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# The Transport Burden of Rural Women in Amuro District in Kogi State, Nigeria.

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## Abstract.

*Women generally play a crucial role in the socio-economic survival and sustenance of their families. Apart from getting involved in rural agricultural production and reproductive activities, women perform household tasks such as transporting water, and firewood as well as ensuring that their children get to school and health centers whenever they are sick. Most of these functions are carried out on foot especially in the rural areas. The study of women activity patterns in Amuro District of Kogi State shows that they are mostly responsible for the transportation of water, firewood and agricultural produce in the district. In all probability the time and efforts used on transport activities would have a devastating impact on the welfare of women. It is therefore imperative to put in place national rural transport policy (NRTP) that is sensitive to the transport burden of rural women in Nigeria.*

Keywords: Rural; transport; women; trip; burden.

## 1.0 Introduction

The impact of adequate provision of rural transport in the developmental process of any regional economy has long been recognized in the literature (Antle, 1983, Ahmed and Hossain, 1990; Levy, 1996 and Lebo, 2001). Besides rural transport providing for the continuous flows of traffic - people, goods and services through space, rural transportation stimulates and by extension sustains the spatial interaction and organization of human activities in rural areas. Rural transport thus acts as a catalyst for the development of rural areas by breaking down the yoke of

isolation imposed on such areas as a result of their remoteness from centers of faster economic development.

The nature, and pattern as well as the structure of movements of rural dwellers in and out of their immediate environment are generally influenced by a variety of factors that range from simple subsistence factors to socio-economic and political characteristics of the individuals involved. However, what constitutes the greatest transport problem of rural households generally occurs between rural villages and their surrounding forests areas (Barwell, 1993; Cornerley and Schroeder, 1995). Majority of these transport activities involving women usually takes such women to brooks, firewood collection points, health centers and farmlands. A neglected aspect of rural transport characteristics in this part of the world is the proportion of women who are actually part of rural traffic either within or between rural areas and their surrounding urban centers. For example, women are well known for the transportation of a variety of farm inputs as well as harvested farm produce to various villages especially on periodic market days. Women are also involved in fetching water and in the collection of firewood for domestic purposes. In most cases women are also responsible for taking the children to school and clinics for medical attention whenever they are sick. And during and after pregnancy, the women pay regular visits to maternity centers for both ante and post natal care.

Studies carried out in various parts of Africa have shown that the contributions of women population to rural transport related problems range between 75% and 85% of the total transport burden of rural population ( Goeff and Ali-Nejadford, 2000, Fernando and Porter, 2002). For instance, women are known to spend approximately three times on transport related activities than their male counterparts. (World Bank, 1999 and ADB, 2002).

A critical survey of available literature on women activities in Nigeria, however, shows that very little studies have been undertaken on the transport characteristics of rural women and the mobility difficulties, which they face particularly in a predominantly rural environment. This neglect is unwarranted given the fact that there are more women in rural areas than in urban centers. These women have been observed to be responsible for conveying the bulk of farm produce and other goods and services either within or between rural areas and urban

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centers especially on rural market days. The ~~aim~~ of this paper, therefore, is to analyze the mobility characteristics of rural women and the various means of rural transport available to them for overcoming the friction of distance between their homes and some rural activity nodes such as farmlands, water and firewood collection points, as well as health care delivery centres. Even though, farm-to-farm and home-to-home trips do occur and very important too, the shortness of such trips within many rural settlements makes their inclusion in this type of study unviable (Ogundana 1973). The rest of the paper is divided into conceptual issues in rural transport burden; study area; methodology; findings; and conclusion.

### 2.0 Conceptualization of Rural Transport Burden

The term transport burden as used in this study refers to series of trips made by an individual per day in order to meet his or her social, economic or political needs which are generally provided beyond ones settlement or immediate environment. Transport or mobility subsequently becomes a burden when an individual spends long hours in the course of fulfilling these socio-economic and political functions. These transport-related burdens may be measured in terms of the length of time (travel time) and the effort (amount of load carried) put into use in order to achieve a particular mobility task. In this study, time refers to time expended by women to cover various distances to socio-economic facilities, while effort concerns the amount of loads carried by such women.

There is no specific reference in the literature (Urasa, 1990; Doran, 1990:1996; Calvo 1994a, 1994b; Fernando and Porter, 2002) as to when transport actually becomes a burden to any individual, but any transport-related activity that consumes time and prevents such persons from engaging in any other gainful and productive activities may be regarded as a burden. For example, if a woman during day time must travel on foot for about 5km to a farmland, 2km to a clinic, 3km to fetch water and 3km to a firewood collection point and on each occasion carries a load equivalent to between 20-30kg, it is reasonable to assume that these movements would not only constitute a transport burden but could also seriously impair the health of persons undertaking such trips. Ellis (1997) has elaborated on this feature of rural transport in parts of Africa.

Women's contribution to the socio-economic well being of members of their families in Africa is well documented in the literature (Mba, 1995). According to a World Bank report (1998) women perform close to 90% of processing of food crops; 80% of hoeing and weeding; 80% of efforts relating to food storage and transportation from farm to village, as well as 60% of the harvesting and marketing work.

African women are therefore faced daily with enormous transport burdens. Doran (1996) has argued that African women are responsible for about 90% of domestic transportation of water and firewood from where these are provided into the villages. According to her, they similarly visit grinding mills sometimes located at considerable distances to their settlements. For instance, the average time spent on transportation alone by women is approximately 5 hours per day in Makete (Tanzania) and 8.4 hours per day in Ghana. Dennis (1998) also showed that in Makete, the average transportation time used for the collection of water and firewood is not only 41% of the total transport time, but that more than 80% of these transport activities are generally undertaken on foot. Goeff (1998) has noted that African women on the average carry the equivalent of 20kg of load over a distance of 10km per day. Another burden that is generally not reckoned with is the fact that at times women in addition carry babies on their backs while undertaking these other transport-related tasks.

In Nigeria, certain attributes are common to both rural transport and rural women. One, there are more of rural women than either rural men or urban women in Nigeria (Nigeria Population Census, 1991). Two, because of the agrarian nature of the rural economy, rural women are generally poor (Olatunbosun 1976). On the other hand, there are more of rural route networks per unit area. (Ikporukpo, 1986). The quality of these rural roads is worse than either intra or inter urban linkages. (Aloba 1986; Johnston 1989) Thus, the advocates of rapid rural change (Johnston 1985) have persistently been calling for a substantial improvement on rural transport in order to stimulate socio-economic development in rural areas.

Most rural women are farmers. Besides this, many of them are also involved in petty trading--selling sugar, milk, tea sachets, cigarettes and other food condiments like onion, pepper and melon. A number of these women either once or twice a week attend the surrounding rural markets. These types of rural movements

take place all over rural Nigeria and substantial studies have been carried out on them even though the share of women in the entire market structure has not been made very explicit (Mba, 1995).

The movement behaviors of rural women for farming activities are not only seasonal but also vary within the same season. For instance, women make more farm trips during planting and harvesting periods than any other periods during the farming calendar. The frequency of trips made by women shows that the distances traversed are generally short and mostly made on foot because of lack of organized rural public transport system. (Ojo, 1970)

Since most rural areas lack portable water, many rural communities depend on streams; with such streams sometimes located several kilometers away. The distance of the streams from the villages would determine the number of trips that the women would make to such brooks. Furthermore, trips may also be influenced by the size of water pots and the number of people in each household drinking from the same pot of water. Because of the perennial nature of many rural streams, women and children spend a considerable length of time looking for water during the dry months.

From the foregoing, it can be hypothesized that rural women would expend much of their energy and time in trip making to farms, water and firewood points and maternity centers. For instance, in a study of rural transport in Burkina Fasso, Uganda and Zambia, Barwell (1996) has observed that more than 65% of time available to women is spent on transport. In Burkina Fasso, in particular, he noted that adult females spend up to 2.2 hours per day looking for water and firewood. An equal number of hours are used to and from grinding mills. Similarly, Barwell (1996) argued that the travel time to these activities has subsequently increased as a result of shifting cultivation which in turn has led to deforestation and scarcity of firewood near rural villages (World Bank 2000)..

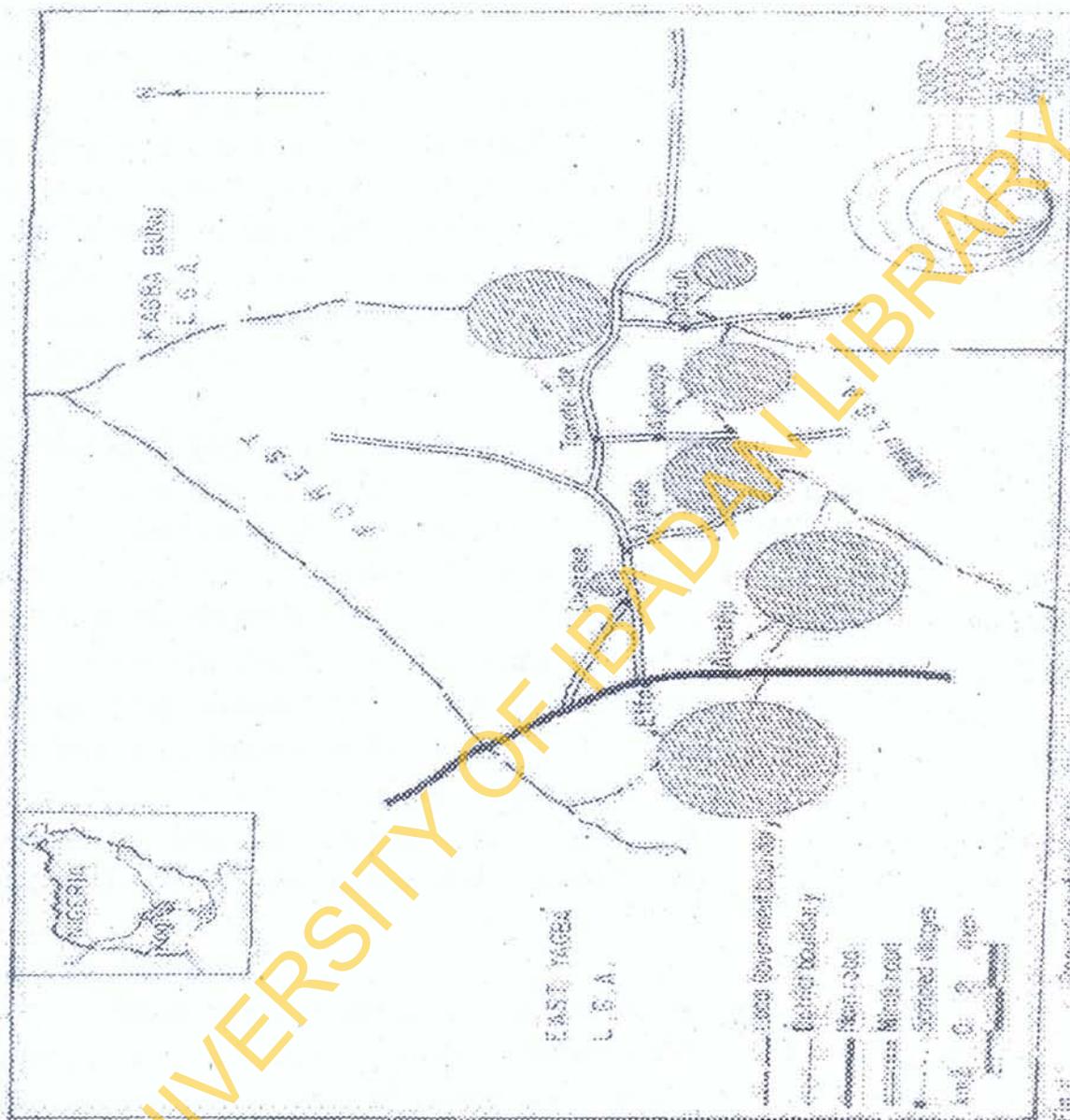
Transport is thus a powerful force and an important element in the equation of the mobility pattern of rural women. The efficiency or the productive capabilities of rural women can to a large degree be measured in terms of time saved by using alternative means of transportation other than foot in a rural environment. For instance; the introduction of a specialized type of bicycle, which takes cognizance of gender differences, would reduce some of the constraints imposed on women by

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poor rural transportation. . Even if women would still depend on firewood as their chief source of fuel more firewood and water would be conveyed using an improved mode of transportation.

### 3.0 The Study Area

The present Amuro District in Mopamuro Local Government Area of Kogi State defines the area of study. The District covers approximately 261 square kilometers. It is the smallest political unit in the local government area. The District consists of seven small villages namely, Effe, Aiyeteju, Takete-Ide, Aiyedayo, Aiyede, Orokere and Otafun. (See Figure 1). The total population of these villages according to the 1991 population census was 10,542. And at an annual growth rate of 3%, the population projection for the whole District was estimated at 11,866 persons in 1996.



Like all rural areas in Nigeria, the District has a very poor road network. Aiyeteju-Effo road is the only tarred road in the whole District. Besides the poorly developed road networks, there are numerous narrow footpaths linking each of the villages to its surrounding farmlands. A map analysis of the route networks in the District shows that footpaths constitute about 75% of the total route network. The

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total length of inter-village road network is only 94.8 kilometers, while that of footpaths is 261.2 kilometers.

The main occupation of majority of the people living in the study area is farming. The important food and cash crops grown in the District are yams, cassava, maize, groundnuts, beans, guinea-corn, cocoa, coffee, orange and kola nuts. Apart from farming, a large percentage of the women are also involved in petty trading, garri processing (fried cassava) and traditional soap making. Many of these products are conspicuous articles of trade in both local and urban markets located in and around the District.

### 4.0 Methodology

Structured questionnaires were designed for the purpose of data collection of the socio-economic as well as the mobility characteristics of sampled women in each of the seven villages. The women were asked to provide answers to simple questions on distance, time; mode of transport as well as the frequency to farmlands; water, firewood and health services; and whether such services are located within or outside their villages. The weight of loads carried by the sampled population were also estimated and recorded by the two field assistants

On the whole, 500 questionnaires were administered. Out of the total number of returned questionnaires, only 430 were analyzable. The data were analyzed using simple tables of percentages and other descriptive statistics.

### 5.0 The Analysis

The analysis of the data is carried out in two parts. The first part analyzes the demographic and socio-economic characteristics of the sampled women in the study area. Part two is a detailed examination of the transport characteristics of the rural dwellers particularly in their procurement of water, firewood, and health services.

#### 5.1 Demographic and Socio-Economic Characteristics of Women in the Study Area.

The age distribution of women in the study area showed that 9.6% of them are below 20 years of age, while 24.3% are between ages 21 and 40 years. Those between ages 41 and 60 years are 48.7%. Only 8.2% of the sampled women are

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above 60 years of age. This age structure shows that a large number of the women found living in the seven villages are elderly people. In addition, over 65% of the women are married and still live with their husbands. Another 3.5% of them are divorcees. Only 28% of the women are widows. The large population of widows may be interpreted to mean that a substantial percentage of the women would probably be depending for themselves and their children. A further analysis of the family structure of the sampled population shows that about 70% of the women have more than four children. Of the seven villages, Orokere has the highest percentage of families with more than four children. Aiyeteju has the lowest. The large family size may suggest that the children are likely to offer some form of assistance to their mothers especially at home. Field investigation however shows that both culture and tradition act as a serious constraint to the level of assistance which a male child may offer his parents at home. For instance, the male child is not expected to carry loads on his head from the farm. Therefore, tradition has in a way increased the transport burden of women in the study area.

With respect to literacy level, more than 70% of the women have no formal education. The few of them who went to school did not go beyond school certificate level. Most of the rural women without western education live in the villages of Aiyedayo, Otafun and Orokere.

The level of poverty among the women in the study area is very high. Their pattern of monthly income shows that 45% of the women earn less than ₦1000, while 28% earn between ₦ 1001- ₦ 2000. Another 17% and 6.3% earn between ₦ 2001- ₦ 3000 and ₦ 3001- ₦ 4000 respectively. Only 4.1% earn above ₦ 4000 per month. This implies that 96% of the women are living below poverty line.

A further analysis shows that inadequate income may have affected both the dietary and protein intake of the sampled women. For instance, over 80% of the women do not eat three square meals a day. Using meat or fish consumption as a measure of protein intake, the analysis shows that 52%, 38.4%, 8.5% and 1% of the women eat meat/fish thrice a week, daily, twice a day and thrice a day respectively.

## 5.2 Transport Characteristics of Women in the Study Area.

### 5.2.1 Trips to Sources of Water

The field survey shows that women actively participated in both domestic and farming activities in the study area. Besides fetching of water and firewood, women are involved in the movement of farming inputs and harvested crops to and from farm sites. Figure 2 shows the percentage of women sampled in each village and the volume of water carried by them per trip. Because the women were found carrying either open containers, earth pots or jerry cans, only estimates of the volume of water carried by them were made and subsequently categorized into three, namely, 15 litres of water or less, between 16 and 25 litres of water, and 25 litres of water or more.

At Effo village, 16.2%, 70.6% and 13.2% carry 15, 16-25 and 25 litres of water per trip respectively. The percentage of persons who carry between 16 and 25 litres of water is highest in both Aiyeteju and Orokere villages. In the latter only one woman indicated that she makes regular trips to water collection points daily. The reason for the large percentage of women going out to look for water outside Effo and Aiyeteju villages is not quite clear. Of all the seven villages under investigation only these two villages have either pipe borne water or bore holes. In other words, under normal circumstances the inhabitants of both villages should be among the least persons in the District to look for water for domestic purposes outside their immediate environment. However, field investigation revealed that most of the pipes and bore holes had broken down completely in the two villages hence the people living there had no other choice but to look for water elsewhere. It may therefore be assumed that the propensity of the inhabitants of the two villages to consume more water is likely to be higher than those of the other villages. In the whole District, only 10.5% and 35% of those interviewed carry 25 litres of water or more and less than 15 litres of water per trip respectively.

The distances covered to the various sources of water by the sampled women in each of the villages were also investigated. While 80% of the women living in Aiyeteju travel less than one kilometer to get to nearby streams, more than 70% of those in Aiyede, Aiyedayo, Otafun and Orokere travel more than one kilometer for the same purpose. For instance, the Apopo stream near Aiyedayo is a perennial one and serves as the chief source of water supply to all nearby villages including

Aiyedayo itself. On the whole, only 31% of the sampled women travel less than 50 metres in order to fetch water. This shows that the bulk of the women generally traverse short distances to various water points. This is contrary to Barwell's (1996) observation in parts of East Africa where rural women travel more than 7 kilometres in search of water.

Consequent upon the short distances traveled to water points by the sampled rural women, both the time and the modes of transportation involved are not particularly striking in the study area. For instance, over 80% of the respondents from Aiyede, Aiyedayo, Otafun and Orokere villages spend under 30 minutes to and from water points. At Effo and Aiyeteju settlements a large percentage of those interviewed there spend less than 15 minutes for the same purpose.

However, the most important issue here is the frequency with which the women return to the water points in their respective villages. The analysis of data on frequency to brooks in the villages shows that a substantial percentage of the sampled women make more than one trip to water points per day. In some cases, some of the women make two trips per day. Although an average of thirty minutes is spent per trip per woman, the total time spent in search of water per day is higher during the dry months when most women said that they usually travel longer distances in search of water. Therefore the time spent in search of water in the villages could be expected to negatively affect the health of the women concerned particularly when it involves long distances. Elsewhere in rural Nigeria, studies have shown that women generally complain of tiredness and general body weakness at rural health centers partly as a result of stress caused by trekking to water and other rural services (Adetunji, 2003).

An important implication of this pattern of movement as observed in the study area is that majority of the women are likely to get to water points on foot. This may not be unusual in a predominantly rural environment where majority of movements to rural activity points are done over short distances and time. The use of bicycles by women, which could have helped to shorten, both time and space is not a common feature in the study area.

### 5.2.2 Trips to firewood collection points

Apart from water, fetching of firewood for cooking food is perhaps the next most important rural activity, which engages the attention of rural women in the District. Besides firewood, other three sources of energy are also available to the different households in the study area.

Table 1: Ranking of Sources of Energy in all the Seven Settlements

Source	Score	Percentage	Rank
Firewood	192	72.0	1
Kerosene	42	15.9	2
Electricity	24	9.2	3
Gas	8	2.9	4

Source: Authors' Survey.

Table 1 shows the percentage of sampled households using the four identifiable sources of energy in each of the villages. The use of firewood ranks first with 72%. Those who use kerosene, electricity and gas are 15.9%, 9.2% and 2.9% respectively. Persons earning higher income either use electricity or gas where available. Similarly, people in this salary bracket also use kerosene whenever there is power failure, which is a regular occurrence in many villages with electricity in Nigeria. However, only firewood involves physical movement of persons to sources of procurement by the villagers.

The volume of firewood carried by sampled women was recorded by estimating the weights of bundles of firewood. The field assistants had fair ideas of the weight of a bundle of firewood carried by most rural women. Table 2 and Figure 3 show the percentage of women found in each of the villages carrying firewood of different weights ranging from (a) 20kg or less (b) 21-40kg and (c) 41-60kg. The Table shows that 68.7% of the women carry firewood weighing between 20 and 40kg. Few women (6.1%) in the study area carry very heavy firewood weighing between 41 and 60kg.





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Table 2 : Average Weights of Firewood Carried by Sampled Women per trip (kg)

Name of settlement	20kg or less	21-40kg	41-60kg
	No (%)	No (%)	No (%)
Effo	17 (34)	31 (62)	2(4)
Aiyeteju	5(25)	14 (70)	1(5)
Takete-Ide	3(13.6)	16(72.8)	3(13.6)
Aiyede	5(29.4)	12 (70.6)	--
Aiyedayo	2(15.4)	10 (76.9)	1 (7.7)
Otafun	1(12.5)	6 (75.0)	1 (12.5)
Orokere	--	1 (100)	-
Total	33	90	8
Average	25.2%	68.7%	6.1%

Source: Authors' Survey 2000

An analysis of the distances covered by women carrying the different categories of firewood shows that only 6% of the women travel 500m or less, while 56% and 38% of them travel between 500m - 2km and 2 - 5 km respectively in search of firewood.

Table 3 as well as figure 4 show the different means of rural transport used to firewood collection points by the respondents.. Again, the table shows that trekking is the predominant mode of transport for the purpose of carrying firewood from collection points to each of the villages. Neither bicycle nor motorcycle is a popular mode of transporting firewood in the study area as only a few persons make use of such mode of transport.. With the exception of Effo (10.4%), Aiyeteju (9.1%) and Aiyede (6.2%) where a few people depend on bicycles, every other person makes use of head portage as a means of transport for carrying firewood. Majority of rural women spend less than 15 minutes to get back to their villages with the firewood on their heads. A few others who traverse between 2 and 5 kilometres spend longer time. There is therefore the possibility that an improved form of rural transport would lessen the transport burden of firewood carrying rural women.

Table 3. Transport to Firewood Collection Points

Name of settlement	Foot	Bicycle	Motorcycle
	No (%)	No (%)	No (%)
Effo	50 (86.2)	6 (10.4)	1(1.7)
Aiyeteju	20(90.9)	2(9.1)	-
Takete-Ide	21(100)	--	-
Aiyede	15(93.8)	1 (6.2)	--
Aiyedayo	73(100)	--	-
Otafun	8(100)		-
Orokere	1(100)		-
Total	128	9	1
Average (%)	92.1%	6.5%	0.7%

Source: Authors' Survey 2000

### 5.2.3 Trips to farm lands

In his study of journey to agricultural work in Southwestern Nigeria, Ojo (1970) did not differentiate between the male and female population making such journeys in Yoruba land. Similar studies on rural Nigeria (Mba, 1995) also failed to show the percentage of female farming population even though their level of involvement in farming activities has been recognized to be high.

An analysis of the structure of the farming population shows that women account for more than 40% of the total traffic in the study area. These women convey various farm inputs such as insecticides, buckets, fertilizers, and raw foods to and from farms. Besides actively participating in the planting of such crops like cassava, cowpeas and maize, the women are the main means of transporting these farm produce to both village and urban markets. Rural farmers whose farms are directly located on motorable roads usually make use of vehicular transport except where the cost of transport is too high. Since most rural traffic are not cost efficient, rural women are generally use to convey most farm produce and farm inputs to and from the villages.

#### 5.2.4 Trips to Health Facilities

Health facilities where they are provided are known for generating substantial social trips. The female population like their male counterpart in the District said that they usually visit hospitals or health centers whenever they are sick for the treatment of both mild and serious illnesses. Women in particular are usually encouraged by rural health workers to regularly visit maternity centres during and after pregnancy for post-natal examination of themselves and their babies. In the seven villages, the health situation is not only pathetic but very poor as no single hospital is located within the District. The three health centres located at Effo, Aiyeteju and Takete-Ide were not functioning as at the time of this study. Thus, the near non-existence of health facilities especially maternity services compels the women in the study area to travel over several kilometers to where such services are provided.

An analysis of the data on health trips shows that women travel over relatively shorter distances (500m) in Takete-Ide, Effo and Aiyeteju villages where some level of maternity services are provided. The situation is different in the other four villages where any form of health services is not available. Field analysis shows that more than 70% of the women living in these other villages actually combined their social trips (trips to health centres) with trips to periodic market centres. Invariably, the three villages where health services are available also serve as important focal points for the surrounding rural communities especially for marketing. It is therefore not unusual to find that the same women attending the rural market centres on foot or bus (if available) also make use of maternity centres located in the same village. However, when asked how frequently these women patronize these health centres whenever they are pregnant, the general answer was that such trips are made occasionally due to lack of vehicular transport and the poor condition of the roads. In order to circumvent this, the women said they often resort to visiting nearby herbalists or spiritualists. For instance, more than 60%, 65% and 75% of women in Orokere, Takete-Ide and Otafun patronize herbalists respectively, on the excuse that it is generally stressful to trek over long distances on very rough roads. This confirms the World Bank's observation that "Distance to health facilities limits peoples' willingness and ability to seek health care particularly when transport is limited" (World Bank 1993).

## 6.0 Conclusion

This paper has highlighted the share of women in the burden of rural transport in Amuro District of Kogi State in Nigeria. The District, which is a predominantly rural environment, has little or no social facilities apart from a few schools and health centers. Because of the poor rural road networks, women in the District patronize services wherever they are located in any of the seven villages. Furthermore, a large proportion of rural trips made by women to firewood and water collection points are generally on foot over considerable distances. This transport characteristics contribute to poverty of rural women in one form or another and which in turn affects their productive health as well as their total well being (Goeff, 1998; Fernando and Porter, 2002). According to IFRID (1999), once all the tasks of water and firewood collection, subsistence agriculture and health care are done with, rural women have little time or energy left in them for increased agricultural production and other productive activities. In other words, reducing women's transport burden becomes a critical issue just as the issues of food security and good governance have been identified as critical elements in the running of an efficient local government in Nigeria.

Since rural population usually move over considerable distances to various rural activity centres, there is need to introduce non-motorized form of transport such as a modified form of the existing bicycles which will take into cognizance women's biological features. The use of bicycles can greatly enhance the mobility of women and open up access to women's groups as well as various sources of information that are essential to their lives (Doran, 1996). Calvo (1994a, 1994b) for instance, has observed that in rural Ghana, the introduction of bicycles shifted partly the tasks of water and firewood collection from mothers to their male children.

Finally, there is need for rural transportation policy that will specifically address the issue of women and rural transport. Such policy should ensure that efforts are made by the various governments to incorporate the issue of women and rural transport into the ongoing economic reform programmes.

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