



UNIVERSITY
of
GREENWICH | Natural
Resources
Institute

Community access to marketing opportunities: options for remote areas. Uganda case study (NRI report no. 2442)

Greenwich Academic Literature Archive (GALA) Citation:

Kleih, Ulrich, Odwongo, Willie and Ndyashangaki, Clement (1999) *Community access to marketing opportunities: options for remote areas. Uganda case study (NRI report no. 2442)*. Technical Report. Natural Resources Institute, Chatham, UK.

Available at:

<http://gala.gre.ac.uk/11933>

Copyright Status:

Permission is granted by the Natural Resources Institute (NRI), University of Greenwich for the copying, distribution and/or transmitting of this work under the conditions that it is attributed in the manner specified by the author or licensor and it is not used for commercial purposes. However you may not alter, transform or build upon this work. Please note that any of the aforementioned conditions can be waived with permission from the NRI.

Where the work or any of its elements is in the public domain under applicable law, that status is in no way affected by this license. This license in no way affects your fair dealing or fair use rights, or other applicable copyright exemptions and limitations and neither does it affect the author's moral rights or the rights other persons may have either in the work itself or in how the work is used, such as publicity or privacy rights. For any reuse or distribution, you must make it clear to others the license terms of this work.



This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License](https://creativecommons.org/licenses/by-nc-nd/3.0/).

Contact:

GALA Repository Team: gala@gre.ac.uk
Natural Resources Institute: nri@greenwich.ac.uk

NRI Report No. 2442

Project A0769

**Community Access to
Marketing Opportunities:
Options for Remote Areas¹**

Uganda Case Study

Ulrich Kleih²

Willie Odwongo³

Clement Ndyashangaki³

August 1999

¹ This report is an output from a research project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed here are not necessarily those of DFID. R7148 Crop Post-harvest Research Programme.

² Natural Resources Institute, University of Greenwich, Chatham Maritime, UK

*³ Agricultural Policy Secretariat, Ministry of Finance,
Planning and Economic Development, Kampala, Uganda.*

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
SUMMARY	ii
INTRODUCTION	1
Background to the Project	1
Justification of the Research	1
Activities	1
METHODOLOGY	3
Definitions	3
A Multi-Sector Approach	3
THE IMPORTANCE OF AN ENABLING ENVIRONMENT	8
Political Environment	8
Background	8
Security	8
Decentralisation	8
Background	8
General issues	8
Achievements and shortcomings	9
Economic Policy	10
Agricultural Policy	12
Social Environment	13
Legal and regulatory framework	14
SURVEY RESULTS, ISSUES, AND RECOMMENDATIONS	15
Summary of Survey Results	15
Road Network	17
Survey results	17
Background	19
Feeder and Community Access Roads	20
Way forward	23
Means of Transportation	24
Survey results	24
Some facts on rural transport	25
Motorised and intermediate transport	26
Way forward and issues involved	32
Market Infrastructure	33
Storage	34
Processing	36

Information	38
Survey Results	38
Current supply of market information in Uganda	39
Facts about information	40
Types of information required	41
Means of communication	43
Rural Radio	43
Other means of communication	50
Market information systems and the way forward	51
Mali's experience	51
Ideas on a decentralised Market Information System (MIS) for Uganda	52
Facilitating Functions	55
Community organisation and market linkages	55
Research and extension	58
Credit	59

TABLES

Table 1:	Results of district level workshops
Table 2:	IMTs given out on credit by PIRTP in Malawi
Table 3:	Performance of intermediate means of transportation
Table 4:	Pros and cons of selected non-motorised means of transportation
Table 5:	Weight losses in local cereal and pulses during storage on small farms in Africa
Table 6:	Pros and cons of clockwork radio

FIGURES

Figure 1:	Flow of physical agricultural inputs and outputs
Figure 2:	Community Access to Marketing Opportunities: a Framework

BOXES

Box 1:	ACT (NGO) Animal Traction Project in Kibaale District
Box 2:	Voice of Toro, the Example of a Commercial FM Station
Box 3:	Radio Dzimwe, Malawi

APPENDICES

Appendix 1:	Contact lists
Appendix 2:	Bibliography
Appendix 3:	Examples of market information needs
Appendix 4:	Summary of district workshop results
Appendix 5:	District case studies

ABBREVIATIONS

ACT	Non-governmental Organisation
ACTIONAID	Non-governmental Organisation
ADB	African Development Bank
AIC	Agricultural Information Centre
APCAM	Assemblée Permanente des Chambres d'Agriculture du Mali
APSEC	Agricultural Policy Secretariat
ADMARC	Agricultural Development and marketing Corporation, Malawi
AT	Appropriate Technology
CARE	Co-operative for Relief Everywhere, NGO
CTA	Technical Centre for Agricultural and Rural Co-operation, ACP-EU
DANIDA	Danish International Development Agency
DFID	UK Department for International Development
EU	European Union
GoU	Government of Uganda
GTZ	German Agency for Technical Co-operation
IDA	International Development Agency
IDEA Project	Investment in Developing Export Agriculture, USAID funded
IDRC	International Development Research Centre, Canada
IFAD	International Fund for Agricultural Development
IFRTD	International Forum for Rural Transport and Development
ITDG	Intermediate Technology Development Group
ILO	International Labour Organisation
IMTs	Intermediate Means of Transportation
KBC	Kenya Broadcasting Corporation
KfW	Kreditanstalt fuer Wiederaufbau
LC	Local Council
LG	Local Government
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MASAF	Malawi Social Action Fund
MFPED	Ministry of Finance, Planning, and Economic Development
MWTC	Ministry of Works, Transport and Communications
MIS	Market Information Systems
MNS	Market News Service
MSE	Micro- and Small-scale Enterprises
MWTC	Ministry of Works, Transport, and Communication
NARO	National Agricultural Research Organisation
NGO	Non-Governmental Organisations
NRI	Natural Resources Institute, University of Greenwich
OMA	Observatoire des Marchés Agricoles
PEAP	Poverty Eradication Action Plan
PIRTP	Pilot Integrated Rural Transport Project, Malawi
PMA	Plan for Modernization of Agriculture
RDP	Road Development Programme
RNRKS	Renewable Natural Resources Knowledge Strategy
RSDP	Road Sector development Programme
RTTP	Rural Travel and Transport Programme

SAARI	Serere Agricultural and Animal Production Research Institute
UNDP	United Nations Development Programme
UNFA	Uganda National Farmers Association
URTD	Uganda Rural Training and Development, NGO
URTEL	Union des Radios et Télé Libres du Mali
USAID	United States Agency for International Development

Exchange Rates
(March 1999)

£1 = US\$2,150
US\$1 = US\$1,350
£1 = US\$1.60

ACKNOWLEDGEMENTS

The authors are grateful to all those who have contributed to the success of this research project. Particular thanks are due to the participants of the district workshops in Kapchorwa, Katakwi, Kibaale, Lira, and Rukungiri for their frank and willing exchange of ideas. We are indebted to our colleagues who have made contributions at the various stages of the project, namely Messrs Perez Karuhanga and Vincent Owor-Adipa, who participated in the fieldwork, and Mr Joseph Kyamanywa and Ms Rhona Walusimbi, who provided inputs during the design stage of the survey and comments on draft versions of the report. The efforts of Mr Andrew Goodland, who has carried out the bulk of a literature search at the beginning of the project, and Messrs Geoff Bockett and Peter Golob, who have made contributions on crop processing and storage respectively, are gratefully acknowledged.

SUMMARY

The findings of this research are based on the results of a project funded by DFID's Crop Post-Harvest Research Programme between April 1998 and March 1999, with fieldwork taking place in Uganda, Malawi, and Mali. The project was mainly concerned with policy and institutional aspects. It was concluded that holistic approaches are required to improve community access to marketing opportunities in remote areas of Sub-Saharan Africa, but that initiatives needed to be prioritised.

Market liberalisation makes it necessary for farmers to adopt a more commercial approach in pursuing market opportunities. In particular, they need to develop a reputation for good quality and build up supply volumes, so as to attract traders.

An enabling environment is a key condition for the development of agricultural commodity systems including remote areas. The Plan for Modernisation of Agriculture (PMA) will provide the framework for agricultural development in Uganda well into the next century. The economic environment is characterised by the liberalisation process which took place during the 1990s, and which has been an overall success in Uganda, promoting economic growth. At the same time, investors require a minimum of security in order to commit themselves in remoter parts of the country. This entails political stability and legal protection for contractual arrangements. Decentralisation offers a chance for hitherto disadvantaged districts, however planning and implementation capacity, funding, and accountability need to be improved at local government level.

During the field survey in five districts (i.e. Kapchorwa, Katakwi, Kibaale, Lira, and Rukungiri) poor roads, inadequate market information, and poor means of transportation were identified as key constraints to market access, and sources of high transport and transaction costs in remote areas. The scale of the road network in Uganda is generally adequate, but maintenance is often lacking. Whereas so far emphasis has been on trunk and feeder roads, guidelines are required for the construction and maintenance of community roads. Participatory approaches should be encouraged to ensure that roads reflect community needs.

Aside from motorised transport, more emphasis needs to be put on intermediate means of transport (e.g. animal carts). These forms of transportation are sometimes considered out-dated technology but are often the only means of transport available to the poorer segments of rural society. Pilot projects are required to introduce them in remote areas.

Lack of information is another characteristic of remote areas. This is often influenced by poor roads and low traffic volumes, in particular in areas where there is no telephone or other communication infrastructure. Given the limited impact and lack of sustainability of most centrally organised market information systems, decentralised systems should be developed, involving relevant local stakeholders. A pilot project is required to identify how systems should be set up at District level. Lessons can be learnt from the IDRC funded project on "Information Accessibility to the Micro- and Small Enterprises", which is being executed in four pilot districts by the Micro- and Small Enterprise Policy Unit of the Ministry of Finance, Planning and

Economic Development. If deemed appropriate, this project should be expanded to include market information for farmers and traders.

Farmers and traders require other information in addition to prices, for example information on supply and demand, trade contacts, technical matters and the new institutional arrangements brought about by decentralisation. More prominence should be given to cheap mass media (i.e. local FM radio stations), in disseminating information in rural areas.

Farmers should be encouraged to organise so as to reduce their constraints to market access, while taking care to avoid past mistakes in co-operative building. Relevant projects should pay close attention to farmers' capabilities and needs. Market integration and linkage building are important, but were only indirectly touched upon given that DFID have recently funded other research projects in this field. Contract farming and outgrower schemes can overcome some of the constraints related to agricultural service supply. They tend to work best when there are fewer, relatively large, players at some point in the marketing chain, and there is scope for interlocking transactions involving input supply and output marketing. Whilst export commodity chains of cash crops often fulfil this requirement, it is difficult to implement similar schemes with food crops such as cassava, sweet potato, maize and beans. Non-governmental organisations may have a role to play in getting farmers to take the initiative in improving the commodity chains for such crops.

Rural finance, research and extension services have a facilitating role to play in improving community access to marketing opportunities in remote areas. Needless to say that a functioning credit system is a condition for an efficient marketing system. Agricultural research and extension services tend to be biased towards technical and production aspects but, due to market liberalisation, need to focus more on commercial and post-harvest issues.

INTRODUCTION

Background to the project

This research project was funded by DFID's Crop Post-Harvest Research Programme (part of RNRKS¹), and managed by the Natural Resources Institute, with collaborators in Malawi (Agricultural Policy Research Unit, Bunda College of Agriculture), Mali (Institut d'Economie Rurale), and Uganda (Agricultural Policy Secretariat, Ministry of Finance, Planning and Economic Development).

Given that two other market access projects funded by DFID and carried out by the University of Durham and Wye College/University of London were focussing on micro- and meso-levels, this project had its emphasis on policy and institutional aspects using the macro-level as an entry point. The project started in April 1998 and finished in March 1999.

The project had the following research objectives:

- Policy recommendations to improve community access to marketing opportunities in remote areas
- Identification of sustainable institutional solutions
- Contribution to poverty alleviation in rural areas

Justification of the Research

The need for a better understanding of community access to market opportunities in the countries concerned was expressed at various levels. Following the liberalisation of agricultural markets in Malawi, it was observed that farmers in rural areas where ADMARC withdrew its services faced difficulties in purchasing inputs and food, and selling produce (Marsland and Golob, 1996). Both Mali and Uganda have been able to increase their agricultural production throughout the 1990s but in particular in remote areas farming communities lack access to marketing opportunities. In the light of these and other country specific experiences, a workshop on research priorities, organised by DFID's Crops Post-Harvest Research Programme in 1997, identified market access as a priority for further research.

Activities

During the first phase of the project a literature search has been undertaken, which was followed by the development of a conceptual framework. In both Malawi and Uganda, the total amount of survey time was of the order of two months spread between October 1998 and March 1999. In both countries, the fieldwork consisted of the following two main elements:

- In the capital (and Blantyre in the case of Malawi), discussions with key informants of Ministries, donor institutions, NGOs and private sector companies.

¹ Renewable Natural Resources Knowledge Strategy

- Five one-week visits to selected Districts (i.e. in Uganda: Kibaale, Rukungiri, Lira, Katakwi, and Kapchorwa) with isolated farming communities facing problems related to market access. The main elements of these visits included workshops involving various stakeholders of the private and public sector with an interest in market access related issues. In addition, discussions were held with key informants and Rapid Rural Appraisal type exercises were carried out in at least one village per District.

A two-week visit to Mali was carried out in January 1999 with a view to complement the research with findings from West Africa. This involved mainly discussions with key informants in Bamako and Segou.

METHODOLOGY

Definitions

Before embarking on a discussion of approach and survey design, it was deemed necessary to define the following key concepts used in the research:

Market Access: Farmers have sufficient information and the physical, financial and social means to purchase inputs or food, and sell agricultural produce on favourable terms.

Consequences of lack of market access: Low volumes of buying and selling transactions and unfavourable terms for the farmers, leading in turn to:

- Low yields and production of cash and food crops,
- Low income,
- Poverty, also food insecurity and access to basic services such as health and education.

Remote areas: In the context of this report, these are areas where,

(a) transport costs per unit of produce are high, which is the result of several constraints, including:

- Inaccessibility, as a function of distance, road conditions, terrain, and climatic conditions,
- Inadequate and inappropriate means of transportation, and
- Low volumes of produce available for transportation, preventing economies of scale.

(b) producers lack information not only on markets but also other aspects of their business as a result of:

- lack of communication infrastructure,
- insufficient movement of people, and
- limited sources of information.

A Multi-Sector Approach

The above definition of market access implies a multi-sector approach to improve the terms on which farmers participate in the marketing system. Given that single interventions alone are unlikely to succeed, it is felt that a holistic view of the subject is required.

It goes without saying that the most basic of conditions for market access is the existence of market opportunities for produce potentially coming from remote areas. In this study it is assumed that demand exists either on domestic, regional, or international markets. Provided there is a demand there are three main options by which the competitiveness of agricultural suppliers in remote and other areas can be improved,

- (a) Reduction of marketing costs,
- (b) Productivity increases leading to lower production costs per unit of output,
- (c) In the case of domestic markets, protection through tariffs.

In the context of this study, the emphasis is on (a). The importance of (b) is recognised and will also be touched upon. In the light of international efforts to liberalise agricultural markets, the scope for (c) has been deemed to be very limited and, hence, not been further investigated.

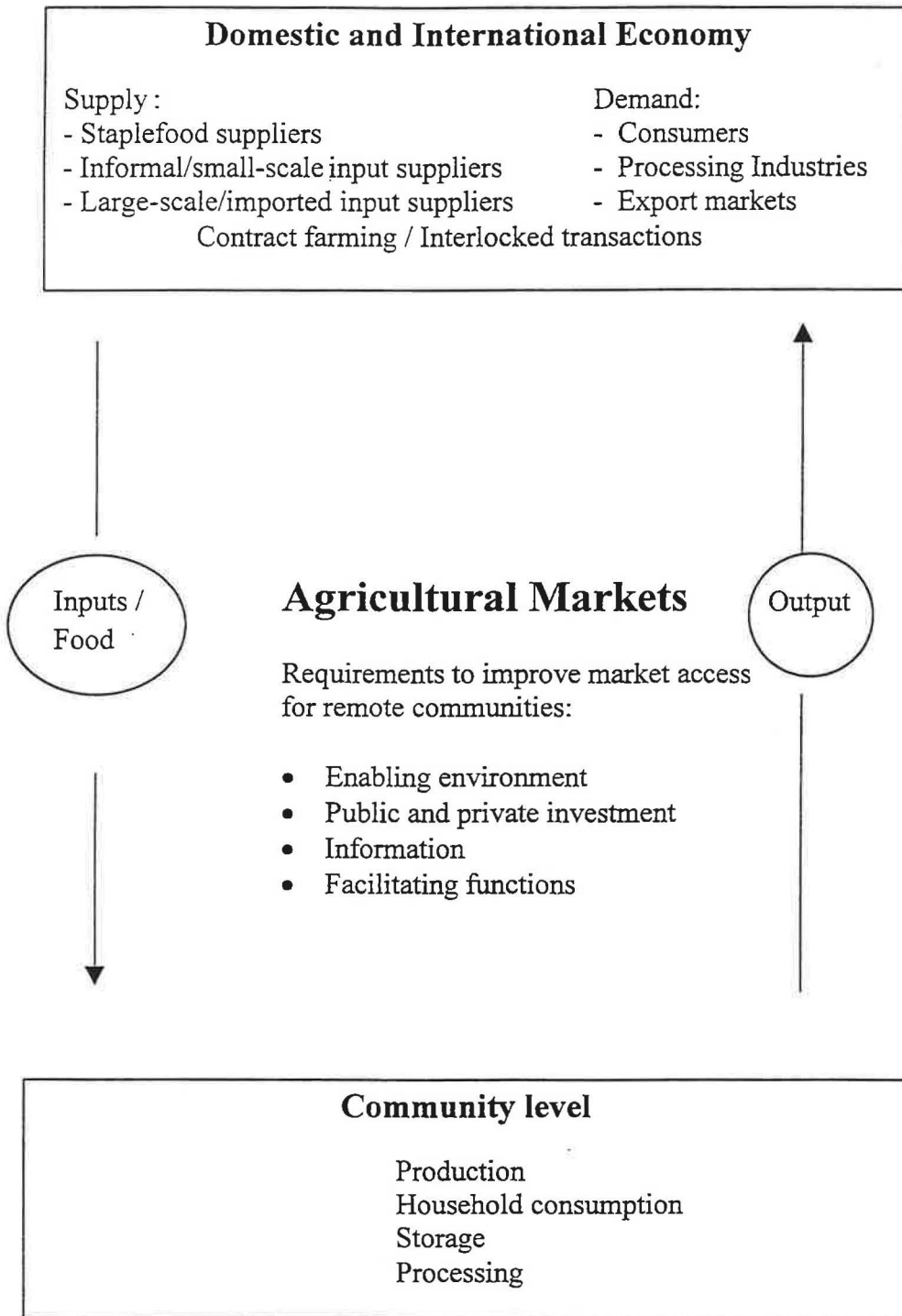
Efforts to reduce marketing margins involve looking at the various elements of marketing costs. As already indicated, it is in particular high transport costs that make a community “remote”. Availability and prices of inputs as well as output prices have a bearing on the farming system. The scissors effect of high input costs and low output prices results in decreased financial incentives for agricultural producers, which is likely to lead to more extensive production systems than in areas with better access (Risopoulos, no date). The consequence is lower production of marketable produce (i.e. cash and food crops), and increased prevalence of subsistence production if transport costs are prohibitively high (i.e. leading to negative gross margins).

Transaction costs include costs related to the search for trading partners, negotiating, opportunistic risk, and contract enforcement (Galtier and Egg, 1998). These costs are generally difficult to measure and, due to their ‘invisibility’, may in certain cases be confounded with traders’ profit. Although, in one way or another, they form part of most trading deals, transaction costs are likely to be higher in remote areas. Amongst other things, this is due to a lack of information by which communities in remote areas are characterised. Information is an integral part of all decision-making processes, and as such also essential for farmers and traders operating in isolated areas. It is therefore required to shed light on the types of information required and means of communication suited for these areas. There is a link between transport and information since increased movement of people tends to improve the flow of information. This can be particularly important for isolated areas characterised by a lack of communication infrastructure such as telephone lines.

Storage and processing can improve farmers’ options in remote areas. For example intra-seasonal storage may allow a farmer to sell a crop which would be non-tradeable during parts of the year when roads are impassable. Similarly, processing can render a bulky crop into a low volume-high value commodity, as a result of which it can become tradeable.

Capital cost forms an integral part of all marketing transactions. Farmers require access to credit to purchase capital equipment such as means of transportation, and inputs for agricultural production. At the same time, the efficiency of a marketing system depends on the amount of liquidity available in the system. However, remote areas tend to be characterised by a lack of credit facilities.

Figure 1: Flow of physical agricultural inputs and outputs



Social issues are important in the context of market access. Given the role of women in marketing of agricultural produce in many parts of Africa, suggestions to improve access ought to take this fact into account. Although women do not always play a major role in the selling of produce (i.e. in particular of cash crops), they usually carry the main burden (i.e. head-loading) when no improved means of transportation are

available. Equity plays a role insofar as not all community members may benefit to the same degree from market access. Those who benefit more are likely to have priorities different from those expressed by the poorer members of the community.

Figure 1 illustrates the physical flow of agricultural inputs and outputs, and the requirements that need to be in place to improve community access to marketing opportunities in remote areas. It shows that marketing and market access cannot be dealt with as a stand-alone issue. It has to be seen as an integral part of the commodity system. On the one hand producers ought to know where they will sell their produce prior to starting production, on the other hand adequate supply in terms of quantity and quality is another prerequisite for an efficient marketing system.

Improving linkages between the different players of a marketing system, namely traders and farmers, is important in the context of market access. However, given that other DFID funded research projects have already looked into this aspect in detail in the context of interlocking transactions and contract farming (e.g. Poulton et al, 1997; Gordon and Goodland, 1999), this will only be touched upon indirectly. At the same time it is expected that improved transport and better flow of information will also improve linkages.

It goes without saying that the most basic of conditions for market access is the existence of a demand for produce potentially coming from remote areas. In this study it is assumed that demand exists either on domestic or international markets.

Given the complexity of the subject, an integrated approach seems appropriate to examine the issues related to market access for rural communities. In the light of decentralisation policies, which have become a main feature of many countries in Sub-Saharan Africa, including Uganda, an integrated, multi-disciplinary approach appears justified. This bears similarities with the Sustainable Rural Livelihoods approach which is also based on a holistic framework stressing that the livelihoods primarily depend on five types of asset, namely: human capital, natural capital, physical capital, social capital, and financial capital (Carney, 1998).

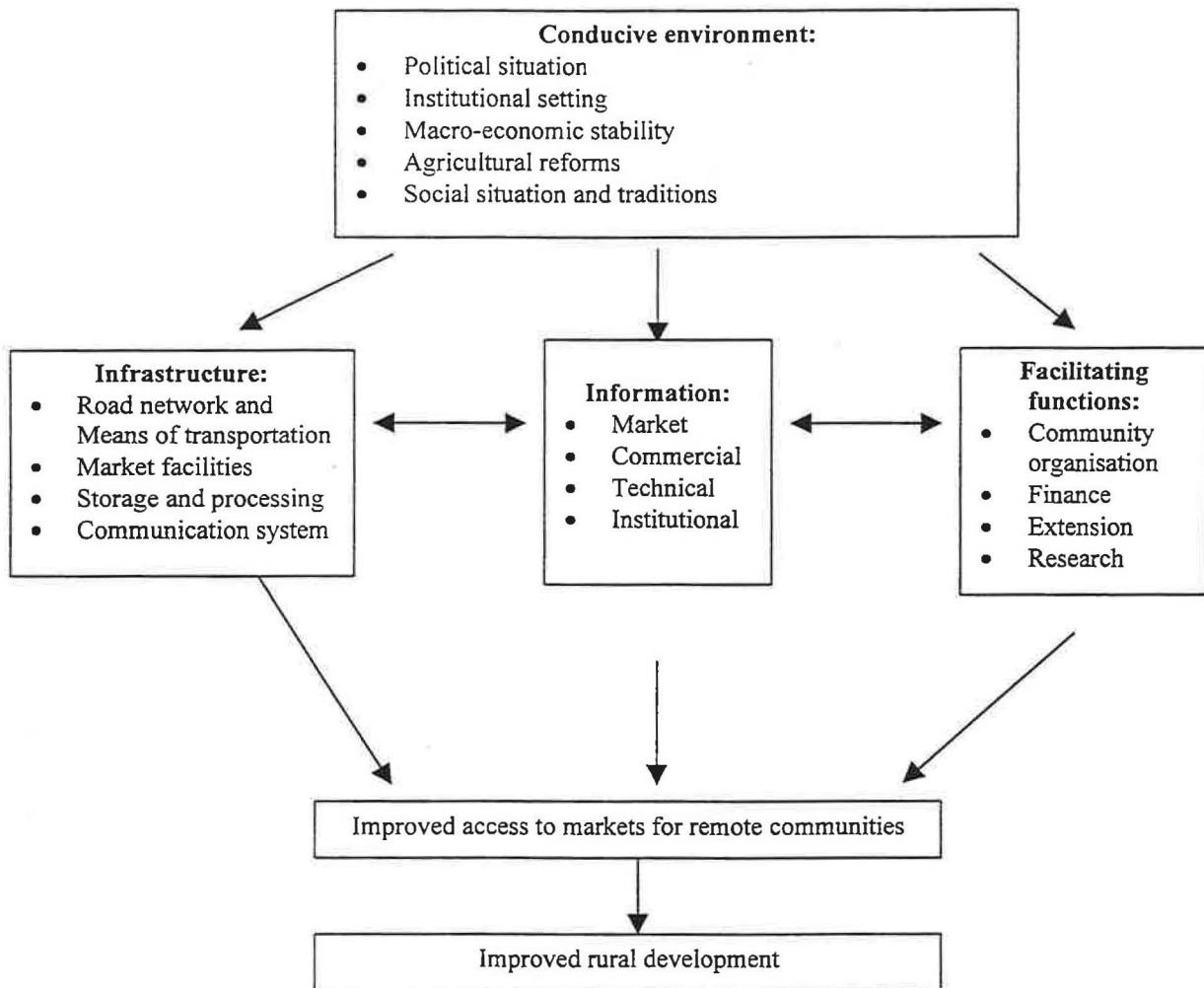
At the same time, it is important to avoid the shortcomings of the Integrated Rural Development (IRD) approach, which was the mainstay of rural development during the 1970s and early 1980s. These shortcomings included:

- Absence of an enabling environment (i.e. political, economic, and institutional).
- Top-down approaches without the participation of the concerned population groups.
- Lack of institution and capacity building on a sustainable basis.
- Dissemination of inappropriate technologies

If an integrated approach is to succeed then these constraints need to be avoided. In particular institutional solutions need to be sought. Decentralisation efforts by the Government of Uganda (GoU) are key in this context. Figure 2 illustrates the relationships of the issues involved in an integrated approach examining community

access to marketing opportunities. Aside from an enabling environment, the study will concentrate on transport infrastructure, means of transportation, information, and the role of community associations. The other issues will be dealt with but not in detail.

Figure 2: Community Access to Marketing Opportunities: a Framework



THE IMPORTANCE OF AN ENABLING ENVIRONMENT

Political Environment

Background

Uganda's system of Government is based on an elected parliament, and a non-party movement, i.e. the National Resistance Movement (The Courier, 1998, P35.). A referendum is planned for 2000 to decide whether the political system should be based on the movement system or a multi-partyism. Uganda's media are lively, which is a major factor contributing to the relative transparency of Government decisions. This transparency is particularly obvious in the capital Kampala, where most of the decisions are taken, and where most of the media are based. On the other hand, transparency is less visible in remote Districts.

Security

There are three security problems which are of concern for Uganda. Firstly, on the domestic front there is an insurgency, led by the Lord's Resistance Army in the Northern parts of the country. Secondly, cattle rustling by the Karamojong is considered a problem in the East and Northeast of the country. Thirdly, the war in the Congo is a destabilising influence in the Region.

Needless to say that these security issues pose a problem in one form or another, delaying the development of market access by farming communities. The more remote parts of the Districts concerned suffer most from the first two forms of insecurity. This not only contributes to delays in developing the Districts, but can also lead to destruction of infrastructure and human lives. The war in the Congo represents a drain on the country's resources, which could be used otherwise.

Decentralisation

Background

Decentralisation is one of the main features of the Ugandan political system at the end of the 20th century. In fact, in this respect, the country is well advanced and ahead of most neighboring countries in Sub-Saharan Africa. As a consequence, it is often described as a model, from which lessons can be learnt.

The decentralisation process in Uganda started as early as 1986 when a commission of inquiry into the local Government system was set up. By September 1987, a local Authorities Committee was appointed. The process of decentralisation was officially launched in 1992, leading to the 1997 Local Government Act.

General issues

Decentralisation is one possibility for improving public good provision, that is transferring responsibility to independent sub-national government. Experience has shown that decentralised infrastructure projects can reduce costs and, as they are more closely tailored to local needs, improve both the effectiveness of the infrastructure and

its maintenance. “A review of forty-two developing countries found that, where road maintenance was decentralised, backlogs were lower and the condition of roads was better... But decentralisation was also associated with higher unit costs of maintenance (partially reflecting the higher share of paved roads) and with wider differences in quality across regions (reflecting inter-regional differences in institutional or human capacity).” (World Bank, 1994).

Decentralisation is considered as a means of increasing the effectiveness of the public sector (Goodland and Kleih, 1998). This is achieved by better information to policy makers about local problems, preferences, and opportunities. Targeting of resources requires detailed information about who and where the poor are, and what their needs are. Local government may be better placed to gather this information. Sub-levels of government are better placed to respond to the needs of local communities, so local development is enhanced and a more equitable allocation of resources among districts and groups results. Bridging the gap between the central state and local communities is essential. Strong local institutions exist in Africa; for the state to plan and implement policies it has the choice of co-operating with local institutions or suppressing them (Griffith *et al*, 1999). Decentralisation is important for the state to have a constructive relationship with groups in society.

Many decentralisation reforms in sub-Saharan Africa have in effect been exercises in deconcentration, without any significant power being relinquished by the centre (Griffith *et al*, 1999). Local governments have not only lacked power and real decision making, they have also lacked resources, and have typically been unable to raise revenue independently from central government, which continues to hold the purse strings.

Local authorities require strengthening and developing before they can fully utilise local knowledge. Local officials often lack skills in methods for increasing community participation in decision making and resource allocation. There is a view that only at the centre is there the sufficient quality of staff for decision making. i.e. the quality of governance will decline as a result of decentralisation. Furthermore, decentralisation can often reduce equity as local governments can easily be captured by local elites. Small elite groups based at the local level will be in a better position to influence local officials.

It is difficult to evaluate the impact of decentralisation: problems are not due to decentralisation *per se*, but to more general administrative, economic and development factors (Conyers 1990).

Achievements and shortcomings

As already indicated, Uganda is internationally considered a model for the implementation of decentralisation. According to Musa (Decentralisation in Uganda, Another leap in the Dark, 1998), decentralisation was well-received by the population. It is seen as a vehicle for greater participation of the people at the grass-roots. One of the key challenges in this respect is how communities can influence decision making processes at Local Government level (i.e. LC3 and LC5).

Although it is acknowledged that financial management practice has improved at District level (Musa, 1998), it still seems that a lot more needs to be done in the more remote, “new” Districts. Aside from improved accountability, the capacity of LG needs to be improved to be able to absorb funds. This requires adequate planning and implementation capacity.

It is often implied that decentralisation will lead to improved financial autonomy of LGs, however this is only partly true, since in reality the Districts still depend largely on transfers from the Centre. There is a particular shortage of funds at LC3 level (i.e. sub-county level). Although 65% of local revenue remains at the lower councils (i.e. graduated tax), the resulting funds are insufficient, owing to a small tax-base. There is even a danger that this shortage of funds might lead to efforts by the LC3 to introduce taxes that can become a constraint to agricultural marketing. For example, high taxes on vehicle ownership or movement of goods is likely to have detrimental effects on market access by farmers in remote areas. In particular the taxation of movement of goods at LG boundaries ought to be avoided since it can create significant extra marketing costs.

At present, conditional grants are still the main source of funding of LG government. Agriculture is one of the priority areas with particular emphasis on extension services at sub-county level. However in most Districts agriculture lags behind the other three priorities, i.e. roads, health, and education. Equalisation grants, the objective of which is to reduce inequalities between Districts, are to be introduced in the FY 1999/2000.

As for the transfer of funds to Districts, which are earmarked for specific activities, a lot can be learned from World Bank funded health projects (e.g. District Health Services Project). A significant part of their funds included capacity building, which included training of finance officers and accountants. Watertight accountability and control mechanisms had to be put in place.

The creation of certain new institutions at LG level is required by the Local Government Act, however, some of them such as the LG Public Accounts Committee and the LG Tendering Board are in some Districts either not in place or not fully operational (Musa, 1998). “New” Districts and those that are located in remote areas without adequate infrastructure are less likely to attract qualified and experienced staff. Inevitably this will have its bearings on the quality of public services. This includes services required to improve market access for farming communities in remote areas (e.g. agricultural extension, market information services, etc).

To sum up, Uganda has embraced decentralisation in a positive manner, however it must be recognised that the country is only in the early stages of implementing this policy. Decentralisation is a long-term measure and there is still a long way to go.

Economic Policy

Economic liberalisation and privatisation have been the key features of Uganda’s economic policy during the 1990s. Though slow at the beginning, the Government gradually embraced structural adjustment policies during the course of this process (Harvey and Robinson, 1995).

With an annual growth rate of about 6% during most parts of the 1990s, the results of the macro-economic reforms have been positive (The Courier, No 170, 1998). Although only at 5.6% on average per annum between 1993-1997, inflation has increased to levels above 20% in 1998/99. This triggered high commercial interest rates.

Although privatisation was pushed by the Government, there still exist Produce Marketing Boards namely, PMB for food crops, Dairy Corporation for milk and CMBL for coffee that remain to be privatized. Except for Dairy Corporation whose monopoly has been removed by the Act of Parliament, PMB and CMBL have more or less been rendered defunct through competition from private sector participants. The marketing of export crops such as coffee is now firmly in the hands of the private sector. It is recognised that about three to four exporters dominate the market, however, as yet, there are no major concerns about this situation.

Despite the economic growth and investment, there are some sectors in which private business is only emerging, as consequence of which considerable amounts of capacity building are required. The agro-processing sectors is one of them. Given Uganda's agricultural potential, this sector could potentially become one of the cornerstones of the country's modernisation of agriculture.

In the context of market access, economic policies have a bearing on demand for agricultural produce, which in turn influence the marketing opportunities for farming communities. As a result, Government and its various agencies should stimulate domestic and external demand for fresh and processed agricultural produce. This should not be interpreted in the sense of Keynesian policies, but in the sense of guidance at the sector level and provision of favourable investment conditions (e.g. low interest rates, low inflation). As for the domestic market, demand patterns are likely to shift with increasing purchasing power and consumer education.

Development of agro-industries should be promoted to increase domestic market for agricultural produce including food crops such as cassava, sweet potato, plantain, grains, legumes, fruits and vegetables. In this context, decision makers ought to recognise that traditional food crops are also cash crops for farmers who depend on their sales for income. Development and modernisation of the agricultural sector will inevitably lead to a situation where food crops will increasingly enter the market place. In that respect, the classical dichotomy of food versus cash crops should be given up.

At the same time, it appears that current and potential agricultural demand is not sufficiently known. **Market demand studies** are required to improve this understanding, based on which adequate measures can be taken. For example, in 1999, DFID are sponsoring a study on industrial cassava markets in Uganda.

Export and cross-border trade should be promoted. The latter is likely to have strong impact on remote Districts, which often tend to be close to neighbouring countries (e.g. Kapchorwa, Rukungiri). Elements, that require improving in this context include:

- Bilateral trade negotiations to improve access,
- Better infrastructure links with neighbouring countries in border areas,
- Better information exchange,

- Better linkages between traders on both sides of the borders,
- Better legal protection of traders who operate in neighbouring countries.

Agricultural Policy

Reforms emanating from liberalisation of the economy and structural adjustment programme also impact on the agricultural sector. Co-operative monopolies have been dismantled and the privatisation of para-statals is in its final stages. As a consequence, the necessary conducive and enabling environment has been created for active private sector participation in agricultural production, processing, and marketing.

Although it is often argued that marketing boards offered an important if not the only marketing opportunity for remote farming communities, one must not forget that these para-statals were not sustainable in the long-run due to continuous financial and management problems. Although, during the course of the survey, there were a few complaints in farming communities about the pace of the liberalisation process, overall the experience made in the Ugandan context is positive. As a consequence, it can be expected that further private sector development should also improve marketing opportunities in remote farming areas.

The Civil Service reform had also its impact on MAAIF, for example the reduction of staff numbers and divestiture of functions. The remaining responsibilities of MAAIF have been stated as comprising the following:-

- agricultural policy formulation,
- setting regulatory standards in agriculture,
- making national plans for the provision of agricultural services and co-ordinating plans made by local government,
- control and management of epidemics and disasters relating to agriculture,
- conducting national agricultural censuses and compiling statistics related to agriculture.

(Source: Proceedings of workshop on PMA: 14 – 16 September 1998, Page 16)

Following the restructuring of MAAIF and the dissolution of the Directorate of Extension, NARO, a semi-independent body under the supervision of the National Agricultural Research Board, now has overall national responsibility for extension services, and management responsibility for the existing 17 district farm institutes (DFIs). It is planned that in future, some of the latter shall be owned by their Districts.

The Plan for the Modernisation of Agriculture (PMA) is a key feature of Uganda's development efforts in agriculture at the turn of the century. The PMA is being prepared using a sector-wide approach involving participation of all stakeholders (including donor agencies) under the leadership of MFPED and MAAIF and sponsorship by DANIDA and DFID. The objectives and aspirations of the PMA are based on the eradication of mass poverty in Uganda and hence PMA preparation is deeply rooted in the Poverty Eradication Action Plan (PEAP).

Local government is responsible for provision and management of agricultural extension services. However, the services currently appear to be in a limbo due to institutional constraints. Although agricultural extension is one of the priority areas, it often figures behind roads, health, and education on the priority list of LGs.

A viable rural credit system, which is accessible for small-scale farmers is another area of concern for agricultural policy makers. Aside from some commercial farms producing cash or food crops, there is little mechanisation visible on Ugandan farms. This needs to be addressed if farm productivity is to increase. Extension, credit, and mechanisation are areas which will be addressed throughout the text.

Social Environment

GoU has made the Poverty Eradication Action Plan (PEAP) one of the cornerstones of its policy. Other priority areas such as health, education and agriculture are expected to feed into the plan.

Uganda's farming system is based on smallholders with relatively small farm sizes averaging 3.0 ha but ranging from 1ha to 5ha. This obviously has a bearing on agricultural production and marketing. In many areas, subsistence production still dominates. A Land Act has been enacted in 1998 in order to improve, for example, security of land tenure. The resulting likely increases in production can be expected to have an impact on marketing. As already indicated above, production aspects form an important part of marketing. There has to be a minimum quantity and quality of supply to attract buyers.

As in most parts of Sub-Saharan Africa, women play an important role in agriculture. In Uganda, women contribute over seventy percent of the total agricultural labour force. Traditionally they are particularly involved in the production and processing of food crops and significantly contribute to the transport of inputs and outputs around the farm and to markets (i.e. head loading). During recent years, they have started to become more active in marketing of agricultural produce. This may have been in part influenced by the country's market liberalisation and agricultural export diversification policies. An outcome of these policies has been the increased importance of food crops (which have been traditionally produced and to some extent marketed by women) as cash crops.

Despite their significant contribution to economic activity in Uganda, women still face social barriers that prevent them from exploiting their full economic potential. For example, largely due to traditional and cultural values, many have limited access and control over productive resources and in general fair less favourably than their male counterparts with regard to poverty levels, education, employment opportunities and participation in the political process. There are many initiatives currently underway in the country by Government and the civil society to address some of these women concerns. The Government of Uganda, in recognition of the positive role of women in sustainable development, and with the support of the international community have since the late 1980s, strongly supported a positive policy environment for the promotion of women advancement. (Uganda Country Gender Profile, 1996). The country has since 1998 had a Ministry responsible for Affirmative

Action Program for women and gender issues. A National Gender Policy was formulated in 1998 to mainstream gender concerns in the national development process. Non Governmental Organisations and Community Based Organisations (CBOs) are involved in various initiatives that seek to empower women economically, socially and politically.

One outcome of the Government Affirmative Action Program has been the increased prominence of women in the country's political process. With the provision of three seats for women in the district local councils this change in role is expected to feed down to the grassroots.

In evaluating the outcome of gender initiatives in Uganda, the Uganda country Gender Profile, 1996 and the National Action Plan on Women, 1999 Draft Report, conclude that despite progress achieved during the last decade a lot remains to be done to strengthen women's role in the development process.

In direct reference to agricultural markets, Manyire, 1993 and Kamparara, 1996 find that gender differences at household level are to the disadvantage of women participation in rural agricultural markets. They stress the need for policy analysts in poverty alleviation programs to analyse the difference that disadvantage one sex against the other and put in place gender responsive actions.

Legal and regulatory framework

There is a lack of standards (e.g. weights, quality grades) applied in particular in the domestic agricultural marketing chain. As a result, the PEAP (P29) states that the standard of marketing will be improved "by introducing standardised weights and measures". This seems important, however, decision makers ought to bear in mind that similar interventions have often failed in the past due to lack of demand by the players in the marketing chain or lack of enforcement. As a result, it seems appropriate to study this issue carefully prior to implementation.

The efficiency of agricultural marketing depends on how contracts are respected and enforced. If contracts are not respected and law enforcement is insufficient, this will inevitably increase risk and ultimately marketing costs. Lack of effective enforcement of contracts is currently particularly serious for many businesses in Uganda. Because Uganda underwent several years of economic and political turmoil, the commercial justice sector is undeveloped and, therefore, fails to deliver adequate service to the private sector. In addition, there is a lack of awareness by the public of the legal provisions in regard to business contracts. The Government has recognised this problem and has embarked on a comprehensive reform of commercial laws in Uganda using financial assistance from DFID.

SURVEY RESULTS, ISSUES, AND RECOMMENDATIONS

Summary of Survey Results

Table 1 summarises the results of workshops organised in five Districts perceived to face major constraints with market access. Each workshop was attended by about 20 stakeholders, including the private sector (e.g. farmers, and traders), Local Government officials, and NGO representatives.

The following procedures were applied during the workshop:

- Following an introduction to the subject, participants were asked to identify constraints related to agricultural marketing in their District.
- Involving the participants, the results of this brainstorming session were organised into clusters.
- Each participant was then asked to identify the three most important constraints to agricultural marketing according to their perception. This led to the scores listed in Table 1.
- The final main element of the workshop consisted of a discussion of solutions to the constraints.

Roads (i.e. quality and network), market information, means of transportation, and markets (infrastructure and network) were identified as the key constraints. However, at this point no attempt will be made to discuss all the constraints in detail. This will take place in detail in the following sections according to the framework presented above.

It is however worth noting that in addition to the “classic” marketing constraints, other constraints were also mentioned. In particular the constraint “low quality and quantity of production” has an impact on marketing opportunities for rural communities. Low volumes and poor quality of produce for sale discourage traders to travel long distances to remote areas since this is likely to increase risk, transaction costs, and transport costs per unit of produce.

Although it is acknowledged that markets ought to exist before production can start, **adequate supply (i.e. sufficient quantity and quality) is a condition for the efficient functioning of commodity chains.** This calls for specialisation of farm production rather than diversification. In particular in remote areas, where farmers traditionally have a high level of subsistence production of the main food crops, it appears necessary to introduce more specialised production patterns. Although commercial agricultural production will never be a risk free business, changes in farming systems should not lead to undue risks for poor farming communities, in particular if livelihoods are at stake as is always the case in remote communities. As a consequence a gradual approach seems best suited to introduce the changes.

To improve market access, the crops to be produced for sale by farmers in remote areas should have the following characteristics:

- Low volume/weight (i.e. not bulky),
- High value,
- Low perishability.

This should lead to reduced per unit transport costs, and, if storability can be increased, allow producers some flexibility in their sales transactions. Processing may be required for certain types of crops such as cassava. However, this will be dealt with in more detail in the sections below.

Lack and/or cost of inputs, which was indicated as another constraint, directly influences levels and quality of production. For example, the lack of good quality seed for crops such as beans and maize was repeatedly brought up during discussions with farmers and at workshops. Other inputs which are increasingly requested by farmers include fertilisers and pesticides. It is therefore important for the Government to have a coherent policy regarding agricultural input supply. Input supply should be seen as a private sector activity and relevant measures taken.

**Table 1: Results of District Level Workshops
Ranked Constraints to Marketing of Agricultural Produce**

		Kibaale	Lira	Kapchorwa	Rukungiri	Katakwi
1	Poor roads / network	1	1	2	1	6
2	Inadequate market information	2	2	1	5	4
3	Poor means of transportation	3	11	5	5	1
4	Low quality and quantity of production	7	4	10	7	7
5	Inaccessibility of credit		4	16	11	2
6	Lack and/or cost of inputs	6		3	7	14
7	Inadequate and poor storage	9	4	5	13	7
8	Poor market infrastructure/ Network		8	8	10	4
9	Low produce prices		11	4	2	11
10	Weak farmer organisations / Mobilisation	7		16	9	11
11	Lack of buyers / Unscrupulous buyers	5		5		
12	Weak marketing organisation		3			
13	Inadequate extension services	3		10		14
14	Wide price fluctuations		11	10	2	
15	Labour constraints				13	3
16	Inadequate processing facilities		7		17	7
17	Insecurity	11	8	10		
18	Poor quality of inputs				2	

Note: Figures represent ranks of constraints identified at District level workshops. Scores were converted into proportions, for which averages were calculated for each category. Some of the original scores obtained during the course of the workshops have been combined. For detailed results including scores see Appendix 4.

Road Network

Survey results

At the District level workshops, poor road infrastructure was identified as the most important constraint to market access. The situation may be summarized for the districts as presented in the sections below.

Rukungiri: The roads are in a poor state and the terrain is difficult. The road from Ntungamo to Ishasha is to be tarmacked as indicated in the 2000/2001 programme. Presently, farmers in Rukungiri cannot compete with farmers from Kasese or Kabale.

Solutions to overcome the problem of poor roads: Construct/tarmac the trunk roads. Maintain the existing road network. Maintenance of community roads is being carried out under “*Bulungi Bwansi*²” but this faces problems during periods of elections – the people tend to ask politicians not to enforce *Bulungi Bwansi*. Secondly the community needs assistance when it comes to construction of bridges and culverts. The district hires contractors to maintain feeder roads and the district has benefited from SWRAP and EU/tea projects which had substantial support for feeder road construction and maintenance. These projects, however, have already ended.

Kibaale. Poor roads, especially feeder roads and community access roads were identified as the main constraint to market access at the District level workshop. It was proposed to maintain the institutional set-up whereby trunk roads are the responsibility of the centre and feeder roads are the responsibility of the district. The community access roads were being handled by contracting the communities at a rate of shs2,500/- per day per person and the communities contributing materials in form of bricks, sand, etc. The chiefs and the LCs mobilised the communities. Communities were assisted on the construction of bridges and culverts. The division of responsibilities between chiefs and LCs is not always clear, which can lead to confusion.

Lira. Like in the rest of the other districts there are three types of roads in the district namely trunk, feeder, and community roads. It was found out that trunk and feeder road network were adequate but the problem was on maintenance of the existing road network. The maintenance of the existing road network required the following: clearing bushes at the side of the roads, filling potholes, clearing off-shoots overgrown with grass, repairing or replacing damaged culverts, replenishing murrum, and grading.

The problem of sub-standard work done on the roads featured prominently at the district level workshop discussions. This was attributed mainly to:

- The current arrangement of maintaining the roads which is undertaken by the District Council without adequate technical back-up.
- Inadequate funding.
- Criteria used in tendering the roads for maintenance by private firms is fraught with lack of transparency.

² Bulungi Bwanzi – is local phrase for community efforts

- Poor standardisation and inspection of roads which arise due to the following reasons:
 - Low remuneration to the technocrats
 - Understaffing of the engineering department
 - Inadequate guidance by the technocrats to the District Council.
 - Inadequate murrum deposits in some places.

Mainly on account of budgetary constraints, the district still cannot handle road maintenance on its own in the short to medium term. There is still a necessity of external funding especially from the Centre, which should be in form of grants specifically ear-marked for road maintenance.

The district should give due consideration on roads when setting priorities. Besides, at lower levels of administration, fund allocation to road maintenance should be accorded the high priority it deserves.

The technocrats in the district (particularly District Road Engineers), the District Council and the representatives of the users of the road (Local council member) should endorse certification of contracts for road repair and should all be fully involved in the planning, management, and monitoring of road maintenance, inspection and standardisation. This it was felt could raise the standard of roadwork and promote transparency.

Kapchorwa. The district has only one trunk road from Sironko to Kapchorwa to Suam at the (Kenya) border. The road is still a dirt road which is very difficult to drive through during the rains. The terrain is mountainous and the district is not connected to tarmac. During the rainy season, vehicles cannot reach the district. The road from Sironko to Kapchorwa is currently being rehabilitated and resurfaced to bring it up to the standard of good quality murrum trunk road. The feeder roads are under the DA, while community roads have no clear arrangements.

Katakwi. The district has a total of 579 km of trunk and feeder roads. Trunk roads, maintained by the Central government constitute 73kms and feeder roads constitute 506km which are maintained by the district. Of the 506 km feeder roads, 361 km are largely inaccessible and require major rehabilitation.

Most of the roads were neglected during the insurgency during late 1980s and early 1990s. Although some have been rehabilitated, these roads are seasonal because they are not tarmacked. The New District will receive road maintenance units by June 1999 but the Ministry of Works office in Soroti is responsible for Soroti, Kumi and Katakwi districts. There is no road rehabilitation project being implemented at the moment. During the survey in the district, the following issues emerged:-

- There is need for the Government to address the swampy sections of community roads and the people to address the remaining sections.
- The road net work is adequate but the resources for road maintenance are insufficient.
- The maintenance of feeder roads should be hired out to the community near the feeder road through transparent tendering.

- The District will not in the foreseeable future be able to raise adequate funds for maintenance of roads.
- The maintenance of community roads should be done by sub-counties but with assistance with respect to swampy sections and culverts.

Background

Uganda's classified main road network comprises 4000 km of primary roads, 3003 km of secondary roads and 1829 km of tertiary roads. (MWTC, 1996). It is indicated that 2105 km out of the total of 8832 km is paved. There are 20,168 km of feeder roads which are generally unpaved. Including 1000 km of urban roads Uganda's road network totals about 30,000 km. In addition, the length of the community road network (*Bulungi Bwansi*) is estimated at 30,000 km.

The establishment of a viable road network is a key priority of GoU, expressed in the Ten-Year Road Sector Development Programme budgeted at US\$1.5 billion. As highlighted in the latter (Volume I, page vi), constraints in Uganda's road network include the following:

- About 30% of the gravel main roads and many feeder and community roads remain unusable in wet weather,
- 32% of the unpaved roads are in poor to very poor condition, leading to excessive vehicle operating costs,
- Illegal axle loads are common. The effect on the freight transport roadways is devastating.
- Funding for rural feeder roads and urban roads is inadequate and delays in fund allocation disrupts the maintenance programme,
- Inter-governmental road planning/budgeting is not well co-ordinated,
- Institutional issues include inadequate staffing and motivation levels and some technical / managerial qualification deficiencies,
- There is a lack of operable equipment, and an inadequate physical equipment maintenance infrastructure,
- The private construction industry is largely ill-equipped and semi-skilled.

The Poverty Eradication Action Plan (PEAP) states that "priority will be given to rehabilitating and maintaining rural feeder roads". Spending on rural feeder roads is seen as supporting investment in the Plan for the Modernisation of Agriculture but it is also recognised that spending on this sector "will continue to present a major budget challenge in terms of both the level of spending and the effectiveness of this spending". It is felt that the link between the road sector and the agricultural sector could be improved for example by including a Ministry of Works, Housing &

Communications official on the Steering Committee of the Plan for the Modernisation of Agriculture.

In the past emphasis has been on rehabilitation of the classified road network and only now is the focus shifting towards the feeder road network. This does not mean that there were no feeder road projects, as yet, but highlights that efforts were insufficient and not necessarily well-coordinated. In addition, the needs and requirements regarding community access roads are largely unknown.

At the central level, feeder roads were handled by Ministry of Local Government, and about 10 rehabilitation area units were established in clusters of Districts. There are numerous road projects funded by donors such as World Bank, DANIDA, DFID, ADB, EU, KfW, etc. The World Bank has started funding the Road Development Programme (US\$ 323, out of which US\$291 to be funded by IDA) which forms part of the 10 year RSDP. Although phase I and II of the Road Development Programme (RDP) focuses on trunk roads there is a component to study the feeder road sector, which is carried out by the consulting firm Africon. Phases III and IV of the RDP are on upgrading (500km) and rehabilitation (1000km) of feeder roads.

In addition, there is also the World Bank funded Transport Rehabilitation Project, which focuses on five Districts including Palisa, Tororo, Mbale, Busia and Kapchorwa. The Project uses local contractors with equipment lease arrangements. The technology used is labour-intensive with a minimum of equipment support. About 10 contractors have been trained at the Mt Elgon Road Maintenance School.

The World Bank also funds institutional support of the road sector (US\$30m) with particular emphasis on the Road Agency Formation Unit.

The Rural Travel and Transport Programme (RTTP) has recently been initiated by the World Bank, which, however, is unlikely to be the main donor of this initiative. GTZ has been contacted for support. RTTP embraces both rural roads and tracks, and means of transportation (more on the later below).

Feeder and Community Access Roads

In the context of improving access for isolated communities, special attention has to be paid to feeder and community access roads and some points need to be addressed as presented in the sections below:

Harmonisation of approaches regarding the involvement of communities in the construction and maintenance of rural roads and tracks. Obviously, it is important not to obstruct priorities and practices to be established by local councils, but to bear in mind that in the past different donor funded projects employed different, sometimes conflicting, approaches. This concerned areas such as technologies (labour-intensive versus capital intensive), and remuneration of local communities (i.e. self-help versus cash or food for work). In this context it is important that Government Departments and donors agree on a standardisation of approaches which would still allow decentralised government authorities to implement their priorities within a specific context.

Greater involvement of the private sector and local communities in road and track maintenance should be encouraged. It is recognised, that besides an inventory of potential operators, this would require awareness-building, and training.

Guidelines should be developed for different levels. Whereas design criteria for national and regional roads should be centrally established, village access roads should be designed at community level, taking into account local requirements. Planning to this end should involve the traders, and other potential users of the roads/tracks.

Design of roads and tracks should reflect current and potential volume of traffic (i.e. vehicles per day). For example, based on a short survey in Zambia, Hine et al (1998) suggest the following indicative figures:

- 100 vehicles per day (vpd): two laned gravel surfaced road and frequent grading;
- 50 vpd: Grading several times a year justified.
- 20 – 50 vpd: there is still the case for some road maintenance, although it is usually unjustified to build and maintain a gravel surface.
- Traffic levels of 20 vpd or less: It is not justified to build a two-lane road; a single lane road with passing places is far more appropriate.

It ought to be recognised that road/track construction by local communities may have its limits, in particular in more difficult terrain (mountains, wetlands, etc). In these cases, external assistance is required for the construction of bridges and other major pieces of infrastructure.

Co-ordination at different levels is required. Prioritisation by local councils is important but this has to take place within District or even regional priorities. As compared to other rural infrastructures such as health centres or schools, where less local co-ordination is needed at local level, roads and tracks linking up several communities need more planning at a higher level.

In particular in areas where population density is low, it is important to identify inexpensive approaches. Local participation in the design of transport infrastructure has been found to lead to lower cost, lower technology solutions. CARE Zambia used an approach where communities provided materials freely and let road workers use their water supplies. As a result feeder roads were rehabilitated relatively cheaply: \$3000 per km, including the costs of water crossings (simple culvert \$700, drift \$400 – 700). Now CARE Zambia has increased the use of private contractors providing training and advise for small-scale contractors who can carry out construction, and maintenance work at local level. (Hine, Nelson and Greening, 1998).

Based on case study work in Ghana, Hine (1993) argues that “it is estimated that replacing a footpath by a vehicle track may have a beneficial effect to the farmer of over a hundred times more than improving the same length of a poor earth track to a good quality gravel road”. At the same time he suggests that there is a need for new roads “to open up remotely located agricultural areas”.

In the local context, it might be appropriate to put more emphasis on means of transportation (see section below), e.g. combinations of so-called intermediate means of transportation (IMTs), and trucks. (Sieber, 1997, Page 8.). It is argued that combining IMTs (for short distances) and motorised transport (over long distances) should lead to lower total transport costs.

Greater use of labour intensive methods appears to be justified given the erosion of wages of unskilled labour in most Sub-Saharan African countries (Von Braun, 1993). The situation in Uganda is not different. However, it has also been stressed that the increased use of labour-intensive construction technologies is likely to lead to increased management costs.

As for the issue of paying workers on Labour Intensive Public Works Programmes in the form of cash or food for work, there is no blueprint formula. On the contrary, this depends very much on the conditions encountered by targeted population groups. However, decision-making should be based on a sound knowledge of the food and labour markets, in order to avoid distortions of these markets (von Braun, 1993). At the same time, the MASAF (Malawi Social Action Fund, World Bank funded) programme in Malawi prefers cash-for-work arrangements since food-for-work payment requires more logistical preparations (e.g. timely delivery of food as payment).

There is the danger that the use of conflicting approaches in relation to the payment of unskilled workers can damage the drive for self-help initiatives in villages. As a consequence, co-ordination between government departments, donors and NGOs is necessary. The result of this consultation should be guidelines to be used by Local Government.

Technical standards of roads should reflect the real needs in terms of potential vehicle usage. Where this is not the case and where standards are set by central government departments and donors without taking into account real service consideration, the result is excessive roads width and cost and hence fewer roads (World Bank, 1994).

Self-help in the construction and maintenance of roads is most likely to succeed when the project carried out by the community is relatively small-scale, and to its direct and exclusive benefit (World bank 1994, Page 78). This may be the case for village access roads. Trunk roads and feeder roads, which serve a wider public, require contractual arrangements with paid labour.

There is the issue of barriers to close roads after rain in order to avoid damage. Problems with corruption should be easier to handle following decentralisation. Transparency and awareness building at local level is required.

Way forward

To sum up, some points to improve the situation of feeder road and community access roads in remote areas include the following:

- Guidelines are required for road construction and maintenance at community level, encouraging community participation. These guidelines should be flexible enough for implementation at sub-county level;
- Avoidance that roads are too large; Criteria should reflect villagers' needs based on current and potential traffic volume;
- More labour intensive construction technologies should be encouraged, bearing in mind that this is likely to lead to increased management costs;
- Encouragement of self-help initiatives at lowest level, in particular if roads are to the exclusive benefit of one community; however community participation should not take place at the expense of the poorer and vulnerable parts of the rural population; If it is felt that there is a danger in this respect, the possibility of contractual arrangements even at lowest levels needs to be explored.
- Given that communal labour is often associated with forced labour, and the fact that these schemes are notoriously difficult to implement during election times, it appears that a substantial amount of awareness building is required in this respect.
- It ought to be recognised that villagers need outside support in particular where terrain is more difficult (hilly, water streams) or where distances are too large; Contractors should be used for the construction of bridges, culverts or drifts.
- If private contractors are used, it is important to ensure transparency during tendering, implementation and evaluation. Without adequate quality control the private companies are unlikely to be more efficient and effective than the public sector.
- In the short-term, NGOs should be involved in Districts with weak local capacity. Capacity building would be required for private sector contractors and Local Government to take over in the medium to long-term.
- Co-ordination at higher level (e.g. Region) is required where roads and tracks form part of a local network.
- The issue of feeder and community access roads ought to be fully included in the PMA. Hence, members of the Ministry of Works should form part of the PMA technical committee.
- It is vital that the above issues are fully recognized in PMA and become part of the operational arrangements for feeder road and community access road development in Uganda.

Means of Transportation

Survey results

With the exception of Katakwi, where it was not identified as a top priority, means of transportation figured high (third most important) among the constraints to market access at District level workshops. A brief summary is given for each district below:

Kibaale. A general lack of means of transportation was observed in Kibaale. Bicycles are the main means, but not many farmers own them. Women stressed that due to cultural attitudes, they were not “supposed” to ride bikes. One woman at the District workshop asked about the possibility of introducing donkeys in the District. ACT (i.e. an NGO) is running a project on animal traction in Nalweyo, Kibaale District. It appears important for NARO to assess the success of this project and make use of lessons learnt. [also see below in section on ox-carts]

Funded originally by IFAD project and currently by the IRISH Aid, the District Administration has established a vehicle pool system, where the public can hire tractors and trailers. There are question marks behind the sustainability of the pooling system once the project will be finished.

Otherwise it was noted that due to road improvements during the last few years there are now more motorised vehicles (i.e. trucks, pick-ups, and motor-bikes), making the District more accessible as a whole.

Rukungiri. There is a general lack of motorised means of transportation. Bicycles are not popular due to the hilly terrain. Donkeys and motorcycles (*boda-boda*) have been introduced, and are both popular. Source of donkeys is not near.

Lira. The most readily available means of transport (i.e. bicycle) in the District is limited in capacity. Ox-carts could be used but farmers do not value this as very important. There is need for sensitisation and training of the community on the use of animal traction implements.

Kapchorwa. Improved roads are expected to lead to better and more means of transport. The local communities have adopted the use of donkeys for transportation of farm produce to considerable extent.

Katakwi. There are insufficient heavy means of transport and buses/taxis for people. It was suggested that business people should be given loans to purchase heavy commercial vehicles. Government should honour the claims for vehicles looted from individuals/companies. People originating from the District do not allow their vehicles to operate here due to insecurity, and cultural beliefs in bewitching vehicles owners. Problems to obtain credit, due to lack of banking facilities and absence of land titles have been mentioned as a major constraint to vehicles ownership. Property has been lost during insurgency and business people have not been compensated. All this seems to refer primarily to motorised means of transportation.

Discussions in Kampala revealed that local councils try to raise taxes from the transport sector either through vehicle movement or ownership. However, there is a danger that trade will be hampered as a result of excessive taxing.

Given that bicycles are the most common IMT in rural Uganda, the supply of women friendly bikes (i.e. without cross-bares) should be encouraged.

Rural Travel and Transport Programme will be launched at road review workshop (i.e. in early April). Baseline studies are required. It seems important to establish a link with the Uganda Debt Network to look at poverty issues.

Tractor schemes have not been successful in the past. This was due to unprofitability of schemes, maintenance and management problems.

Research into IMTs is mainly undertaken by the Serere Agricultural and Animal Production Research Institute (SAARI) and the Department of Agricultural Engineering. Uptake of the technologies developed has been disappointing, which is linked to constraints faced by the extension services.

Given the prevalence of rivers, lakes and swampy areas, the issue of water transport (i.e. boats, canoes, and ferries) should not be overlooked. There are issues surrounding the ownership of ferries. It was felt that private operators are likely to be more efficient than Government run schemes.

Privatisation of the railway system is envisaged, but it seems unlikely that the system will be rehabilitated beyond the Kampala - Mombassa line in the near future given the initial heavy capital investment required in rail road construction.

A **review of GoU policy documents** indicates that, aside from the roads sector, little importance is given to rural transport. The Poverty Eradication Action Plan (Page 26, Para. 4.4.6) states that “efforts will be made to upgrade the technological capacity of agricultural equipment in use through introduction of low-cost and scale neutral technology such as draught power”. The Background to the Budget 1998/99 emphasises infrastructure, however there is little on means of transportation, in particular rural travel and transport. In the Plan for the Modernisation of Agriculture in Uganda there is not much on mechanisation and nothing on IMT or rural travel.

Some facts on rural transport

“Rural people in Africa devote a significant amount of time and effort to transport, much of which involves walking in and around the village and is geared to domestic and subsistence needs” (Ian Barwell, The World Bank, Discussion Paper n0. 344, 1996; found on World Bank web-site January 1999). Women are often the ones who are responsible for the bulk of the transport burden in rural areas, and in many cases this is aggravated by male migration to urban centres. (Ellis, 1997). According to Dawson and Barwell (1993, quoted in Ellis, 1997), women have been reported of taking up to 85% of total transport effort in terms of tonnes per kilometer travelled.

Head-loading, in particular by women, is a common feature of rural transport in remote areas in Uganda. This includes transport of produce from the field to the farm,

and from there to markets. According to a study by Barwell (1996, cited in Akidi et al 1997) in Mbale District, domestic transport – mainly for water and firewood collection - constitutes 73% of household transport demand. Travel and transport for farming activities and marketing made up only 18% and 6%, respectively. To some extent, the latter figures are likely to have been influenced by a high degree of subsistence production in the farming system studied.

According to Akidi *et al* (1997), at the national level, about 70% of the agricultural produce sold at local markets are transported by head-loading (i.e. mostly by women and children). Bicycles, which are mainly used by men, account for 20%, motorised transport for 8%(i.e. mainly pick-up trucks), and donkeys for 2%. The use of ox-carts or donkey carts is very limited, due to lack of technical know-how on their fabrication, high initial cost and lack of traction animals. 93% of transport of produce between the farm and homestead takes place by head-load.

Bicycle ownership and use for hire (Bodaboda) is common especially in Eastern Uganda. Where road conditions are good pick-up transport is available on market days (ibid).

Motorised and intermediate transport

Motorised transport. Lorries, trucks and pick-ups play an important role in long-distance marketing of agricultural produce. Although the capital cost of lorries is highest, they also have the highest transport cost effectiveness (i.e. kg.km/\$) (Grebresenbet et. al 1997). Both, capital cost and cost effectiveness are lower in the case of smaller modes of motorised modes of transportation such as pick-up trucks or mini-buses. Nevertheless, in terms of effectiveness the latter are still far ahead of any other means of rural transport, such as ox-carts or two-wheel tractors and carts.

Tractor schemes, including in Uganda, have failed in most countries of Sub-Saharan Africa (Ellis, 1997). Amongst other things, this was due to lack of profitability of the operations, and management and maintenance problems.

It goes without saying that motorised transport need a minimum of rural road infrastructure. At the same time, there are question marks behind the road standards required in remote rural areas. It is widely acknowledged that trunk roads have an important role to play in opening up an agricultural region, however, the exact requirements for motorable feeder and community access roads are less well known.

Given its role in the economy, it seems important that Central and Local Governments take measures encouraging the development of a competitive transport sector. This includes for example:

- Avoidance of cartels in the form of transport unions or otherwise;
- Avoidance of excessively high taxes on fuel, and vehicle importation and ownership;
- Although safety and environmental concerns are important, relevant regulations should not impede the development of a transport sector.

Intermediate Means of Transportation (IMTs). Given the limited quantities which can be transported, the speed involved and the maximum distances to be covered, head-loading is one of the most expensive means of transportation. At the other end of the spectrum, motorised transport (e.g. trucks, tractor-trailers) is often not profitable in isolated villages. As a consequence, it has been argued that Intermediate Means of Transportation (IMT) have an important role to play in this context. For example, Sieber (1997) argues that the shift from headload to donkey cart can reduce the transport costs by 60%, and the shift to an ox-cart by nearly 90%.

Sieber (ibid) runs different scenarios for transport systems to connect villages to a market centre. Highest transport costs occur when trucks or pick-ups visit all villages to collect produce. The best cost efficiency is achieved when a combination of animal traction is used with truck transport. Ox carts can transport loads on poor roads to collection points, where trucks carry bigger, aggregated, loads to the marketing centres. Sieber backs this up with empirical evidence from Tanzania, where marketing revenue is substantially higher for households owning donkeys.

Box 1: ACT (NGO) Animal Traction Project in Kibaale District

The project covers the period from 1996 to 2000. The animal traction component of the project includes a metal/carpentry workshop and a parent stock of local Zebu. 48 farmers were trained by November 1998 and 170 farmers will be trained in 1999.

There is a high demand for ox-carts. Farmers can acquire carts on hire-purchase arrangement, however the project does not envisage a credit facility. In November 1998, the farmers could purchase equipment and animals at the following prices: Carts: Sh350,000 – 370,000; Plough: Sh100,000; Pair of oxen: Sh300,000 – 400,000.

Given the need to intensify agricultural production, the project covers an important area and the use of animal traction forms an essential element of mechanisation of agriculture. Five years may not be sufficient for the project to become sustainable and work on a private basis as planned. Carts have a recommended capacity of 300kg only. This seems low compared to the “normal capacity” of ox carts (i.e. up to 1000 kgs). Due to lack of interest from Government extension services, the project has created its own extension service, which operates in a rather small part of the District. In order to publicise the project’s activities on a wider scale in the District, it seems important to look into ways how the link with Local Government services and other NGOs such as URDT can be improved.

Between 1992 to 1996, the UNDP/ILO sponsored Pilot Integrated Rural Transport Project (PIRTP) which was carried out in Malawi by the Ministry of Local Government and Sports. The project has later given birth to the Malawi Rural Travel and Transport Programme, which is a World Bank initiative but looking for support from other donors as well. Bicycles were by far the most numerous IMTs which were

given out on credit by PIRTP, followed by wheel-barrows, and farm carts (Table 2). Men were the main beneficiaries of the project. Besides means of transportation, the project also covered aspects related to infrastructure such as bridges in rural areas and community access roads.

Table 2: IMTs given out on credit by PIRTP in Malawi

Type of IMT	Lobi		Embangweni (Mzimba)		Neno (Mwanza)		Total
	Male	Female	Male	Female	Male	Female	
Bicycles	145	67	110	26	192	17	557
Bicycle trailers	3	2	7	0	3	0	15
Wheel barrows	31	2	23	1	23	2	82
Farm carts	16	0	12	1	16	1	46
Hand carts	1	0	0	0	0	0	1
Donkeys	0	0	0	0	4	0	4
Tricycle	0	0	0	0	1	0	1
Stretcher	2	0	1	0	0	0	3
Total	198	71	153	28	239	20	709

Source: Anonymous, 1997.

“Although donkeys are universally ridiculed, they can be invaluable providers of transport energy for women in semi-arid and mountainous areas. Donkeys are more gender-neutral than other work animals and in many societies, it is uncomplicated for women to own and / or have access to donkeys. By facilitating women’s access to donkeys, development programmes can have important social and economic impacts” (Starkey, 1998). In Mali, the majority of carts are drawn by donkeys. In fact, for cost reasons, even owners of oxen often prefer to use donkeys and donkey carts for transport. In that respect, the country benefits from its large population of donkeys, which was 574,000 in 1991. (Gordon, 1997).

The main constraint to access to IMT for resource poor households is the initial capital expenditure - appropriate credit schemes would be necessary for households to be able to pay for donkeys/carts etc. Evidence from Kenya showed that farmers were able to pay off their loans for ox carts after only one harvesting period (IT Transport, 1996).

Potential manufacturers of IMTs require training and credit for setting-up a business. (e.g service delivery, parts and repair workshops, etc.) In Malawi, one of the problems encountered in this respect, was that carpenters or metal workers did not have sufficient education to operate certain types of machinery or lacked access to electricity which was a problem for welding.

Below is an overview of the performance and effectiveness of the various modes of intermediate means of transportation, including small motorised vehicles, and their key characteristics.

Table 3: Performance of intermediate means of transportation

Mode	Max load (kg)	Max speed (km)	Max range (km)	Topography Required
Wheelbarrow	100	5	10	Flat narrow path
Bicycle	75	20	20	Flat narrow path
Bicycle and trailer	200	10 – 15	15 - 20	Flat wide track
Bicycle and slider	150	10 – 15	15 - 20	Flat wide track
Pack animals	100 – 250	5	15 - 20	Hilly, narrow path
Animal-drawn sledge	200 – 400	5	10	Flat
Animal drawn cart	500 – 1500	5	15 - 20	Flat wide track
Motorcycle	100	40 – 90	100	Motorable path
Motorcycle and side-car	250 – 500	30 – 60	60	Flat
Motorcycle and trailer	250	30 – 60	60	Flat
Single-axle tractor and trailer	1500	15 – 20	40	Flat
Asian utility vehicle	1000	60	60	Motorable road / track

Source: Riverson and Carapetis, 1991, quoted in Gebresenbet *et al* 1997.

Table 4: Pros and cons of selected non-motorised means of transportation

Bicycles

Pros	Cons
<p>Don't require fuel</p> <p>Relatively fast</p> <p>Cheap</p> <p>Can be used on narrow paths</p> <p>Local manufacturing and repair capacity exists in many countries</p> <p>Bicycle trailers can be used for heavy or bulky loads, however this requires improved, wider paths/tracks. In the past, bicycle trailers have not been very successful.</p>	<p>Often not used by women, owing to cultural attitudes, or lack of appropriate equipment (i.e. bikes without cross-bars)</p> <p>Pay load is limited to about 100 kg.</p> <p>Difficult to use in hilly terrain, in particular if paths/tracks are not sufficiently smooth</p>

Ox-carts

Pros	Cons
<p>High pay-load (i.e. up to about 1000 kg)</p> <p>Advantageous if animals are also used for ploughing</p> <p>Cows can be used for transport (e.g. Southern Europe); as a result milk can be an additional benefit of the traction animal</p>	<p>Mostly used by men</p> <p>Pair of oxen plus cart are fairly expensive and often beyond the reach of resource poor farmers</p> <p>Animals have relatively high feed and fodder requirements which can be a problem in areas where farm sizes are small (i.e. below 2 hectares)</p> <p>Problems with diseases such as tripanosomiasis in particular in the more humid parts of Sub-Saharan Africa</p> <p>Cattle rustling can be problem</p>

Donkeys

Pros	Cons
<p>Due to the animals' size, they can be used by women and even children</p> <p>Relatively inexpensive</p> <p>Can be used on foot-paths, in particular in hilly terrain where there are no roads or tracks which can be used by bikes</p> <p>Require little management, in particular in arid or semi-arid regions</p> <p>In some parts of Africa (e.g. Mali), there is widespread use of donkey carts</p> <p>Owing to their low value, theft of donkeys is rare compared to cattle rustling</p>	<p>Donkeys survive best in arid or semi-arid regions. Disease prevalence and mortality rate increase if annual rainfall is above 700 – 1000 mm.</p> <p>If used as pack animals, carrying capacity is limited to about 70 – 100kg.</p>

Source: Personal communication, Paul Starkey

Way forward and issues involved

- The government ought to avoid regulatory barriers (i.e. including high taxes) blocking the widespread up-take of motorised and non-motorised means of transportation.
- Adequate availability of credit for farmers and workshop owners is important for the up-take of appropriate means of transportation.
- Government staff have to be made aware of the benefits of Intermediary Means of Transportation. In the context of small-scale farming, animal traction and other forms of IMTs do not represent an out-dated technology. IMTs should be given more prominence in training and extension curricula.
- Due to socio-cultural constraints, awareness building amongst the rural population is necessary. This should make certain means of transportation more acceptable to women (e.g. bicycles, donkeys, etc).
- A programme supporting the introduction of intermediate means of transportation should have an adequate element on animals (i.e. management, nutrition, and health of draught animals such as oxen and donkeys).
- Pilot projects should be carried out to (re)introduce IMTs and agricultural mechanisation. Issues to be considered in this context:
 - Pre-conditions for project success need to be established and Participatory Rural Appraisal carried out. This includes assessment of economic viability of certain types of IMT.
 - It is preferable to start such a project in areas where farmers already keep animals and may be familiar with animal traction from the past.
 - Given that IMTs represent a relatively large investment, in its initial stages the project should focus on an area where cash crop production is common and where farmers have a higher income.
 - Adequate training and incentives for blacksmiths are necessary to stimulate the creation of workshops in remote areas. This includes provision of credit.
 - Subsidised sale of equipment and animals should be considered at the beginning but later on this may be phased out.
 - Networking with other countries should be encouraged.
 - Project should have a minimum scale to develop a critical mass in a particular District.
 - A pilot project may require an element of community road construction and maintenance.
 - Transport and its various components are a private sector activity (e.g. Government run animal breeding programs or equipment factories should be avoided).

Market Infrastructure

Poor market infrastructure and lack of an adequate network was rated as a constraint to marketing at four out of five District level workshops. Below are summaries of discussions at selected workshops.

Lira. Market network, market facilities, and maintenance of facilities were discussed. It was observed that the market network was adequate in the district but a lot of problems arose in areas of market facilities and their maintenance. It was noted that most markets lack facilities such as sheds and toilets. The problem is even more serious at fish landing sites, where in addition to the above problems, there are no provisions for disposal of fish offal.

More seriously, the market authorities demand fees from the trader that should have been used to provide these facilities. Problems arise because the local markets in the rural areas which are most affected by this problem are owned by District Local Government. These markets are tendered to individuals or companies that operate it for a given period of time. At the same time, the private operators do not have the willingness to invest in the market structure.

It was therefore recommended that:

- Grassroots institutions and agencies including primary societies should be strengthened to operate these markets.
- District Local Governments should put some structures in markets since they are the ones who own the market. Sub-county administration should contribute greatly to this effect.
- The running and maintenance should be tendered out but the bids should be properly evaluated.

Katakwi. There are three grades of markets i.e. grade I, II and III. In category 1, there are three markets i.e. Ochorimongin which specialises in livestock; Unyaniguro-rice, and Libalango which has a speciality of livestock and green gram. These markets are managed by tenderers. The number of markets are adequate but their structure is basically open air with a few grass thatched stalls and with no other amenities e.g. stores, waybridges for livestock, toilets etc.

Review of Government documents. The establishment of rural markets is one of the areas highlighted in the PMA. It is suggested that initially public investment is required but later it should be privately run (MAAIF/MFPED December 1998, Page 26).

The following points can serve as **guidelines** for the establishment of markets:

- Markets should be located at central points reducing distances for producers and traders,
- Markets need a minimum of infrastructure to be provided by LG, such as platforms, permanent shades for all weather business, sanitary facilities, and water

supply. The construction of warehouses should be undertaken by the private sector.

- The system of weekly or fortnightly markets may need enhancing. Announcements through the mass media (i.e. in particular local radio) should be envisaged.
- Following an initial, moderate investment, the running of the markets should be tendered out to private operators.

Storage

Storage was mentioned as a problem at all district workshops. The following summarises some of the discussions.

Lira. Storage was seen as a problem at all levels. The storage structures easily expose the produce to insect damage. It is one of the reasons why farmers rush to sell their produce immediately after harvest when the price is still very low. It was also observed that other aspects of post harvest handling (e.g. drying) is not being done properly thus making the produce vulnerable to pest infestation. Another observation made was that construction of appropriate storage facilities requires high initial investment that farmers cannot afford.

It was therefore recommended that:

- Post harvest handling and storage, particularly at the farm level, should be strengthened more, especially in training all the stakeholders involved in marketing agricultural produce.
- Produce buyers should be encouraged to fumigate at an appropriate storage facility so that they are able to tap the high prices at the period of scarcity. But this should be done with technical back-up and supervision.

Kapchorwa. Lack of storage facilities was seen as having three negative effects, (a) farmers cannot store to wait for better prices, as a result of which they sell at low prices, (b) in case of maize, no chemicals against weevils are available, which affects the quality, (c) the moisture content required by the market is not met.

Katakwi. Storage both at on-farm and off-farm level is grossly inadequate and where it exists, it is out-dated and of traditional type. The basic function of storage, i.e. bulking and prolonging the storage shelf life of commodities, is thus not met and most crops are sold immediately after harvest at very low prices thus reducing the farmers' incomes.

Rukungiri. Due to lack of storage facilities farmers cannot wait for good prices and traders take advantage of this.

Kibaale. Storage was found critical at farmers' level;. It was recommended that extension services should introduce new storage technologies.

General comments. Storage allows greater flexibility in the timing of marketing. At the local level, storage enables producers and traders to delay the marketing of produce in order to take advantage of seasonal price fluctuations. In the context of remote communities, storage periods are likely to be longer owing to the lack of marketing opportunities. In addition, it may be necessary to bulk up produce prior to selling in order to achieve economies of scale for transportation.

Storage is a private sector activity. As such it is important that research and extension services prepare relevant messages on technical aspects and the economics of storage for the main players, i.e. namely farmers, traders, and manufacturers of storage facilities. Farmers generally will require small storage facilities, which are appropriate for the scale of their business. Traders generally need warehouses, which can be owned or hired.

Protection of stored produce against insects, rodents, moulds, etc is important to preserve the value of the commodity. Aside from technical messages on the use of chemicals or natural protectants such as inert dust, it is important that these means are available.

Table 5, prepared by Dr P Golob, NRI, provides some guidance on the extent of agricultural storage losses. The Table in general demonstrates that considerable losses occur during grain storage at farm level particularly when storage periods are extended over several months.

Table 5: Weight losses in local cereal and pulses during storage on small farms in Africa					
Country	Crop	Storage period (months)	Cause of loss	Mean % weight loss (\pm SEM) or range	Reference
Zambia	maize	7	Insects	1.7-5.6	Adams, 1977
Kenya	maize	Up to 9	insects, rodents	3.5 \pm 0.2	De Lima, 1979
Malawi, Lilongwe	maize	Up to 9	Insects	3.2 \pm 3.4	Golob, 1981
Malawi, Lower Shire	maize	Up to 9	Insects	1.8 \pm 3.5	Golob, 1981
Malawi, Lower Shire	sorghum	Up to 9	Insects	1.7 \pm 0.5	Golob, 1981
Tanzania**	maize	3-6.5	insects (LGB)	8.7	Hodges <i>et al.</i> , 1983
Swaziland	maize	Unspecified	Insects	3.7	De Lima, 1982
Swaziland	maize	Unspecified	Moulds	0.5	De Lima, 1982
Swaziland	maize	Unspecified	Rodents	0.2	De Lima, 1982
Ethiopia!	sorghum	9	Insects	4.0-9.2	Lemessa and Handreck, 1995
Togo	maize	4-6	insects	5.1-6.4	Pantenius, 1988
Togo*	maize	6-8	insects (LGB)	30.2-44.8	Pantenius, 1988
Tanzania*	maize	4	insects (LGB)	17	Keil, 1987
Ghana	cowpea	5-9	Insects	1.1-4.7	Golob <i>et al.</i> , 1998
Ghana	bambara	5-9	Insects	1.4-1.6	Golob <i>et al.</i> , 1998

*Data do not take into account food removals during storage, no allowance made for declining quantities.
 ** Spot estimate on samples collected at one point in time.
 ! Storage in lined, underground pits which were untouched for the entire storage period

Storage is associated with capital costs. Traders often depend on credit (e.g. inventory credit) to be able to purchase commodities which can be stored. Although farmers may not require capital to store produce, storage still leads to opportunity costs. In many cases farmers are forced to sell produce after the harvest to meet their financial commitments. This could be prevented if farmers had better access to credit facilities.

Processing

Inadequate processing facilities was mentioned as a constraint to market access at three out of five district workshops.

Lira. Most of the agricultural produce bought or sold are mainly in primary form fetching very low prices. There is therefore a need to add value to these produce by processing but the low level of processing machines among the rural community hampers this.

It was therefore recommended that:

- Policies should be instituted to encourage cottage industries that can process agricultural produce. This would be more viable especially if the processing units are within reach of the farmers.
- At higher levels, processing facilities should be encouraged and developed because this constitutes a very important outlet for farmers' produce.
- At farm level, the produce should if possible be graded so that farmers benefit from premium prices. This, therefore, calls for emphasis on quality at farm level.

Kapchorwa. Other than coffee whose processing plant is being revived under a joint venture between Divinity Union Ltd and Sebei Elgon Co-operative Union Ltd, there is no other agro-processing facility in the district. AT(U), an NGO, had introduced small oil mill extractors for sunflower, but the crop has not picked up well in the district.

Katakwi. Due to insecurity, no major processing facilities have been established in the district. Although a lot of cotton is grown in the district, there are no ginneries and oil extraction mills. Lack of electricity is a major factor in the slow rate of industrialisation of the district. Of recent, Appropriate Technology (AT) has established its branch office in Katakwi and has introduced small scale oil presses, water pumps, etc at affordable prices.

General comments. Processing can range in scale from household level, low technology processing, to fully mechanised factories. Farming communities lacking opportunities to sell their produce in fresh form are often forced to endeavor in processing activities (e.g. drying of roots, fruits and vegetables, smoking of meat).

With respect to marketing, processing serves two main functions:

- it can add value to the good, thereby increasing the potential marketability and profitability of the product; and
- processing can preserve the produce, thereby increasing the time available for marketing.

At national level, agro-processing industries can generate demand for agricultural raw materials, including crops traditionally viewed as foodcrops. “New market opportunities are now providing a still largely unexploited niche for small-scale processing” (Spore 65, September/October 1996). Urbanisation, increasing purchasing power, and changing consumer preferences are likely to be driving forces behind the establishment of processing industries.

The final processed product may be exported or consumed domestically. Aside from the traditional cash crops, other examples include:

- Vegetable processing (e.g. RECO in Kasese),
- Vanilla processing and export (UVAN Ltd)
- Fruit processing (Fruit of the Nile),
- Animal feed processing (e.g. by-products from oilseed processing and maize milling, dried cassava),
- Starch industries (e.g. cassava or sweet potato, in particular in Asia),
- Milk processing,
- Fish processing.

A favourable investment climate is a condition for the creation of a successful agro-industry. It is important that the investment climate is conducive not only in Kampala but also in the Districts. Needless to say that a minimum of infrastructure is required to stimulate agro-processing industries, such as water, electricity and communication facilities.

NGOs such as AT (Appropriate Technology), ITDG (Intermediate Technology Development Group), and Technoserve are specialised in the establishment of processing industries in particular at community level. In addition, institutional arrangements involving the public and/or the private sectors need to be encouraged to provide processing companies (i.e. small- and large-scale) with appropriate technical and managerial know-how. Contract farming may be an option to be considered in this context. The export of non-traditional export crops (e.g. vanilla, paprika, maize) is encouraged by the USAID funded IDEA project.

(also see section on community organisation and market linkages)

Information

Survey Results

After roads, the lack of market information was the second most important constraint to agricultural marketing identified at the District workshops as indicated below.

Kibaale: Efforts should be made by the District and subcounty administrations to use the following media: FM Radio Stations, Local Newspapers, churches, NGOs, Farmers and Traders Association, Extension workers, local councillors, study tours etc.

Rukungiri: The farmers lack knowledge of prices in Kampala and in neighbouring countries like Congo and Rwanda. They also lack knowledge on quality requirements of the various.

It was observed that the Field Extension Workers (FEWs) based at each sub-county collect agricultural data, including price data but this is never disseminated to the farmers. It is only utilised in-house by the agricultural staff and planners. There was a need to disseminate market information using the “Orumuri” newspaper and Rukungiri FM radio station.

Lira: It was observed that marketing information is necessary from various marketing levels namely – international, national, district and rural levels. The type of information required includes: Prices of the produce, market, quality and quantity, products available etc.

The prominent problem that featured in market information was information gathering and dissemination. The office of the District Marketing Officer who should be doing this is grossly understaffed and underfunded. Yet this information is required on timely basis to enable farmers negotiate with the buyers in fixing prices of produce.

It was therefore recommended that:

- The effort of the District Marketing Officer should be supplemented by other government agencies such as Agricultural Extension Staff and Civic Leaders.
- Other stakeholders namely Local Councils, UNFA, and projects involved in agricultural production should be made aware of the importance of marketing information and they should therefore be involved in the funding, collection, and dissemination of marketing information.
- The media, especially radios should be fully utilised in the dissemination of marketing information. This should be put on air at an appropriate time of the day.
- Farmers’ organisation should be strengthened so that they are able to collect and disseminate marketing information.

Kapchorwa: Farmers in remote areas are generally ignorant of prices prevailing in Kapchorwa Town, Mbale, Soroti and Kumi, let alone the capital Kampala. Traders tend to dictate the prices due to farmer ignorance.

At the District workshop it was recommended that efforts be made to improve the provision of market information through mobile film vans, newspapers and radios.

Katakwi: There is a lack of means of communication e.g. telephone, fax, etc. The only way information travels is by people. There is no information dissemination mechanism. There is only one officer manning the marketing department. The Government through the Ministry of Trade and Industry (MTI) together with traders' and farmers' organisations should be responsible for market information dissemination.

Although it is recognised that the provision of market information is necessary to improve domestic marketing, it may also be assumed that due to the modernisation of agriculture some market information will be supplied by private sources charging user fees. However, if the information is to be targeted at poor farmers predominantly active in subsistence production, then this approach is unlikely to work. More on this in the sections below.

Current supply of market information in Uganda

There are a number of institutions, which are or have been involved with market information collection and dissemination. A brief discussion of a selected few of these institutions is given in the sections below.

The Market News Service (NMS), - based at the Ministry of Tourism, Trade, and Industry was funded primarily by USAID until September 1998. The MNS struggled with a number of shortcomings including: shortage of funds, delays in data communication, and poor dissemination of information in particular as the service was heavily centralised. The data was published in newspapers and broadcast through one FM Station (i.e. Radio Simba). It was recognised that publishing the data in English was not sufficient, and that vernacular languages should be included. The Service mainly targeted traders by publishing the prices of food crops in 21 Districts. It was expected that this would lead to greater competition in the market place to the benefit of the producers. Once the funding had stopped the service became more or less defunct.

The USAID funded IDEA project - used to collect and disseminate market information. However, in March 1999, IDEA did not have an Information Officer, as a result of which this activity was not fully covered by the project. There was only a monthly meeting involving, amongst others, project staff, traders, and FEWS staff, for the exchange of market information.

The USAID FEWS project - is publishing a monthly report on the food security situation in the country. However, the information is more geared towards decision makers rather than private sector operators, and is presented from a food security perspective.

Uganda National Farmers Association (UNFA)- publish agriculture related news through the quarterly magazine Farmer's Voice and radio broadcasts. Unfortunately, although the information is very useful, in remote areas it reaches only few farmers.

Some NGOs - disseminate market information to farmers in their area. However, although the information may be of good quality, it only reaches relatively small numbers, and, more importantly, the data is not shared by a network of agricultural information providers.

The Agricultural Policy Secretariat (APSEC) - has a substantial amount of agricultural production and marketing data, gathered primarily for the purpose of their annual report on economics of crops and livestock production.

The Agricultural Extension Services - have traditionally focused on production aspects, leaving the dissemination of commercial information at district level to the Trade Officer of the Ministry of Tourism, Trade and Industry.

Given the above, there is relatively little information on domestic agricultural markets reaching the majority of the private sector, i.e. traders, farmers and consumers. In particular, farmers in remote areas lack information.

As for the export market and small- and medium scale enterprises, there are a number of initiatives trying to provide data for their respective clients. These include

The Uganda Export Promotion Board (UEPB) - publishes a bimonthly export bulletin providing information on export markets for agricultural and other products. In addition, there is a weekly 15-minute broadcast. Prices are also published on a weekly basis.

The Micro- and Small Enterprise Policy Unit (MSE) of the MFPED - is currently undertaking a 14-month IDRC funded research project on “Information Accessibility for the Micro- and Small Enterprise Sector”. The findings of a pre-project survey show that there is a fairly large number of organisations providing commercial, technical and managerial information to the micro-and small enterprise sector, including:

- Institutions which provide information to MSE entrepreneurs free of charge (e.g. Uganda Small-scale Industries Association),
- Government institutions providing information to MSE entrepreneurs as part of their mandate (e.g. UNCST, Department of Trade and Industry at District level),
- Private businesses that charge fees for their information, e.g. Bushnet, TIPS (Technological Information Promotion Services), and FIT Ltd (Farm Implements and Tools).

Facts about information

The need for market information is unquestionable. “Up-to-date, or current, market information enables farmers to negotiate with traders from a position of greater strength. It also facilitates spatial distribution of products from rural areas to towns and between markets. Well-analysed historical market information enables farmers to make planting decisions, including those related to new crops. It also permits traders [and producers] to make better decisions regarding the viability of intra and, perhaps, inter-seasonal storage.” (Shepherd, 1997).

Shepherd (ibid) distinguishes between market information and marketing information. The former emphasises collection and dissemination of prices, and, in some cases, quantities, whereas the latter represents a much wider concept, including information on market channels, potential buyers and their contacts, payment requirements, quality standards, etc. In this report, only the term market information will be used.

In particular larger-scale traders usually have their own information networks relying on more or less modern communications technology (e.g. fax, e-mail, etc). Although generally quite well informed of local markets, small-scale traders lack the resources to monitor markets on a regular basis (Shepherd, 1997, P10). They depend more on “word-of-mouth” information, which depends on the existence of traditional communication channels such as telephone lines, and a functioning transport infrastructure. The latter not only result in larger quantities transported but also improved flow of information.

Although it is increasingly argued that users should pay for information, in the context of resource poor farmers this seems unrealistic. For the time being, information should be considered a public good in the context of small-scale farming in Sub-Saharan countries. Especially where mass media such as radios are used it is difficult to recover costs. Information provided through the printed media (e.g. newsletters or newspapers) could be charged directly or indirectly to the user, but there are issues such as affordability, delivery delays, quality of information, and presentation (i.e. usually not in vernacular language).

It must be recognised that the provision of information for small-scale farmers ought to be seen in the context of adult education. Universal Primary Education (UPE) is expected to generate long-term benefits, however, if agricultural modernisation is to take place within the next decade, then adult farmers will require more information not only of markets but their business and environment in general.

In particular in remote areas, demand for information needs to be created. Farmers need to be made aware of their right to information, how they can make use of it, and how to influence its delivery. This can take the form of “pressurising” an extension officer to provide a particular piece of information or request better packaged agricultural radio programmes from the local FM station.

At the same time it is important to bear in mind that provision of information alone, however good its quality, is not sufficient. Markets must be sufficiently competitive so that farmers or small-scale traders can take advantage of opportunities offered. Aside from the availability of production factors, farmers must have the entrepreneurial spirit and knowledge to be able to make use of information. Obviously, and last but not least, if increased market orientation would lead to unjustified risk to their livelihoods then farmers cannot be expected to adjust production accordingly.

Types of information required

According to Robbins (1998), “farmers need to be able to compare local market conditions with those further away, ... prices between one grade of product and another, ... and they need information on individual traders’ track records so that they

can avoid those that are untrustworthy”. Appendix 3 provides an overview of perceived information needs by stakeholders in Ghana (Robbins, *ibid*).

In Mali, the execution of needs assessment studies was one of the first activities of the newly established “Observatoire des Marchés Agricoles”. Target groups for this exercise included, farmers, traders, processors, and institutional decision-makers.

According to Sanogo (1998), farmers requested the following types of market information: Different food security and cash crops (i.e. not only cereals should be covered), Supply and demand situation and prices on markets, Availability and prices of inputs (including transport, equipment, fertiliser, etc), Availability and conditions of credit.

As for processing and storage, the following information needs were expressed by producers: Storage technologies, Availability and price of chemicals, and Demand for processed products. Livestock producers requested information on, disease control, availability and price of inputs such as drugs and feed, livestock prices.

The survey also revealed that farmers have a preference for local radio stations broadcasting in vernacular language. This indicates that at least part of the information should be related to the context of a specific locality (i.e. Commune or region) rather than the nation as a whole. This may in particular apply to farmers operating in remote areas.

Traders expressed the following information needs: Traders buying and selling on the domestic market, prices, demand and supply volumes, contacts of traders, information on storage technology.

Export traders requested information on, prices, supply and demand situation, contact details of traders, quality standards, regulations, market opportunities. In the context of traders it is important to mention government policies affecting domestic and export markets. For example, unannounced subsidised imports of cereals or inputs such as fertilisers can create problems for traders.

Processors require three types of information related to, raw material supply (prices, volumes, sources, production statistics), processing technology (prices and suppliers of machinery, new technologies), and sales (price, demand and distribution of products, information on competing imported products).

Decision makers require information on: Commodity system, agricultural statistics, food aid, food security stocks, regulations on national and international markets, support programmes for operators active in the respective commodity chains, availability and conditions of credits, prices of agricultural products on the national, sub-regional, and international markets.

This clearly shows that farmers and traders require more than market information, which is primarily based on prices. Technical information includes both pre- and post-harvest aspects of farming. Traditionally, extension services were given a leading role in providing this information, however, at best, their results have been mixed.

Particular emphasis has been on production whereas farmers in a commercial agriculture equally require technical information on post-harvest aspects, including storage, transport, processing and marketing. As a consequence the latter points need to be strengthened. More about this below in the Section on extension.

If agriculture is to be modernised then farmers need a more commercial approach to their business. This requires a minimum exposure to farm management concepts such as gross margins, profitability, etc. In this respect, extension officers, be they from Government departments, NGOs, or private sector, have an important role to play in communicating these concepts. Needless to say that the extension staff themselves require more exposure to commercial approaches.

Although not directly linked to market information, institutional information has an important role to play in rural development. This may correspond to civic education whereby villagers are made aware of their rights and duties. In particular, following decentralisation, it is important that Local Government actions and decisions are made as transparent as possible.

Means of Communication

Rural Radio

“Radio is clearly the most effective and appropriate means of communicating information in remote areas to farmers many of whom have poor literacy skills.” (Robbins, 1998). This certainly also applies to the dissemination of market information.

Broadly, there are three types of radio stations in Uganda:

- National radio station (i.e. Radio Uganda)
- Commercial local radio stations (e.g. Voice of Toro)
- Community radio stations (small radius, about 50 – 100km) often set up by NGOs (URDT plans to open a station in Kibaale District)

Radio Uganda is used for informing the rural population with messages related to agriculture or health issues. The main advantage is the large coverage national radio stations can achieve. This is partly due to the fact that listeners are used to the programmes and schedules of the national radio and therefore prefer to tune in despite the existence of new stations.

Disadvantages of national radio stations include:

- generally high fees for airtime,
- sometimes political interference,
- if there are many languages and dialects spoken in the country, it may become difficult to reach the majority of the population,
- National radios, which are usually based in the capital city, may be useful for spreading very general messages concerning the entire country, but they cannot take account of local information requirements.

Commercial FM Stations. In early 1999, Uganda had about 10 commercial FM stations covering the bulk of the country. As the term already implies these private stations tend to have a commercial, profit-making approach. They often charge relatively high rates for airtime, which may be an indication of lack of competition, or high demand for airtime. Income may not only come from advertising, but also broadcasting of development programmes, and personal messages.

Although generally set up without support, in some countries such as Mali they receive a subsidy at least during the first years of operation. Often the owner of the station or key employees have a background in journalism, which is of advantage when it comes to issues such as programme making and broadcasting.

The radius of FM Stations can vary considerably. Smaller stations with less expensive equipment have a radius of about 50 km which can increase to 100km if the transmitter is well positioned (e.g. on top of a mountain). Larger stations with several transmitters can cover several regions of a country as the example of Voice of Toro in Uganda shows.

Box 2: Voice of Toro, the Example of a Commercial FM Station

Created in the mid-1990s, Voice of Toro (VOT), a private FM radio station, which has its headquarters in Fort-Portal, Western Uganda, has four 3KW transmitters located in Fort-Portal, Mbarara, Mubende, and Kampala. In addition to the usual media aspects like entertainment and news updates, the focus of the corporate mission is on basic social concerns such as poverty alleviation, agriculture, education, and other aspects of rural development.

According to their factsheet, VOT covers 16 Districts in Western and Central Uganda with a population of over 15 million, and is also received in parts of Northern Rwanda and Eastern Congo. The languages used by the station include: Runyoro/Rutoro, Runyankole/Rukiiga, Lukonzo, Rwamba, Kinyarwanda, Swahili, English, Lingala, and Luganda.

The average airtime cost for advertising spots is between Sh10,000 to Sh15,000. Airtime for news adjacent journals will attract an extra charge of 50%. The production of one commercial/advert costs Sh150,000, and a 15 minute programme Sh450,000. At the same time it was indicated that cheaper rates could be negotiated if, for example, the station would be used for regular broadcasts of agriculture related extension or market information messages.

During the early years of their existence, VOT have also sold low cost FM receivers to the population in their area in order to boost radio ownership and listenership.

Community Radio Stations, often sponsored by NGOs or donors, are stations that can be particularly useful in remote areas where no commercial FM station can be received. In some cases they are based on volunteer work. As a consequence they are

obviously in close contact with their listeners, but are also likely to lack professional broadcasting and management staff. This can be a problem once the initial enthusiasm for the new station is gone and programme making becomes routine. They require financial support from donors, NGOs, or the Local Government.

Estimates of costs of setting up a Community Radio Station vary widely. According to Myers (1998, based on Louarn, Panos 1994), small stations “cost as little as £15,000 (US\$24,000) to set up in terms of initial investment in equipment”. Larger stations may cost up to £50,000 (\$80,000) and more, including costs for broadcasting equipment, transmitters, studio, vehicles, and training of personnel. In addition, there are often unpaid inputs from volunteers. Insufficient funding and the absence of adequate training and support (e.g. means of transportation for volunteer staff) can jeopardise the success of a station.

Cost of FM equipment for Community Radio Stations starts with US\$1,500 for a small transmitter suitable for villages or small areas increasing to about US\$7,000 (ex-works) for a 1200 Watts package comprising transmitter, power supply, and four-bay antenna system (Source: Mallard Concepts Ltd., Brixham, UK).

With 107 licensed radio stations, out of which 92 were operational in early 1999, Mali can be considered a communication laboratory. For example, there are five stations alone in the secondary urban centre of Segou and a total of 14 in the Segou Region. The rapid expansion of radio stations was sparked by the downfall of the Traoré regime in 1991. Until then only one, Government run, radio station existed in Mali.

The Italian NGO Terra Nova played an important role in providing associations (i.e. political, cultural, and other) with broadcasting equipment. The population’s interest and donor support, led the government to subsidise new radio stations from 1992 onwards. In the earlier years the annual subsidy of a larger station was of the order of 2 million FCFA (approx. US\$3,500) and 0.2 million FCFA for smaller stations. For 1999 larger stations hope for a contribution of about 1 million FCFA.

The more successful stations manage to work on a budget which is much higher (e.g. FCFA 10 million), with funding coming from advertising, association’s membership fees, projects or development services wishing to broadcast information.

The radio stations are classified into the following categories:

- association/community
- commercial
- Religious
- rural.

In reality it is difficult to draw exact lines between these categories, as their programmes often tend to cover more than one of them. The radio stations have their own association called “Union des Radios et Télé Libres Du Mali (URTEL). The number of radio stations and the fact that subsidies are declining suggest that competition between the stations will increase and some of them will have to close. In particular those with insufficient backing and weak management structures are likely to loose out.

Competition is likely to increase the commercial element in broadcasting, requiring stations to take close account of listeners' wishes. For example Radio Foko, the antenna of the cultural association Jamana, have recently changed their programmes and broadcasting formats following consultation with their listeners.

Findings from survey work as part of a workshop organised by CTA and GRET in Mali in 1997, highlight the importance of "staying in touch" with the audience (Sultan, 1998). For example, it was found that women prefer to have "their" programmes broadcast during the evening hours after 8pm, when they have more time, as compared to the rest of the day. Another lesson drawn was the fact that "listeners frequently regard a radio station as their 'property' and therefore tend to use the language of the 'stakeholder', when talking about the subject".

In particular in cases where villagers contribute financially through subscriptions to the running costs of the local station, they have a strong interest that their concerns are addressed and there is adequate coverage (Sultan, 1998). Rural population groups have a strong interest in technical matters related to their daily work and tend to ask for programmes more related to agriculture, livestock and fishing. Mediation between villagers and their external partners, and reinforced solidarity within villages are other beneficial outcomes of rural radio stations.

Myers (1998) describes the successful use of local radio broadcasting in an NGO project promoting reafforestation around Douentza in Mopti Region. The success of the radio campaign was due to the following factors:

- "Firstly, the radio campaign did not stand alone,; it backed-up an on-going extension programme of face-to-face contact between development workers and villages.
- Secondly, the radio promoted ideas and techniques, which were not totally new to listeners; it intentionally built on traditional knowledge and recommended small adaptations to what people were already doing.
- Thirdly, the campaign benefited from being attached to a popular local radio station which people trusted.
- Fourthly, the campaign was run in a relatively remote area where people do not have access to much information or entertainment.
- Finally, and crucially, the radio campaign provided new information with which listeners could make their own decisions".

This suggests that not only market information as such but also technical information can be successfully broadcast to target population groups. As a consequence, extension services should be encouraged to make wider use of local radio stations, in particular in remote areas which, as yet, have been neglected by projects and extension services.

However, Myers (1998) also highlights the need for increased funding of rural radio. According to her, "the problem is that almost everywhere rural radio is chronically

under-funded". She describes the case of one town in Burkina Faso, "where the district government is meant to support a community radio station, the regional administration is so poor that it has had to requisition the radio station's only motorbike to enable it to collect local taxes".

Based on project experience in Meru District in Kenya, Lloyd Morgan and Mukarebe (1998) describe "how audience research and imaginative programming have enabled radio to reach women farmers". The project was in support of Kenya's Agricultural Information Centre (AIC), trying to develop new approaches to radio programming in order to meet rural women's needs.

In a first step, the AIC radio research team, which was based on 13 Ministry of Agriculture Technical Assistants, was trained in Participatory Rural Appraisal techniques. This helped the team to undertake both quantitative and qualitative audience research on issues such as: radio ownership, access to radios within households, liked and preferred programme content, style (including language), time and duration.

Based on the research findings, a soap opera was produced, which was supposed to be entertaining as well as able to raise awareness. The fact that different population groups of the target area found themselves represented in the drama significantly contributed to its success. In addition, the soap opera was supported through a sister, magazine programme, offering factual messages related to issues raised in the soap opera. The 13 technical assistants collected all the material for the programme, ensuring at the same time constant feedback from the audience. The programmes reached a weekly listenership of 23 percent of the target population.

Following an evaluation, a similar approach has been taken in developing two programmes that are broadcast on the KBC National Service in Ki-Swahili. As for financial sustainability, a commercial company, which was at the same time advertising its product, was found to cover the expensive air-time on KBC. In addition, development organisations such as Plan International, GTZ, and CIP use the radio programme to transmit their messages on a commercial basis.

At the same time one must bear in mind that the project benefited from donor support, as a result of which there were sufficient resources to produce well-presented programmes. The question remains to what extent such an approach would be feasible without initial external sponsorship.

The cost of programme production, including script writing, transport etc. was £250 (\$400) per 15 minutes soap opera in Kenya, excluding airtime (pers. comm. Lloyd Morgan). In the case of the USAID funded DISH project in Uganda, the cost of producing a 30 minutes drama on health issues is approximately \$300 (pers. comm. Cheryl Lettenmaier). For comparison, Myers (1995) estimates production and broadcasting of natural resources related programmes at £75 (\$120) per hour in the context of a Community Station. These figures need to be seen in comparison with the number of listeners reached. Overall, radio is an inexpensive, cost-effective medium for reaching large numbers of listeners in remote rural areas.

Comparing commercial and community stations, it appears preferable to establish the latter primarily in areas, where commercial FM stations cannot be received. Otherwise it seems best to use commercial stations for the dissemination of the different types of information required by isolated farming communities. Different avenues of funding need to be explored. For example, one option consists of companies involved in input supply also sponsoring agricultural programmes on the radio.

In some countries, radio ownership and availability/cost of batteries can be of an issue. The latter constraint led to the invention of the clockwork radio by Trevor Baylis in 1993, which is now manufactured by BayGen in South Africa (Myers, 1998, P30). The idea was to provide poor people living in remote areas with a cheap communication tool not requiring batteries. “The energy storage and release mechanism is based upon energising a steelspring by winding it from one spool to another” (Robbins, 1998). 30 seconds of winding are required to have a listening time of 30 minutes. A new version of the radio using a built-in solar panel, has recently been developed (ibid).

Due to its energy saving characteristics, the radio was well received by Governments and donor agencies alike. However, despite its good intentions, there are a number of snags, which require sorting out to make the radio more accessible for resource poor farmers. This includes in particular its relatively high price and a design default, which can lead to broken springs if the radios are wound up the wrong way around. Table xx summarises the pros and cons of the clockwork radio.

Table 6: Pros and Cons of clockwork radio

Pros	Cons
The radio does not need batteries, hence no energy costs and environmentally friendly	Purchase price of \$40 – 60 in Africa (excluding retailers’ mark-up), which is high for resource-poor farmers
The radio is best suited not for individual ownership but for group listening	Design fault, i.e. handle must be turned clockwise otherwise it will break. Once the radio is broken it is not repairable except by specialists
The clockwork radio has good sound quality and volume	
If not mishandled, they are sturdy and hard-wearing. The radio is well equipped to deal with dust and heat.	
They can receive short wave as well as FM and MW frequencies.	

Source: Myers 1998, Robbins 1998.