



Sub-Saharan Africa Transport Policy Program  
The World Bank and Economic Commission for Africa



SSATP Working Paper N° 12

# *Case Study on Intermediate Means of Transport Bicycles and Rural Women in Uganda*

**Christina Malmberg Calvo**

**February 1994**

Environmentally Sustainable Development Division  
Africa Region  
The World Bank



## *Foreword*

---

One of the objectives of the Rural Travel and Transport Project (RTTP) is to recommend approaches for improving rural transport, including the adoption of intermediate transport technologies to facilitate goods movement and increase personal mobility. For this purpose, comprehensive village-level travel and transport surveys (VLTTS) and associated case studies have been carried out. The case studies focus on the role of intermediate means of transport (IMT) in improving mobility and the role of transport in women's daily lives. The present divisional working paper is the second in a series reporting on the VLTTS. The first working paper focussed on travel to meet domestic needs (for water, firewood, and food processing needs), and on the impact on women of the provision of such facilities as water supply, woodlots, fuel efficient stoves and grinding mills.

The present case study documents the use of bicycles in eastern Uganda where they are a means of generating income for rural traders and for urban poor who work as bicycle taxi-riders. It also assesses women's priorities regarding interventions to improve mobility and access, and the potential for greater use of bicycles by rural women and for women's activities.

The bicycle is the most common IMT in SSA, and it is used to improve the efficiency of productive tasks, and to serve as a link between farms and villages, nearby road networks, and market towns. The study indicates that the financial return on these activities is so high that the cost of the bicycle can be recovered in less than twelve months. It is further asserted that the main reason for the relatively small number of bicycle traders is the lack of credit.

The study highlights the general situation in SSA where IMT are predominantly owned and used by men and, where, for mainly cultural and economical reasons, women rarely get to use IMT for their transport needs.

The RTTP is a component of the Sub-Saharan Africa Transport Policy Program (SSATP). The general objective of the SSATP is to help governments improve transport policies so as to enhance the efficiency of transport services, and to ensure that they are sustainable. The RTTP has supported the development of country strategies (Madagascar, Ghana, Ethiopia, Uganda, Tanzania), and has produced a comparative review of rural transport policies<sup>1</sup> as well as thematic and policy papers dealing with rural road strategies<sup>2</sup> and intermediate means of transport.<sup>3</sup> The country specific work as well as the above-mentioned surveys will provide the basis to prepare guidance papers on key aspects of rural transport strategies. This will support the drive to address the transport needs of rural households and, more generally, to develop rural infrastructure services in Africa.

Jean. H. Doyen, Chief  
Environmentally Sustainable Development Division  
Technical Department  
Africa Region

<sup>1</sup> Gaviria, Juan. 1991. *Rural Transport and Agricultural Performance in SSA: 6 Country Case Studies*. Washington, D.C.: The World Bank (AFTIN).

<sup>2</sup> Riverson, John et al. 1991. *Rural Roads in Sub-Saharan Africa: Lessons from Bank Experience*. Washington, D.C.: The World Bank (AFTIN).

<sup>3</sup> Riverson, John and Steve Carapetis. 1991. *Intermediate Means of Transport in Sub-Saharan Africa: Its Potential for Improving Rural Travel and Transport*. Washington, D.C.: The World Bank (AFTIN).

## *Acknowledgements*

---

This case study has been prepared as part of the Rural Travel and Transport Project of the Sub-Saharan Africa Transport Policy Program (SSATP) managed by the Environmentally Sustainable Development Division, Technical Department, Africa Region (AFTES), Division Chief Jean Doyen. Financial support was provided by the Norwegian Government, the Swiss Development Cooperation (SDC), Swedish International Development Authority (SIDA), and the World Bank. The report was prepared by Christina Malmberg Calvo, consultant. The study was desktopped by Leita Jones.

Special thanks is extended to the previous and present Task Managers of the RTTP, John Riverson and Snorri Hallgrímsson, and Ian Heggie. Ian Barwell and Anthony Airey of I.T. Transport Ltd. assisted in drawing up a detailed outline, provided guidance and extensively reviewed the material. The study benefited from internal review and comment by Alice Galenson and Philip Moeller. Special mention is also made of Geoff Edmonds and George Yadoun of the International Labor Organization (ILO), the Community Development Departments of Mbale and Tororo districts who vigorously supported the field work, and the numerous individuals, groups and organizations in Uganda who generously shared their experiences and views.

## *Acronyms*

---

ADP	Agricultural Development Project
AFTES	Africa Technical Department, Environmentally Sustainable Development Division
BCU	Bugisu Cyclist Union
DYA	Doko Youth Association
EC	European Community
ILO	International Labor Organization
IMT	Intermediate Means of Transport
MDBT	Mukwano Disco Bicycle Transporters
MOLG	Ministry of Local Government
MUT	Mbale United Transporters
RC	Resistance Committee
RTTP	Rural Travel and Transport Project
SDC	Swiss Development Cooperation
SIDA	Swedish International Development Authority
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
SWRARP	South West Region Agricultural Rehabilitation Project
TRR	Tororo Transport Cycle Cooperative Society
USh	Ugandan shilling
UWFCT	Uganda Women's Finance and Credit Trust, Ltd.
VLTS	Village-level Travel and Transport Surveys
YWCA	Young Women's Christian Association

## *Contents \**

---

Executive Summary .....	i
1. Introduction .....	1
1.1 Background to the Case Study .....	1
1.2 General Objectives of the Case Study .....	1
1.3 Scope of Work .....	2
1.4 Study Methodology .....	2
1.5 Profile of Mbale and Tororo Districts .....	3
Mbale District .....	3
Tororo District .....	4
1.6 Structure of Report .....	8
1.7 Exchange Rate.....	8
2. Characteristics of Bicycle Usage in Eastern Uganda .....	9
2.1 Overview of Use of Bicycles .....	9
2.2 Traffic Counts.....	9
2.3 Bicycle Usage for Personal Transport and Travel .....	10
Bicycle Ownership .....	10
Social and Economic Characteristics of Bicycle Owners .....	12
Trip Purposes .....	14
Sources of Finance for Bicycle Purchases .....	15
Constraints to Greater Use of Bicycles .....	15
Summary .....	16
2.4 Bicycle Transport Services - Rural Traders .....	19
Income of Matoke Traders .....	20
Income of Beer Traders .....	20
Summary .....	21
2.5 Bicycle Transport Services - Boda-Boda Operators .....	22
Background .....	22
Boda-Boda Services .....	23
Boda-Boda in Tororo .....	24
Boda-Boda in Mbale .....	26
Summary .....	27
3. Bicycles and Rural Women .....	29
3.1 Attitudes of Women Towards Use of Bicycles .....	29
Culture and Traditions .....	29
Exposure to Women Riding Bicycles .....	29
Social Situation .....	30
Economic Situation .....	30
Location - Terrain and Infrastructure .....	31
Summary .....	31

3.2	Bicycle Usage Among Women .....	31
	Riding Skills .....	31
	Trip Purposes .....	32
	Loads Carried .....	32
3.3	Women and Bicycle Transport Services .....	32
	Rural Traders .....	32
	Boda-Boda Transport Operators .....	33
3.4	Constraints Upon Greater Use of Bicycles by Women .....	33
	Culture .....	33
	Technical Constraints .....	33
	Economic Factors .....	36
	Infrastructure .....	37
	Summary .....	37
4.	Women and Rural Transport .....	38
4.1	Women's Perceptions of Rural Transport .....	38
	Opportunity Cost of Time and Effort Dedicated to Transport .....	38
4.2	Existing Time- and Effort-saving Measures for Internal Travel .....	42
	Bicycles .....	42
	Wheelbarrows and Handcarts .....	42
	Oxen .....	41
	Donkeys .....	41
	Non-Transport Interventions .....	42
	Water Supply .....	42
	Woodlots .....	42
	Grinding Mills .....	42
4.3	Women's Priorities for Interventions to Improve Transport .....	42
	Intermediate Means of Transport .....	43
	Bicycles .....	43
	Wheelbarrows .....	43
	Oxen/cows .....	44
	Donkeys .....	44
	Motorized Vehicles .....	45
	Development of Transport Services .....	45
	Internal transport .....	45
	External travel - rural traders .....	46
	External travel - boda-boda transport services .....	46
	External travel - public transport .....	46
	Improvement of Road Networks .....	46
	Non-Transport Interventions .....	47
	Water supply .....	47
	Woodlots/alternative energy sources/fuel efficient cooking stoves .....	47
	Grinding mills .....	48
	Health facilities .....	48
	Summary .....	49

5.	Potential for Increasing Bicycle Usage and Alleviating the Transport Burden of Women .....	50
5.1	Key Findings and Issues .....	50
	Bicycle Usage .....	50
	Bicycles and Rural Women .....	51
5.2	Ways to Encourage Greater Use of Bicycles by Men and Women .....	51
	Cultural Change .....	51
	Technical Improvements .....	52
	Credit Programs .....	53
5.3	Alternative Ways to Improve the Local Transport System .....	54
	Intermediate Means of Transport .....	54
	Non-Transport Interventions .....	55
5.4	Ways to Reach the Rural Women .....	55

## **Annex 1**

\*       *The page numbering refers to the printing version*

## *Executive Summary*

---

This working paper suggests that the ownership and use of bicycles in Eastern Uganda can be seen as meeting two household needs. The bicycle meets the personal transport requirements of male household members, and it is also a means of generating income. This can be directly through the sale of transport services i.e. as taxis (boda-boda riders), or indirectly, by enabling a member of the household to act as a middleman or trader.

The most frequent use of bicycles in a survey area of Mbale district was for trips to markets and to local trading centers to purchase and sell food and household items. Bicycles were also employed to take sick family members to the clinic. The ownership and use of a bicycle for personal transport is influenced by a number of factors, of which household economic status, cultural background and location with regard to terrain and infrastructure are the most important.

The cost of a bicycle is high and increasing at a rate faster than the prices received for agricultural commodities. The general lack of credit moreover, means that the cost of a bicycle has to be met in full when purchased. This stretches the household's ability to save, and usually, bicycles can only be bought when the harvested crops are sold. It is, therefore, not surprising that bicycle ownership is highest among the wealthier households of Mbale and Tororo.

Culturally, bicycle ownership and use is the prerogative of the male members of the household. Bicycle ownership confers social prestige, and their use is monopolized by men to reduce the time and cost of making journeys outside the village. In Mbale district, women riding bicycles are perceived to "behave like men," while in Tororo district, the main obstacle women encounter is one of access to bicycles. Nevertheless, there is the suggestion that a minority of women have indirectly benefited from bicycle ownership. Some of the transport burden of these women has been transferred to male household members through, for instance, sons and husbands fetching water from distant dry season sources.

The locational characteristics of the area of residence are also an important influence on bicycle ownership. As can be expected, bicycle ownership is highest in the flatter lowlands of Tororo and tends to decline as altitude and gradients increase, so that it is absent in the escarpment zone of Mbale. At the same time, bicycle use is affected by the road surface; well-maintained roads are easier and safer to negotiate than badly-maintained ones.

The income-generating potential of bicycles has been developed in two ways. In the urban areas, the direct sale of passenger transport services, where the passenger sits on the back carrier, has become an important avenue for young men to earn a living as boda-boda riders. In the rural areas, the ability of the bicycle to carry 100 or more kilograms of beer and matoke has enabled traders to transport these commodities to a wider market. In the case of beer brewing, the trade is from the millet-growing lowlands to the uplands. With matoke, the trade is reversed, going from the wetter uplands down to the matoke-deficit lowlands and to Mbale town itself. In either case, the use of bicycles can be seen both to complement and supplement existing motorized transport modes. The boda-boda acts as a localized individual transport service carrying passengers from the extensive outer suburbs of the towns to the central facilities and work places. Similarly, boda-bodas can be seen transporting away newly-arrived travellers from the bus station to their destinations in town. In the rural areas the small-



scale nature of the millet beer and matoke trade lend themselves to bicycle transport. In both situations, the bicycle has proved itself to be a flexible and durable transport mode in difficult terrain and road conditions.

In financial terms, the income-generating potential of the bicycle is high. It is calculated that in each of the three activities, the bicycle owner can recover the costs of the investment in less than twelve months.

Finally, this working paper addresses the question as to whether Intermediate Means of Transport (IMT) can reduce the transport burden of women. A number of IMT time- and effort-saving devices are currently in use in the rural areas of eastern Uganda. The problem is that they are rarely used for women's transport activities and women have limited access to them due to cultural, educational and economic constraints.

The women seem eager to adopt IMT. To this end, the introduction of a sturdy "ladies' bicycle" is advocated as one way of overcoming the cultural resistance to women using bicycles. Such an initiative would need to be complemented by the provision of credit and strengthening of the management capacity of women's groups. There is also the potential to reduce women's transport burden through non-transport interventions, i.e. by locating economic and social facilities such as wells, woodlots, and clinics nearer the home.

This working paper is an input into the preparation of guidance papers on rural transport strategies. The key issues which emerged from the present study point to the following:

- The importance of credit in promotion of IMT. The main obstacle to the increased use of bicycles in business activities in the study area was the difficulty in raising the initial investment to purchase the bicycle;
- When aiming to alleviate the transport burden of rural women, a number of options have to be considered including improvement in mobility (promotion of IMT), provision of facilities closer to the household, and low cost transport infrastructure--tracks and footpaths;
- Given the range of options for improving local level transport, during the planning stage the project area has to be surveyed together with local interest groups to identify their priorities and the most appropriate interventions.

# ***1. Introduction***

## ***1.1 Background to the Case Study***

This report presents a case study on bicycles, women and rural transport in Uganda. It is the result of field work carried out in the Mbale and Tororo districts of eastern Uganda during a three-week visit in September 1991.

The case study forms part of the Rural Travel and Transport Project (RTTP) of the World Bank-financed Sub-Saharan Africa Transport Program (SSATP), a major research program covering transport in SSA. One aspect of this program is the RTTP, which is designed to focus on transport at the level where it has the most direct influence on economic (particularly agricultural) and social development in rural areas of SSA.

One of the key aims of the RTTP is to recommend approaches to the improvement of rural transport services, and to the adoption of intermediate technologies to increase personal mobility and agricultural production.

This research is being conducted through Village-Level Transport and Travel Surveys (VLTTs) and related case studies. The World Bank has commissioned the International Labor Organization, in collaboration with I.T. Transport, to execute the VLTTs and the related case studies under the RTTP.

## ***1.2 General Objectives of the Case Study***

The objective of the case study is to investigate two key aspects of rural mobility and accessibility focusing on:

- (i) The role of intermediate means of transport (IMT) in improving mobility, and the institutional and implementation policy requirements necessary for developing the use of IMT; and
- (ii) The role of transport in women's daily lives, - given that a major part of the transport burden falls on women in addition to their substantial agricultural and domestic responsibilities, and the impact of improvements in mobility and accessibility upon women.

These aspects of rural mobility and accessibility are dealt with in this case study through an analysis centered on the predominant mode of intermediate transport used in the study area - bicycles. Eastern Uganda was selected as a case study area primarily as a result of the extensive use of bicycles in this area in comparison to other parts of SSA. In addition, bicycle usage in this area plays an important role in transport services, rather than being exclusively used for personal travel. Furthermore, unlike many areas in SSA, there appeared to be no social or cultural constraints to the use of bicycles by women, although actual bicycle usage was still primarily undertaken by men.

A VLTTTS was carried out in Mbale district at the same time as this case study. The VLTTTS was designed to measure and assess the time and effort spent on transport in the context of overall household labor allocation and the level of economic and social development, and to analyze local level transport as a factor and constraint in agricultural development and in the utilization of essential services. The case study draws upon, and aims to complement and extend, the findings from the village-level survey.

Additional work is also being done on roads and infrastructure in the same general area of eastern Uganda as part of preparation for a World Bank transport project. This case study, therefore, although always keeping the more general results of the VLTTTS as a reference, focuses on the current and potential role of bicycles as the predominant and key intermediate means of transport in the area, and on its impact on women.

### **1.3 *Scope of Work***

The case study was carried out in close collaboration with the VLTTTS. It was designed to examine three aspects of rural transport in eastern Uganda:

- (i) Bicycle usage
  - trip characteristics, both for personal use and to provide transport services;
  - operating cost characteristics of bicycles; and
  - influence of widespread availability and use of bicycles on transport patterns of rural households and on women.
- (ii) Bicycles and rural women
  - attitudes of women towards the use of bicycles, and the extent of ownership and use of bicycles by women; and
  - potential for the greater use of bicycles by women, and constraints upon this use.
- (iii) Women and rural transport
  - more generally, the attitudes of women towards the role of transport in their lives, and their response to different interventions to improve mobility and access.

### **1.4 *Study Methodology***

The case study is based primarily on interviews and discussions with women's groups and key informants. The initial section on bicycle usage draws mainly on data collected by the VLTTTS. The information on transport services stems from interviews with bicycle operators, district officials, and general observations.

The sections on women, bicycles and rural transport are based on interviews with women's groups in villages in Mbale and Tororo districts, discussions with key informants such as teachers, health and

church staff, leaders of women's income-generating projects, and representatives of women's organizations and government at the village, parish, sub-county, county, district, regional and national levels.

A questionnaire was used as a checklist for village group discussions (see Annex 1). It was designed to serve as the basis for a structured discussion rather than as a preset interview.

## **1.5 Profile of Mbale and Tororo Districts**

The case study was carried out in two of the nine districts in the eastern region of Uganda - Mbale and Tororo districts. This section presents a brief summary of the relevant characteristics of the two districts in order to place the case study within the context of conditions in the study area.

**Mbale District** (For more detailed information on Mbale district see reference 1)

Mbale district is located in the extreme east of Uganda. Mbale town is situated on the main road approximately 250 km from Kampala. The location of Mbale district is shown in Map 1. The area around Mbale town and in the direction of Tororo, Pallisa, and Kumi districts in the south and west is rather flat while the eastern and northern parts of Mbale can be categorized as hilly or mountainous.

Mbale district is ethnically rather homogeneous. The predominant ethnic group is the Bagisu who are generally perceived as mountain people. The area of Mbale district is often referred to as Bugisu or the land of the Bagisu. However, during the recent period of political instability, there has been an influx of Iteso people from Kumi and Soroti districts (Teso). Teso is characterized by flatland similar to the terrain around and west of Mbale town. As a result, the Iteso have preferred to settle in Mbale town and to the west.

Mbale district is a densely populated area, with 353 inhabitants per square kilometer (1987 estimate). In 1991, it had 706,600 inhabitants,<sup>1</sup> and suffers from land shortage, particularly in the mountains which might be the reason why the incoming Iteso chiefly settled in the plain. With the flatland being less fertile than the mountains, the Iteso chose to specialize in alternative income-generating activities to farming such as beer brewing and bicycle transport services. The Iteso were known for their expertise in these areas, and as refugees, this knowledge was a comparative advantage to be exploited in making a living.

Mbale town is the third largest in Uganda with 53,600 inhabitants. Approximately 9 percent of the population in the district lives in urban areas, i.e. centers with a minimum of 3,000 inhabitants. This conforms closely to national estimates showing that only 10 percent of the Ugandan people live in urban areas.<sup>2</sup>

Mbale district is made up of six counties including the municipality, 29 sub-counties and 124 parishes. There are between 6 and 29 villages in each parish. The villages visited during the field trip are marked on Map 2.

---

<sup>1</sup> Government of Uganda. 1991. *Uganda Population and Housing Census*. Entebbe.

<sup>2</sup> Government of Uganda. 1991. Op cit.

The Village Level Transport and Travel Survey (VLTTTS) was carried out in Budadiri county of Mbale district in September 1991.<sup>3</sup> Four villages within Buwalasi and Buyobo sub-counties were selected to represent a wide range of conditions and different degrees of remoteness from Mbale town. A total of 168 households, 42 in each village, were randomly selected and interviewed within the survey villages. The four villages were Nampanga, Bumudu, Buwanyama, and Bukisimamu. The location of the survey villages is shown in detail in Map 3.

Nampanga village is situated 13 km north of Mbale town on the tarmac road to Sironko. It is characterized by rolling terrain. Bumudu village is on a good and recently improved all weather earth road 16 km from Mbale town. The first 10 km leading away from town are on tarmac, and the next 6 km are on an earth road leading into a relatively hilly area.

Buwanyama and Bukisimamu villages are located to the east of Bumudu. Buwanyama is located at about the same altitude as Bumudu village. It remains accessible by four-wheel drive vehicle throughout the year although it is on a rather poor feeder road 2.5 km from the improved earth road; it is about 21.5 km from Mbale town.

Bukisimamu is the most remote and highest village. It is located some 23 km from Mbale town, and is the most inaccessible of the survey villages. The last 4.4 km, before reaching Bukisimamu, cross very steep and difficult terrain. When it rains (April through September), this feeder road becomes impassable to both motorized vehicles and bicycles.

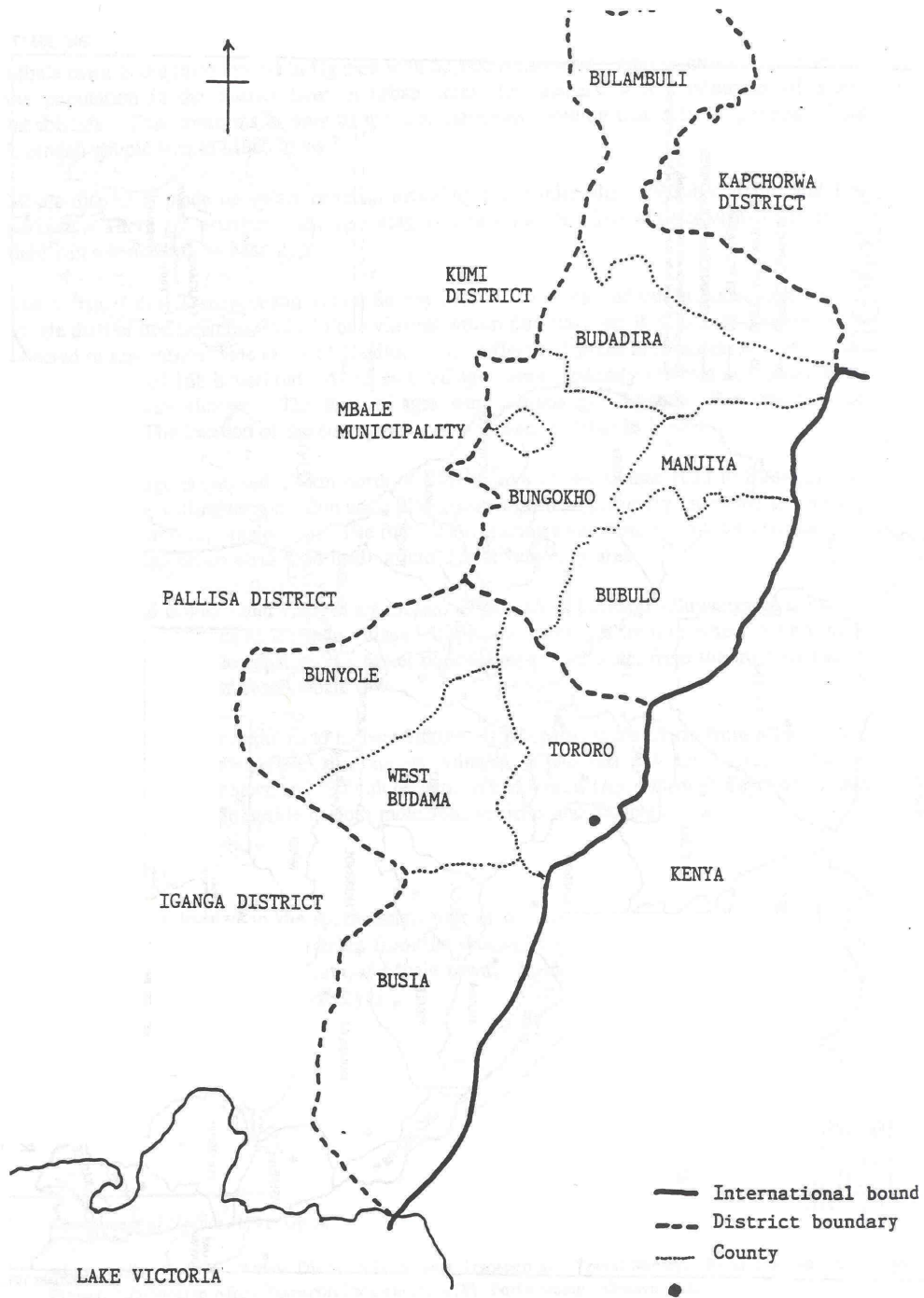
### ***Tororo District***

Tororo district is located in the southeastern part of the eastern region (see Map 1). It is a predominantly flat area which stretches from the shore of Lake Victoria up to Pallisa district in the north and ends only 7 km south of Mbale town. In the west, the neighboring district is Iganga and to the east, it borders Kenya.

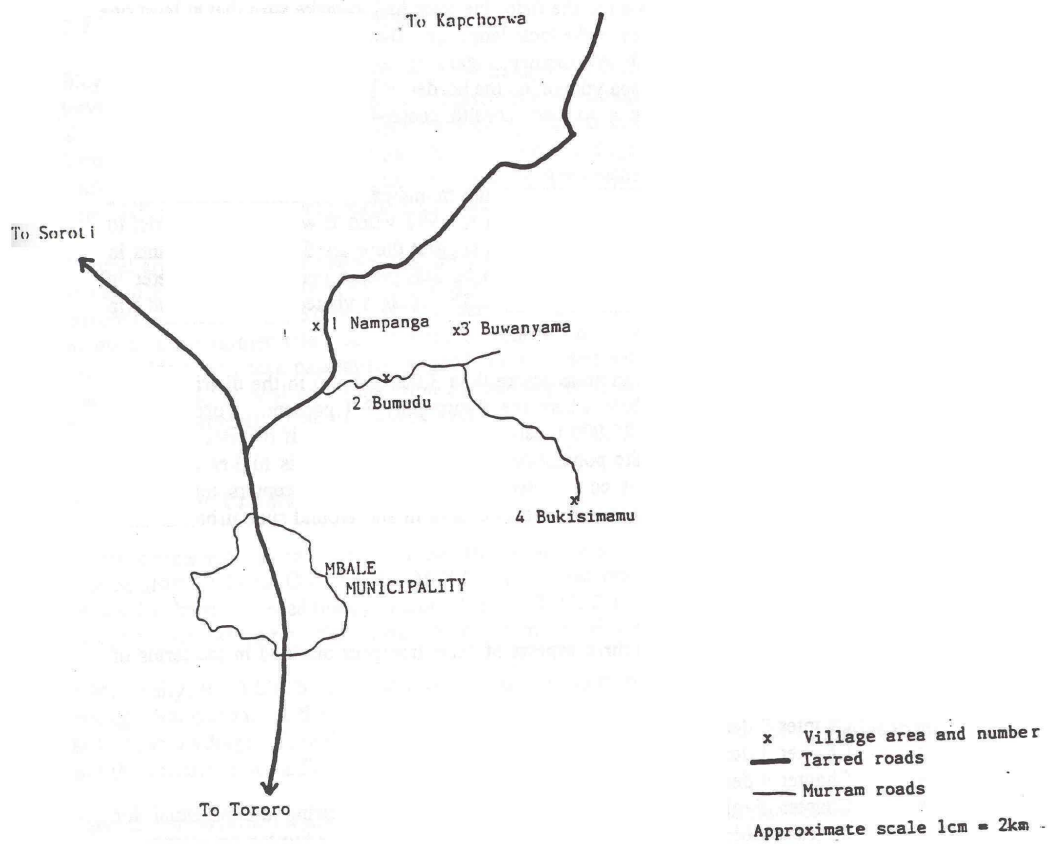
---

<sup>3</sup> Airey, Anthony. 1991. "Mbale District Village-level Transport and Travel Survey." Rural Transport and Travel Project, Sub-Saharan Africa Transport Program (SSATP). Forthcoming. Geneva: ILO.





MAP 2: Mbale and Tororo District



MAP 3: VLTTs Villages



There are a large number of ethnic groups in Tororo district - Adhola (originally Acholi from the north), Banyole, Badama, Basamia and Bagwe (who are closely related), Bagwere and Iteso. The languages of some of these groups are so different that frequently they have to communicate in Swahili or Luganda. Before each visit to the field, the team had to make sure that at least one member of the team could communicate in the local language. Discussions with larger women's groups invariably had to open with an inquiry regarding to the preferred language of communication. For example, in Malaba village, on the border of Kenya, all ethnic groups were represented during a meeting held at a women's health center-their common language was Swahili.

Tororo district currently has five counties including the municipality of Tororo town. Pallisa district was considered a subdistrict within Tororo up to 1991 when it was made a district to reduce Tororo's large size. Currently, 1991 estimates suggest there are 554,000 inhabitants in Tororo district.<sup>4</sup> Population density was estimated to be 206 people per square kilometer in 1987, i.e. 40 percent lower than that of Mbale district. The villages visited during the field trip are marked on Map 2.

The proportion of people living in urban areas (more than 3,000 people) in the district is 11.5 percent, somewhat higher than in Mbale where the figure only 8.7 percent. Tororo town, however, is relatively small; with its 27,000 inhabitants, it is less than half the size of Mbale town. Given that the proportion of the population living in urban areas is higher in Tororo district, it is clear that this district has comparatively more small urban centers than Mbale district. This is significant as bicycle services tend to evolve in and around such urban areas.

## **1.6 Structure of Report**

The report is structured to address the three aspects of rural transport outlined in the terms of reference:

- Chapter 2 deals with the characteristics of bicycle usage;
- Chapter 3 deals with bicycles and women; and
- Chapter 4 deals with women and rural transport.
- Chapter 5 gives a summary of the findings by assessing the potential for increasing bicycle usage and thus alleviating the transport burden on women.

## **1.7 Exchange Rate**

In the report, all costs are expressed in Ugandan shillings (Ush). In Uganda there are two different exchange rates - the official rate, and the commercial rate. The official rate is applied to, among other things, imported goods which are on the priority list for the allocation of foreign exchange, for example, bicycles. The commercial rate is given by the various foreign exchange bureaux in Kampala. At the time of the visit in September 1991 the exchange rates were:

Official Rate:	Ush.823 = \$1
Commercial Rate:	Ush.970 = \$1

---

<sup>4</sup> Government of Uganda. 1991. Op. cit.

## ***2. Characteristics of Bicycle Usage in Eastern Uganda***

### ***2.1 Overview of Use of Bicycles***

Bicycles are a common and versatile means of transport in Uganda. They are used for personal travel and for the movement of goods or passengers. Although bicycles are intensively used in all flat areas of the country, they seem particularly popular in the eastern and northern regions. Virtually any load can be carried on a bicycle - people, bags of crops, matoke (the Ugandan cooking banana), iron sheets (2m long), charcoal, sewing machines, jerrycans of beer and water, firewood, cases of soft drinks, pigs, goats, another bicycle, etc.

In rural areas, bicycles are mainly used for travel outside the village such as going to a market, travel to a nearby center or town, going to work or for a social visit. They are also used for transport services as in the case of rural traders who buy crops in the villages and transport them to markets for further sale. Another more urban form of transport service is performed by bicycle riders who take passengers or goods to their destinations both within towns and local trading centers, as well as to and from surrounding rural areas. They are called boda-boda bicycles and serve as a kind of low-cost taxi.

### ***2.2 Traffic Counts***

Traffic counts serve as an indicator of the extent to which people travel by bicycle in rural areas. The Ministry of Local Government (MOLG) has carried out traffic counts on 22 road links in Mbale district and 47 road links in Tororo district. Table 2.1 presents the traffic flows by vehicle category. An earlier report<sup>5</sup> analyzed the variations in vehicle intensity on these roads.

Additionally, the VLTTs recorded one-week traffic flows of all vehicles on the tarmac road through Nampanga, on the good earth road through Bumudu, and all departing traffic from Bukisimamu village. Table 2.2 shows the average vehicle flow per day on the respective roads, and the variations in traffic flows over one week.

Table 2.1 shows that bicycles are by far the largest vehicle category on these roads:

- In Mbale district, on rural roads carrying between 1 and 111 motor vehicles per day, there are on average more than seven times as many bicycles as motor vehicles.
- In Mbale district, on 6 of the 22 roads surveyed, the number of bicycles exceeded the number of pedestrians.
- In Tororo district, on rural roads carrying between 0 and 71 motor vehicles per day, there are on average more than 40 times as many bicycles as motor vehicles.
- In Tororo district, on 9 of the 47 roads surveyed, the number of bicycles exceeded the number of pedestrians.

---

<sup>5</sup> Barwell, Ian. 1991. *Report of Project Preparation Study Consultant on Promotion of Bicycle Use and Upgrading of Private Report Workshops*. Uganda Transport Project. Feeder Roads Component. Geneva: ILO.

The VLTTS traffic counts in Table 2.2 confirm that bicycles are the major vehicle category on the three differently classified roads:

- In Nampanga village on the tarmac road carrying between 231 and 323 motor vehicles per day, there are on average 1.6 bicycles per motor vehicle (9.6 percent of all bicycles are used by rural traders, 2.6 percent are boda-boda transport operators).
- In Nampanga village, the number of bicycles exceeded the number of pedestrians.
- In Bumudu village, on the good earth road carrying between 108 and 181 motor vehicles per day, there are, on average, 1.3 bicycles per motor vehicle (on average 40 percent of all bicycles are used by rural traders).
- In Bukisimamu village, on the poor feeder road carrying between three and fifteen motor vehicles per day, there are 6.3 bicycles per motor vehicle, (61 percent of the bicycles are used by matoke traders. The proportion of bicycle traders could have been even higher if beer traders' bicycles had not been recorded as personal transport bicycles because they leave without loads - empty jerrycans - when they travel out from the village).

The data from the VLTTS villages suggests that the worse the infrastructure, the higher the proportion of total bicycles performing transport services as rural trade vehicles. That is to say, the further away from good roads, the more significant the proportion of cargo transported by bicycle. At the same time, the better the road surface, the greater the absolute level of both motor vehicles and bicycles.

### **2.3 *Bicycle Usage for Personal Transport and Travel***

#### ***Bicycle Ownership***

According to the VLTSS in Mbale district, 15 percent of the households interviewed owned bicycles. Only one household, in Bumudu, had more than one bicycle. Table 2.3 displays the distribution of the 24 bicycles identified in the survey villages. A total of three bicycles (12.5 percent) were not working. Fifty-five percent of the bicycles in working order were found in Nampanga, the village located on the tarmac road. There, almost every third household owned a bicycle. Bumudu which is the most accessible of the mountain villages accounted for 36 percent of the working bicycles, that is one in five households possessed a bicycle. The remaining 9 percent, 2 working bicycles, belonged to the households in Buwanyama, where only 5 percent of the households owned bicycles. There were no bicycles in the most inaccessible village.

Bicycle ownership in Tororo district was estimated, during discussions with the various villages visited, to range between 20 percent of households in Magodesi village on the main road between Tororo and Mbale, and 50 percent of households in Busia in the south. Bicycle ownership tends to be higher in flatlands. This is seen both when comparing bicycle ownership between different parts of the interior of Mbale district which has varying terrain, as well as when comparing bicycle ownership in Mbale district, which is relatively mountainous, to bicycle ownership in Tororo district which is flat overall. Moreover, there is not necessarily a relation between high bicycle density and the location of villages along the tarmac road, as is evidenced by the high bicycle density observed on the earth roads around Busia.

**Table 2.1: One-week Traffic Count Data on a Set of Road Links in Mbale and Tororo District**

		Pedestrians	Bicycles	Donkeys	Motor-Cycles	Cars	Pick-Ups	Four-Wheel Drives	Mini-Buses	Buses	Light Trucks	Medium Trucks	Heavy Trucks	Other	Total Motor Vehicles Per Day <sup>a</sup>
MOLG Survey Tororo District (47 Road Links)	Average	889	596	NC <sup>b</sup>	NC	1.7	3.2	0.6	0.6	0.2	1.1	0.8	1.0	4.5	13.7
	Maximum	3,310	3,064	NC	NC	9.0	18.0	5.0	7.0	7.0	10.0	6.0	10.0	70.0	71.0
	Minimum	212	114	NC	NC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOLG Survey Mbale District (22 Road Links)	Average	1,012	224	NC	NC	2.3	10.3	1.8	0.4	0.6	1.6	4.4	0.4	10.6	32.4
	Maximum	3,225	1,106	NC	NC	11.0	71.0	7.0	3.0	9.0	9.0	22.0	5.0	98.0	111.0
	Minimum	37	6	NC	NC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0

**Table 2.2: Traffic Count Data on Use of Bicycles on 3 VLTTTS Roads in Mbale District**

Road	Daily Intensity	Pedestrians	BICYCLES					Motor-Cycles	Pick-Ups <sup>c</sup>	Medium Trucks	Buses	Tractors	Total Motor Vehicles
			Total No.	Transporting Matoke	Transporting Beer	Boda-Boda	Personal Transport						
Nampanga Village Tarmac Road	Average	121	461	38	6	12	405	17	221	42	0	2	282
	Maximum	180	625	70	14	30	511	22	238	58	0	5	323
	Minimum	141	315	15	2	5	293	12	196	22	0	1	231
Bumudu Village Good Earth Road	Average	NC <sup>a</sup>	201	53	27	0	121	7	132	15	1	0	155
	Maximum		392	143	69	0	180	17	142	21	1	0	181
	Minimum		119	1	44	0	74	2	100	5	1	0	108
Bukisimamu Village Poor Feeder Road	Average	NC	28	17	0	0	11	0	6	1	0	0	7
	Maximum		94	58	0	0	36	0	11	4	0	0	15
	Minimum		0	0	0	0	0	0	3	0	0	0	3

a. Assumes "Other" are all motor vehicles.

b. NC - Category not used in traffic count.

c. In the survey, most pick-ups were used for transport of passengers, that is as private buses (generally called "taxis" in Uganda).

In Busia, soils are poor and people live off the lakeside and inter-district trade with neighboring Iganga district. Bicycles are the only available means of transport between these areas. In fact, bicycles are so essential that if people have to choose "they rather buy a bicycle than send a child to school." (Quote from Mr. Gakwandi, Asst. District Executive Secretary, Busia Subdistrict.)

### ***Social and Economic Characteristics of Bicycle Owners***

All of the bicycle-owning households in the VLTTTS villages were male headed. The typical head of household was in his mid-30s. Each family had an average of 6.8 members, ranging from 3 to 14.

Table 2.4 indicates that in Nampanga village, 10 out of the 12 households owning working bicycles households (83 percent) had annual incomes above the average for the village. Only two of the households with bicycles in working condition had an income below the village average. On the other hand, the two broken bicycles belonged to the two households with the lowest income in the sample. Insufficient levels of income thus may prevent households from repairing their bicycles. The households with the non-functioning bicycles had 4 and 12 members respectively which suggests that household size does not necessarily influence the earnings of a family.

This pattern was not so strong in Bumudu and Buwanyama, where only a total of four of the eight households with working bicycles had above average incomes. In Bumudu, the household with the highest income (a shopkeeper) had the non-operational bicycle. At the same time, household sizes tend to be below the overall average. Thus, in these mountain villages, there appears to be no clear correlation between household income, size and bicycle ownership. This could be a reflection of the limited usefulness of bicycles in mountainous terrain.

The main source of income of the majority (77 percent) of those with working bicycles was derived from non-agricultural activities such as small businesses, beer brewing and crafts, regular employment and remittances. Only one of the households, however, used the bicycle to travel to work. Thus, it does not appear to be the bicycle which enables the household to generate income, but rather the higher income which has made it possible to buy the bicycle.

Only 5 (23 percent) of those with working bicycles relied on the sale of agricultural produce as their main source of income and they tended to have below average incomes. Their average annual income was Ush.100,872 which is not much more than the cost of a bicycle in the area (about Ush.65,000). This suggests that their bicycles have not been acquired recently.

Similarly, the two households with broken bicycles fit this pattern of being reliant on low agricultural incomes. In fact, village discussions indicate that many households have bicycles which are 20 or more years old. Most of these bicycles have been inherited and have been non-operational for a long time.

**Table 2.3: Bicycle Ownership in the VLTTs Villages**

Village	No. of h/h Interviewed	Total			Working Bicycles			Broken Bicycles		
		No. of h/h owning bicycle	% h/h owning bicycle	No. of bicycles owned	No. of h/h owning	% h/h owning	No. of bicycles	No. of h/h owning	% h/h owning	No. of bicycles
Nampanga	42	14	33%	14	12	29%	12	2	5%	2
Bumudu	42	9	17%	10	8	14%	9	1	2%	1
Buwanyama	42	3	5%	3	2	5%	2	1	0%	1
Bukisimamu	42	0	0%	0	0	0%	0	0	0%	0
Total	168	26	14%	27	22	12%	23	4	7%	4

**Table 2.4: Income of VLTTs Households with Bicycles in Working Order**

Village	Below average	Above average	Average Income		Income range BC owning h/h
			Village	BC owning h/h	
Nampanga	2	10	183,351	290,384	58,500 - 670,516
Bumudu	4	4	106,528	100,384	4,413 - 259,850
Buwanyama	2	0	108,529	76,524	72,528 - 80,520

### *Trip Purposes*

Bicycles are mainly used by their owners for external travel needs. The extent to which the households in the VLTTs villages undertake external travel for one week in September is shown in Table 2.5. In Nampanga, 60 percent of the households travel to places outside the village. Of these external trips 23 percent are by bicycle. In Bumudu and Buwanyama 48 percent and 40 percent respectively of the households travelled externally; 7 percent in Bumudu and 5 percent in Buwanyama of trips are by bicycle. In Bukisimamu, one-third of the households surveyed undertake a trip outside the village; however, none of these were by bicycle. These findings suggest that the further away a village is from Mbale, the smaller the number of external trips. Also, it seems that the steeper the terrain, the lower the proportion of trips by bicycle.

**Table 2.5: External Travel for 1 Week in September**

Village	No. of h/h that do not travel	No. of h/h that do travel	Total no. of trips	% of trips on bicycle
Nampanga	17	25 (60%)	81	23.5%
Bumudu	22	20 (48%)	29	7.0%
Buwanyama	25	17 (40%)	19	5.0%
Bukisimamu	28	14 (33%)	22	0.0%

In the survey area, the most frequent use of bicycles was for trips to markets and to local trading centers to effect purchases, or occasionally sales, of food and household items. At a large market - Mile 8 - on the Mbale-Tororo road, there is a fenced area designated for bicycle parking where market users can leave their bicycles with an attendant for a fee. At the time of the team's visit, approximately 90 bicycles were parked in this area.

Bicycles also serve to bring sick family members to the clinic. In Buwanyama village the bicycles are used for trips to the grinding mill. Only in one survey household, in Nampanga, is the bicycle used for regular travel to and from work.

Two of the households in Nampanga village used their bicycles to ferry water in the dry season. Water collection is generally considered more of a problem on the plains than in the mountains. In the dry season, many streams and wells dry up and households may have to travel further from their village to collect water. In the mountains, where streams are often located in steep-sided valleys, the use of a bicycle to collect water becomes very difficult.

Most transport activities immediately in and around the village are performed by women and children. They have limited access to bicycles and there was no evidence of bicycles being used for collection of firewood or the transport of crops from the field to the home. It was the men who performed the transport or travel activity, in all activities where bicycles were used. Thus, in the case of grinding, which is generally a woman's task, the bicycle facilitated the transfer of responsibility to a man. Also, in the two households where water was transported on a bicycle, the

responsibility for water collection was transferred from females to males during the period of the dry season.

Households that own bicycles thus have better access to markets and health clinics. They can therefore acquire products which are not available in the village and have easier access to medical services.

### ***Sources of Finance for Bicycle Purchases***

Most owners interviewed said that they bought their bicycles after they had sold their cash crop harvest. Coffee and rice are the main cash crops in the two districts, and each has a specific harvesting time. Bicycle retailers confirmed that the majority of customers who bought bicycles for personal use did so right after the harvesting season of rice or coffee. Occasionally, large rice traders from Kampala purchase a "box" of 6 bicycles and bring them to the Doko rice scheme in Tororo district where they exchange them for rice. This confirms that most bicycle customers buy when they have received a lump sum of money rather than save up for a long period of time to make the purchase.

It is difficult to judge how bicycle ownership has changed over the last decade. During the period of political instability, villages were repeatedly looted and a large number of bicycles disappeared. During this period, coffee production also declined. Discussions with both bicycle operators and retailers in Mbale and Tororo town indicate, however, that the number of bicycles is increasing.

The main increase appears to be within the transport services category, primarily boda-boda bicycles, and not bicycles for personal transport use.

There are many non-functioning bicycles around. The cost of returning them to operating condition was estimated by the owners to be between Ush.5,000 and 20,000. When asked why they do not repair the bicycles, most of them said that they did not have the money. This could also be interpreted as saying that there are other, greater priorities for the limited funds of the rural household.

### ***Constraints to Greater Use of Bicycles***

The two major physical constraints to the use of bicycles are terrain and infrastructure; It obviously takes considerably more effort to ride a bicycle in a hilly area than on the flatland. Bicycle usage in mountainous areas is thus conditioned by this limitation. Hence, bicycles are more popular in flat areas because their range of usage is wider.

The condition of the roads over which the bicycle is ridden influences the size of the load that can be carried. Riders are frequently seen pushing their bicycles over stretches of poor road. If the condition of a road is poor over a long distance, the bicycle tends to become simply a "load carrier" rather than a means of personal transport. Otherwise, the rider must carry only very small loads in difficult terrain if he wants to ride rather than push.

Loads are carried on the rear rack, over the cross bar and on the handlebar. The rear-carrying racks in Uganda are made by local blacksmiths. They are wider and sturdier than those fitted to the bicycles at the factory. In spite of these adaptations, the physical effort of balancing and transporting goods on the bicycle still remains.



According to the national budget survey, the average annual household income in the eastern region was Ush.284,000 for the rural areas and Ush.594,000 for the urban areas. A bicycle would then cost approximately one-tenth of the annual income of an urban household, and a quarter that of the rural household. These figures may, however, be overestimated considering that the VLTTs indicated rural incomes to be closer to Ush.120,000. Using either figure, bicycle purchase remains a large expense for most rural households.

### ***Summary***

People own bicycles for a variety of reasons - income generation, social prestige, time/cost-saving on regular journeys. Bicycle ownership and usage can be a reflection of a specific pattern of life or culture in an area, terrain and infrastructure. Other important factors are the affordability and availability of alternative means of transport, which vary with income and location.

Bicycles facilitate access to social and economic services such as health clinics and markets. To a limited extent, bicycles also tend to bring about a transfer of transport responsibilities from women to men. The VLTTs results show that in 4 households (2.4 percent of total) - where bicycles were used for women's transport activities-the task was performed by a man. This is a trend that could be encouraged further by education and demonstration, particularly since the 17 remaining working bicycles in the survey sample were mainly used for external travel purposes.

All households on the flatland felt that bicycles are very useful. Even though the cost of buying a bicycle is high and increasing, the main problem is the need to pay the full amount at one time. It is difficult for the rural household to save, and therefore most bicycle buyers make their purchase immediately after the harvest season when they have received payment for their cash crops. Commonly, the farmers have to use part of this lump sum income to pay back accumulated debts and there may not be enough money to buy a bicycle if that was the intention. The availability of credit to overcome this problem might enable many more households to acquire a bicycle.

Poor road infrastructure also limits the extent to which bicycles can be used effectively. In addition to better road conditions, an improvement of the terrain performance of bicycles would also help overcome the constraints relating to poor infrastructure. In addition, with a reinforced rear rack or an improved bicycle design, it might be easier to transport water, or other domestic loads. Thus, with more versatile carrying aids, the potential usage of bicycles could be extended.



*A typical rural trader carrying matoke*



*Boda-boda bicycles showing the padded cushion fitted over the rear rack*





*This informal roadside bicycle repair facility outside Tororo town is bustling with activity*



*A display of available bicycle spare parts at the repair facility above*

## **2.4 Bicycle Transport Services - Rural Traders**

There are small-scale traders/transporters for whom the bicycle is the chief means of earning a living. The most common types of products transported are matoke and local beer. In some areas, charcoal is also regularly ferried from rural areas to the main road for further sale.

Rural bicycle transporters can generally be categorized as middlemen. They purchase their loads directly from the producers in the villages and transport them to trading centers or markets where they sell the goods onward to retailers. Interviews were carried out with 15 traders on the road through Bumudu village over 10 days, with matoke transporters around the markets in Mbale and Tororo towns, and with a random sample of matoke traders on various feeder roads in both districts.

The average trader was 32 years old, ranging from 16 to 50. A few of them had just recently started this work while some seniors had been traders for up to 18 years. All of them were male and lived in the rural areas. They considered their work a full-time activity, and physically very demanding. Their average load weighs around 100 kg and, when travelling up-hill, riders have to push rather than ride the loaded bicycles.

Most matoke and beer traders have bicycles which are 10 years old or older. The newest bicycle encountered in the study was bought in 1987 (for Ush.15,000). Of the traders, interviewed 40 percent had purchased their bicycles second hand. The ones who had purchased their bicycles within the last two years had paid between Ush.10,000 and Ush.30,000.

All traders set out early in the morning. Matoke riders in the area of the VLTTTS generally purchase their bunches from Buteza market near Bukisimamu, the most inaccessible of the survey villages. Thus, they are faced with difficult terrain not only when ferrying the produce but also when acquiring it. The typical trip from Buteza market to Mbale takes 4-5 hours. Considering that many of them have to travel 1-2 hours to reach the Buteza market and then spend some time in Mbale before they find a buyer and return home, their working day is approximately 10 hours. They perform this work 3-4 days per week. They prefer to sell their entire load to a retailer rather than to individual customers. After having found a buyer for the matoke, the traders commonly return home without a new load.

Both matoke and beer traders complained about the frequent breakage of their bicycles and the resulting cost of the repair. The most common repairs were due to punctures of tubes and tires, broken spokes and cones, brakes and bent wheels. On average, the bicycles needed repairs every three days. The traders attributed these frequent repairs to the conditions of the roads, and only reluctantly admitted to overloading their bicycles. The monthly repair cost, excluding tires, varies with the condition of the bicycle between Ush.2,000 and Ush.3,000.

There are two types of tires available in the area: the Gabon from China and the Nelson from India. The Gabon lasts about four months and costs Ush.8,000 while the lifetime of the Nelson is only one month and it costs Ush.3,500. Thus, in the long run, the Gabon is considerably more priceworthy. Yet, traders also use the Nelson due to limited funds. Many traders and boda-boda riders put a Gabon on the rear wheel, as it carries the greater load, and a Nelson on the front wheel. Monthly expenses for tires are estimated at about Ush.4,000.

### ***Income of Matoke Traders***

Most traders transport between 4 to 8 bunches of matoke, or about 6 on average. The matoke is carried on the rack and along the sides of the rear wheel. The price of a bunch sold by a producer in

a village varies, depending on the size and season, from Ush.700 to Ush.850. In the rainy season, there is more food available both on the plains and in the mountains and consequently prices are lower. The sale price in Mbale of a bunch of matoke in September 1991 was Ush.1,400, which is double or close to double the producer price. The matoke transporter in the survey earned between Ush.2,400 and Ush.4,800 daily before expenses.

Table 2.6 gives a breakdown of the operating characteristics and vehicle operating costs for matoke bicycle traders. Since there were some variations in the data collected from interviews with different traders, the range of results is also presented. The information in the table indicates that, once repairs are paid, matoke traders are left with a monthly income of Ush.47,900 excluding costs for depreciation. Depreciation is estimated at Ush.1,430 monthly, assuming that the price of a bicycle is below Ush.70,000 and that it works for 4 years. Their net monthly earnings would then reach Ush.46,470, equivalent to Ush.557,612 per annum. This means that they would have recovered their investment cost in only two months. Earnings would be even higher if a longer period for depreciation were applied, which may be warranted, considering the advanced age levels of the existing bicycle stock.

Among the matoke traders interviewed, 33 percent rented their bicycles for Ush.500 daily. The "rental" trader is responsible for all costs associated with the vehicle. His monthly income would thus be reduced to about Ush.40,310. Bicycles used for personal transport are generally lent out free of charge between villagers. However, if a bicycle is to be used for an income-generating activity, the owner will demand rent.

### ***Income of Beer Traders***

Beer traders in the VLTTS area live in the villages. They bring the beer into Buwalasi and Buyobo sub-counties from the surrounding areas. In the morning they travel with empty jerrycans towards the plains in Nakaloke sub-county and towards Kachumbala in Kumi district. The average return trip takes three hours, and the load is between 40 and 80 liters. The jerrycans are positioned across the rear rack, on the handle and over the crossbar.

Most beer traders work five days per week. They earn about Ush.1,600 per day. Once they have paid for repairs, tires and discounted for depreciation, their monthly income is around Ush.28,000, equivalent to Ush.335,600 per annum (see Table 2.7).

Two of the beer traders interviewed were employed riders and two rented their bicycles. As with the matoke traders who rented bicycles, all vehicle-related costs had to be born by the riders themselves. Thus, a beer rider who rents his bicycle (at approximately Ush.500 per day) earns Ush.17,133 monthly, that is Ush.205,600 per annum.

**Table 2.6: Operating Characteristics and Vehicle Operating Costs:  
Matoke Traders in Mbale District**

	Average	Range
<b>Operating Characteristics</b>		
Working days per week	3.5	3-4
Trips per week	3.5	3-4
Distance per one-way trip (km)	23	20-30
Distance per year (km)	8,372	6,240-12,480
Bunches per trip	6	4-8
Load per trip (kg)	100	70-160
Load per year (tonne)	18.2	10.9-33.3
<b>Vehicle Operating Cost (Ush.)</b>		
1. Investment:		
Total Cost	68,750	65,000-72,000
Life (years)	4	3-5
Annual Depreciation	17,188	13,000-24,000
2. Operating (per annum)		
General Maintenance	30,000	24,000-36,000
Tires and Tubes	50,400	
TOTAL	80,400	
<b>Annual Gross Revenue (Ush.)</b>	655,200	374,400-998,400
<b>Annual Income - after costs and depreciation (Ush.)</b>	557,612	264,000-911,000
<b>Income to rider in case of a rented bicycle:</b>		
2. <b>Vehicle Operating Cost (per annum)</b>		
General Maintenance	30,000	
Tires and Tubes	50,400	
Rent to Owner	91,000	
TOTAL	171,400	
<b>Annual Gross Revenue (Ush.)</b>	655,200	
<b>Annual Income - after costs (Ush.)</b>	483,800	

### **Summary**

Annual income from matoke and beer traders is Ush.558,000 and Ush.336,000 respectively. This is higher than the averages for the VLTTTS (Ush.122,000) and the national household budget survey for the rural areas of the Eastern region (Ush.284,000). There is no obvious reason why the traders would have overestimated their income, thus raising the question why there are not more rural traders when the pay-off is so high. One reason may be the difficulty in raising the funds for the initial investment i.e. the purchase of the bicycle. If this is true, then credit facilities for bicycle purchases would enable more people to become rural traders. Another reason could be that the job is very hard and therefore not very attractive.

**Table 2.7: Operating Characteristics and Vehicle Operating Costs:  
Beer Traders in Mbale District**

	Average	Range
<b>Operating Characteristics</b>		
Working days per week	5	5-6
Trips per week	5	5-6
Distance per one-way trip (km)	20	16-25
Distance per year (km)	10,400	8,320-15,600
Time per one year trip (min)	180	
Liters per trip	60	40-80
Load per trip (kg)	60	40-80
Load per year (tonne)	15.6	10.4-25
<b>Vehicle Operating Cost (Ush.)</b>		
1. Investment:		
Total Cost	68,750	65,000-72,000
Life (years)	4	3-5
Annual Depreciation	17,188	13,000-24,000
2. Operating (per annum)		
General Maintenance	30,000	24,000-36,000
Tires and Tubes	50,400	
TOTAL	80,400	
<b>Annual Gross Revenue (Ush.)</b>	416,000	277,333-665,600
<b>Annual Income - after costs and depreciation (Ush.)</b>	335,600	190,933-591,200
<b>Income to rider in case of a rented bicycle:</b>		
2. <b>Vehicle Operating Cost (per annum)</b>		
General Maintenance	30,000	
Tires and Tubes	50,400	
Rent to Owner	130,000	
TOTAL	210,400	
<b>Annual Gross Revenue (Ush.)</b>	416,000	
<b>Annual Income - after costs (Ush.)</b>	205,600	

## 2.5 Bicycle Transport Services - Boda-Boda Operators

### *Background*

Boda-boda riders perform a type of taxi service. They operate "for hire" from stands in towns, in trading centers and at large bus stops along the main roads.

The boda-boda service originated in Busia in the southern part of Tororo district. During the period of the East African Community (1964 - 1977) there was unrestricted travel between the member countries. Ugandans who wished to travel from Kampala to Busia found it more convenient to board a bus bound for Nairobi and cross the Malaba border east of Tororo town into Kenya rather than to go directly to Busia. The passengers would get off in Kenya, from where they would cross back into Busia.

On the Kenyan side, motor vehicles could travel up to the border while on the Ugandan side there was a distance up to the town area where motor vehicles were not allowed to operate. It was in this area that the boda-boda transport service originated. Travellers to and from Busia were offered transport to the border by bicycle riders who called out their message to attract the clients: "Border-border, I'll take you to the border!" In the 1980s, partially as a result of the decrease in motor

vehicles, population growth and poor roads, the boda-boda taxi service was extended to other areas of Tororo and also adopted by surrounding districts.

### ***Boda-Boda Services***

The transport service is carried out on a man's bicycle. A padded cushion is fitted over the rear rack in order for the passenger to travel more comfortably. The cushion can easily be removed when the rack is needed for carrying a load rather than a passenger. By law, the bicycles have to be equipped with reflectors and mirrors. Frequently, the riders also add colorful decorations to their vehicles in order to render them more attractive-looking.

All boda-boda operators have to be licensed i.e. they have to belong to an association and receive a registration number from the police; this is both for tax and security reasons. When a rider becomes licensed he receives a metal plaque, showing his registration number, which is welded on to the rear mudguard. Some associations have also started to require their riders to wear a uniform shirt with their registration number stamped on the back.

Bicycles have to a certain extent replaced motor vehicle services. For example, an old car park by the traffic circle outside the main bank in Tororo town has over the years been transformed into a large boda-boda stand. Boda-boda bicycles also serve as a complementary means of transport to motorized vehicles. They take passengers to and from the bus and pick-up stands. In eastern Uganda, the first and last leg of a journey is frequently on the rear rack of a bicycle.

The boda-boda riders perform a useful service for the people in the towns and in the surrounding areas. Town women use boda-bodas as frequently as men, and it is common to see a traditionally dressed lady with a baby in her arms on the passenger seat. If a passenger has a large piece of luggage, boda-boda bicycles will often be employed, one for the passenger and one for the luggage.

Boda-boda transport services are a predominantly urban phenomenon. They exist where there are sufficient numbers of people to create a market, and where the terrain is flat or slightly undulating and the road surface is in a reasonable state of repair. If a heavy load is carried in the hillier areas of Mbale district, let alone a passenger, the rider are forced to get off and push the bicycle up the hill. Boda-boda riders frequently complain about uncooperative passengers who are reluctant to walk up a hill. Conversely, these passengers argue that they are paying to be transported and prefer to be pushed.

All boda-boda riders are men, and most are between 18 to 30 years old. Before they can apply for a license they must have obtained approval from the Resistance Committees at the village (RC1), parishes (RC2), and sub-county levels (RC3). They must also have paid their graduated tax, which effectively makes the minimum age 18 years. Most of the riders in the towns live in nearby villages or in the slum areas of the outskirts. The riders are generally school dropouts with limited possibilities of getting any other paid work.

### ***Boda-Boda in Tororo***

In Tororo district there are five major boda-boda centers - Busia, Buslowe, Kachonga, Merkit, and Tororo town. The first boda-boda association, Busia Bicycle Operators Association (BBOA), was formed in Busia in 1986. It has currently around 400 members. The chairman of the organization estimated that the number of riders had more than doubled over the last five years. There are two more associations in Busia - Namgodi and Masafi. Together, they account for about 100 members.



The boda-boda service was introduced to Tororo town in the mid-1980s. Two associations were formed in 1987 - the Tororo Transport Cycle Cooperative Society (TRR) in January, and the Mukwano Disco Bicycle Transporters (MDBT) in July. TRR and MDBT have also established branches in smaller urban areas and trading centers outside of Tororo town. There are 1,000 to 1,200 riders in town. MDBT, which is the largest association, has 850 registered bicycles, among which 600 were estimated to be full time riders. In Tororo district, the riders come from all the various ethnic groups in the district.

The distance that the boda-boda riders cover varies greatly with the area. In Tororo district, which is relatively flat, riders in town go out about 30 km while riders in Busia reported doing shorter, more frequent trips. The average trip by Tororo town riders was estimated at 13 km, twice a day. In Busia, the riders' average trip was about 6 km, 3 to 4 times per day.

In general, the charge depends on the condition of the road, the terrain, what is being transported, whether the customer is a regular, and the general assessment of the "paying ability" of the customer. Prices also vary throughout the day. In Tororo town, very few destinations have a fixed price. The charge for a distance of 20 km can vary from Ush.600-1,500, that is between Ush.30 and Ush.75 per km. A shorter 2 km trip within town costs Ush.150 while the minimum charge is Ush.100 for 1 km. Thus, the kilometer charge tends to be lower the longer the distance travelled.

The cost of joining an association in Tororo town varies between Ush.1,000-1,500 depending on the club. A fee of Ush.1,200 is applied towards the metal plate with the registration number, and Ush.1,900 towards the club shirt. The responsibilities of the associations vary. In Tororo, they work as a kind of bank both for those who ride their own bicycles and for those who hire them. All members deposit between Ush.400-800 per day into their "account" with the association. At the end of the month, the association releases these funds less Ush.1,000 which is used for administrative expenses.

Table 2.8 gives a breakdown of the operating characteristics and vehicle-operating costs for boda-boda operators in Tororo town. Boda-boda operators who ride their own bicycles earn an average annual income of Ush.335,600 after operating costs, equivalent to Ush.27,960 per month.

In the case of a rented bicycle, the owners receive between Ush.500-700 per day depending on the agreement with the driver. The rest of the income is kept by the driver. In some cases, riders earn a minimum salary of around Ush.4,000 monthly in addition to the right to keep the excess money above the rental fee. The rider generally covers the running and maintenance costs while the owner is responsible for major repairs and the tires.

**Table 2.8: Operating Characteristics and Vehicle Operating Costs:  
Boda-boda Transport Operators in Tororo Town**

	Average	Range
<b>Operating Characteristics</b>		
Working days per week	6	5-7
Trips per week	12	10-25
Distance per one-way trip (km)	13	1-30
Distance per year (km)	16,224	
Load per trip (kg)	70	15-100
Load per year (tonne)	43.7	
<b>Vehicle Operating Cost (Ush.)</b>		
1. Investment:		
Total Cost	68,750	65,000-72,000
Life (years)	4	3-5
Annual Depreciation	17,188	13,000-24,000
2. Operating (per annum)		
General Maintenance	52,000	39,000-65,000
Tires and Tubes	50,400	
Monthly Fee to Assoc.	14,400	12,000-18,000
TOTAL	118,000	
<b>Annual Gross Revenue (Ush.)</b>	468,000	343,200-780,000
<b>Annual Income - after costs and depreciation (Ush.)</b>	335,600	241,800-646,600
<b>Income to rider in case of a rented bicycle:</b>		
2. Vehicle Operating Cost (per annum)		
General Maintenance	52,000	39,000-65,000
Rent to Owner	156,000	124,800-249,600
TOTAL	208,000	256,800-324,600
<b>Annual Gross Revenue (Ush.)</b>	468,000	343,200-780,000
<b>Annual Income - after costs (Ush.)</b>	260,000	86,400-455,400

In Tororo town, riders apparently do not have to pay municipality taxes, while in Busia and Mbale town, they pay Ush.50 and Ush.100 respectively daily. These taxes are collected directly from the riders by the police.

### ***Boda-Boda in Mbale***

In Mbale town, there are 5 boda-boda associations, all rather smaller than Tororo, the "Gava Mkulia" Mbale United Transporters (MUT), the Bugisu Cyclist Union (BCU), the Doko Youth Association (DYA), and the Bugisu Youth Association (BYA). Gava Mkulia was the first one to be established in 1989. In 1991 it was also the first, and, as of September 1991, the only, association registered as a corporation.

The estimated numbers of active boda-boda riders in Mbale vary greatly and there are discrepancies between these estimates and the number of licensed bicycles. It is likely that there are around 2,000 riders in the area. This is less than the 3,000 riders that were said to exist before compulsory registration was enforced.

Compulsory registration was introduced to overcome the concern of the police authorities about the many bicycle accidents, and the potential criminality that could follow from having a pool of young underemployed men with insufficient earnings around the town. In Mbale, which is predominantly Bagisu, a large percentage of the riders are Iteso who have come south due to the insecurity in their home area.

In Mbale, town riders cover a radius of about 6 km; they rarely travel any further. The riders cite security reasons for limiting themselves to this radius, claiming that at least one rider per day gets his bicycle stolen by a passenger. A 5 km trip can cost between Ush.200-300, that is Ush.40-60 per km. Most of the trips are, however, shorter and within the town area, riders performing 15 to 25 trips per day.

In Mbale district, the boda-boda associations charge their members Ush.600 per month, but they do not perform any "banking service". The association can collect the daily rental fee on behalf of the bicycle owners, but in most cases the riders deliver the money themselves directly to the owners.

Boda-boda riders who ride their own bicycles in Mbale town earn on average Ush.327,000 per annum, the equivalent of Ush.27,250 monthly. In the case of a hired bicycle, the income to the rider drops to around Ush.228,800 per annum, the equivalent of Ush.19,066 monthly (see Table 2.9).

Nakaloke village, 8 km north of Mbale on the road to Soroti, is a small trading center with a boda-boda stand. There are about 350 riders and they are organized in the Nakaloke Cyclist Union. The terrain is relatively flat and the riders mainly service the rural areas. The average trip was estimated to be 20 km, but on occasion the riders claim to have made trips of up to 45 km into the rural areas.

A trip to Mbale town would cost Ush.200, Ush.25 per km, but the riders said that they hardly ever go there because travellers to Mbale have access to motorized transport. In Nakaloke, the boda-bodas mainly service areas which are off the main road. Here the kilometer price seemed to be rather constant, around Ush.25, regardless of the trip distance.

## *Summary*

Boda-boda operators who ride their own bicycles earn an average monthly income of Ush.27,500. Thus, in only three months, a rider will be able to recover the expense of purchasing a bicycle. However, only about 25-30 percent of all riders in both Mbale and Tororo districts own their bicycles. At the time of this team's visit, bicycles were easily available in the town shops in both districts. The lack of bicycles for sale does not appear to be the reason that keeps riders from buying their own bicycles.

A more plausible explanation relates to the difficulties that riders face in raising the money for the initial investment. The cost of living in Uganda is increasing rapidly due to an annual level of inflation of 40-50 percent. The purchasing power of the riders is in constant decline, as their incomes fail to increase at the same rate as inflation. Their earnings are therefore increasingly spent on daily necessities, and their ability to save is very low. Also, the real value of savings which are not kept in a bank account is rapidly depreciating. The availability of credit for bicycle purchases would thus greatly increase the potential for bicycle ownership.

A rider who rents a bicycle earns on average Ush.19,500 per month. The bicycle owner makes between Ush.5,800 and 12,800 monthly, after allowing for tire expenditures and the boda-boda association fee. Thus, the owner can expect to recover the purchase price of the bicycle within five to eleven months. Most owners have one or two bicycles, but there are some who have up to 25 bicycles rented out.

**Table 2.9: Operating Characteristics and Vehicle Operating Costs:  
Boda-boda Transport Operators in Mbale Town**

	<b>Average</b>	<b>Range</b>
<b>Operating Characteristics</b>		
Working days per week	6	5-7
Trips per week	120	75-100
Distance per one-way trip (km)	1.5	1-6
Distance per year (km)	9,360	5,850-11,700
Load per trip (kg)	70	15-100
Load per year (ton)	436	93-624
<b>Vehicle Operating Cost (Ush.)</b>		
1. Investment:		
Total Cost	68,750	65,000-72,000
Life (years)	4	3-5
Annual Depreciation	17,188	13,000-24,000
2. Operating (per annum)		
General Maintenance	52,000	39,000-65,000
Tires and Tubes	50,400	
Monthly Fee to Assoc.	7,200	
Municipal Tax	31,200	20,800-36,400
TOTAL	140,800	117,400-159,000
<b>Annual Gross Revenue (Ush.)</b>	468,000	343,200-780,000
<b>Annual Income - after costs and depreciation (Ush.)</b>	327,200	225,800-621,000
<b>Income to rider in case of a rented bicycle:</b>		
2. <b>Vehicle Operating Cost (per annum)</b>		
General Maintenance	52,000	39,000-65,000
Rent to Owner	156,000	124,800-249,600
Municipal Tax	31,200	20,800-36,400
TOTAL	239,200	184,600-351,000
<b>Annual Gross Revenue (Ush.)</b>	468,000	343,200-780,000
<b>Annual Income - after costs (Ush.)</b>	228,800	158,600-429,000

### **3. Bicycles and Rural Women**

#### **3.1 Attitudes of Women Towards Use of Bicycle**

Women's attitudes towards bicycles vary with their:

- (i) Culture and tradition;
- (ii) Exposure to other women riding bicycles;
- (iii) Social situation;
- (iv) Economic situation; and
- (v) Location, i.e. terrain and infrastructure.

Each of these factors is discussed subsequently.

#### ***Culture and Traditions***

In Mbale district, which is predominantly Bagisu, and in other parts of Uganda such as Buganda in the Central region, it is not considered proper for women to ride bicycles. Women are supposed to be "subservient and a bit secretive," and someone who rides a bicycle is judged to "behave like a man." (Quote from Mr. Waswa Balunwya, Business Consultant, *Every Woman*).

Both women and men mentioned that women riding bicycles are perceived as being more independent, more "liberated" than others, and that husbands may not consider women riders as a positive development. Frequently, stories are told of women who had left their husbands when they became financially independent or "too liberated." These factors were rarely mentioned in Tororo district where the culture seems more permissive with regard to women riding bicycles. Tororo women come from many different ethnic groups, and they do not seem to face cultural taboos about riding bicycles. They are keen to have the opportunity to use a bicycle. The obstacle that women encounter here is one of access to bicycles. If there is a bicycle in the household, it is considered the man's possession. Even if the bicycle stands idle, the woman may not be allowed to use it because the men fear that it will break if used for women's transport activities.

Culture and traditions are strong and important factors in rural areas. However, even though rural societies might be considered traditional, they are not necessarily static. During structured discussions with Bagisu women on the plains, some showed an interest in the possibility of having access to a bicycle for their daily transport needs. When asked what their families and friends would think about them riding a bicycle, a young woman in Nampanga (Mbale) answered that when people realize how much the vehicle assisted her, they would change their opinion.

#### ***Exposure to Women Riding Bicycles***

It is quite rare to see a woman riding a bicycle in Tororo or Mbale districts. Yet, in the towns and on the main road through these districts, a few female riders can be observed. In the rural areas of Tororo, women occasionally ride bicycles. However, in the villages of Mbale district, it is a very unusual event.

Women who have never seen a woman on a bicycle often start to laugh at the mere thought of it. On the other hand, if they know, or have seen women ride, they are more attuned to the idea of riding themselves: "If she can ride why should not I!".

### ***Social Situation***

In the 14 villages visited, there were only five cases cited of women riding bicycles regularly. Two of the women are Bagisu, from Mbale, and three are from Tororo district. These women share some common social characteristics which facilitate their access to and acceptance of bicycles.

All of the women riders live in male headed households. Two of the women are teachers and two are nurses. The fifth is a self-employed business woman. They either live in villages that are relatively close to Mbale or Tororo towns, or in the vicinity of the main road on the flatland. All of these bicycle-owning/using women have a formal education, and they have been exposed to cultures and traditions different from their own.

In the villages, a teacher or a nurse is frequently the RC1 women's representative. Education, thus, is a merit that is appreciated and recognized by rural women. Educated women are respected and looked up to by other women. If the school teacher or the nurse rides a bicycle, they may help to "break the taboos." Hence, if bicycles were to be introduced into rural areas where they are not part of the inherent culture, these educated women could be important agents of change.

### ***Economic Situation***

All of the bicycle-riding women previously mentioned earn money, and they use the bicycles mainly to go to and from work. Two of the women have a motorized vehicle in their households. Thus, they belong to a very privileged economic group. If the man has a car, then the woman can have a bicycle. However, if there is only one vehicle in the household, it is generally considered to be for the man.

Women frequently stated that in cases where there is only one bicycle in the household, they feel that it is more correct to let the husband own it, even if he is only using it for social purposes. They would feel awkward or ashamed to own a bicycle while their husbands had to walk. Moreover, as mentioned earlier, men are reluctant to share bicycles with their wives. Consequently, many women reached the conclusion that the best way to ensure that they would have access to a bicycle would be for the family to have two bicycles. However, this option is economically beyond the means of most rural households.

In two of the cases mentioned here, the women received their bicycles through a project - family planning and tree planting. Thus, they did not have to pay for them.

### ***Location - Terrain and Infrastructure***

In rural areas, women are primarily responsible for the life-sustaining transport tasks in and around the village, such as water and firewood collection. They are also responsible for the daily transport of food from the fields to the home, and, during harvest periods, they contribute significantly to bringing in the crops from the fields. In addition, they are responsible for grinding, which involves trips to the grinding mill.

When an area is hilly or mountainous, the activities which bicycles can be used for are more limited. Water is commonly located down in a valley while the settlements are up on a ridge. Firewood may be located far away and collectors must travel over difficult terrain where the absence of proper footpaths makes it difficult to pass. Moreover, crop production frequently takes place on steep slopes where a bicycle cannot effectively be put to use.

The condition of tracks and footpaths, particularly if there is a difficult water crossing, also limits the use of bicycles and thus influences the attitudes of women towards the employment of bicycles for "their" activities. In the plains, women were frequently concerned about broken bridges and slippery soil. However, they all recognized that if footpaths were improved, the employment of intermediate means of transport could have wider applications.

### ***Summary***

The attitudes of women reflect the perceived usefulness of the vehicle. It is much easier for women in flat areas to perceive how a bicycle could be useful in their daily transport activities even though they may not know how to ride or may never have seen anyone use bicycles for water or firewood collection.

The fact that exposure to an event influences attitudes underlines the importance of demonstration projects. The average villager is more likely to get used to the idea of women riding bicycles when he has been exposed to the idea in other situations.

Teachers and nurses could act as agents for change with regard to increased bicycle usage among women. It would not, however, be desirable for a bicycle to be perceived as a vehicle that is only for educated women. This group of women should therefore not be encouraged to use bicycles in isolation, but along with other more typical village women.

## ***3.2 Bicycle Usage Among Women***

### ***Riding Skills***

In Tororo district, the majority of women over 40 years of age claimed that they knew how to ride a bicycle when they were young, before they got married. They are, however, doubtful as to whether they would attempt to ride a bicycle today. Their main interest in bicycles stems from the possibility of sending children to do errands. They believe that older sons would be more positively inclined to help with water collection or to be sent off to the grinding mill if they had access to a vehicle.

Older women in Mbale district, however, have generally never ridden a bicycle. They are interested in bicycles for the same reason as older women in Tororo, that is, for the possibility of transferring part of their responsibilities to other family members.



On the other hand, younger or unmarried women in both districts are more open to the idea of cycling. It appears that fathers are more likely to allow their unmarried daughters to ride bicycles than husbands are to allow their wives to do so. A major problem, particularly in of all Mbale, is that many women do not know how to ride. Despite their lack of riding experience, women of all ages in the plains feel that bicycles could ease their transport tasks and they have a positive attitude to bicycle ownership.

### ***Trip Purposes***

Traditionally, while men are responsible for transport outside the village, women are responsible for travel in and around the village. However, when women have access to bicycles they use them to go to work, to go to the market, to go to buy something from a shop, to bring a sick child to the clinic, or to make a social visit. That is to say, women end up using bicycles for the same purposes as men, mainly external travel.

Since women have very limited access to bicycles, it is not strange that bicycles are not used for water or firewood collection. It is also to be expected that when women do get access to bicycles they use them for wider external travel.

### ***Loads Carried***

Women who were observed riding bicycles used them to carry very small loads, for example, 5 maize cobs, or a small box of medical supplies in the case of a nurse on a field visit. Thus, the bicycles were used mainly for personal transport, and not for load carrying.

## **3.3 Women and Bicycle Transport Services**

### ***Rural Traders***

In Mbale and Tororo districts, women do not render bicycle transport services. Throughout the visit to eastern Uganda, only one woman, in Iganga district (outside of the defined study area), was seen transporting matoke on a bicycle; she was seen at the junction of the main road carrying 4 bunches of matoke. As this is more than she would need for personal consumption, it is possible that she was taking it to a market.

Rural women's groups have on occasion hired bicycle riders to transport their produce to market. This is, however, a rare event. Most women's farming groups complained that they were the "victims of middlemen" who take advantage of the fact that women have difficulties transporting their produce to market. As a result, they are forced to sell to the bicycle traders at low prices.

### ***Boda-Boda Transport Operators***

There are no female boda-boda riders although boda-boda services are used intensively by urban women. Boda-bodas perform a very useful service for the urban woman and the town-market woman, who employ the boda-bodas for both personal and goods transport. Many working women use boda-bodas to go to work. Also, in the mornings, some parents send their children to school on boda-bodas. The urban women mentioned, however, that they have to be careful not get into the habit of taking boda-bodas on a daily basis, because it becomes too expensive.

### **3.4 Constraints Upon Greater Use of Bicycles by Women**

The constraints upon greater use of bicycles by women can be divided into four main categories.

- (i) Culture;
- (ii) Technical constraints;
- (iii) Economic factors; and
- (iv) Infrastructure.

Each of these categories is discussed subsequently.

#### ***Culture***

In some areas, cultural factors will make it more difficult to expand bicycle usage. Projects aimed at encouraging bicycle riding among women in these areas must move more slowly, and more carefully than in areas where bicycle riding is culturally accepted.

#### ***Technical Constraints***

In Uganda, the standard bicycle is the man's type with a horizontal crossbar. All the bicycles in the shops in Mbale and Tororo town were men's bicycles. All the men, women and children seen riding were on men's bicycles. The most common brands of bicycles are imported from India - Roadmaster and Hero. There are also some Phoenix from China and Raleighs from India. Most of the bicycles have 22-23 inch frames.

Bicycle retailers do not import women's bicycles because there is no demand for them. They claim that a ladies' bicycle with the curved frame or the slanted crossbar is not as strong as a man's bicycle. The general opinion among both women and men confirms the belief that the crossbar makes the bicycle sturdier. As a result, women customers tend to buy men's bicycles even if they plan to ride the bicycles themselves. Men are also against the idea of ladies' bicycles because male household members do not wish to be seen riding on a woman's bicycle. Thus, it is more acceptable for a woman to ride a man's bicycle than for a man to ride a woman's bicycle. This is another reason for buying a man's bicycle, since it can then be used by all household members.



*A Phoenix ladies bicycle belonging to a family planning field worker in Tororo*



*Boda-Boda transport services are extensively used by urban women*

The average height of women in Eastern Uganda is probably around 1.60 meters. It is difficult for a woman of this height to keep her balance when riding a man's bicycle on a bumpy road, or to quickly come to a halt. Urban women frequently wear Western-style clothing while rural women mainly dress in the traditional full-length busuti. It is particularly difficult to get on or off a man's bicycle in such a long dress. On a relatively good but narrow feeder road, the team witnessed a woman falling along with her bicycle because she had difficulties dismounting when she was startled by the sound of an approaching car.

The available mens' bicycles thus have frames which are too large to be ridden securely by women of average height. One way to encourage bicycle usage among women could be to import ladies' bicycles. A deliberate effort in this direction is being made by a World Bank- financed project - the Agricultural Development Project (ADP), which is active in eight districts in the Eastern and Northern region. The districts covered in the Eastern region are Kumi, Pallisa, Soroti and Tororo. Another project - the South West Region Agricultural Rehabilitation Project (SWRARP) - also has some experience with the use of ladies' bicycles.

ADP has a specific women's component. It has assisted women's farming groups to establish village stores. There are a total of 31 such stores in Tororo and Pallisa districts and the ladies' bicycles were sold through these shops. Each shop received 5-7 bicycles. The bicycles were sold for Ush 40,000 each, which is about 67 percent of the market value. Despite this discounted price, there are two unsold bicycles in the shop in Mukujju village in Tororo district. The reason for the ladies' bicycles remaining unsold is that they are said to be weaker than the mens' bicycles. The SWRARP project also encountered difficulties in selling the women's bicycles, particularly due to cultural beliefs in the Southwestern region.

The ADP bicycle is a Roadmaster from India. It has a very large frame with a curved down-tube instead of a crossbar. It had a top-heavy and unsteady feeling when test-ridden. Thus, if the judgement of women's bicycles being weaker or less steady was based on the experience of this specific model bicycle, it would seem accurate. A family planning field worker from Tororo town had a Phoenix ladies' bicycle. It was a smaller bicycle which felt more compact and gave no impression of being top-heavy or unstable. The field worker was very satisfied with her bicycle. When women from Mukujju village were shown this model of ladies' bicycle, they concluded that it seemed as strong as a man's bicycle, and that it would indeed be easier to ride.

Another constraint upon increased bicycle usage for women's transport activities is the containers in which water is carried. In Tororo district, water is frequently fetched in pots while in Mbale it is more common to use jerrycans. Pots are more difficult than jerrycans to ferry on an intermediate means of transport. This has to be kept in mind if bicycles or any other IMT are introduced for the purpose of water collection. Thus, where pots are used, households would also have to acquire the jerrycans. In September 1991, a 20 liter jerrycan cost about Ush.2,500; a pot costs Ush.500. Pots, however, break more easily than jerrycans.

In September 1991, an agreement was reached between private Chinese and Ugandan businesses to manufacture bicycles in Uganda. It would be desirable that these bicycles be produced with the type of rear racks and other reinforcements which are used locally. This would reduce the additional expense that bicycle owners incur for modifications. It would seem reasonable that projects interested in promoting bicycle use among women, collaborate with this factory to aim to extend the bicycles' carrying capacity for women's loads such as water.

### *Economic Factors*

In order for a woman to be able to claim a bicycle as her own, she has to pay for it herself. This is a very difficult issue since in the rural areas of eastern Uganda it is traditionally the man who takes care of the sale of agricultural produce. Thus, months can pass when rural women have no access to money at all, not even for the smallest expenses. In most villages a woman's only possibility of getting money is through income-generating projects developed through women's clubs. Yet, even if a club has an income-generating project, it does not necessarily produce any income.

Therefore, although the vast majority of rural women encountered in Tororo district and in the flatter areas of Mbale are very keen on bicycles, they feel that it is impossible for them to purchase one because of the difficulty in saving Ush.65,000. Even when they attempt to save school fees, school uniforms, and unexpected expenses for sickness and travel prevent them from accumulating large sums of money.

Rural women understand and are very interested in the prospects of credit. Credit would enable them to pay in installments and this is perceived as a much more manageable commitment than saving the entire sum. In the past, rural women have rarely had access to credit schemes. Similarly, the experience with existing credit schemes is not good. For instance, farmers have had bad experiences with the "Rural Farmers' Credit Scheme" administered by District Agricultural offices, through which they could borrow up to Ush.500,000. The scheme was targeted at the small farmer and aimed at encouraging productivity increases through improved cultivation methods and the intensified use of fertilizer and other inputs. The program failed due to delays in delivery of inputs and in disbursements of loans. (Farmers tell stories about how the scheme let them down: One woman had to sell her only cow in order to pay the laborers she had employed to prepare a new plot of land because she did not receive the loan she had been granted. She also did not receive the necessary inputs, making it impossible to plant.)

Interest rates are a somewhat difficult and sensitive issue for farmers. Commercial interest rates are set around 45 percent - the inflation rate in Uganda is about 40 percent. Crop prices do not adjust to compensate for this steady increase in the general price level. Thus, farmers constantly see their purchasing power deteriorate while interest rates on loans are set to reflect the rate of inflation.

Women also complained that in the past, interest had been charged from the date that a loan was granted rather than from the date that the loan was disbursed. Hence, they felt cheated by the arrangement and would not apply for credit again if this procedure was repeated. However, despite previous negative experiences, rural women continue to be interested in credit schemes, particularly if they think they would work well and without delays.

## *Infrastructure*

The condition of footpaths and tracks in the villages is a constraint upon the wider applications of bicycle use for the transport needs of women. Improvement of these tracks could expand the use rural women get out of bicycles. These women generally have a positive attitude about carrying out self-help work on the local transport network when they can envisage the positive results that this would bring. This suggests that rural women might be receptive to the idea of improving tracks and paths for extended bicycle usage, particularly on the plains.

## *Summary*

If ladies' bicycles are introduced with the aim of encouraging bicycle usage among women it is important that the bicycles sold are of good quality in order for them to be comparable with existing mens' bicycles in terms of load-carrying capacity and versatility of use. It is also desirable that the women's bicycle be equipped with a carrying device that facilitates the transport of water, crops or firewood.

It is conceivable that in areas where bicycles are not currently used, they could be introduced and targeted for women's transport purposes. Also, if ladies' bicycles are equipped with improved rear racks or other carrying devices, they may be perceived as a "new" vehicle particularly designed for women. It is possible that women riding these new bicycles no longer will be seen to "behave like men."

Due to the fact that men do not like to be seen riding a ladies' bicycle, the purchase of a woman's bicycle could limit the use of the bicycle to the female members of the household. This is not necessarily bad, because it could help break the existing pattern of bicycles being monopolized by the male household members and allow women to use the bicycles for "what they are intended" i.e. women's transport activities.

Moreover, as ladies' bicycles become more common, it is conceivable that young men would become less reluctant to ride on ladies' bicycles and would run errands using a ladies' bicycle rather than walk. Thus, if ladies' bicycles are introduced, women may get the dual effect of saving time and effort directly through the use of bicycles in their daily transport activities, and indirectly by transferring transport responsibilities to their children. At the same time, the risk of men monopolizing the vehicles may be reduced.

Women's lack of money is manifested in the numerous attempts among women to establish income-generating projects in the rural areas. Men are generally responsible for all monetary transactions. Thus, months can pass without women having access to money. Credit can help to overcome part of this financial constraint although the fundamental problem remains that, despite hard work and income-generating attempts, women have difficulties in raising even the smallest amounts of money.

Moreover, when women have access to money, there are often a number of more urgent priorities such as school fees, medical bills or old debts which take precedence. Thus, there are many claims on women's scarce funds which are given priority over the purchase of a time- and effort-saving device for the women themselves.

## **4. *Women and Rural Transport***

### **4.1 *Women's Perceptions of Rural Transport***

Women are well aware of the time and energy that their transport responsibilities consume. When asked specifically about water and firewood collection or crop transportation, the women vividly explain their situations. Frequently, after a meeting, they wished to show the exact location from where they get water, especially the condition of the footpath and the sanitary conditions around the water source. They wanted to make sure that the person asking questions understood the magnitude of their effort.

Women often start their day by fetching water. Then they move to the fields to cultivate the fields and to gather food for the day. Before they return home to prepare the meal, they also have to collect firewood. In some areas, firewood is available near the fields or home, or on the way home from the fields. In other areas, a special trip has to be made in order to collect firewood. In the mountainous areas of Mbale district, gathering firewood is said to be the most time-consuming transport task women face. No evidence was found of any intermediate means of transport being used for firewood collection in any of the villages visited. In the plains, water collection is considered to be the most time-consuming transport activity. In the dry season, households may need to travel up to 7 km in order to reach a water source.

The transportation of agricultural produce is also a daily task, although it is only particularly difficult during the harvesting seasons. As with the previously mentioned activities, the loads are generally carried on the head, or, as found in some areas of Mbale district, on the back. Women generally accept their situation but are very eager for changes and improvements.

#### ***Opportunity Cost of Time and Effort Dedicated to Transport***

What would women do with the time and energy "saved" if they reduced the time and effort dedicated to transport? Most women would spend more time at home. They would cook better meals, keep their homes cleaner, wash the family's clothes more frequently, spend more time with the children, and rest. These are all activities which women currently do not have sufficient time for. An increase in time at home would thus result in enhanced family welfare.

Rural women are socially deprived. They farm alone and the only social interchange they have during the day may be at the water well or stream. Therefore, many women would also spend the "extra" time at women's clubs which could serve both social occasions and income-generating purposes.

Very few women said that they would cultivate more land or intensify existing cultivation. Most women indicated that in case of an improvement they did not wish to further increase their existing burden. Ugandan families are large, and women often have 6 to 10 pregnancies during their childbearing years. They take care of infants over a long period of time. Given their heavy workload and many responsibilities, women often neglect their own health. Rural women are tired, overworked, and undernourished. An increase in time spent at home may indirectly contribute to a rise in productivity in the fields as well.





*Women fetching water in Mulenju village in Tororo district*



## ***4.2 Existing Time- and Effort-saving Measures for Internal Travel***

An intermediate means of transport (IMT) is very rarely employed women's transport. In fact, in all cases where an IMT was used, regardless of whether it was a task performed traditionally by men or women, the transport task was performed by a male. Children alleviate the transport tasks of their mothers by carrying water, firewood, and crops at harvest periods. They generally help during the afternoons since most of them go to school in the mornings. Most women thought that older children (particularly boys) would be more willing to continue assisting them if they could use an IMT.

### ***Bicycles***

In two of the VLTTs households in Nampanga, bicycles were used during the dry season to fetch water from distant sources. In Buwanyama village, the two bicycle-owning households used their vehicles to go to the grinding mill in another village. These are the only examples within the VLTTs where the availability of bicycles resulted in the transfer of a traditionally female transport activity to men.

### ***Wheelbarrows and Handcarts***

In a few villages in the flatland, water was seen being transported in jerrycans on wheelbarrows. In most of these cases the water was intended for construction (generally a man's responsibility) rather than for personal consumption.

Wheelbarrows are popular in Uganda and in most flat areas there is a wide variety of locally- made wheelbarrows in use. Often, children make their own crude toy versions of these vehicles. In villages, wheelbarrows are mainly used for movement of an occasional heavy load such as a bag of fertilizer or cement, or to bring a bag of coffee to the cooperative godown. They are also used to transport sand or bricks during construction.

In the larger town marketplaces, and at the bus parks, there are wheelbarrow and handcart transport operators. All of them own locally manufactured vehicles. These vehicles have large wooden bodies, metal axles and a pneumatic or metal tire. There is a carpentry shop in the market in Tororo town that specializes (among other things) in custom-made wheelbarrows and carts.

Metal wheelbarrows are available in both Mbale and Tororo towns. The most common ones come from China and India, and they cost Ush.16,000. Apparently, there is also a Ugandan wheelbarrow made in Jinja, and a Zimbabwean model. Both cost around Ush.25,000. They were not available in the shops visited by the team. The main problem with metal wheelbarrows in the villages is the lack of repair facilities.

### ***Oxen***

In eastern Uganda, oxen are frequently used for ploughing. Many families who do not have the animals try to rent them. Oxen are also used for transporting agricultural products during harvest season. Two-span and 4-span oxen are engaged to pull locally manufactured sledges. A large basket is placed on top of a sledge to transport crops, commonly maize or onions. The sledges are also used to move bricks or logs for construction.

Ox-carts were found in two of the villages visited - Mukujju and Magodesi in Tororo district. Both are located in the flatland along the main road between Tororo and Mbale. The two carts were imported 48 and 12 years ago respectively. Only the one in Magodesi was still operational. It has metal wheels and is pulled by 4 oxen. The cart is used for collecting water in a drum, and for ferrying crops from the fields at harvest time. The cart was only used by the owner, i.e. it was not rented out, as is frequently the case with the oxen themselves. The women were very keen on the carts and on the idea of improved sledges, although they recognized that only a few households have a pair of oxen. Both cart-owning households belong to the wealthiest families in their respective villages.

### ***Donkeys***

Donkeys are not traditionally kept in either Mbale or Tororo district. In fact, many women on the flatland have never seen a donkey. In the hilly areas of Mbale the villagers are very interested in these animals because they know that donkeys are used in the sub-counties which border with Kapchorwa district in the northeast or with Kenya.

The only village visited that has donkeys was Bumbo, about 62 km southeast of Mbale town. It is situated in the mountains on the Kenyan border. The last 20 km before reaching Bumbo are on a very poor access road which is virtually impassable when it rains. Due to its remoteness, this village has only sporadic contact with Mbale district. District officials rarely visit Bumbo due to lack of transport. Close to the village there is a trading post with Kenya - Bwakhakha. This area has clearly benefited from trade with Kenya. There are a number of private grinding mills in the village, and both oxen and donkeys are used for transportation.

At the time of the team's visit, there were 4 donkeys in the village center. The donkeys carry "everything that can be put in a bag." They are thus mainly used for the transport of agricultural produce. Both donkeys and oxen are rented out by their owners. It costs Ush.500 to rent a donkey to go to the Kenyan border. There are no carts in Bumbo and very few bicycles due to the mountainous terrain. Veterinary services are limited and donkeys and oxen frequently die due to lack of proper care and medicine.

In 1986, the Young Women's Christian Association (YWCA) brought 25 donkeys from Kenya intended for sale in Mbale district. The animals were kept at the government farm in Sironko. The project made efforts to improve on the harnesses and attempted the construction of a small cart. Shortly after the donkeys came to Uganda they contracted lung worm. The veterinary staff had limited experience with donkeys and lacked the necessary medicine. As a result, all the donkeys died, except one. Some of the donkeys died shortly after they were delivered to their owners. At the time they were sold for Ush.50,000. The owners lost their money in the process, and naturally are skeptical about trying again.

### ***Non-Transport Interventions***

The transport burden of rural women can also be alleviated by having better access to:

- (i) Water supply;
- (ii) Woodlots;
- (iii) Grinding mills.

The existence of these facilities in the study area is discussed subsequently.

#### ***Water Supply***

Few villages have protected springs or boreholes. In Mbale and Tororo districts, there are ongoing rural water and sanitation projects being carried out with external funding. The fact remains, however, that, even in villages with improved water supply, women and children must still travel large distances to get to the source. Villages in eastern Uganda are rather spread out and settlements are scattered. Thus, in order to eliminate the transport element of water collection, several sources would be required within the same village.

#### ***Woodlots***

Very few households plant trees. A women's group was recently formed - the Uganda Women's Treeplanting Association - which addresses the issue of firewood and deforestation. In the villages where the group exists, women start nurseries and arrange seminars on tree planting. This organization is, however, still not established in the mountainous areas of Mbale district, where firewood collection is considered the most time- and effort-consuming transport activity.

#### ***Grinding Mills***

Women also tend to take responsibility for grinding. In villages without a grinding mill, considerable time is spent on this task. However, in Bukisimamu, the most remote of the VLTTTS villages, women do not take their grain to be ground because the closest mill is too distant. Instead, they sell their maize to traders, and buy flour in the shops around the market.

There is a European Community (EC)-funded project where communities construct mill buildings according to exact specifications, and the project provides and installs the mill. Not all the women's groups struggling to get a mill were aware of this project. Also, in some of the places where they were working with the project they had trouble following the building plan.

### ***4.3 Women's Priorities for Interventions to Improve Transport***

During meetings with women's groups in villages, they were asked how their main transport problems could be alleviated, emphasizing the limits of the economic and technological means of the rural household. A variety of suggestions were made which have been divided into five different categories.

- (i) Intermediate means of transport;
- (ii) Motorized vehicles;
- (iii) Development of transport services;
- (iv) Improvement of road networks; and
- (v) Non-transport interventions.

Each of these categories is discussed here.

### ***Intermediate Means of Transport***

An IMT is used to transfer the load-carrying task from a person to a vehicle and/or enables a person to increase the load per trip. The use of an IMT can thus either reduce the time and effort spent on transport, and/or allow for an increased consumption of the transported item. The former is a common result of improved access to firewood while the latter is common for water. In most cases, the use of an IMT increases trip efficiency in terms of weight transported per minute.

In eastern Uganda, 4 alternative types of low-cost vehicles were discussed by the women's groups and relevant key informants.

- (i) Bicycles;
- (ii) Wheelbarrows;
- (iii) Oxen/cows; and
- (iv) Donkeys.

### ***Bicycles***

Women in flat areas are very interested in bicycles and find them useful. They would either use the bicycles themselves or other household members would use them in order to assist the women. The main constraints to increased bicycle usage are, as discussed previously cultural factors (depending on the area), technical and economic factors, and infrastructure.

In all of the villages visited in Tororo district, and in Bumudu, Buwanyama and Nampanga, in Mbale district there was a keen interest in bicycles. In Tororo, the women were more open to the idea of riding themselves, while in Mbale, most women thought that their older sons would be more interested in helping them with daily transport activities and running errands if they had access to a bicycle.

The bicycle has large potential in Uganda because it is well known, popular, and could, with suitable credit arrangements, come within the financial reach of a rural household.

### ***Wheelbarrows***

Women in flatter areas are also enthusiastic about the prospect of employing wheelbarrows for the collection of water, and the transportation of crops from the fields, either by using their wheelbarrows directly or having their children use them. Despite this opinion, wheelbarrows are rarely used by women at present.

In the hilly areas of Bumbu village and in Bukasakya village in the flatland in Mbale district, women were interested in using wheelbarrows for the transportation of water and crops. When asked why they did not buy them, the women hinted that they were unaware of their price or availability. Their estimate of the cost of a wheelbarrow was twice as high as the current market prices.

Wheelbarrows are widely available, and cost a quarter of the price of a bicycle. Yet few people purchase them for other than building and construction. As mentioned earlier, there are limited possibilities for the repair for broken wheelbarrows in the villages and this could be a constraint to the sustainable impact of wheelbarrows in the local transport system. Locally-produced wheelbarrows would be less affected by this problem.

#### *Oxen/cows*

Improved sledges and locally manufactured carts could greatly enhance the transport capacity of households who own oxen. A pair of oxen are, however, too expensive for the average household. The most practical option for the majority of households to benefit from improved carts would be to rent oxen for transportation, in the same way as oxen can be rented for ploughing. Women's groups in Mukujju and Magodoro expressed an explicit interest in carts. Women in general, both in the mountains and on the plains, were interested in extending the use of oxen.

Cow carts could be considered as an alternative to ox carts. At the Namulonge research center outside Kampala, carts made of local materials have been built at a cost of Ush.82,000. (This should be contrasted with a price of Ush.300,000 for available imported ox carts.) The Namulonge cow cart is pulled by one cow, which can transport loads of 300-400 kg. The animal is fitted with a padded horseshoe-shaped collar to increase its pulling capacity. It takes about 4 weeks to train a cow to pull the cart. The younger cows are more easily trained, as they tend to learn their transport role faster. Many households already have cows; thus, the investment for these households would be limited to the cost of the cart.

In eastern Uganda, it is the men who plough or transport goods using oxen. Consequently, women have limited experience using the animals. The cow trainer at Namulonge thought that it would be easier for women to take charge of a cow rather than to deal with oxen, as they are more familiar with cows. Since cows are not used currently for transport, they could be introduced as draught animals to be used particularly for women's transport activities.

The animal caretaker at Namulonge said that a pregnant cow could also pull a cart if the animal is properly fed. It was mentioned, however, that there may be a law in Uganda that prohibits the use of cows as draught animals due to their function of providing milk. Thus, it could go against cultural or traditional beliefs to use cows to pull loads. These aspects need further investigation because there is a large potential for using cows as draught animals in rural areas.

#### *Donkeys*

The use of donkeys could be extended through improved carrying aids and the introduction of carts. Currently, donkeys are used in a few upland areas of eastern Uganda and there is an interest in them in other mountainous areas, such as in the VLTTTS villages of Bumudu and Bukisimamu. Here, the

women feel that donkeys could be very useful for internal transport purposes. Equipped with appropriate carrying devices, the animals could transport water, firewood, and crops, and be used for trips to the grinding mill. Unfortunately, neither agricultural nor veterinary extension officers have any experience with donkeys and their introduction would have to be a slow and carefully supervised process to gain acceptance and minimize health hazards.

### ***Motorized Vehicles***

In Bumbo village in Mbale district, the women were very interested in purchasing a tractor in order to bring their produce to market. However, they would need access to credit. They knew of a neighboring village that had acquired a tractor and now receives much better prices for its produce.

However, the idea of acquiring a tractor had not been properly thought through by the women. On the economic side, the problem is the lack of knowledge on how to finance and manage a motorized vehicle. Limited demand in the village may also necessitate the tractor being stationed outside for long periods of time. On the technical side, the lack of local maintenance facilities and expertise are problematic in this remote region of Mbale.

When asked to consider less expensive means of transport, the women said that donkeys and oxen are very useful, but that they are not "women's animals," that is, they are always handled by men. When it was mentioned that tractors and other motorized vehicles generally are also "men's animals," some of the women indicated that in fact in their daily transport chores they would probably get more use out of a wheelbarrow. It is possible, however, that the responses of these women might have been influenced by their belief that there was a project being planned to facilitate their access to wheelbarrows.

### ***Development of Transport Services***

At present, transport services in villages are related mainly to external travel. However, in towns and trading centers, transport operators are engaged for both internal and external travel as well as for personal and goods transport.

#### ***Internal transport***

It was hard for village women to conceive of how they would be able to afford to pay someone to bring them water or firewood. Unless women are able to generate income, they will not be able to buy either the product or the service. In the study area, the average farmer rarely uses money payments for transport-related activities. In cases where people are "hired" to transport crops from the fields, the service is often based on a mutual agreement: "If I help you today, you invite me to food and drink, and then tomorrow you will do the same for me."

On occasion, donkeys have been rented out to bring crops home from the fields. If animal carts and sledges were to be introduced, there may be potential for local transport services to develop using these vehicles.

#### ***External travel - rural traders***

Traders coming from town to buy produce enable farmers to sell their crops directly in the villages, saving the farmer time and effort which otherwise may have been dedicated to transport. Farmers frequently complain, however, that it is a buyer's market. This applies both to large traders who come with motorized vehicles and to bicycle transporters. An increase in the number of traders would result more competition and this may transfer some of the profits to the farmers.

#### *External travel - boda-boda transport services*

The boda-boda service is appreciated and used by both men and women. However, this service has limited benefits for the rural woman since she rarely travels outside the village. She does, however, benefit to the extent that other members of the household can travel on a boda-boda to sell or purchase goods.

Discussions with boda-boda riders and police authorities indicate that there are already as many riders as the market can support, and as a result daily revenues are low. The main impact of more widespread services like boda-boda would be in predominantly flat areas, and it is not likely to have a great effect on rural women.

#### *External travel - public transport*

Many households in the VLTTS villages suggested that a bus service in areas without buses, or more frequent bus service in areas where buses are already operating, would greatly enhance their possibilities of undertaking external travel.

A bus passes through Bumudu village on route from Budadiri to Mbale town. It costs Ush.250 to go from Buwira to Mbale by bus; the bus passes once a day. Consequently, people tend to rely on pick-up trucks -"taxis"- instead. The taxi fare is Ush.600, more than twice as much as the bus fare. Travel cost is a factor that affects external transport patterns. An extended bus service network would improve the possibilities of travelling for rural households.

#### ***Improvement of Road Networks***

Women feel that improvements to the road network are very important as this would allow for increased contact with the surrounding world. Delivery of inputs and consumption goods would be made easier and the possibilities of selling produce to traders or bringing produce to market would increase.

Although women attach great importance to roads, in areas where roads are passable all year around people are frequently faced with a scarcity of motorized transport or lack of finances when they need to travel. A road also has limited direct impact on the transport patterns and burden of rural women since it mainly facilitates outside travel. Women will benefit to the extent that an improved road brings goods and services to the village. However, the perceived benefits of having a good road may be greater than they are in reality.

Women in eastern Uganda do not traditionally work on the roads. However, with the establishment of the Resistance Committee system, community and self-help work is being organized, and women in many areas are starting to participate in road work as well. When women participate in road works, they generally transport stones and gravel to the road sites.

Mbale municipality has recently employed women to undertake road maintenance work. This is an indication that women also have started to do road work for payment. Women also work on roads for the World Bank-funded Pilot Road Maintenance Project in Mbale district. However, the project manager had to put pressure on the village authorities to let women compete for the employment opportunities. Apparently, the quality of the women's work is very high. Also, women are considered to be more responsible and dedicated to their job commitments than men; if a woman cannot come to work, she herself arranges for a substitute. In addition, women were found to be "neater" and more conscientious in their approach to the assigned tasks.

Women in one village said that in colonial times there was a decree which banned women from road work. Because of that decree women are no longer used to working on roads. In all of the villages visited in both Mbale and Tororo district, however, women were willing to undertake paid work on the roads. They considered it both a good opportunity to earn money and an activity which would be beneficial to the community. They would also participate in self-help road work, but here the women were not unanimous. Some of them felt that if the work was unpaid, women's participation on the roads would only add to their already long list of responsibilities.

### ***Non-Transport Interventions***

#### *Water supply*

Many households in Nampanga village on the tarmac road in Mbale district have to travel 60 minutes to get to a water source in the dry season. In the Magoro settlement of Tororo municipality, the distance to water is 3 km, and people have to cross the main tarmac road to reach the water source. In these villages, women preferred the idea of having a closer water source to the alternative of employing an IMT to ease their transport burden. However, a closer water source would not totally eliminate the transport problem since the typical village tends to be spread out over a wide area, and it would be very costly to provide a source close to every house.

#### *Woodlots/alternative energy sources/fuel-efficient cooking stoves*

Women in mountainous areas identified firewood collection as being their most time-consuming transport activity. Firewood is used for cooking, and to a certain extent also for lighting. In cold areas, firewood is also the main source of heating. Due to deforestation and the resulting need to protect natural forests, the areas where farmers search for fuel are becoming increasingly distant from their homes and the fields. Thus, the time and energy dedicated to firewood collection is likely to increase even more in the near future.

A long-term solution is the establishment of woodlots. However, the implementation of such a solution would have to deal with the problem land shortage and the need for identifying trees which can intercrop with food and other cash crops. Farmers say that they cannot intercrop eucalyptus with matoke and beans, and they are reluctant to plant traditional trees as they grow very slowly.

The establishment of tree nurseries and the concept of woodlots is to a large extent an educational issue. Women recognize the problem of fuel, but the concept of growing trees, which cannot be used for decades, is alien to many of them. On the other hand, it is feasible that households which



plant trees can use them as a source of income in the future as people may have to start buying wood. Few people in the rural areas have fully realized this.

Women mentioned the possibilities of cooking with gas or electricity. There is no reliable supply of butane gas in the rural areas of Uganda, and the majority of villages do not have electricity. Moreover, in towns where there is electricity, most households do not have electric burners. They mainly use charcoal, which again contributes to deforestation. The introduction of improved cooking stoves which use less firewood, or an alternative energy source, would also reduce the transport burden of women.

### *Grinding mills*

Many of the women's groups within Mbale and Tororo district are attempting to acquire grinding mills. They are motivated by the fact that easy access to a mill saves time and effort and allows for more frequent grinding which improves the taste and quality of the flour.

One village project visited in Bayengo in Busia subdistrict, had a grinding mill but no one in the village knew how to operate the diesel generator. Training of grinding mill operators would improve the reliability of the service the mills offer to the villages.

The cost of buying a grinding mill is very high (a figure of Ush.3-4 million was mentioned). This makes it difficult for women's groups to aspire to a grinding mill as their income-generating and time-saving project. The implementation of appropriate credit schemes might make it more feasible for women to acquire a mill. It is, however, important that the women are trained in how to operate the mill both technically and financially in order to make it a sustainable project.

### *Health facilities*

In all village-level discussions the issue of access to health facilities was brought up as one of the major transport concerns. Improved access to clinics has very high priority for rural women. The most common cause of death among women in Uganda is related to complications during childbirth. Women are also responsible for taking care of sick family members, and they are sometimes confronted with the dilemma of not being able to get a patient to a clinic or hospital due to the lack of vehicles or poor roads.

Very few villages have their own dispensary or clinic. Most people have to travel to a sub-county headquarters to obtain basic health services. In some villages there are private clinics, but they are expensive compared to government clinics which offer free services.

The shortage of health care staff and premises could be addressed by mobile clinics, but there are, as yet, none operating in the area.

### *Summary*

The use of an IMT could reduce the transport burden on women directly by reducing time and effort dedicated to transport, and indirectly by transferring the transport responsibilities to men. A reduction of women's transport tasks can also be achieved through non-transport interventions which locate economic and social facilities closer to rural homes. Were such an intervention to take

place most women would choose to spend the "extra" time at home and in women's groups to enhance social welfare.

There are a number of time- and effort-saving devices currently in use in the rural areas in eastern Uganda. The problem is that IMT are rarely used for women's transport activities, and women have limited access to IMT because of cultural, educational, and economic constraints. Another problem is that improvements in the transport situation through the provision of facilities is rarely lasting or significant.

Women are very eager for changes and are willing and prepared to work to improve their situation. They need guidance and support from community development workers in order to overcome existing obstacles and constraints. In terms of reducing the transport burden on women, the challenge lies in working with local women's groups to identify the most appropriate intervention for each area, and to assist them in bringing about sustainable improvements.

## ***5. Potential for Increasing Bicycle Usage and Alleviating the Transport Burden of Women***

This case study investigates the current and potential role of bicycles both for personal travel and movement of goods, and the commercial role of bicycles in providing transport services in eastern Uganda. Its particular focus is on the potential for greater use of bicycles by women and for women's activities, and on women's priorities for interventions to improve mobility and access.

The key findings are presented in the section below. The subsequent section deals with ways to increase bicycle usage, the one following that with additional ways of improving local transport in eastern Uganda, and the last section with aspects of concern regarding projects aiming to involve rural women.

### ***5.1 Key Findings and Issues***

#### ***Bicycle Usage***

Traffic counts in Mbale and Tororo district show that bicycles are the largest vehicle category on all roads. The VLTTS indicates that the poorer the road conditions and the steeper the terrain, the smaller the proportion of external trips households do by bicycle. However, the VLTTS traffic counts indicate that the poorer the road infrastructure, the higher the proportion of bicycles employed for commercial load-carrying purposes. Most of the bicycles in these areas were operated by rural traders. Village people can sell their surplus crops to these bicycle traders. Thus, through the existence of bicycle transport services, markets are extended to a large proportion of the rural population. Another somewhat more urban type of transport service is provided by boda-boda bicycles which can be hired for both personal and goods transport.

Bicycles are mainly used by men for external travel purposes - most commonly for going to markets or for running errands. Bicycle usage positively impacts on the well-being of a household by facilitating access to economic and social services such as markets and health clinics. If bicycles were also used for internal transport activities, their potential impact on household welfare would be greater since the time and effort spent on these activities would be reduced.

In all cases where bicycles or other intermediate means of transport were employed for women's transport activities, they were used by men. The increased availability of bicycles and other IMT could facilitate the transfer of transport responsibilities from women to men, and thereby alleviate some of the transport burden placed on women.

### ***Bicycles and Rural Women***

Currently, very few rural women ride bicycles for the following reasons:

- (i) Culturally, this may not be accepted. In certain societies, women who ride bicycles are perceived "to behave like men." Husbands in particular may feel that the extra mobility a woman would get from having a bicycle could make women "too liberated," and they would no longer know where their wives were or what they were doing.
- (ii) Bicycles are generally used for travel outside the village while women's transport responsibilities take place in and around the village.
- (iii) The existing load-carrying devices on bicycles make it difficult to transport water, firewood and crops over poor footpaths.
- (iv) Bicycles are generally considered a man's possession, and men are reluctant to lend them out to women. The men fear that the bicycle can break and result in expensive repairs if used for women's transport activities. It is more likely that men lend out their bicycles for the same activities for which they themselves use the bicycles.
- (v) Women have limited access to money. Men are generally responsible for monetary transactions and for decisions involving monetary outlays.

However, women are anxious to improve their situation and, in the flatter areas of eastern Uganda, they could use bicycles to alleviate their transport burden.

### ***5.2 Ways to Encourage Greater Use of Bicycles by Men and Women***

Increased bicycle usage will enhance mobility among rural people by providing both a means of personal and goods transport to bicycle owners, and an extension of transport services. A greater use of bicycles among both men and women in Eastern Uganda would increase transport efficiency and facilitate access to social and economic services. Bicycle usage could be encouraged through:

- (i) Cultural change;
- (ii) Technical improvements;
- (iii) Credit programs; and
- (iv) Improvements of roads and footpaths.

#### ***Cultural Change***

In areas where it is not considered proper for women to ride bicycles, change would have to be introduced slowly and cautiously in order not to offend traditional beliefs. Meetings and seminars need to be held with village leaders and with local men and women in order to gain support for a project.

Educated women such as teachers and nurses could act as initial agents for change. However, one should be careful not to propagate the idea of bicycles being vehicles exclusively for women with higher status. Therefore, a conscious effort should be made to involve more typical village women.

It is also possible that a modified ladies' bicycle (equipped with a carrying device designed for the transport of water, firewood and crops) could help to overcome cultural constraints which attribute masculinity to women who ride bicycles.

### ***Technical Improvements***

A previous study<sup>6</sup> has identified three priorities for the technical adaptation of bicycles to improve load-carrying capacity.

- (i) Strengthening the rear wheels to reduce the frequency of breakage. Since bicycles are employed in eastern Uganda to carry heavy loads, damage to spokes and rims are common occurrences.
- (ii) A simple 2-speed gearing system to facilitate rural load carrying. The single gear-ratio on existing bicycles in eastern Uganda is rather high, and a lower fitted second gear would make transport on poor roads and tracks easier.
- (ii) A 2-wheeled cycle trailer to enable, in the flatter areas, bulkier and heavier loads to be transported. Its use would be restricted not only by terrain and road conditions, but also by market size. In order to justify the investment in the trailer, the owner would have to generate a higher financial return.

It would also be desirable to:

- (i) Incorporate local needs and priorities into the designs produced by domestic bicycle manufacturers, such as at the planned bicycle factory at Banda outside Kampala (a private Ugandan-Chinese joint venture). For example, all bicycles in eastern Uganda are currently fitted with wide rear carrying racks manufactured by local blacksmiths. If new bicycles were equipped with these or similar racks already at the factory, the cost to the buyer is likely to be lower as well as resulting in racks of better quality and design.
- (ii) Extend the load-carrying capacity of bicycles to allow for easier transport of water, firewood, and crops. This would result in an increase in the potential use of bicycles for women's transport activities;
- (iii) Introduce a sturdy ladies' bicycle of a smaller size to help overcome the difficulties experienced by women of relatively small stature in keeping their balance on men's bicycles. Women riding ladies' bicycles may also face fewer cultural constraints.

### ***Credit Programs***

---

<sup>6</sup> Barwell, Ian. 1991. Op. cit.

Credit is a factor that was mentioned in every discussion throughout the visit. The interest in bicycles is widespread in the flat areas of eastern Uganda, but potential buyers face major difficulties in accumulating sufficient cash to purchase a bicycle.

The affordability of a bicycle for the rural household depends on the household's income level, and on its ability to save. The real income of rural households is in steady decline, since inflation increases at a higher rate than crop prices. As a result, the rural household's ability to save is decreasing as a larger proportion of income is being spent on daily necessities. Furthermore, bicycles are currently imported, and due to the depreciating Ugandan shilling, bicycle prices are increasing. The bicycle price/income ratio is thus widening, which negatively affects the affordability of a bicycle for rural people.

Most rural bicycle owners have acquired their bicycles in conjunction with a large sale of cash crops, and few of them have saved for the purchase over longer periods of time. The provision of credit to households with modest earnings ought, therefore, to allow for the credit period to extend over two or three harvest periods, as income flow is related to large sales of crops.

The availability of credit for bicycle purchases could also encourage investment in bicycle-related business activities, such as rural trading and boda-boda. The credit decision (and assessment of loan repayment) would be made on the basis of the future income-generating capacity of the bicycle activity. Bicycle transport operators would thus pay back their loans with the income generated directly by their investment.

Discussions were held with the General Manager of Uganda Women's Finance and Credit Trust Ltd. (UWFCT) in Kampala and with the regional coordinator for the Eastern Province in Mbale about the design and implementation of a credit scheme for the purchase of bicycles or other IMT targeted for rural women. UWFCT has an organization for the training of women's groups who wish to undertake income-generating activities. Before an individual or a women's group is granted a loan, it has to open a bank account and learn the concept of saving.

UWFCT recognizes transport as a major constraint on women's time and also on the success of many income-generating projects. It would therefore consider cooperating with a transport project by lending its expertise for the training components as well as for the technical aspects of the credit scheme.

The general manager of UWFCT suggested that the credit for the purchase of bicycles should be granted to women's groups, and that the groups should be responsible for the repayments of individual members. The loans could work as revolving funds both within the individual women's group and within the UWFCT. Women's groups could, for example, be allowed to borrow a multiple of their deposits, or alternatively, only qualify for loans after they have reached a pre-established minimum level of savings.

Many of the institutional representatives and key informants interviewed emphasized the advantage of lending to groups rather than to individuals. Women are very committed to their groups, and would not wish to damage their reputation with the group. Thus, the "policing" of the loans to individuals would be taken care of by each group. UWFCT would be responsible for training, disbursement and the receipt of interest payments and principal of the loan.

Although the overall structuring and monitoring of credit schemes could be carried out through women's groups, their potential success depends also on how the sensitive issue of interest payments is handled. Farmers find it difficult to understand why commercial interest rates are 40-50 percent. UWFCT is a self-sustaining entity and therefore has to charge commission for its services and commercial interest rates for its loans. If a project wishes to lend money at interest rates below market rates, UWFCT would still be able to collaborate on the credit scheme (although the difference between the market rate and the subsidized rate would have to be covered by project funds). However, once the project ended, it would no longer be a sustainable scheme. Either market interest rates would have to be charged, or the funds would be depleted over time.

There are many international donor agencies interested in cooperating with UWFCT, because it has been successful in reaching women. There is a risk, however, that it may become overburdened or grow too fast, and this would negatively influence its managerial capacity and implementation skills. The General Manager did not think that this would happen, although she agreed that UWFCT is being approached by many organizations.

Overall, there are many projects in Uganda which are considering the use of revolving funds. Before a credit scheme for bicycles is designed, the successes, failures, and problems of these credit schemes ought to be studied.

### ***Improvements of Roads and Footpaths***

The improvement of feeder roads and footpaths would have a beneficial effect on the load-carrying capacity of bicycles. Considering the scarce financial resources at the district level, feeder road rehabilitation is likely to be given priority while improvements to footpaths and tracks will essentially have to be carried out on a self-help basis. Such a project would have to rely on a participatory approach for implementation. Its degree of effectiveness would, to a large extent, depend upon the priorities and perceived needs of the rural communities, and on the technical and social skills of the project staff.

## **5.3 *Alternative Ways to Improve the Local Transport System***

### ***Intermediate Means of Transport***

Different types of IMT would be suitable, depending on the transport task, household income, topography, road and track standards, farming systems, culture and traditions, local resources, and technical capabilities of the area. In addition to bicycles, wheelbarrows and handcarts, oxen, cows, and donkeys were identified as IMT whose current use could be extended. These IMT are within the technical capabilities of rural communities, and through credit schemes, could become financially viable for households in eastern Uganda.

### ***Non-Transport Interventions***

Transport efficiency, in terms of the weight of the load related to the time spent on transport, can also be enhanced through the provision of facilities such as water supply systems and grinding mills. In many areas of eastern Uganda, women would prefer a closer water source or a grinding

mill rather than an IMT. The provision of a closer facility would clearly reduce the transport element per unit carried of water and grains, although there is still likely to be a transport component involved in these activities. On occasion facilities also break down (and their repair may be delayed), and as a result people are forced back into their old transportation modes in order to get water and flour.

The reduced consumption of and reliance on firewood would also save time and energy spent on to transport. The introduction of wood stoves with low fuel consumption or of alternative energy sources, such as solar power or methane gas, could alleviate some of the burden. The planting of woodlots would prevent further deforestation, and, in the long run, could help eliminate the need to travel large distances to obtain wood.

Currently, there are few health clinics in the rural areas of eastern Uganda. As a result, a great deal of effort is spent transporting sick people to the nearest health facility. The addition of more stationary clinics, or alternatively mobile clinics, could alleviate this transport burden. However, in order for this to be a feasible alternative, higher salaries, among other things, must be offered to medical professionals in order to give them incentives to continue practicing.

#### **5.4    *Ways to Reach the Rural Women***

In order to ensure women's participation in development programs there has generally to be a specific women's component which addresses their situation and consequent involvement. In many traditional societies, as well as in eastern Uganda, women do not feel comfortable voicing their opinions, or do not speak freely in the presence of men. In these situations, a typical village meeting with both men and women becomes fruitless in its attempt to seek a dialogue with women to learn more about their situation and priorities. It is, however, important that men are informed about the meetings that the women attend in order to eliminate unnecessary suspicion. Men could also, on occasion, be invited to attend. The problem here is if women become too intimidated to speak up, or the men "take over" by answering on behalf of the women.

In villages where there already are established women's organizations, it is advisable to work through these groups and avoid setting up parallel structures. Currently, in Mbale district there are about 500 women's organizations registered with the Community Development Office. However, only a small number of them are active. Most of the groups are open to all women in the village or in the parish. Some of the more active women's groups are, however, project specific, such as women's cooperatives or projects directed to a certain segment of the female population (as is the case with religious groups).

The government's Minister for Women in Development, Culture, and Youth, indicated that in the near future women's councils will be formed in villages as a complementary women's forum to the Resistance Committees. In RCs there has to be one women's representative at all levels. Women are also eligible for other posts on the RCs, even if in reality, the only woman commonly on the RC is the obligatory women's representative. In addition to the obligatory women's delegate, in 1989 only 3 of the 160 representatives from the various districts were women.<sup>7</sup> The need for a special structure

---

<sup>7</sup> Hannan Andersson, Carolyn. 1985. Op. cit.



where women can express and interchange opinions freely is the main reason for establishing the women's councils. When a project approaches a village for the first time, these women's councils would be a natural first contact, an important point of reference, and a source of information.

When a project or a visitor wishes to hold a meeting not only with women leaders but also with ordinary village women, it is important to announce the visit a few days in advance in order for the message not to be restricted to the most well-connected women. It is generally more difficult to communicate with average village women than with the more articulate, educated women leaders. The typical village woman is likely to speak a local language, and she may not be used to verbalizing her thoughts and ideas. This means that the process will be considerably slower - requiring more visits and more logistic work. However, it is important to follow a slower pace in order to understand the situation of the majority of the rural women, and to avoid the perception that a project is "elitist."

The meeting should preferably be held at a time when it least interferes with the women's daily schedule in order to minimize obstruction and potential criticism from husbands. Women generally go to the fields in the mornings, after the older children have gone off to school. If meetings are called between 10 o'clock to 1 o'clock, the attendance is likely to be very poor. This is not because women are not interested but because they simply do not have the time to attend. If they were to come to the meeting they would not be able to go to the fields that day. Hence, they must be informed at least two days in advance in order for them to have brought sufficient food home the previous day.

When the women go home from the fields, they have to prepare a meal for their families. If the meeting is called at this time, the women are likely to be criticized by their husbands for behaving irresponsibly by giving priority to women's "get-togethers" and leaving the children hungry. An early notice of the meeting will enable the women to plan ahead and make arrangements to avoid this situation. In eastern Uganda, the best time for women to attend meetings was between 2 p.m. and 3 p.m. Women frequently mentioned that when they go to meetings they rarely know in advance what the subject of the meetings is likely to be. It would be easier for women to get permission from their husbands to attend meetings if they could account for the purpose and the character of the meeting. Organizations may send out detailed information about meetings to village officials, but it is likely that these officials only pass on small parts of the information to the households.

In addition, when the women return home from meetings, husbands tend to expect them to bring some type of present back from the meeting (ignoring the fact that the men themselves rarely bring anything from their meetings). Many of the groups visited mentioned this issue. There seems to have been in the past a project or an organization which offered "presents" at meetings, which may have given rise to these expectations. Husbands may ridicule their wives, or forbid them from going to more meetings simply because they did not come back with "something."

This is a dilemma which partially stems from the short-run and the long-run perspective on the returns on the time invested in meetings. In the short run, a meeting may be of a fact-finding or informative nature and therefore appears to bring no return. In the long run, gatherings may give rise to activities or projects for the social and/or economic benefit of the communities. The women did, however, understand the problems related to people only attending meetings motivated by the belief that "presents" will be given out, and that this practice and attitude would undermine any

project lacking outside funding. It is also important that project staff clearly communicate the scope and potential activities of their projects. They also need to give the communities a realistic time frame. Life in the rural areas is very hard and the possibility of an improvement is greeted with enthusiasm and hope. People frequently complained about having been promised project activities or inputs which never materialized. They were left uninformed and eventually disillusioned. This situation could be prevented by maintaining an open and clear dialogue between visiting organizations, projects and the local communities.

*Notes on discussion checklist:*

Design of Questionnaire:

1. The questionnaire is intended to serve as a base of discussion rather than a script to be read out or followed strictly. It is desirable to aim to create a comfortable feeling of exchange rather than questioning in order for the women to speak their mind.
2. The order of the questions may appear illogical or scattered, but the questionnaire has purposely been designed to encourage women to give their own opinion and reveal their preferences and not try to "second guess" what a "potential project" may be interested in. One specific objective of the case study was women and bicycles. Questions focusing directly on bicycles have been assigned to the latter part of the questionnaire in order to avoid the impression that the visitors have a preference for this means of transport.
3. Question 10 is the same as Q.4. The reason for this is to get a feel for if women's opinions are firm in the sense that they have thought about the problem and its solution thoroughly already prior to this meeting or if their preferences have changed/matured/become more realistic during the course of the discussion.
4. Question 12 c. has been included to get insight into what area women give priority to if and when they have money.
5. All of the questions need not necessarily be asked on every occasion. Sometimes prior information or comments render a question excessive.
6. Depending on the answers, some of the questions may on occasion require further investigation. Every discussion should be permitted to be different and to be conducted according to the circumstances in the surrounding area.

*Checklist for Women's Group Discussion*

Village:

Parish:

Sub-county:

County:

No. of women present:

Age range:

Note: The discussion should be preceded by a brief introduction explaining that this is a fact finding mission and not a project. The purpose of the visit is to find out what women's transport situation is like, what their priorities are, and how projects should be organized in order to assure women's participation.

1. a. Which is your most time consuming/effort involving task?  
  
Transport task?  
How often?  
Travel time o/w?
- b. How could it be alleviated?
- c. What would you do with the time (and energy) you save if this transport element were reduced/you did not have to perform the transport task?
2. a. Do you use/hire any IMT to reduce transport burdens? Give example.
  - i) What do you transport?
  - ii) How often?
  - iii) How long does it take o/w?/How far is it?
- b. Do you use/hire any bicycle transport device?
  - i) Purpose -- Personal movement or goods?
  - ii) How often?
  - iii) Where to?
  - iv) How much does it cost?
3. a. What would the benefits be from improved roads/footpath network?
- b. Would you participate on a self help basis/paid basis?
- c. Would men mind if women work on roads?

4. What are your priorities for improvements in the transport system? (IMT/roads/ tracks/non-transport interventions?)
5.
  - a. Do you own a bicycle?
  - b. Is there any bicycle in your household?
    - i) Who uses it?
    - ii) Purpose?
    - iii) How often?
    - iv) Where to?
    - v) How long does it take?/How far is it?
    - vi) Do you rent it out?
      - \* Charge
      - \* To whom
      - \* Purpose
      - \* Frequency
6. Can you ride a bicycle?
  - i) When did you last ride?
  - ii) Where did you learn how?
  - iii) Why do not more women ride bicycles?
  - iv) How could use of bicycles be encouraged?
  - v) What do men think of women who ride bicycles?
  - vi) What do women think of women who ride bicycles?
7.
  - a. Do you know any woman who has/rides a bicycle?
    - i) Purpose?
    - ii) How often?
    - iii) Where to?
    - iv) How long does it take?/How far is it?
    - v) Age of woman?
    - vi) Age of bicycle?
    - vii) How long has she had the bicycle?
    - viii) How did she acquire it?
    - xi) What type of bicycle is it?
    - x) Does her husband have a bicycle/another vehicle?
      - \* Do men let women use their vehicles?
  - b. Do you know of any household where the woman rides but not the man?
8.
  - a. If you had a bicycle what would you use it for?

- i) How often?
    - ii) How far?
  - b. Would you let other people use it?
  - c. Would you rent it out/?engage in transport services?
  - d. Would/could you use it for water/firewood/crop from field transport?
    - i) Are conditions of footpaths a constraint to extended usage?
      - \* Could they be improved?
  - e. Would there be a risk that men/sons would monopolize the bicycle for their travel needs if there were only one in the household?
    - i) Would this risk exist for other IMT?
9. Possibility of men taking over transport responsibilities/burden if IMT available?
10. Which transport problems would you like to see addressed first? (IMT/roads/tracks/non-transport interventions?)
11. How should a project which wishes to address your priority go about doing it in order to assure:
- i) women's participation?
  - ii) women's benefit?
  - iii) sustainability?
12. a. How much does a bicycle cost?
- b. Why do you not have a bicycle?
- c. If you had the above mentioned amount of money, what would you buy? (clothing, a mattress, a radio, a cow, a sewing machine (together with someone else), an IMT?)
- d. If credit were available for bicycle purchases, would you buy?
  - i) How frequent should instalments be?  
(monthly/bimonthly/quarterly/twice a year)
  - ii) How much could you pay per instalment?

### *Supplementary References*

Airey, Anthony. 1991. "Mbale District Village Level Transport and Travel Survey." Rural Transport and Travel Project, Sub-Saharan Africa Transport Policy Program (SSATP). Geneva: ILO.

Airey, Anthony. 1991. *Report on the Project Preparation Study on Labor Availability, Economic Feasibility and Women's Involvement*. Uganda Transport Project Feeder Roads Component. Geneva: ILO.

Barwell, Ian. 1991. *Report of Project Preparation Study Consultant on Promotion of Bicycle Use and Upgrading of Private Repair Workshops*. Uganda Transport Project. Feeder Roads Component. Geneva: ILO.

Barwell, Ian and Christina Malmberg Calvo. 1989. *The Transport Demands of Rural Households: Findings from a Village-level Travel Survey*. Geneva: ILO.

Government of Uganda. 1991. *Uganda Population and Housing Census*. Entebbe.

Hannan-Andersson, Carolyn. 1985. *Domestic Water Supply Improvements in Tanzania: Impact on Rural Women*. Dar-es-Salaam: SIDA.

Hermele, Kenneth. 1989. *Landanalys*. Uganda: SIDA