

Rural transport and livelihoods in Uganda

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Abstract

In 2002, as part of the three-year action-research project “Improved Food Crop Marketing through Appropriate Transport for poor Farmers in Uganda”, a baseline study using both Participatory Rural Appraisals (PRA) and a questionnaire survey was carried out in nine sub-counties of Iganga, Kasese, and Katakwi districts. The baseline study assessed household livelihoods, focusing on ownership of means of transportation and other issues related to livelihoods assets, vulnerability context and livelihood strategies. A detailed analysis of cropping and marketing patterns was undertaken in view of the project context. The analysis of the rural transport system included human portage, intermediate means of transportation (IMTs), motorised transport, road infrastructure, as well as institutions and support services. The baseline study highlighted the shortage of transportation means in rural communities. Bicycles are the main form of IMTs and one of the principal physical assets owned by farmers, particularly in districts with flat terrain. The lack of donkeys, donkey-carts, tractors and trailers, cars and pick-up trucks was evident among the households surveyed, while the ownership of bicycle-trailers and wheelbarrows is very limited. The use of oxen and ox-carts was mainly encountered in Katakwi. In most cases men own the household physical assets. Ownership by women only appears to become relatively more prevalent if there is a higher number of female-headed households, suggesting that only household heads own assets. Human portage was found to be the most common mode of transport at community level in all three districts, and, unsurprisingly, farmers expressed a need for better availability of means of transportation. Although motorised forms of transport are used, farmers primarily use them for travel rather than transport purposes. In view of this, oxen, ox-carts, donkeys and donkey-carts, are being introduced and tested in rural communities in the three districts. Partnership arrangements between local organisations and farmer groups, as well as participatory monitoring by the latter, play an integral role in the project.

Key words: Farmers, female-headed households Crop production and marketing

Introduction

Lack of means of transportation has been identified as one of the key constraints to farmers access to marketing opportunities in Uganda (Kleih *et al.*, 1999; Foodnet and NRI, 2002). Headloading, in particular by women, is a common feature of rural transport in rural areas of Uganda. This includes transport of produce from the farm to the home and from there to the market.

Both the Poverty Eradication Action Plan (PEAP) and the Plan for Modernisation of Agriculture (PMA, 2000) state the importance of rural transport, mechanisation, and improved technological capacity of agricultural equipment. In this context, the three-year action research project “Improved Food Crop Marketing through Appropriate Transport for Poor Farmers in Uganda” started in April 2002. The main outputs of the project include, capacity building, improved understanding of poor farmers’ transport needs, a validated technology for Intermediate Means of Transportation (IMTs), and promotional material.

As part of the first main project activities, a baseline survey was carried out between September and December

2002. The results of the study were subsequently used for the introduction and testing of IMTs in communities.

In view of developing a reasonable basis upon which strategic project interventions could be made, the study objectives were split into two tiers:

- (a) To gain a broad understanding of the context in which food marketing and rural transportation are situated. This included an understanding of rural household livelihoods in the target communities structured around access to capital assets, vulnerability context, and an understanding of the institutional context;
- (b) To gain a specific and detailed understanding of food crop production and marketing, and transportation structures, systems, priorities and needs within the target communities.

Methodology

The baseline survey consisted of a Participatory Rural Appraisal (PRA), and a household questionnaire survey (total sample size 397) in nine sub-counties as outlined in Table 1. The sub-counties were selected based on crops grown, farming potential (preferably high) and different degrees of accessibility.

Table 1: Survey Locations

| District | Sub-Counties | Accessibility | No of Households Interviewed |
|----------------|--------------|---|------------------------------|
| Iganga | Ivukula | Medium | 45 |
| | Bukanaga | Good | 45 |
| | Makutu | Remote | 44 |
| Kasese | Kyabarungira | Mountains, poor access | 43 |
| | Mahango | Mountains, poor to medium access | 45 |
| | Nyakiyumbu | Mountains and flat terrain, variable access | 42 |
| Katakwi | Asamuku | Good | 44 |
| | Orungo | Remote | 45 |
| | Kapujan | Medium | 44 |
| Total | | | 397 |

The tools employed for the Participatory Rural Appraisal (PRA) included, semi-structured interviews with groups and individuals, scoring and mapping exercises, transect walks, key informant discussions, daily activity profiles, seasonal calendars, and case studies.

The household questionnaire survey was undertaken in order to triangulate and complement information collected as part of the PRA. The survey was co-ordinated by a member of the Transport Forum Group, and executed by district based teams of enumerators. Processing and analysis of the data was carried out by the Transport Forum Group (TFG) and the Natural Resources Institute (NRI), using computer programmes such as MS Access, SPSS, and MS Excel.

Results

Household livelihoods

Asset ownership by households

Group membership is considered a main social capital asset in that it provides members with easier access to other assets (e.g. micro-credit) or offers protection in times of hardship. Overall, the membership in groups is relatively low. Only membership in credit groups (32% in Kasese) and in IGA groups (31% in Katakwi, and 15% in Kasese) stand out. As for membership in agricultural production and marketing groups, this stands at 1% in Iganga, 11% in Kasese, and 3% in Katakwi¹. This confirms the findings of the PRA during the course of which it was found that the majority of households conduct their farm and non-farm activities on an individual basis and may engage in social and / or economic group-based activities on a periodic basis. At the same time it is worth pointing out that group formation is strongly encouraged by Government of Uganda (GoU) and Non-governmental Organisations (NGOs) alike. As a result, new groups are currently being created in the villages on a regular basis.

As for access to land, the average acreage cultivated by households during the period of November 2001 – October 2002 (i.e. 12 months prior to the survey), is of the order of 2.8 acres in the case of Kasese, 3.6 acres in the case of Iganga, and

4.0 acres in the case of Katakwi. In particular, Kasese has a high proportion of villagers cultivating on two acres and less. The variation in acreage cultivated mainly reflects demographic pressure in the study area.

Bicycles are the main IMT and one of the principal physical assets owned by the households surveyed. Especially Iganga has a high ownership of bicycles (i.e. 84% in total), which is likely due to its location as a major trading centre between Kampala and Kenya. Katakwi district also has a reasonable degree of bicycles ownership (i.e. 36%), whereas it is limited in Kasese district which is primarily due to the mountainous terrain (Figure 1).

No ownership of donkeys, donkey carts, tractors and trailers, cars and pick-up trucks was found. The ownership of bicycle-trailers and wheel-barrows is very limited. The use of oxen and ox-carts was mainly encountered in Katakwi district, where Kapujan sub-county stands out (i.e. 16% of households own oxen and 14% own ox-carts). Draught animal power has been introduced in the Teso farming system relatively early (i.e. during the colonial period), however cattle rustling has become a major problem in recent decades for livestock owners of the District.

In most cases these physical assets are owned by men. Ownership by women only appears to become comparatively more prevalent if there is a higher number of female headed households, suggesting that only household heads own assets.

Chicken, goats, cows, and pigs are the main forms of livestock owned by the households. However, there are differences between the districts, in that only very few farmers own cattle in the sub-counties surveyed in Kasese (3%). On the other hand, 35% of farmers in Iganga and 46% of farmers in Katakwi own at least one cow.

Vulnerability context of farmers

The vulnerability context of farmers has to be seen in the context of shocks, trends, and seasonality. Insurgencies during the last decades have been one of the key factors causing household vulnerability, in particular in Kasese and Katakwi Districts. This may partly explain the higher number of female headed households in these two districts

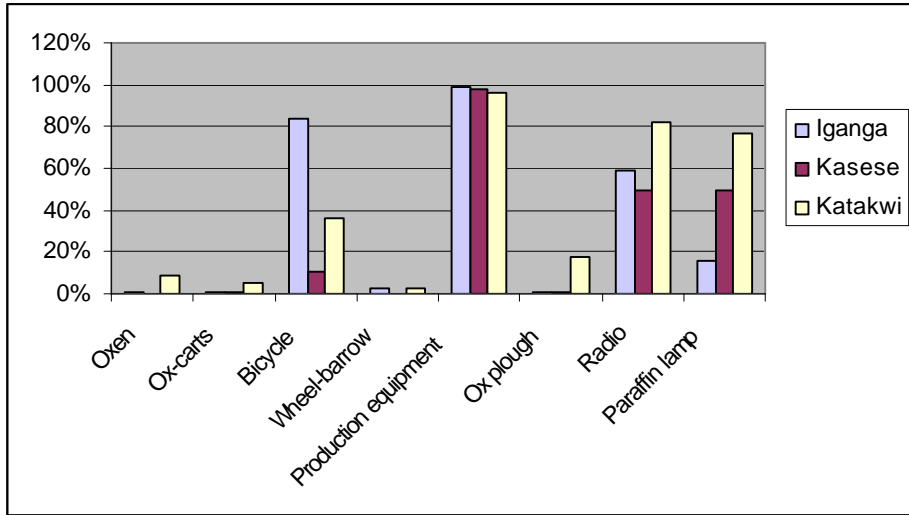
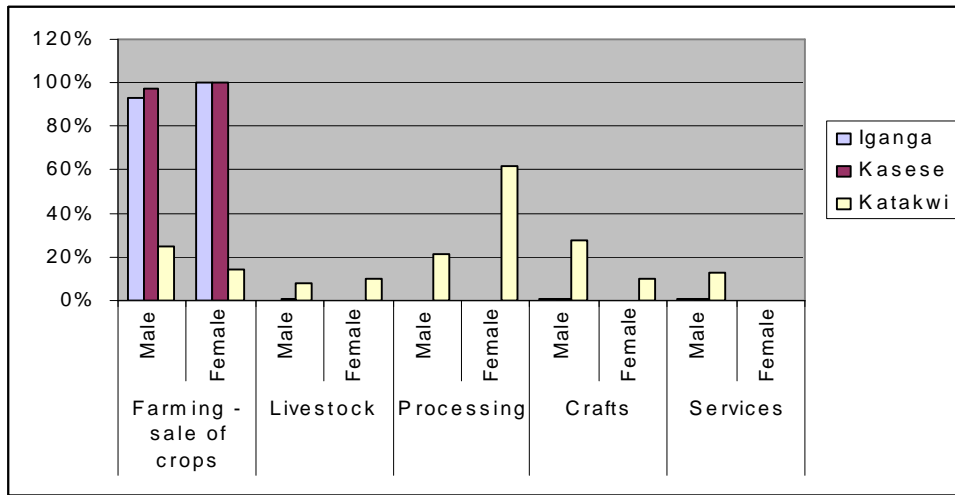
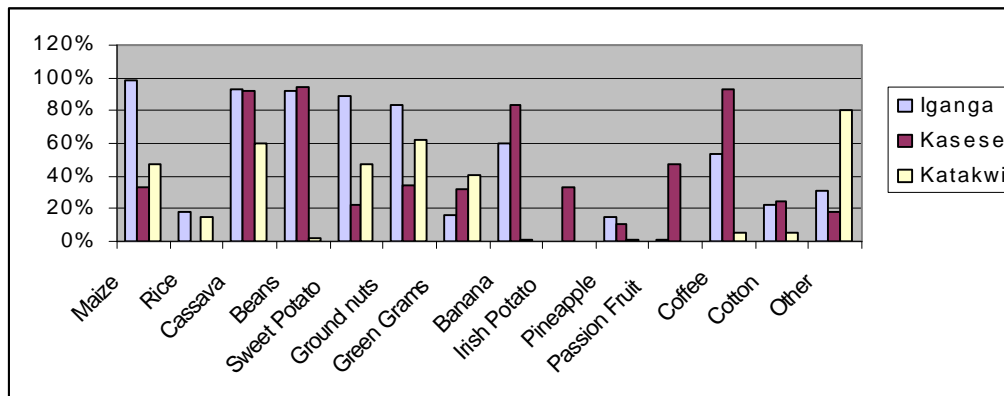


Figure 1: Percentage of Households Owning selected IMTs, and other Goods



NB: Percentages are related to the totals of male and female headed households. It is important to bear in mind that the majority of household heads are male. Female headed households (FHHs) represent 4% (Iganga), 12% (Kasese) and 16% (Katakwi), respectively.

Figure 2. Selected Primary Occupations / IGA by Household Head, by Gender (by percentage of household



NB: Other crops in Katakwi include oilseeds (e.g. simsim, and sunflower) and grains (e.g. millet and sorghum). Also, it is important to note that crop production and marketing in this District were affected by drought prior to the period when the survey was carried out.

Figure 3. Crops planted by households during the 12 months prior to the survey (% of households

(12% and 16% respectively) as compared to Iganga (4%). Aids is another factor leading to household insecurity in communities. As already indicated, cattle rustling still prevails in Katakwi thereby causing a constant threat to livestock owners and their restocking efforts. This has also implications for the spread of IMTs such as oxen and ox-carts in this district.

Livelihoods strategies and outcome

As for livelihoods strategies and outcome, Income Generating Activities (IGAs) show how households use their asset base within a given context (i.e. vulnerability and institutional / policy contexts) to earn their living. Figure 2 indicates the main occupations and Income Generating Activities (IGAs) of household heads. Farming and the sale of crops clearly dominates the economic activities of villagers in Iganga and Kasese districts (i.e. 93% and 98% respectively). Other activities only play a minor role in these two districts.

In Katakwi, on the other hand, the household livelihoods are much more diversified in that farming, traditional processing of primary produce, and crafts each occupy about a quarter of the household heads' income portfolio. In addition, activities related to the sale of animal produce and services also play a role there.

As far as IGAs by female headed households (FHHs) are concerned, farming and the sale of crops are their only primary occupation in Iganga and Kasese. In Katakwi, however, traditional processing of primary produce (i.e. 62%) plays a dominant role for FHHs (i.e. in particular beer brewing). Other primary IGAs carried out by FHHs in Katakwi include sale of livestock produce (10%), crafts (10%), and waged or salaried work (5%).

Variations of poverty

At the same time, there are variations of poverty within the communities reflected in varying degrees of access to resources and capital assets (e.g. education, land, livestock ownership), which in turn lead to variations in income levels. Often, those considered rich (i.e., in general, having a monthly income in excess of US\$200,000) are also engaged in other IGAs such as trade or civil service. Those who are considered poor in the villages often earn well below US\$100,000 per month. Concerning landownership, as already indicated the number of households with small plots of land is especially high in Kasese district.

The agricultural production and marketing system

As for the farming systems in the three districts surveyed, Figure 3 shows to what extent the farmers rely on a number of key crops such as maize, beans, cassava, sweet potato, groundnuts, banana and coffee in Iganga district. The main crops grown by Kasese farmers include cassava, beans, banana, coffee, passion fruit and Irish potato. Katakwi farmers grow maize, cassava, sweet potato, groundnuts, millet and sorghum and oilseeds such as sunflower.

Based on the survey data, Iganga has the highest amount of crops marketed (i.e. in particular maize, beans, and coffee), which is a result of its location close to major marketing centres such as Kampala, and Kenya. As can be seen from Figures 4 and 5, Kasese also has a reasonable degree of crop marketing (i.e. especially coffee, passion fruit, and Irish potatoes).

Katakwi, on the other hand has a much less commercialised farming system in that the quantities marketed are lower than in the other two Districts. Only comparatively small quantities of crops such as maize, sweet potatoes, cassava, and coffee are sold by farmers of this District.

The gender responsibility for sale varies according to crop and sometimes region, although high value food crops and traditional cash crops such as coffee or cotton are predominantly sold by men. Traditional food crops may be sold by men only or women only or a combination of both depending on the location.

As for the place of sale, selling from home and at the village market are the two main locations in all three districts. However, the majority of farmers in Iganga district tend to sell their crops at the farmgate, as compared to Kasese and Katakwi districts, where relatively more farmers go to the village market to sell their produce. Selling at the district market or the village store is relatively uncommon, with some exceptions in Kasese (e.g. 28% of farmers sell coffee at the district market, and 63% of cotton producers sell their harvest at the village depot).

The average distances to the main markets are 11km (Iganga), 13km (Kasese), and 16km (Katakwi) in the sub-counties surveyed. As for storage, the vast majority of farmers store their produce at home. In all three study areas the majority of farmers sell the bulk of their crops to non-local traders. Village agents come second, whereas selling to other buyers such as groups, private companies or neighbours rarely takes place. The fact that more than half of the cotton growers in Kasese sell to co-operative societies represents an exception.

The rural transport system

Motorised forms of transport

The use of motorised forms of transport (e.g. motorcycle, pick-up, mini-bus, tractor, lorry, and car) during the 12-month period prior to the PRA, was found to vary considerably. The use of motorised vehicles is particularly limited in the mountainous parts of Kasese district. Whilst some communities have constructed roads to facilitate access for the vehicles, the latter may only come on demand or not at all if the terrain is too difficult for them to access the villages. On the other hand, even in the flatter areas of Nyakiyumbu Sub-county near Lake Edward the use of motorised vehicles is quite limited.

In Iganga district the overall use of motorised means of transport is far more common compared to Kasese, however it is quite difficult to discern a clear pattern by mode of

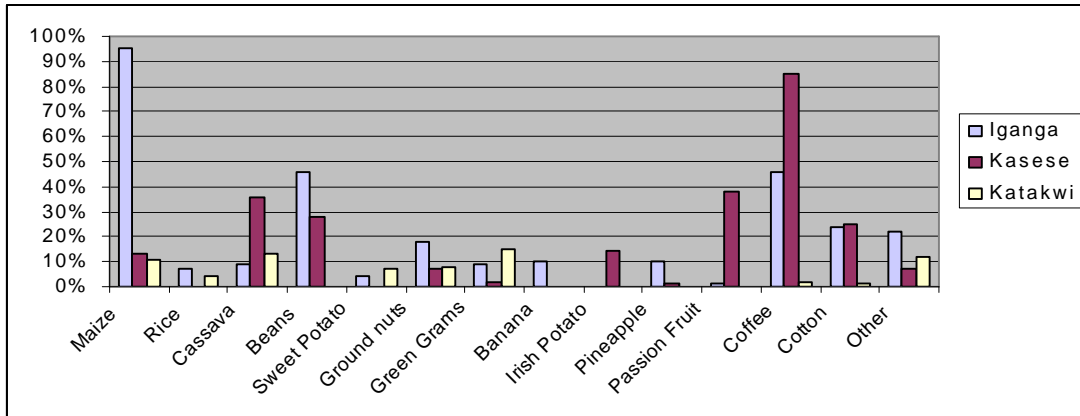
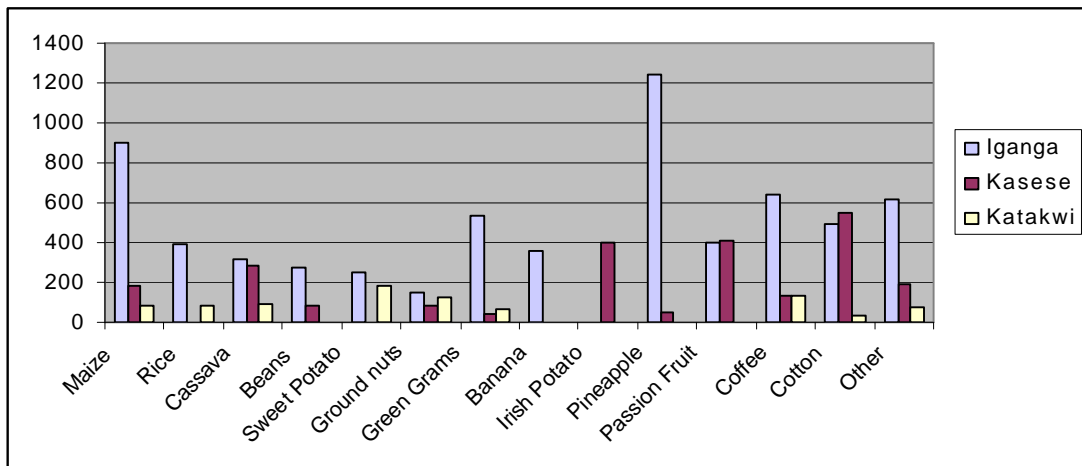
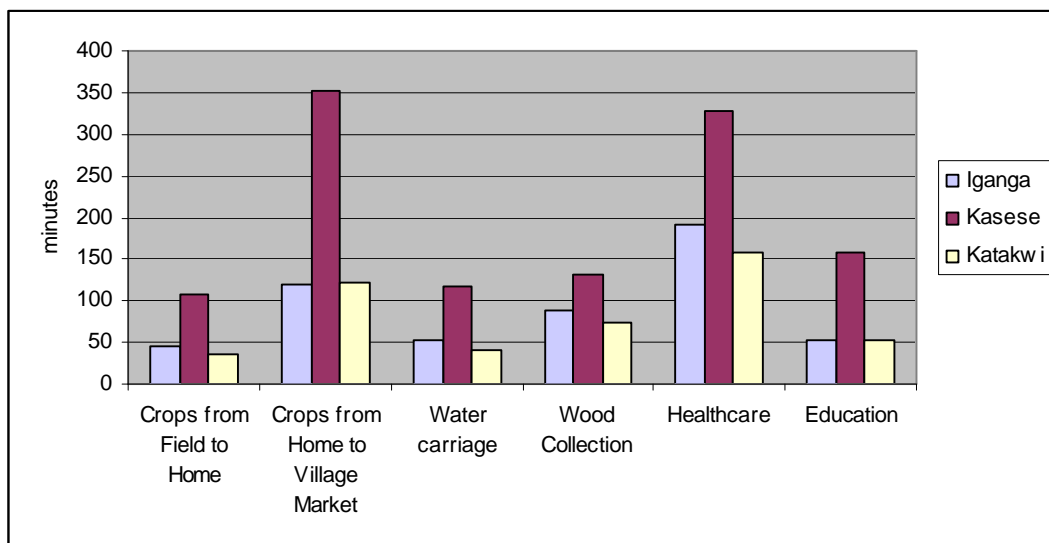


Figure 4. Crops marketed by households during the 12 months prior to the survey (of households)



NB: The mean quantities refer to those households that sold at least some of the crop. As indicated, the quantities of crops produced and marketed by farmers in Katakwi were negatively influenced by drought.

Figure 5. Quantities of crops marketed during the 12 months prior to the survey (mean kg per household)



NB: The trips for transport of crops from the field to the home store and from the home to the village market refer to one-way trips. The trips for water carriage, wood collection, health care and education refer to return trips.

Figure 6. Average trip time using foot as main mode of transport

transport or gender. Motorcycles, mini-buses and pick-ups are the main forms of motorised transport used by both men and women. However, this can be quite location specific in that one form of transport may dominate in one village whilst it is a different one in another village. Although the overall use of motorised means of transport in Katakwi appears to be similar to Iganga, here it is equally difficult to discern a clear pattern. Women may not have used pick-up trucks over the last twelve months in one village (although these were available since men used them) whilst they might have extensively used them in another village of the same district. Whilst it is commonly found that men capture the means of transportation due to cost and status, the fact that no village members were found to own these modes (in all cases people are paying for a ride, or hiring), may explain the generally high female utilisation.

The main reasons for using motorcycles, buses, or mini-buses (also referred to as taxis) include health (e.g. emergency such as taking sick people to the clinic or hospital), economic (business in urban centres and market), or social (e.g. funerals, or weddings). The fact that vehicles for carrying heavy loads such as lorries or tractors and trailers are rarely used highlights that motorised vehicles are required by villagers primarily for travel rather than transport purposes.

Intermediate Means of Transportation (IMTs)

As for IMTs, bicycles are by far the main mode used in that 60 – 100% of both men and women have used them in the villages of Iganga and Katakwi districts over the last 12 months. However, whilst the figures for use by men and women are similar, this does disguise the frequency of use. Through observation and informal discussion with village members it was found that men use bicycles more frequently than women, reflecting the fact that ownership is entirely in the hands of men. This reflects a cultural norm in which men dominate ownership and control over the means of transportation. As indicated above, bicycle ownership is highest in Iganga district, followed by Katakwi, whilst it is limited to non-existent in Kasese district.

Other IMTs that are used in the villages include stretchers (mainly in Kasese), sledges (mainly Katakwi), ox-carts (mainly in Kapujan sub-county of Katakwi), boats (also Kapujan due to the lake) and wheelbarrows. Although ownership of the latter is low, men of four villages (out of six) in Iganga and Katakwi have used them relatively frequently by hiring or borrowing them for the transport of building material, manure to the field and crops from the field (i.e. up to about 50% of men).

Human portering

Human portering (i.e. head, back, shoulder and hand loading) was found to be the most prevalent mode of transport at community level in all three districts. Differing forms of human loading reflect gender-specific tasks. Men tend to carry the bulkiest loads: produce, production

equipment and building materials (primarily using the shoulders), while women carry produce, water and firewood (using the head, or back in the case of Kasese) and children (using the back). These modes are primarily practical, but are also embedded in social norms, with certain modes not socially acceptable by men. On average, women were found to spend many more hours engaged in portering than men, reflecting the variety of domestic and productive tasks conducted. Weighing exercises revealed that women carry loads of 30 to 35 kg on their heads or backs.

Transportation of crops

Transportation of crops from the field to the home primarily takes place on foot (i.e., human loading), with only some farmers in Iganga District using bicycles for the transport of specific crops (e.g. coffee or maize). The use of bicycles in Kasese or Katakwi for transporting crops from the field to the farm is very limited.

As for the transportation of crops from the farm to village market sites, it was possible to discern clear patterns whereby almost all the farmers in Iganga who visit a market would use a bicycle, although it needs to be borne in mind that the majority of them sell from their farm. Almost all the farmers in Kasese would use human portering, whereas the system seems more diversified in Katakwi district in that human loading, bicycles, or lorries would be used.

Transport use for domestic purposes

Transport use for domestic purposes is mainly dependent on human portering and walking in that wood collection exclusively takes place on foot. Walking is also mostly used for water collection and purchasing of consumer goods. Bicycles are only used to some extent in Iganga for water carriage, and for shopping in both Katakwi and Iganga districts (i.e. about 30%). Walking would be the dominant mode of transport for the overwhelming majority of Kasese villagers undertaking these tasks.

According to the questionnaire survey, transport use to obtain services such as health care and education shows a mixed picture, in that walking is the only mode to go to school, and, depending on the location, walking and bicycles are used to visit health care facilities. In Kasese district, walking is the principal mode of transport to reach health facilities, whereas 85% of Iganga villagers and 35% of Katakwi villagers would use a bicycle. As for transport for social reasons, the picture is similar to that of transport for health reasons. In all three districts, very few farmers would use motorised means of transport for health or social reasons according to the questionnaire survey.

Duration of trips

Regarding the average time per trip, the survey clearly reveals that villagers in Kasese district spend much more time for transport purposes than their colleagues in Iganga or Katakwi district. For example, the average return trip time to fetch water is 118 minutes in Kasese compared to

53 minutes in Iganga and 41 minutes in Katakwi. The fact that the Kasese villagers also indicated fewer trips per day (i.e. 1.2) compared to 2.5 and 2.1 in Iganga and Katakwi respectively, indicates that they are likely to have less water available for domestic purposes. Similar results have been obtained for other domestic transport uses and for the transport of crops from the field to the home and from there to the village market, as is highlighted in Figure 6.

As for other means of transport such as bicycles, differences in the average trip time are less pronounced, although it needs to be borne in mind that owing to the hilly terrain the Kasese villagers depend much more on walking and human portage. Transport of crops by bicycles is not always faster than transport on foot due to the fact that these IMTs are often used for transporting heavier loads rather than for speed.

Transport economics

As for transport economics, villagers stated that high initial capital costs were the principal stumbling block for the acquisition of IMTs. Bicycles, which are the most prevalent IMT, cost about US\$100,000 when purchased anew, and US\$30,000 – 60,000 when bought second-hand. Although this may seem a modest sum of money, it is still beyond the reach of many villagers who are struggling to meet their daily costs of living. Other IMTs found in Uganda and considered for this research, include oxen (US\$300,000 – 350,000), donkeys (US\$80,000 – 100,000), ox-carts (US\$250,000 – 700,000), donkey-carts (US\$200,000 – 300,000), and wheelbarrows (about US\$40,000).

At the same time, it ought to be borne in mind that operational costs can be significantly higher than capital costs when the entire lifetime of the IMT is considered. In particular, vehicles (and animals for that matter) can break down if they are not properly maintained.

Discussion

In all three Districts, villagers expressed a need for better availability of means of transportation. In particular, high cost and lack of available transport were indicated by both men and women as main household travel and transport problems.

Donkeys in Kasese district, and ox-carts in Iganga and Katakwi Districts were identified together with farmers as potential IMTs to be tested. Due to the conditions of the farming system and the terrain, animal transport seems the most viable option for Kasese farmers for the time being. However, it needs to be pointed out that past efforts to introduce these animals in the district have failed due to lack of sensitisation, training, and follow-up. It is important to avoid these mistakes if future attempts are to succeed.

Amongst the three districts, Iganga farmers currently produce the largest amounts of agricultural produce for sale. Bicycles which are commonly used in the district are only suitable for transporting smaller amounts of produce over

shorter distances. As a consequence, the testing of a larger-capacity means of transportation appears justified. This would provide farmers with more options for selling their produce (e.g. selling at the market rather than at the farmgate, which in turn would result in a price premium estimated at 20 – 30%).

Although ox-carts are already used in some sub-counties of Katakwi, it appears that there is scope for design improvement. In addition, given the problem of cattle rustling in this District the introduction of donkey carts may represent an option to be envisaged. Other IMTs which were considered with farmers during the course of the survey in the three Districts include power-tillers and bicycle trailers, however it was found that the former is too expensive for rural communities under current conditions, and the latter required flat and smooth road surfaces, which presently do not exist in most villages.

In view of this, oxen, ox-carts, donkeys and donkey-carts, are being introduced and tested in rural communities of Iganga, Kasese, and Katakwi Districts as part of the project 'Improved Food Crop Marketing through Appropriate Means of Transportation for Poor Farmers in Uganda'. The objective is to have the IMTs tested and monitored by farmer groups as part of a risk sharing agreement whereby the farmers would pay 60% of the cost price of the animals and equipment, and the project would contribute the remaining 40%. Needless to say that the distribution of IMTs is accompanied by training sessions which are held by local partners such as district based NGOs and veterinary services.

The adoption of an innovation systems approach places emphasis on the building of partnerships and participatory monitoring and evaluation as two essential cornerstones of the project. In particular, the partnership building greatly benefits from active participation of local stakeholders in project workshops and quarterly partnership meetings. As a consequence, local partners such as NGOs like Multi-Purpose Training and Community Empowerment Association (MTCEA) in Iganga, the Karughe Farmers Partnership in Kasese, and Youth With a Mission in Katakwi became more aware of their roles, interests, and expectations towards the project.

A participatory and inclusive approach to monitoring and evaluation (M&E) stresses that participatory M&E should not be interpreted as M&E only with and by end-users (as has been commonplace), which overlooks the key roles and responsibilities of other stakeholders in the design and implementation process of the project. Numerous individuals, groups and organizations (e.g. farmer groups, artisans, NGOs, credit providers, local veterinary services) have a stake in the project, in the sense that they stand to be affected by it and/or have an influence over its process and outcome. With this in mind, a participatory M&E system was put in place in order to track and review performance and impact of the project.

As a result of this approach, project success stories so far include:

- a) artisan week was initiated by the project partners in order to improve cart design;
- b) Iganga team looked into problems of another team and provided advice that helped to overcome these problems;
- c) the one hand, farmers from Kasese district convinced Iganga farmers to try out donkeys. On the other hand, Iganga farmers convinced Kasese farmers to pay for their IMTs;
- d) project partners recognized the importance of inculcating good animal welfare practices and are taking related action;
- e) Government is starting to take up research findings and Local Administrations budget for IMT distribution to farmers.

Conclusion

Household livelihoods in Iganga and Kasese Districts are dominated by agricultural activities, whilst villagers in Katakwi have more diversified livelihoods in that they are active in a number of alternative income generating activities such as processing of agricultural produce or manufacturing of handicrafts. Ownership of means of transportation is limited, with the exception of bicycles in Iganga and parts of the other districts. Human portorage, in particular by women, is common for transport of agricultural produce from the farm to the homestead and from there to the market. In addition, women are also responsible for carrying water and fuelwood over sometimes large distances. Motorised transport by motorbikes, pick-up trucks and mini-buses is available but primarily for long-distance travel.

The results of the baseline survey point to the need of introducing Intermediate Means of Transportation (IMTs) in the rural communities with a view to alleviating transport related bottlenecks in the farming system. However, these means of transportation ought to be seen in the wider context of rural livelihoods, in that they can also be used for other activities such as agricultural production or domestic tasks. In particular, the use of animals as draught power and for carrying goods appears to be appropriate in all three districts.

In view of this, oxen, ox-carts, donkeys and donkey-carts, are being introduced and tested in rural communities in the three districts. Partnership arrangements between local organisations and farmer groups, as well as participatory monitoring by the latter, play an integral role in the project.

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