and, in turn, affect the price and scope of land transactions. They hypothesise that greater security of ownership raises farm productivity and, as a result, the market value of land is higher for titled land than for an identical parcel that is not titled. The most commonly recognised benefit from the titling and registration of land, besides the tenure security bestowed on the property owner, is the use of those secure ownership rights as collateral to solicit credit. Formal lending agencies, such as banks, often require not only that property being used as collateral be titled, but that the title be registered. In fact, the rationalisation for the cost of titling and registration programmes is that they put capital into the hands of people with little wealth and a low income, leading to increased investment and productivity by these families.

There is one important qualification to these conclusions. The fact that there is ample under- or unutilised land available for the expansion of commercial and small-scale agriculture leaves open the question of who has rights over the use of that land. Recent estimates (e.g. Negrão, 1992) suggest that land concessions over about 28,000 sq. km were awarded up until 1990. Land concessions to private companies and farmers since then amount to a further 5,000 sq km. How far this overlaps with the area of cultivated or cultivable land is not known. Still, it is clear that agricultural expansion will involve the transfer from current use to new uses of large areas of land that has already been conceded to individuals, companies and institutions. Thus, it is critical that the legal framework should permit such transfers to take place in a reliable, transparent and efficient manner.

6.6.3. IMPACT ON CREDIT AND INVESTMENT

In Mozambique, under these circumstances, the impact of land titles on individual investment incentives and productivity is likely to be greater for wealthier farmers whose land size and wealth (access to other assets) leave them favourably situated with respect to capital and insurance markets. For smallholder farmers, potential benefits of land titles may be overwhelmed by market-access problems, leaving little incentive for title acquisition. While definitive and conclusive studies on the long-term effects of land titling on the agrarian structure still need to be undertaken, assessments and studies undertaken in the last decade seem to indicate that titling, in and of itself, does not increase credit transactions, improve production levels on titled land or increase the number of land transactions. There are some positive differences in investment and credit for titled farmers over non-titled farmers. The fact that their results are inconsistent means that more attention is needed to evaluating their data, as well as their competing methodologies and the differences between the two regions in Mozambique (Negrão, 1992).

MADER (2004) states that credit market imperfections can thus offset small farmers' supervision cost advantage. For the case of the Nampula province, for example, yields for virtually all crops are lower for poor (small) farmers and higher for rich (large) farmers, thus turning the farm-size productivity relationship upside down. Furthermore, the informal "land market" leads to land transfer from poor and labour-abundant smallholders, to rich and relatively labour-scarce households. The reason is that capital market imperfections, combined with reasonably functioning land and labour markets and a technology that is not supervision intensive, make it more attractive for small credit-constrained households to rent out land and work for a wage than to engage in owner-cultivation without capital inputs. By contrast, in panel data from the Manica province an inverse farm-size-productivity relationship was observed even though a positive presence of correlation between yields and cash inflows from non-agricultural employment suggests the presence of capital market imperfections.

Furthermore, informal lenders have only limited scope to diversify covariate risks, and they typically do not provide much long-term credit. Interest rates on informal loans are thus high. Therefore, both the limited availability of credit and the high cost of borrowing credit would prevent those who do not have accumulated savings from acquiring land. Even if imperfections in markets for credit and insurance reduce the scope for the land sales market to bring about improved land allocation through land transfers from large to small producers, such allocation should – in a frictionless world – be facilitated through the land rental market (Carter, 1994). One possibility would be an interlinked contract whereby the landlord uses the credit access provided by land ownership to provide the tenant with working capital as part of the rental contract. High transaction costs – part of them

related to government regulation – reduce the extent of land rental transactions in a number of countries (Stanfield, 1985).

The impact of titling and tenure security on credit availability and agricultural productivity can be broken down into supply and demand effects. Demand effects occur when the acquisition of a land title increases the farmer's security and certainty that he or she will be able to maintain possession of the land and benefit from investments that improve its productive capacity. Increased security is hypothesised to enhance investment incentives and increase the demand for capital and variable inputs complementary to capital and, thereby, raise agricultural productivity.

Stanfield (1985) argues that, in addition to ownership security, farmers' investment decisions are affected by a number of factors such as alternative investment opportunities, accessibility of production inputs, the farmer's present debt structure and overall profitability of farming, and the availability of investment capital. These factors are dependent on agricultural and macro-economic policies. Moreover, the assumption that credit is available must be seriously questioned. In an environment of imperfect capital markets, small farmers' access to credit is rationed and a title to land may not overcome the obstacles to obtaining access to institutional credit. Furthermore, under some conditions, the provision of land titles may work to the disadvantage of smallholders. As Carter (1994) points out: "If titled land operates as collateral ... then foreclosure and land loss is a real possibility. The threat of land loss is of course supposed to mitigate moral hazard problems associated with credit contracts. But in a stochastic agricultural environment which lacks insurance markets, the farmer faces a genuine erogenous probability of loss of titled and mortgaged parcels." Finally, despite a lack of evidence of productivity effects, there is evidence of a significant impact of titling on the market price of land, which could reflect the capitalised value of the costs of acquiring a land title, as well as perceived implications of title for tenure security and access to credit.

A key reason for land markets' transfer from large to small producers to be rarely observed is that it is very difficult for small farmers to access markets for credit and insurance (Carter, 1994). On the other hand, credit market imperfections that increase the shadow price of credit for small producers would reduce small farmers' competitiveness in the land sales market and at the same time outweigh the supervision cost advantage they enjoy (Negrão, 1992). Asymmetric information and moral hazard lead generally to quantity rationing in credit markets. Formal credit markets can overcome the problem of asymmetric information by utilising a collateral requirement. However, the costs of and political impediments to foreclosure on smallholders land are often quite significant. This is part of the generally high transaction costs associated with providing credit to small

producers. In informal credit markets, close familiarity and social control is used to select promising clients or projects.

6.6.4. EFFICIENCY LOSSES ASSOCIATED WITH CUSTOMARY TENURE SYSTEMS

The efficiency losses associated with customary tenure systems may for a number of reasons be more modest than generally assumed. Firstly, in the large majority of communal tenure systems, arable land (in contrast to pasture and forest or fishing grounds) is cultivated by individuals who may even enjoy inheritable rights. This implies that the static (and maybe even dynamic) efficiency losses possibly associated with communal tenure may be quite limited. Secondly, communal resource ownership is often maintained because it either provides public goods or allows owners to take advantage of synergies that would be difficult to provide under fully individualised cultivation. Land access and security of property rights systems are normally limited to the private sector. This limitation may reduce investment incentives. To facilitate economic growth and prevent static and dynamic efficiency land losses, studies and frameworks have to be carried out to recognise the multiple land functions. While systems prohibit land transactions, communities will permanently continue practising traditional land use, and investment opportunities in the communal areas will be low. In other ways the system does provide flexibility and scope for efficiency-enhancing transfers. It is now recognised that the universal provision of secure land rights promotes investment.

Evidence is mixed regarding the gains and losses to agriculture of household-level diversification strategies; negative effects are associated with the withdrawal of critical labour inputs from the family farm, while positive effects include the alleviation of credit constraints and a reduction in the risk of innovation. Poor migrants from remote areas are less likely to reinvest urban earnings in agriculture, while better-off migrants from nearby or high-potential areas are more likely to do so. Where on-farm diversification occurs, it can generate many of the same beneficial effects on off-farm diversification. What is needed is that rights are transparent and can, within the existing physic-geographic, institutional and legal environment, be enforced in a cost-effective manner. In terms of importance of land tenure security, the community has to be protected by the state, using correct legislation, but it is necessary to define practical mechanisms to look at the performance of the economy. Also, if land is abundant, it is also necessary to define its use to best stimulate growth in the economy, reduce poverty, promote investment and employment, and increase GDP.

Supply effects result when the provision of a secure and legal land title improves a farmer's access to cheaper and longer-term institutional credit, because the land can be pledged as collateral for loans. Output on securely owned (i.e. titled) parcels is consequently expected to be greater than on untitled parcels because of a greater use of inputs of capital and other variable production factors

and potential shifts to more capital-intensive corps. Thus, the combined demand and supply effects, it is hypothesised, result in higher farm productivity on titled land and also raise the price that titled land can command in the land market. The rationale provided by Feder *et al.* (1988) for land titling, however, ignores a number of other factors that shape farm productivity and may bring about the desired outcomes of titling programmes.

Land tenure may be defined as the terms and conditions on which land is held, used and transacted. Land tenure reform refers to a planned change in the terms and conditions (e.g. the adjustment of the terms of contracts between land owners and tenants, or the conversion of more informal tenancy into formal property rights). A fundamental goal is to enhance and to secure people's land rights. This may be necessary to avoid arbitrary evictions and landlessness; it may also be essential if rights-holders are to invest in the land and to use it sustainably. In South Africa, tenure reform is a component of a national land reform programme that also embraces the restitution of land to people dispossessed by racially discriminatory laws or practices, and land redistribution to the poor. One of the greatest challenges is to secure the switch from antipathy to supportiveness in the relations between public administration at local levels and private, non-farm, productive activity in rural areas.

6.7. DEVELOPMENT POLICY PRIORITIES

There is wide scope within existing rural development policies for support to beneficial forms of diversification. Such action does not mean increasing the role of the state in particular economic sub-sectors, nor does it mean manipulating prices and costs in order to achieve specified outcomes. Rather it is about improving the institutional context of private decision-making by, for example, reducing risk, increasing mobility, minimising barriers to entry (e.g. licensing regulations), and ensuring fairness and transparency in the conduct of public agencies. It is also about facilitating the poor to improve their assets, and to make use of those assets to best effect. The appropriate mix of policies is highly context-specific, but some general principles are likely to hold:

- **Human capital:** The significance of education, both formal academic education and workplace skills, for improving livelihood prospects is established by a great number of studies, and poverty is closely associated with low levels of education and lack of skills. There is little doubt that rural education is under stress in many countries. The demands made on educational systems by rising populations are one important factor, the cost of updating educational materials another. Parental contributions to the upkeep of schools are increasing, with inevitable implications for differential access that excludes those unable to meet such contributions. This makes innovative approaches to educational delivery at village level a priority in the future.

- **Enabling environments for grassroots initiatives:** Even after nearly two decades of market liberalisation, it is a mistake to assume that an environment that facilitates small-scale enterprise is now in place. The local-level policy context often remains inimical to self-employment and start-up business. Local enterprise often arises "outside" the regulations, i.e. as an unrecognised informal sector activity, and depends on paying off local officials to allow continued operation. Any business wishing to register formally therefore faces widespread reluctance to dismantling regulations, or speeding up the processing of applications. It is in this sense that reform (in terms of efficiency, effectiveness, transparency and fairness of state operations), although proceeding at different speeds in different countries, is still in its early stages.
- **Decentralising natural resource management:** The choice of institutional setup for supporting decentralised natural resource management (DNRM) should be guided by the administrative systems that national governments have decided to put in place for different natural resources. In situations where jurisdiction over a natural resource is poorly defined and a general devolution process is already being implemented, or where the resource is already under local government jurisdiction, the appropriate institutional choice for support is likely to be *devolution.* Conversely, if the natural resource is under the domain of a politically strong line ministry, devolution might be politically infeasible, which leaves *deconcentration/delegation* as the most realistic model for actual promotion of DNRM. Moreover, deconcentration/delegation need not be the final result. It could rather be considered a (pragmatic) first step towards devolution of natural resource management. Whether the legitimate interests of, say, pastoralists and indigenous peoples, who are local minorities or who traditionally roam/move through large areas, are served better through devolution or deconcentration/delegation of natural resources is an open question, since both models are primarily based on geographically rather than interest-defined communities. Whichever institutional setup is chosen, special provisions will probably be needed to accommodate the interests of minorities, seasonal and occasional resource users, as well as public authorities with direct or indirect stakes in the natural resource.
- **Providing economic incentives and ownership at community level:** Economic incentives for people to protect and invest in a particular natural resource are closely associated with their enforceable rights, as well as the terms of trade prevailing for resulting product flows. Owners and proprietors have the strongest incentives to invest in and maintain a resource, because they hold the right of excluding others from capturing the benefits of their investments. This incentive is even stronger if owners and proprietors can pass on these rights to their heirs. Claimants hold stronger investment incentives than authorised and unauthorised users, but the propensity of these three categories to invest in the resource is likely to be rather small, because their use of it depends on the goodwill of others (owners or proprietors). Community

control over a substantive portion of the values generated by managing the resource also forms a crucial part of the economic incentives established through NRM. Accordingly, these should not be undermined by undue restrictions on trade or excessive taxation of NRM products. Payments to communities from society at large for environmental services accruing from NRM (watershed maintenance, coastline protection, maintenance of biodiversity, etc.) could also form a relevant part of the economic incentive structure, especially in cases where national and international environmental concerns result in tight limitations of product extraction

7. SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

7.1. INTRODUCTION

In recent years, concern has been expressed over rising agricultural and food prices. The world market prices for major food commodities such as grains and vegetable oils have risen sharply to historic highs of more than 60% above levels just 2 years ago. Many factors have contributed to the run-up in food commodity prices. Some factors reflect trends of slower growth in production and more rapid growth in demand that have contributed to a tightening of world balances of grains and oilseeds over the last decade. Other factors that have added to global food commodity price inflation include the declining value of the US dollar, rising energy prices, increasing agricultural costs of production, growing foreign exchange holdings by major food-importing countries, and policies adopted recently by some exporting and importing countries to mitigate their own food price inflation (Trostle, 2008).

International pricing is not the only factor that affects the stability of the agricultural sector and rural livelihoods. Natural disasters, deteriorating weather conditions (climate changes), institutional constraints and inefficient use of resources are important elements effecting rural livelihoods and determining productive output. This research discusses these factors and illustrates how they have contributed to the deterioration of rural livelihoods and food crises. Low agricultural productivity associated with institutional and policy frameworks have pushed food prices beyond the reach of a significant number of the rural poor. The livelihoods of rural people with no or very limited access to natural resources are vulnerable, because they have difficulty in obtaining food, accumulating other assets, and recuperating after natural or market shocks or misfortunes.

This thesis is developed as a framework to examine how agricultural and governance policies affect local development and how effectively natural resource governance strategies can be addressed to support communities, organisations and local authorities (traditional) to jointly define and implement local development based on existing local potential and opportunities. On the basis of a comprehensive literature review, it was found that the governance of natural resources has played an important role in past and present configurations of the rural economy of Mozambique. Despite the implementation of governance reforms and agricultural restructuring over the past 10 years, no recent institutional and rural development model of natural resource management has explicitly considered these new issues. Access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.) is essential for sustainable poverty reduction.

7.2. SUMMARY

The role that agriculture should play in economic development has been recognised for years. The adoption of new technologies designed to enhance farm output and income has received particular attention as a means to accelerate economic development. However, output growth is not only determined by technological innovations, but also by the efficiency with which available technologies are used in the absence of inefficiency factors. After decades of research, institutional analysis has become a prominent area of development. The combination of policies and institutions seems to bring a new analytical direction to non-market-oriented analysis, where the traditional analytical framework (demand and supply) seems to have limitations.

This study attempts to uncover how participatory governance and decentralised natural resource management (NRM) can be improved in rural areas, and it explores the implications of these findings for rural growth and poverty-alleviation strategies in the region, specifically in agricultural development, food security and local/rural development. It analyses the relationship between access to natural resources (including its utilisation) and income generation at household level, and explores the implications of these findings for rural poverty-alleviation strategies in Mozambique using data envelopment analysis and econometric specifications.

The country of Mozambique, with its sufficient natural resources, possesses large tracts of arable land with a wide diversity of agro-ecologic conditions, but hunger and misery affects more than half of the population, with a major incidence thereof in rural areas that has left the majority malnourished. This study provides an alternative analytical approach based on non-measurable variables (qualitative measurements). Examining the utility theoretic foundations of the models, it was found that qualitative variables have a substantial influence on the level of efficiency related to natural resource management and ultimately the impact thereof on the agricultural sector. Over the years, state visions of the appropriate management and use of resources have largely been extended to the rural sector through a centrally directed structure and process (for example, according to the land law, the domain to authorise 100,000 hectares of land falls under the Minister of Agriculture in Mozambique). However, state control over the use and management of resources amongst the peasantry was and is largely ineffectual, because on one hand the state lacks the resources (human, technical and financial) and capacity to enforce such controls, and on the other hand because the policy thrust seeking to empower the peasant communities is supply-led and thus defined according to the terms and processes of external agents, including funders and central governments.

Findings based on the observations reveal, on average, that provinces were 0.60 technically efficient. Thus, the same quantity of resources may be utilised with 40% less cost if all operators produce on the minimum cost frontier under constant returns to scale. This conclusion suggests that the economic theory of commons is an important strand of thinking about efficient use of natural resources. It is conventionally indicated that common property rights are inconsistent with efficient utilisation of natural resources in the absence of some form of government intervention, and that given the impediments to effective intervention, private property rights are a better bet. This challenges the validity of this proposition for some types of property, and results in the conclusion that communal management may be socially wealth-enhancing for properties with certain characteristics of public goods. The presence of shortfalls in efficiency means that output can be increased without requiring additional conventional inputs and without the need for new technology. If this is the case, empirical measures of efficiency are necessary in order to determine the magnitude of the gains that could be obtained by improving performance in agricultural production with given technology.

This suggests that attention to productivity gains arising from more efficient use of existing technology is justified. These results confirm the hypothesis that with decentralisation, power transferred from the central/state government to the local-level government enables the rural poor to: a) Share in decision-making that affects their daily lives; b) Evaluate the outcome of their own decisions; c) Minimise the chances of misunderstanding; d) Understand the difficulties and complexities of administration, planning and management; e) Accept responsibility for failure; and f) Develop a sense of belonging and commitment to civil society.

The study found that concentrations of families' exploration are between 0.2 and 1.0 hectares, mostly in rural areas. Technical efficiency (TE) measures ranged from 0.202 to 1.00 (CRSTE), with an average of 0.60. Inputs could on average be reduced by 40% if all operations could be produced along the production frontier. About 40% of the observations were technically efficient, and 60% of the observations exhibited technical efficiency measures greater than 0.80. At variable returns to scale, TE ranged from 0.78 to 1.00, with an average of 0.933. Approximately 90% of the observations exhibited allocative efficiency measures greater than 0.80. Four observations were technically efficient. Scale efficiency (SE) varied from 0.25 to 1.00, with an average of 0.62. Over 80% of observations exhibited scale measures less than 0.95. These results are consistent with the fact that significant increases in output could be obtained by making better use of available inputs and technology. However, this does not mean that research designed to generate new technology should be overlooked. As Bravo-Ureta and Pinheiro (1993) noted, the evidence presented suggests that there is much room for improving economic efficiency, using a domestic best practice standard,

and that the magnitude of the input market distortions are in some cases quite severe. However, land sales transactions could be efficiency decreasing if, due to policy-induced credit market distortions, large owners' advantage in accessing credit would offset the productivity advantage of owner-operators or if, due to the inability to insure, significant landholdings are not part of poor people's optimal asset portfolio.

In agricultural analysis particularly, more factors influencing efficiency are qualitative, and mostly related to institutions, politics and policies. This suggests that these factors should be considered in determining the causes of agricultural productivity performance. Variables related to quality were also used to identify factors influencing agricultural inefficiency. Exogenous influences arise from restrictions related to policy aspects (government side), but institutional aspects also influence allocation of resources, e.g. participation of the local community in the management of local resources (consultation processes). Policy outcomes are considered to be institutional factors related to governance, participation, local power and authorities (local governments), and grassroots organisations and structures (civil society and local communities) that are the real agents of local governance. There is considerable influence of qualitative variables in efficiency. The theoretical and practical foundation of traditional authority is generally of a symbolic religious nature, and is given legitimacy only by the communities themselves (often finally endorsed through bodies such as councils of elders).

One of the key findings of the study is that local micro politics affect how natural resource policies work in practice, and particularly how the process related to the decentralisation of powers occurs. Leadership structures must be assessed and informed by local settlement histories, which contribute to determining institutional inclusion and exclusion. Empowering authorities that are not held downwardly accountable to local populations can imperil the long-term wellbeing expected from more accountable local management. It can imperil democracy by taking resources away from emerging democratic structures while strengthening and helping to entrench the very non-democratic institutions that democratic reforms aim to replace. Successful decentralisation programmes must take advantage of, support and work with democratic reforms.

Governance is considered within the framework of power, process and practice and how these shaped peasant access, control and use of natural resources in Mozambique. Natural resource governance systems resulted in over-centralisation, because they were crafted in the context of conquest and subjugation. Over the years, state visions of appropriate management and use of resources have largely been extended to the peasant sector through a centrally directed structure and process. However, state control over the use and management of resources among the

peasantry was and is largely ineffectual, because the state lacks the resources and capacity to enforce such controls. Much of the legislation was inherited piecemeal into post-colonial times, and amendments to date have largely de-racialised the colonial acts and policies without democratising them.

They are thus "grassroots institutions" that in effect have to negotiate their power day-by-day, and therefore embody a degree of flexibility that may be extremely useful for the efficient management of natural resources. There exists no formalisation of this integration in laws, decrees, or sectoral directives. As far as such formalisation is concerned, any potential step to be taken in this direction should be carefully considered beforehand. Traditional authority is an institution that is legitimised in community settings, in the sphere of a community civil society of an agricultural base. In the event that this instrument of legitimisation is transferred from a civil to a state level, this authority would lose its intrinsic assets and would probably become frozen in time.

Decentralising natural resource management (NRM) can give local governments allocative powers over lucrative opportunities, both of which can help build local government legitimacy. In general, resource allocation and institutional mechanisms for its management seems to be the limitation. It is hypothesised that by improving institutions, citizens' and communities' capacity to address local governance and decision-making through prominent decentralised natural resource management policies, they could participate more effectively in local development, gain experience in democratic processes, and hold local officials responsible for their decisions. Pioneering efforts at decentralising entrustments over the use and management of resources to the peasant communities have largely resulted in recentralisation at district level, where such efforts are still practised in the trickle-down mode. This is in part because the policy thrust seeking to empower the peasant communities is supply-led, and thus defined according to the terms and processes of external agents, including funders and central governments and their functionaries.

7.3. CONCLUSIONS

Mozambique is highly agrarian, with more than 80% of the labour force employed in agriculture. However, despite its large share in employment, agriculture contributes less than 30% to the country's gross value added. Agricultural productivity is thus far below the average for the economy, and policymakers continue to focus on ways of improving productivity and the efficiency of capital. Mozambique has a large extension of land and a rich diversity of natural resources. Resources are inadequately used, rural incomes continue to drop, and poverty is increasing. The rural standard of living has been deteriorating year by year. Over the years, state visions of appropriate agriculture

development have largely been extended to the peasant sector through a centrally directed structure and process.

The role that agriculture should play in economic development has been recognised for years. With agriculture being a subject very close to the cultural setting and largely sensitive to the changes in society, flexible informal institutions are more effective in agriculture. The livelihoods of rural people with no or very limited access to natural resources are vulnerable, because they have difficulty in obtaining food, accumulating other assets, and recuperating after natural or market shocks or misfortunes. It is not possible to discuss food prices without mentioning the agricultural structure, production systems, rural development, and access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.), which are essential for sustainable poverty reduction. In Mozambique, major changes have occurred in the context within which rural livelihoods have been constructed in Mozambique over the past 20 years – many of which have increased the vulnerability of the majority of the rural population. These changes have impacted upon the natural, physical and social capital that is available to the rural poor.

The concept of governance, like development, is both a political and a technical term. This conflates the normative and prescriptive with the descriptive and analytical, and consequently refers to both an end state and a process. Governance may be conceptualised in many ways – including structural constructions, dynamic approaches, and objective-driven strategies. Alternatively, and as in the approach taken here, governance may be thought of as the relationship between civil society and the state, and thus fundamentally different from the concept of government. It covers the whole range of institutions and relationships involved in the process of governing.

The policy framework for natural resource management has changed dramatically in the past two decades. “Governance” moved to the centre of development debates in the 1980s. By the mid-1990s, environmental governance and sustainable development had become key concepts influencing environmental management. Devolution and participation emerged as important issues in development and environmental thinking. This coincided with increasing concern by governments and non-governmental actors about the success of natural resource management, and resulted in a global trend towards participatory approaches. Defining the relationship between the state and civil society and their respective roles has become a core issue in development theory. Participation, accountability, local institutions, local practices, indigenous knowledge, policy, gender equity, tenure, and fair and equitable decision-making processes became key focuses. This shift from centralist development strategies to locally driven development has been complemented by a corresponding shift in the rights and obligations of various parties. Participation may take many

forms. It occurs along a continuum from active consultation to complete transfer of authority and responsibility to stakeholders. Devolution, decentralisation or deconcentration may promote participation, because they focus on creating lower levels of decision-making. Decentralisation can be defined as "any act in which a central government formally concedes power to actors and institutions at lower levels in a political and territorial hierarchy. It involves the creation of a realm of autonomy in which a variety of lower-level actors can exercise some autonomy. It is fundamentally different from deconcentration. Deconcentration occurs when powers are devolved to appointees of central government". The increasing downward linkages of governments towards sub-national government may be a strategy to reassert control and is not necessarily driven by a concern for rights.

In many African countries, processes of devolution have not been taken to their logical conclusion, so that local grassroots interests may be able to fully exert themselves. The key problem seems to be that these initiatives were not about devolution, but were instead a means to achieve other objectives including conservation, legitimacy, and more effective government. However, given the rhetoric about devolution and empowerment that has accompanied these initiatives, the communities have been sent mixed messages their rights vis-à-vis traditional interests and state interests, and as a result certain levels of expectation and discontentment have been created. It is clear from the experience of all these initiatives that their future (and their success) lies in addressing these expectations and thus redefining governance relations.

The right to public participation, as developed in these agreements, is significantly different from the established legal concept of public participation, which was based primarily on a right to object to decisions, but offered no role in decision-making. This approach was reactive and was based on indirect representation. The emerging right of participation is proactive in that it creates opportunities for individuals and groups to participate in the formulation of management strategies and the implementation thereof. Participation, as a legal concept, has evolved in the context of an environmental management framework that recognises the importance of effective representation, the inclusion of the full diversity of stakeholders, and the recognition of their value and knowledge systems, the linkage between authority and responsibility, capacity-building, accountability and transparent administrative procedures, including access to information and due process. Recognised stakeholders include women, indigenous people, workers and trade unions, farmers, the youth and children, as well as business and the scientific community. There is also recognition of the rights of local communities and indigenous people.

The recognition of customary law seems to be important, because at the level of local communities it is evident that traditional leaders and practices do assert themselves and that many of these reflect sound resource utilisation controls and practices. Yet these are not incorporated into land-use considerations or management plans, except at *ad hoc* informal levels. The creation of village assemblies and the new roles of the chiefs seem to offer some opportunity for local approaches to resource management to be formally included in planning. However, this potential is constrained because the value basis, that is customary law, on which this approach is developed, is not legally recognised. Village assembly initiatives will need to fall firmly within the boundaries of national law, which defines rights of access, management and use. For these institutions to play a meaningful and empowered role in natural resource management, the ambit for decision-making needs to be broadened. One approach suggests that national law should facilitate rather than prescribe. This would allow institutions to define rules for management that are locally appropriate.

The "new rural paradigm" emphasises the adoption of specialised districts, meaning the maximisation of the potential and productive comparative/competitive advantages – the *one district and one product* approach. Each district should, based on local potential, identify its productive value chain based on local resources in a participatory and inclusive manner. This requires a change in the policy infrastructure conception and efficient implementation mechanisms, and a movement away from the traditional hierarchical administrative structures. It requires coordination to encourage the various institutional and managerial systems that formulate and implement rural policy to work together, and a political commitment to overcoming sectoral tendencies. Integrated rural policies do work, and the place-based approach helps to foster local-level public-private partnerships and integrate new stakeholders and resources. These initiatives are developing a culture of cross-sectoral cooperation within central and local governments and thus more coherent policy initiatives. More importantly, there is recognition that a place-based approach requires more bottom-up as opposed to top-down initiatives.

7.4. RECOMMENDATIONS

Designing rural development policy for different communities involves pooling the knowledge held by multiple actors and increased use of partnerships between the public, private and voluntary sectors. There is a focus on local specificities as a means of generating new competitive advantages, such as amenities (environmental or cultural) or local products (traditional); and more attention to quasi public goods or "framework conditions" that support enterprise indirectly. A key governance challenge is to build the political will and institutional capacity to promote sustainable livelihoods and this requires a particular focus on developing practical linkages to translate national policies, laws and regulations into action at the local level. Support for local institutions, to

strengthen their ability to deliver services (government) and to make claims on entitlements (citizens), is an area on which there needs to be considerable focus in the years ahead. This research has shown how local authorities have a far greater impact in practice than the design of decentralisation policies at a national level, and therefore much greater attention should be paid to the issue of building and strengthening the social and political capital of the rural poor.

Strengthening rural citizens' involvement in the management of their own resources will help to reduce the pressure on natural resources by promoting community-driven and congruent sustainable use of natural resources and wildlife conservation. It will assist local authorities and existing resource management organisations to integrate local communities around conservation areas into the planning, management, and decision-making processes on NRM. At the same time, involving citizens will capacitate communities to learn skills in mapping resources, identifying environmental goals, conducting rapid response planning, and operating their nature-based businesses. Involving local populations in decision-making (design and implementation of activities) may: (i) Better emphasise users' preferences and priorities, give greater voice and representation to citizens, stress local ownership as an effective instrument of implementation, and bring greater grassroots-level control over resources and their utilisation; (ii) Facilitate collective action in the provision of public goods and in the protection/management of natural resources, and improve the efficiency of public service delivery; and (iii) Make central government more responsive to citizen needs and produce more acceptable government decisions.

This will require strengthening the role of local authorities so that they can become activists for visible change and gender equality by sensitising community leadership and women to the benefits of effective participation by women. This in turn will require a strong gender component in the training in community mobilisation skills. This will require the identification of strategic partners amongst civil society and community-based organisations. Gender differences in roles, authority, power, and access to resources are pervasive. In most societies, there are important differences between the roles, needs, networks, skills, and knowledge of men and women. It cannot be assumed, even at community level, that what is appropriate for men is appropriate for women. Nor can it be assumed that programmes that reach men should reach or empower women. This produces new ways of coordinating vertically across levels of government, with a better use of local knowledge being one of the central pillars without which rural economic development cannot take place.

Local governments must be open, receptive, sensitive and responsive, and must internalise, accept and institutionalise partnerships at appropriate levels. Local people, particularly the rural poor, must

develop skills in negotiation and claim-making so as to effectively engage in participatory local development through small business development and outsourcing with local governments. The study shows that while communities and other groups can influence local decision-making, they have less opportunity to express themselves regarding the possession of natural resources and to decide about their management at local level. The land law provides mechanism of consultation, but does not say enough about how local communities can strengthen their partnerships with the private sector and gain from the natural resources. Arguments that local populations lack the capacity to use and manage natural resources and to manage local conflicts are most often baseless. Many local natural resource decisions do not require any special capacities. To proceed with decentralisation, the risk of transferring power before assessing or building capacity must be taken.

Mechanisms and systems of participation require creative thought if the initiatives discussed here are to improve and to acknowledge local rights. The emerging international regime identifies some key issues. The starting point of many multilateral environmental agreements is that the full diversity of interests related to resource management must be acknowledged – systems for acknowledging these, and mediating and negotiating between different perspectives, need to be created. This suggests that the recognition of customary law and values might offer opportunities for more effective participation. The process of developing appropriate structures for local conservation must be seen as just that – a process. The challenge facing conservation initiatives is to move beyond a focus on benefits to finding a place within the broader "culture" of humanity. Rural development and NRM requires a high degree of policy fine-tuning to different local conditions. An advantage of traditional institutions is that they are genuinely local, and that they may also be, as in Mali, present at higher levels of government. The literature review revealed that in both Mozambique and Yemen, the lowest state representation is the district, while in Mali it is the rural commune. In any case, it is never the village, which does not have legal personality. But it is precisely at this level that one normally finds the traditional institutions that could sustain genuinely community-based NRM.

Local authorities play a critical role in development. They are composed of different systems and segments and they define the drivers of development by looking at how agents, institutions and structures shape and are shaped by one another. It thus becomes possible to engage with political interests and power relations and to come to terms with how political choices and demands influence policy outcomes and institutional incentives, rules and patterns. Development literature and concepts are good at identifying *what* needs to be done to improve the lives of the poor in developing countries, but they are not always clear about *how* to make this happen most effectively. The Drivers of Change Approach, developed by the DFID, is a concept to identify, describe and to

better understand the interaction between them (agents, institutions and structures). Typically, development agenda has sought to bring about change through technically sound programmes, supported in-country by individual champions of reform or change. Increasingly, the importance of understanding the underlying political systems and the mechanics of pro-poor change has been acknowledged. In particular the role of institutions – both formal and informal – and underlying structural features is being recognised.

It is pointed out that central government cannot devolve significant power to local institutions and to local authorities, because they lack essential technical capacity. Improved and participatory local governance in the rural areas is considered to be one of the necessary pre-conditions for improving the living conditions of the rural population. The process of building good local governance requires long-term strategies and procedures, which encourage consistent local civic participation. It is necessary to prevent failure on the part of regulatory frameworks to adequately address the issue of incentives and failures as a result of the withholding of benefits by local power structures.

It is recognised that qualitative variables have influence and potential importance in efficiency. Governance is considered within the framework of power, process and practice, and how these shaped peasant access, control and use of natural resources. Decentralising natural resource management gives local governments allocative powers over lucrative opportunities, both of which can help build local government legitimacy. This is in part because the policy thrust seeking to empower the peasant communities is supply-led, and thus defined according to the terms and processes of external agents, including funders and central governments. Decentralising natural resource management and using local decision-making powers are considered critical to improving the revenue-generation ability of citizens and local authorities. Local representative bodies need power over the resources that affect their sustainable livelihoods and economic improvement.

It is the cumulative outcomes at local levels that determine the national-level success or failure of DNRM. Accordingly, DNRM must establish significant economic incentives at the community level for managing and conserving the resources, which is closely related to clearly defined and officially supported tenure systems, as well as revenue-sharing mechanisms. Furthermore, DNRM should coordinate resource use among numerous individuals to establish an “optimal” rate of production and consumption at the local level, as well as for society at large. The rationale of DNRM as a development strategy is that by means of policy and legal frameworks, as well as administrative support, the state may establish attractive and fair economic incentives for communities to manage natural resources, whereby resource conservation, poverty reduction and good governance will be promoted at community level. Good governance at the local level is seen both as a means to

achieve resource conservation and poverty reduction and as an objective in itself. In practical terms, it is the elaboration, implementation and experience-based revision of resource management plans at local levels that determine the actual performance of DNRM on the ground. Furthermore, the results and experiences of implementing DNRM at community level should be used to adjust and revise the policy and legal frameworks, including the choice of administrative setup.

The research found that by improving the capacity of institutions, citizens and communities to address local governance and decision-making through prominent decentralised natural resource management policies, they could participate more effectively in local development, gain experience in democratic processes, and hold local officials responsible for their decisions. The study concludes that access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.) is essential for sustainable poverty reduction. Many rural communities are dependent on natural resources in one way or another. Natural resources play a strategic role in rural economies both as a potential source of long-term development and as the essential contributor to sustained food security. Local representative bodies need power over the resources that affect their constituencies in order to become legitimate actors around which civic organisations and citizens rally for justice, sustainable livelihoods and economic improvement. Decentralising NRM can give local governments allocative powers over lucrative opportunities, both of which can help build local government legitimacy. In short, local development can emerge.

7.5. FUTURE RESEARCH

The findings of this research may be relevant to agricultural development in the country of Mozambique. Similar studies have been conducted in the following areas:

- **Influence of sectoral policies in agriculture and rural development:** Policymakers and development managers need to be aware of the pros and cons of giving a (more) prominent role to traditional and neo-traditional leaders in envisaged initiatives, and of the implications of making them (again), consciously or against their intentions, intermediaries between government (and international development agencies) and civil society. Yet, due to a mix of historical, cultural and socio-political circumstances, the social capital embodied in traditional community leaders should sometimes be “tapped” only with great care, as much of that capital, although grounded in traditional networks of mutual assistance and solidarity, is also nested in clientelistic relations among kinship groups of unequal social status.
- **Land tenure rights and agricultural development:** Customary systems in Mozambique are, as in many other areas, highly dynamic and complex. The implication of their recognition in formal law is that inequalities, where these exist in the “customary” systems, can be reinforced. The position of women as a commonly marginalised group may be changing as a result of the

messages transmitted by the land law, although there are community groups that contend that this marginalisation never existed in customary systems. The role of the customary leadership as regards responsibilities outside of the conventional traditional sphere is thus undefined, due to this overlap and the gap in the existing laws.

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9. APPENDIX AND ANNEXES :

Main policies and legislation after 1990

POLICY	*DESCRIPTION (KEY ASPECTS)*
Land Policy (Resolution 10/95 of 17 October, 1995)	(i) Ensure the population's and investors' access to land; (ii) Ensure women's access to and use of land; (iii) Enforce an ecologically sustainable use of the resources; (iv) Promote national and foreign private investment without prejudicing the resident populations, and ensuring benefits to the State; and (v) Ensure active participation by nationals as partners in private enterprises.
Forestry and Wildlife Policy Resolution 10/97 of 7 April)	The main objective of this policy is the conservation, utilisation and development of forestry and wildlife resources for social, ecological and economic benefit of present and future generations of the Mozambican people. Other key aspects include: i) Establishment of an economic value for Mozambique; ii) Rural development through involvement of the communities in the management of profits obtained from forestry and wildlife exploration; iii) Ecologically sustainable use of resources; iv) Strengthening and organisation of the institutional capacity within the processes of decentralisation and community handling of natural resources.
Agrarian Policy (1995)	It defends the sustainable use of natural resources for the development of agriculture
Water Policy (Council of Ministers Resolution 7/95 of 8 August)	It postulates the rational and economical use of water resources, with involvement of local communities.

Legislation

LAW (ACT)	***DESCRIPTION (KEY ASPECTS)***
Land Law (Law 19/97 of 1 October)	The key aspect of the new law is its recognition of the right to land through occupation on the part of rural families, based on verbal testimonial. This is particularly important because it opens up opportunities for safeguarding the right to land of many Mozambicans who cultivate it. This law compels for: (i) Recognition of the right to land use and/or utilisation according to customary norms and practices; and (ii) Compulsory consultation to the communities when demarcating and titling the right to use and/or utilise land.
Environmental Law (Law 20/97 of 1 October 1997)	(i) Rational utilszation and management of environmental components; (ii) Recognition and valorisation of traditions and community knowledge; (iii) Participation of the citizens in the environmental management programme; (iv) International cooperation in view of finding solutions to environmental problems.
Forestry and Wildlife Law (Law 10/99 of 7 July 1999)	(i) Integration of local communities' interests, of the private sector and civil society; (ii) Ecologically sustainable use of resources; (iii) Establishment of mechanisms for private appropriation; and (iv) Recognition of customary rights.
Fishery Law (Law 3/1990)	This law emphasises the development of small-scale fishing and envisages establishing conservation measures for fishing resources, and this includes determination of resting periods, areas of forbidden or limited access, maximum quantities of exploration, prohibition or regulation of fishing as far as internationally protected species are concerned, and protection of rare and endemic species.

Water Law (Law 16/91 of 3 August 1991)	The law postulates that all traditionally established common uses must be recognised and recorded, and that there must not be any private utilisation of water in prejudice of the populations' right to potable water. It also adds that the holders of rights and of private utilisation will have to allow access of the neighbouring population to potable water. The law also defends the participation of the populations in the main decisions relating to the policy on water management. As one of its objectives, the Law states that the National Policy on Water must be geared towards the continuous and sufficient provision of potable water to the populations so that they meet their domestic and hygienic needs.

Source: Adapted from Nhantumbo, Dent and Kowero, 2001

Annex 1

Descriptive Statistical of Efficiency

	TE	AE	EE
Mean	0,830229167	0,137052083	0,115953125
Standard Error	0,006875993	0,010016867	0,009505479
Median	0,825	0,1015	0,083
Mode	1	0,087	0,056
Standard Deviation	0,095276559	0,138797783	0,131711778
Sample Variance	0,009077623	0,019264824	0,017347993
Kurtosis	-0,392319748	16,1874763	21,99192609
Skewness	-0,078763099	3,642840458	4,293256311
Range	0,412	0,981	0,985
Minimum	0,588	0,019	0,015
Maximum	1	1	1
Sum	159,404	26,314	22,263
Count	192	192	192

Annex 2	**CROP PRODUCTION**								
Provinces	**2001/02**	**VAR%**	**2002/03**	**VAR%**	**2003/04**	**VAR%**	**2004/05**	**VAR%**	**2005/06**
Cabo Delgado	116,000	-13	100,700	47	147,900	-27	108,553	-15	92,412
Niassa	195,000	4	202,600	5	213,500	-20	171,284	-13	148,790
Nampula	206,000	14	234,800	3	242,100	2	247,060	-22	192,305
Zambézia	297,000	6	315,600	-7	292,400	17	341,133	-11	303,317
Tete	117,000	33	155,800	10	171,100	40	239,030	-27	174,941
Manica	180,000	4	186,500	4	193,800	54	298,341	-22	232,425
Sofala	124,000	0	123,600	22	150,800	18	178,463	-30	125,497
Inhambane	92,000	-22	71,700	16	83,400	54	128,265	-20	102,473
Gaza	38,000	145	93,100	5	97,500	-32	66,308	3	68,484
Maputo	20,000	124	44,700	-17	37,000	12	41,356	-17	34,129
Total Nacional	**1,385,000**	**10**	**1,529,100**	**7**	**1,629,500**	**12**	**1,819,793**	**-19**	**1,474,772**

Annex 3	**MAIZE PRODUCTION**				
Provinces	**2001/02**	**2002/03**	**2003/04**	**2004/05**	2005/06
Cabo Delgado	81,000	62,200	97,400	57,265	49,836
Niassa	163,000	175,800	173,500	144,568	120,087
Nampula	101,000	117,200	120,400	129,197	104,360
Zambézia	184,000	190,600	212,500	192,366	166,029
Tete	92,000	125,700	125,300	177,544	139,031
Manica	155,000	160,100	158,600	260,829	200,450
Sofala	64,000	64,700	71,800	105,333	73,254
Inhambane	65,000	47,900	59,800	104,466	83,053
Gaza	27,000	61,200	74,100	38,811	51,796
Maputo	15,000	36,800	30,200	35,699	30,965
Total	947,000	1,042,200	1,123,600	1,246,078	1,018,861

Annex 4

FOOD AND AGRICULTURE INDICATORS
Country: MOZAMBIQUE

Prepared by ESSGA, November 2006

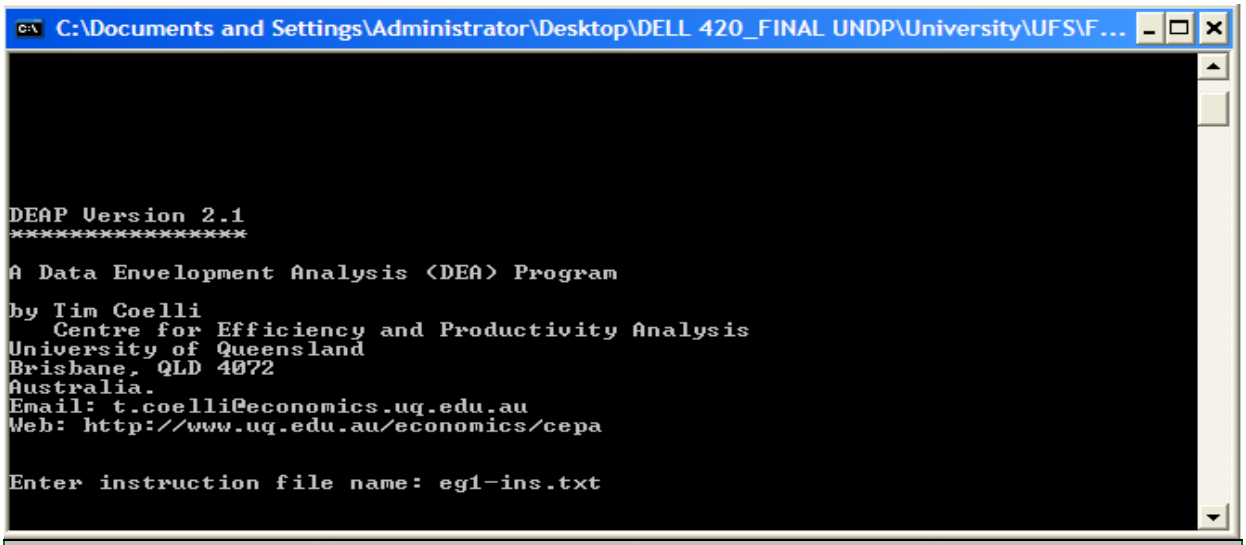
INDICATORS	UNIT	1979-1981	1989-1991	1999-2001	2002	2003	2004
Population & Agricultural Labour Force							
Population	1000 people	12 082	13 519	17 861	18 537	18 863	19 182
Rural / Total Population	percent	87	79	68	65	64	63
Density	people/ km^2	15	17	23	24	24	...
Agricultural Labour Force	1000 people	5 586	5 781	7 585	7 837	7 953	8 065
Agricultural Labour Force/Total Labour Force	percent	84	83	81	81	81	80
Land Use							
Total Land	1000 ha	78 409	78 409	78 409	78 409	78 409	...
Arable Land + Permanents Crops	1000 ha	3 117	3 680	4 185	4 430	4 580	...
Arable Land	1000 ha	2 887	3 450	3 950	4 200	4 350	...
Irrigated Land	1000 ha	65	103	115	118	118	...
Agricultural Production - Major items							
Cassava	1000 tonnes	3 567	3 994	5 568	5 925	6 150	6 413
Maize	1000 tonnes	383	370	1 066	1 236	1 248	1 437
Indigenous cattle meat	1000 tonnes	36	40	37	38	38	38
Food Production Indices							
Food Production	1999-01=100	77	75	100	101	104	109
Food Production, per person	1999-01=100	113	99	100	97	98	101
Foreign Trade - Exports							
Total	million US$	271.8	131.2	480.0	850.0	997.9	997.9
Agricultural	million US$	155.3	43.7	51.8	76.3	103.6	123.6
Major Exports (share in Agriculture)							
Tobacco leaves	percent	0.0	0.0	0.0	28.5	30.8	25.9
Cashew nuts	percent	0.0	0.0	0.0	24.6	17.8	23.0
Cotton lint	percent	12.1	19.0	21.7	21.4	24.3	18.4
Foreign trade - Imports							
Total	million US$	723.0	861.3	1 268.0	1 523.0	1 696.8	1 696.8
Agricultural	million US$	98.1	218.8	219.9	330.3	303.2	342.2
Major Imports (share in Agriculture)							
Wheat	percent	29.0	10.0	7.9	7.3	19.9	26.6
Rice, milled	percent	24.8	12.4	6.2	4.1	10.0	14.4
Oil of palm	percent	2.5	8.1	7.2	2.9	5.8	11.1
Agriculture trade balance							
Exports-Imports	million US$	57.2	- 175.1	- 168.1	- 254.0	- 199.7	- 218.6
Lands & Inputs							
Total Population/Arable Land	people / ha	4	4	5	4	4	...
Fertilizer Use/Arable Land	kg nutrs/ha	11	1	4	6	...	...
Tractors/Arable Land	number / 1000 ha	2.0	1.7	1.5	1.4	1.3	...
Food Supply		1979-1981	1989-1991	2001-2003			
Per caput Dietary Energy Supply	kcal/day	1 860	1 780	2 070			
Per caput Dietary Protein Supply	g / day	32	32	39			

INDICATORS	UNIT	2004	INDICATORS	UNIT	1994-2004
Gross Domestic Product (GDP)	millions US$	5 910	Annual growth rate:		
Agricultural GDP as share of total GDP	percent	23.3	GDP	percent	8.4
Gross National Income per caput	US$	270	Agricultural GDP	percent	5.9

Notes: Agricultural GDP and Labour Force include Forestry & Fisheries. Agricultural production and trade refer to crop and livestock products only.

Sources: FAOSTAT; World Bank - Website

Annex 5: DEA MODEL AND RESULTS



Unit Farms	TE	AE	EE
1	0.922	0.062	0.057
2	1.000	1.000	1.000
3	0.818	0.144	0.118
4	0.999	0.062	0.062
5	0.719	0.348	0.250
6	0.920	0.150	0.138
7	0.757	0.295	0.223
8	0.981	0.127	0.125
9	0.765	0.103	0.079
10	0.863	0.104	0.090
11	0.838	0.089	0.075
12	1.000	0.095	0.095
13	0.750	0.043	0.033
14	0.926	0.065	0.060
15	0.735	0.120	0.089
16	0.853	0.111	0.095
17	0.814	0.551	0.449
18	0.930	0.171	0.159
19	0.752	0.106	0.080
20	0.987	0.109	0.107
21	0.740	0.055	0.041
22	0.964	0.165	0.159
23	0.792	0.131	0.104
24	0.805	0.119	0.096
25	0.954	0.058	0.056
26	0.912	0.203	0.186
27	0.841	0.207	0.174
28	0.771	0.096	0.074
29	0.787	0.321	0.253
30	0.882	0.057	0.050
31	0.787	0.076	0.059
32	0.829	0.200	0.166
33	0.732	0.181	0.133

34	0.720	0.125	0.090
35	0.618	0.059	0.036
36	0.880	0.027	0.023
37	0.825	0.164	0.136
38	0.600	0.068	0.041
39	0.770	0.090	0.069
40	0.848	0.042	0.036
41	0.786	0.025	0.019
42	0.840	0.287	0.241
43	0.645	0.213	0.138
44	0.763	0.191	0.146
45	0.807	0.141	0.114
46	0.660	0.051	0.034
47	1.000	0.087	0.087
48	0.992	0.083	0.083
49	0.896	0.048	0.043
50	0.899	0.041	0.037
51	0.914	0.092	0.084
52	0.862	0.088	0.076
53	0.802	0.178	0.143
54	0.868	0.179	0.156
55	0.787	0.019	0.015
56	0.818	0.074	0.061
57	0.784	0.214	0.167
58	0.982	0.115	0.113
59	0.919	0.026	0.024
60	0.767	0.100	0.077
61	0.991	0.118	0.117
62	0.956	0.138	0.132
63	0.996	0.064	0.064
64	0.716	0.115	0.082
65	0.720	0.113	0.081
66	0.823	0.087	0.071
67	0.664	0.084	0.056
68	0.959	0.087	0.084
69	1.000	0.860	0.860
70	0.841	0.061	0.051
71	0.831	0.028	0.023
72	0.859	0.027	0.023
73	0.814	0.095	0.078
74	0.783	0.120	0.094
75	0.699	0.032	0.022
76	0.882	0.143	0.126
77	0.894	0.049	0.043
78	0.899	0.199	0.179
79	0.856	0.020	0.017
80	0.772	0.126	0.097
81	0.853	0.172	0.147
82	0.733	0.192	0.141
83	0.825	0.124	0.102
84	0.858	0.115	0.099
85	0.835	0.067	0.056
86	0.716	0.115	0.082
87	0.720	0.113	0.081
88	0.823	0.087	0.071

89	0.664	0.084	0.056
90	0.959	0.087	0.084
91	1.000	0.860	0.860
92	0.841	0.061	0.051
93	0.831	0.028	0.023
94	0.859	0.027	0.023
95	0.814	0.095	0.078
96	0.783	0.120	0.094
97	0.699	0.032	0.022
98	0.882	0.143	0.126
99	0.894	0.049	0.043
100	0.899	0.199	0.179
101	0.744	0.111	0.083
102	0.864	0.063	0.054
103	0.808	0.076	0.062
104	0.964	0.096	0.093
105	0.809	0.080	0.065
106	0.930	0.371	0.345
107	1.000	0.234	0.234
108	0.829	0.173	0.143
109	0.808	0.091	0.073
110	0.812	0.189	0.154
111	0.841	0.183	0.154
112	0.872	0.060	0.052
113	0.794	0.078	0.062
114	0.788	0.084	0.067
115	0.740	0.137	0.102
116	0.671	0.294	0.198
117	0.593	0.064	0.038
118	0.976	0.028	0.027
119	0.817	0.071	0.058
120	0.588	0.067	0.040
121	0.777	0.079	0.061
122	0.928	0.062	0.057
123	0.794	0.024	0.019
124	0.798	0.138	0.110
125	0.701	0.471	0.330
126	0.734	0.124	0.091
127	0.826	0.194	0.160
128	0.634	0.056	0.036
129	1.000	0.150	0.150
130	0.926	0.081	0.075
131	1.000	0.083	0.083
132	0.927	0.165	0.153
133	0.904	0.055	0.050
134	0.875	0.401	0.351
135	0.767	0.109	0.084
136	0.931	0.111	0.103
137	0.758	0.096	0.072
138	0.974	0.065	0.063
139	0.825	0.154	0.127
140	0.879	0.142	0.125
141	0.936	0.106	0.099
142	0.826	0.091	0.076
143	0.784	0.136	0.107

144	0.820	0.114	0.094
145	0.740	0.341	0.252
146	0.856	0.059	0.051
147	0.820	0.123	0.101
148	0.780	0.046	0.036
149	0.681	0.150	0.102
150	0.727	0.157	0.114
151	0.648	0.070	0.045
152	0.945	0.025	0.024
153	0.844	0.088	0.075
154	0.726	0.204	0.148
155	0.698	0.082	0.057
156	0.817	0.157	0.128
157	0.725	0.150	0.109
158	0.990	0.150	0.148
159	0.785	0.108	0.085
160	0.911	0.059	0.053
161	0.879	0.034 0	**0.034**
162	0.824	0.026	0.022
163	0.760	0.096	0.073
164	0.783	0.179	0.140
165	0.758	0.272	0.207
166	0.909	0.181	0.165
167	0.942	0.053	0.050
168	0.882	0.345	0.305
169	0.830	0.111	0.092
170	0.864	0.089	0.077
171	0.755	0.064	0.048
172	0.944	0.092	0.087
173	0.833	0.103	0.086
174	0.777	0.300	0.233
175	0.935	0.082	0.077
176	0.852	0.156	0.133
177	0.776	0.087	0.067
178	0.817	0.093	0.076
179	0.676	0.113	0.076
180	0.736	0.126	0.093
181	0.831	0.090	0.075
182	0.725	0.114	0.082
183	1.000	0.684	0.684
184	0.801	0.070	0.056
185	0.806	0.061	0.049
186	0.815	0.033	0.027
187	0.842	0.028	0.024
188	0.739	0.067	0.050
189	0.876	0.646	0.566
190	0.750	0.116	0.087
191	0.855	0.090	0.077
192	0.947	0.100	0.095
Mean	0.830	0.137	**0.116**

Note: TE = Technical Efficiency
AE = Allocative Efficiency = EE/TE
EE = Economic Efficiency