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Keywords: *gender differences; rural transport; agricultural production; horro guduru wollega.*

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Sileshi Tamene [α] & Tebarek Lika Megento [σ]

Abstract- In a society where women's inequality remains deeply rooted gender norms and unequal gender power relations dictate the role of men and women. In Ethiopia, women's access to rural transport is limited. This qualitative research aimed to explore the gender differences in access to rural transport and its implication for agricultural performance. Focus group discussions, in-depth interviews and observations were used to collect data. By using purposive and snowball sampling, a total of 14 in-depth interview, 12 key informant interview and 96 focus group discussion participants were selected. The qualitative data was collected using semi-structured and open-ended interview protocols and analyzed using qualitative thematic content analysis. According to the results of women's focus groups, men control household's transport means (donkey, horse, and mule). Women typically only control such resources if they are female headed household. These activities are done through head-loading or back-loading. To improve rural women's access to transport infrastructures and hence their agricultural productivity, greater consideration needs to be given to interventions in intermediate means of transport, and other time- and load-reducing measures such energy saving cooking equipments and rural child care centers.

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I. Introduction

Around the world, in much of development work, transport above everything is the ultimate enabler since it unlocks growth potentials, creates jobs, and brings wealth to local communities. World Bank (2008) showed that 1 billion poor people in developing countries today lack access to basic all-weather roads. Transport in the rural areas relates principally to basic needs and is carried out mostly on foot or with the aid of intermediate means of transport (World Bank, 2010; Tamene and Megento, 2017). Rural transport-related issues such as access to markets, health care, fuel wood, water, grinding mill and other basic facilities play an important, but underappreciated role in perpetuating women's disadvantaged position in society. Women smallholder farmers living in remote areas have to spend longer hours collecting water or processing food than women living in areas better endowed with infrastructure and this appears to be a significant constraint on their meaningful participation in productive economic sectors like agriculture (FAO, 2010; Gebre-Selassie and Bekele, 2010; porter, 2008).

According to United Kingdom Department for International Development (2010), total agricultural outputs in Africa could increase by up to 20% if women's access to agricultural inputs was equal to men's. Gender gaps in access to rural transport infrastructure seem substantial in sub-Saharan Africa where agriculture is a more important source of livelihoods than in other regions. Reducing this gender gap is therefore, a priority for improving women's access to basic resources in agriculture-based countries (FAO, 2010). Such gender-differentiated access to rural transport infrastructure determines the ability of men and women smallholder agricultural producers to receive fair prices for heir produce.

Women and men occupy different positions and face different working conditions in rural labor markets across the developing world and hence they experience different levels of access to rural transport infrastructure (FAO, 2010; FAO, 2016). Rural men and women have no equal access to rural transport infrastructure and services necessary to achieve their individual potential and fulfill their obligations to the household. Owing to gender biased socio-cultural norms and unequal gender power relations, women in most developing countries have less access to rural transport infrastructure as compared to their male counterparts and hence their ability to own and acquire appropriate time saving transport facilities is restricted (porter, 2008; FAO, 2016). This further differentially determines how they may contribute to and benefit from rural livelihood.

Gender intensified inequalities in access to rural transport infrastructure are complex and require an understanding of how household dynamics and gender power relations interact. The reasons for gender differences in access to rural transport infrastructure are many, and are often intertwined.

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Although different countries have very different levels and trajectories of gender inequalities, in most societies men and women have distinct economic and social roles and responsibilities, and consequently transport use and provision are highly gendered (Bamberger and Davis, 2001; Booth et al., 2000).

Even though, women are not the only vulnerable groups to be susceptible to lack of rural transport infrastructure, due to their specific reproductive roles and responsibilities, they have several unique rural transport needs that were not shared by the majority of their male counterparts (Porter, 2008). The successful transport service and infrastructure developments in rural areas of developing countries are unattainable without due consideration of gender idiosyncratic transport demand and supply patterns (Zogo and Epo, 2016).

Due to their higher decision making power over household resources, men can afford to pay for higher transport costs that rural transporters are able to charge. But, due to their lower incomes and weak bargaining power, women cannot affordable to pay such higher prices for vastly poor transport facilities, which add to the costs of inaccessibility from which they already suffer. Therefore, women are recognized to lack access to rural transport and suffer more acute accessibility problems than their men counterparts. Indeed, the success of harmonious and all-inclusive rural development depends on access to well planned, efficient, affordable and equitable rural transportation systems (Gutierrez and Kuiper, 2010; Holste, 2009).

Even though, not sufficiently recognized and valued, promoting gender equality in access to rural transport infrastructure is an essential component of sustainable economic growth and poverty reduction. Improving women's access to rural transport infrastructure can enhance women's agricultural productivity, economic decision-making power and their entrepreneurial opportunities. Addressing gender equality in access to rural transport infrastructure is therefore central to achieving rural agricultural development goals (Fernando and Porter, 2002).

II. Statement of the Problem

Women are taking up a larger share of agricultural production in many low income countries. At the same time, they continue to be the main care providers for their family members (Grassi et al., 2015). In his speech on the annual meeting of the Clinton Global Initiative during September 2009, the former President Bill Clinton addressed that "Women perform 66% of the world's work, and produce 50% of the food, yet earn only 10% of the income and own 1% of the property" (as cited in OECD, 2011, p. 6). If women had the same access to productive resources as men, they could increase yields on their farms by 20-30%. This could raise total agricultural output in developing countries by 2.5-4%, which could in turn reduce the number of hungry people in the world by 12-17% (OECD, 2011).

Although progress has been made, there are clearly many gender-specific rural transport constraints still at work among smallholder farmers of developing countries. Even in the absence of adequate rural transport provision, women shoulder the main responsibility for household chores, care provision and other unpaid work to support their families and communities (FAO, 2010). Despite women's role and responsibility for a disproportionate share of the household's transport burden, they have more limited access to transport facilities. Unequal gender power relations and the resulting women's weak bargaining power relative to their men counterparts within households severely limit women's ability to make claims over their contributions (FAO, 2010). Marginalization of women in the use of transport infrastructure poses some challenges on maintaining adequate levels of agricultural productivity and is against the principles of gender inclusive rural development (Creighton and Yieke, 2006; FAO, 2011).

A disproportionate share of the unpaid work burden falls on rural women's shoulders, thus restricting the time they have available for productive work like agriculture. The burden of water and fuel collection is likely to reduce the amount of time women can spend in paid work (Grassi et al., 2015; Chen, 2008). Many women smallholder farmers in low-income countries face disproportionate obstacles in accessing and using rural transport as opposed to their men counterparts. These results in women's relative lack of mobility, self-esteem and confidence in relation to men in decision making over household income (Quisumbing and Pandolfelli, 2009; African Development Fund, 2001).

In Ethiopia, where gender biased cultural norms appear to be significant, women have vastly inferior access to rural transport facilities and are less likely to control over how transport resources are mobilized within households. Limited rural transport infrastructure is a challenge mainly in rural areas of Ethiopia with a high dispersion of people and remote villages. Countries with large rural areas such as Ethiopia also display high shares of women having difficult access to motorized, non-motorized as well as local mode of transportation (Dercon et al., 2009; Muleta & Deressa, 2014). Such problems of gender-differentiated access to transportation are partly exacerbated by gender-blind rural transport policies and programs. Women's limited access to rural transport facilities also constrains their access to other important productive resources and opportunities such as extension, microcredit schemes, women-friendly formal financial systems, training, input and output markets, and other complementary supporting services (Ogato et al., 2009). Unequal

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access to such important productive assets is an important source of gender disadvantage likely to undermine the achievement of women's agricultural productivity (Eneyew and Mengistu, 2013; Bryceson and Howe, 1993; Gebre-Selassie and Bekele, 2010).

Gendered transport is a subject that received scant attention from policy makers and development specialists. Despite its necessity in development endeavors, gender equality in access to rural transport infrastructure is not sufficiently recognized and valued. Until now, however, little attempt has been made to assess the extent to which, and how, gender-differentiated impact of rural transport infrastructure constrains rural women's agricultural productivity.

In Ethiopia, by overlooking the vast majority of women who reside in male-headed households, many gender-focused transport and agricultural development researches targeted exclusively women headed households (Muleta and Deressa, 2014; Eneyew and Mengistu, 2013; Ahmed, 2013; Bryceson and Howe, 1993; Dea, 2016). Hence, little attempt has been made to assess the domestic transport burden of women who reside in male-headed households.

In Ethiopia, past transportation studies were more inclined towards urban areas compared with existing work done on the transport situation of women in rural areas (eg., Dagnachew, 2011; Eshete, 2015; Schmidt and Mekamu, 2009; Nyarirangwe, 2008). Limited rural transport studies have been undertaken in Ethiopia focusing more on the effects of rural access roads on poverty and livelihood strategies (Ahmed, 2013; Dercon et al., 2009; Porter, 2012). Consequently, less attention has been devoted to study transport patterns and needs of rural women smallholder farmers. Therefore, rural women's and men's substantially different patterns of mobility constitute a promising area for potential research.

In light of the above research gaps, it becomes expedient to examine the problem of gender differential access to rural transportation infrastructure, so that the extent of the problems can be known, and possible policy interventions delivered to achieving gender inclusive rural development.

III. Objective

The principal objective of the study is to investigate gender differences in access to rural transport infrastructure and its effect on woman's participation in agricultural production.

To achieve the main objective, the following specific objectives are identified:

1. To identify the extent of gender differences in access to and control over rural transport resources and its associated effect on their participation in agricultural production.
2. To examine gender disparities in rural transport mode choice and describe the role of IMT in reducing rural women's transport burden.
3. To investigate gender differences in relation to rural travel pattern and behavior.
4. To explore the major distinction between rural transport burden falling on women and men.
5. To examine the trip chaining characteristics of men and women smallholder farmers.

IV. Research Questions

- Is there gender discrimination in the ownership of and access to rural transport facilities?
- To what extent do gender differences determine rural transport modal choice?
- Are there economic, social and cultural factors in place which determine rural women's /men's travel pattern and transport burden?
- Why women smallholder farmers often trip-chain than their men counterparts?

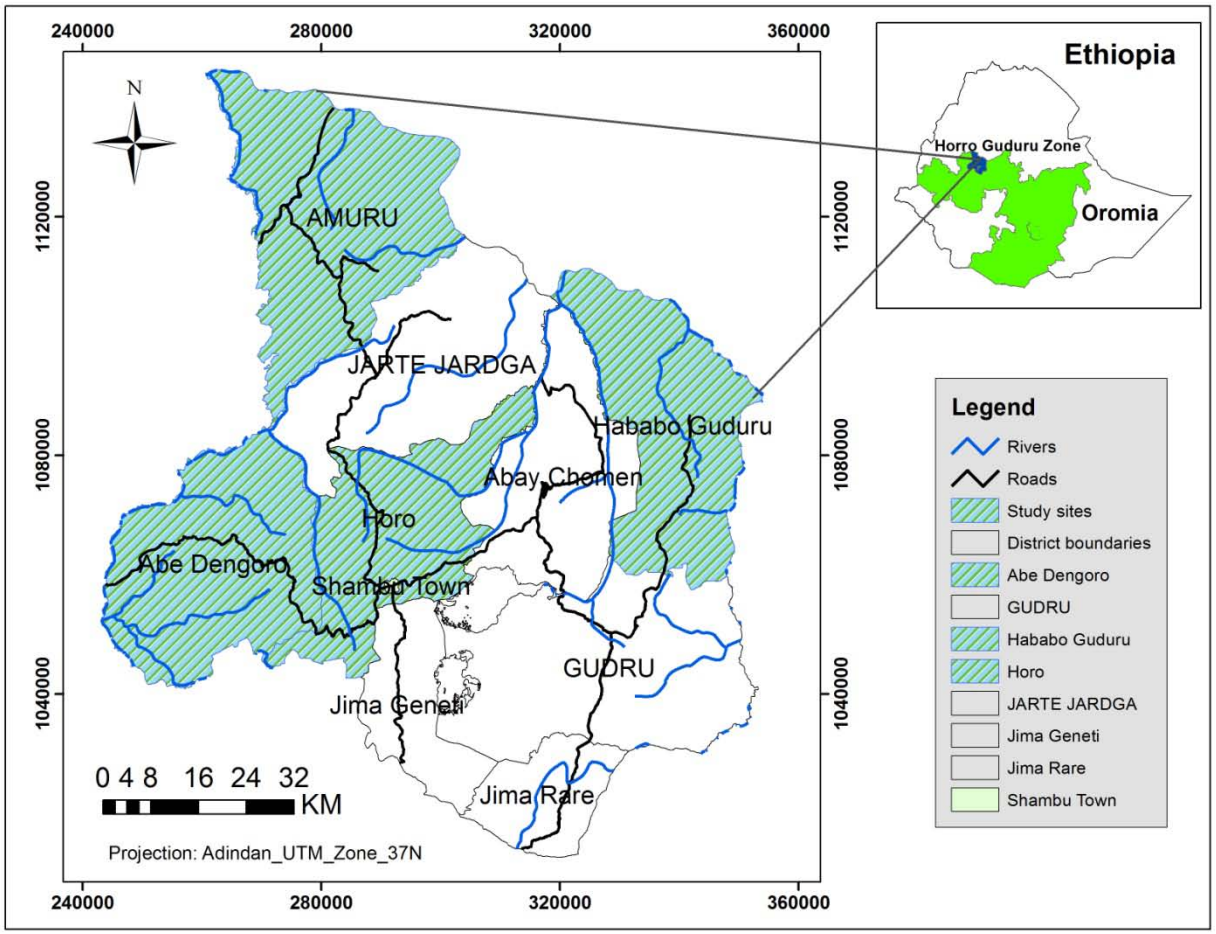
V. Research Methodology

This methodology section gives a brief account of the study area, research design, data collection strategies and data analysis. It also provides a detailed account of ethical issues related to data collection and challenges faced the research process. Since there was no one right technique to collect qualitative data, a combination of data collection methods including focus group discussions (FGDs), in-depth interviews (IDIs), key informant interviews (KIIs), and participant observation were used to offer a holistic interpretation of the phenomenon being studied. Interviews and focus group discussions were tape-recorded, transcribed verbatim and analyzed using inductive thematic analysis approach.

VI. Study Area

This study was conducted in Horro Guduru Wollega zone, Western Ethiopia. The capital town of the zone, Shambo, is located 314 km away from Addis Ababa to the Western part of Ethiopia. The zone comprises nine rural districts. According to the report of (CSA 2011), Horro Guduru Wollega zone covers a total land area of 8,097km^2; a total population of 641,575 of which 50.09% are male and 49.91% are female. This study was conducted in four districts of Horo Guduru Wollega zone namely, Ababo Guduru, Horro, Abe Dongoro and Amuru (Figure 1).

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Source: Adapted Finance and Economic Development Bureau of Oromia, 2016

Figure 1: Map of study area, Horro Guduru Wollega Zone by districts

VII. Research Design

In light of the research design, this research employed exploratory qualitative research design. Since the aim was to explore an in-depth description of real-life experiences of gender differences in access to rural transport infrastructure and agricultural production, qualitative approach was chosen for this specific research (Creswell, 2012). Qualitative research methods are also effective in identifying intangible factors, such as social norms, socio-economic status, gender roles and gendered differences and characteristics in a society (Denzin & Lincoln, 2005). Qualitative research methods are often employed to obtain more detailed descriptions and explanations of experiences, behaviors, and beliefs. Furthermore, it can answer the whys and hows of human behavior, opinion, and experience—information that is difficult to obtain through more quantitatively-oriented methods of data collection. The philosophical views of the study were focusing more on the constructivist view that deals with gender differences in access to household resources. The methodology used was Interpretive Description. Both primary and secondary data sources were used for this study. The primary sources were obtained via key informant interview (semi-structured), in-depth interview (unstructured), observation tools and focus group discussions.

The research used interpretivism epistemological viewpoint, since the aim of this research is more interested in interpreting deeper meaning in discourse that is represented in a collection of personal narratives or observed behaviors and activities. Since this research is concerned with revealing multiple realities as opposed to searching for one objective reality, interpretivism epistemological viewpoint was taken for granted as appropriate philosophical framework.

VIII. Study Population and Sampling

Purposive and snowball sampling were used to recruit participants for FGDs, IDIs and KIIs. First, 12 focus group discussions (4 with women smallholder farmers, 4 with men smallholder farmers and 4 with mixed sex smallholder farmers) were held in 16 rural kebeles across four districts of Horro Guduru Wollega Zone (Ababo Guduru, Abe Dongoro, Amuru, and Horro).

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In each focus group discussion an average of 8 individuals were participated. Therefore, a total of 48 women and 48 men smallholder farmers were participated in focus group discussions. Second, from each rural kebeles of the study districts one men and one women smallholder farmer (i.e. 16 men and 16 women) were purposively selected to participate in in-depth interviews. Therefore, a total of 32 IDIs were conducted in 16 different rural kebeles across the four study districts. Finally, expert purposive sampling was used to select the 2 male and one female local government officials from each of the four study districts making up a total of 12 key informants for the study (table 1). The key informants consisted of one expert each from district agricultural office, district rural transport office and district gender office.

Table 1: Distribution of in-depth interviews, key informant interviews and focus group discussions

Districts	IDIs (32)		KIIs(12)		FGDs(96)		
	women	men	women	men	women	men	mixed sex
AbaboGuduru	4	4	1	2	8	8	4 each sex = 8
Abe Dongoro	4	4	1	2	8	8	4 each sex = 8
Amuru	4	4	1	2	8	8	4 each sex = 8
Horro	4	4	1	2	8	8	4 each sex = 8
Grand Total	16	16	4	8	32	32	16 each sex = 32

Sources: own design, 2016

IX. Data Collection Methods and Tools

a) Focus Group Discussions

A focus group discussion (FGD) is a form of interview that involves addressing questions to a group of individuals who have been selected for this specific purpose. This approach offers the opportunity of allowing people to probe each other's reasons for holding a certain view. In this study, 12 FGDs were conducted to obtain the experiences of men, women and mixed sex smallholder farmers towards the topic under study. In total, there were 32 women, 32 men and 32 mixed sex participants.

To solicit more information than what could be obtained from individual farmers, FGDs were held with women, men and mixed sex farmers' groups in different rural kebeles of the study districts. Focus group discussion was designed to solicit information from participants not only on their own perception but on the community perceptions, thoughts, feelings, experiences, reactions and attitudes towards gender differences in access to rural transport infrastructure and its implication for agricultural production (Kvale, 1996)

While recruiting the focus group discussion participants, special emphasis was placed on the composition of the group participants in line with Robinson (1999). Both single-sex and mixed groups were included in the study, as well as the age and religion of focus group members was also considered. Equal numbers of women and men smallholder farmers were included in the FGDs in order to give different chances of representation of views. During each focus group discussion maximum care was also taken to minimize dominant voices that can skew results and affect participation of others. A moderator or group facilitator is usually engaged to guide participants and help them participate in the discussion. Female facilitators were used in women focus group discussions to avoid the potential barriers and encourage them to speak up and express their ideas freely. Experienced local facilitators/moderators were used to encourage participation, build trust and relationships and support an open discussion among focus group discussants.

By taking a great care of restraining themselves from sharing their views about the topic of discussion, facilitators or moderators played a great role in time management, in interviewing and guiding the group's discussions. They also established a comfortable atmosphere within the group encouraging all participants to be part the discussion.

The main topics of the discussion were gender roles and relations, men's and women's to access and control over rural transport infrastructure, day-to-day mobility patterns of men and women, travel purposes of men and women smallholder farmers and existing practices and challenges in rural transport infrastructure. Using the observation method alongside FGDs helped the researcher to capture individual emotions as well as non-verbal information (facial expressions, changes in volume of speech and body language) from FGD participants. The FGDs were conducted using interview guides as data collection tools aiming at answering the already set objectives. These interview FGD guides were developed before the study and improved upon after the pilot study. The guides were designed in such a way that many possible answers could be derived from the discussion, while avoiding short questions and leading questions.

b) In-depth Interviews (IDIs)

In-depth interviews are useful in collecting more in-depth information or exploring new issues in-depth on sensitive topics that are less likely to be discussed in groups (Boyce and Neale, 2006). In-depth interviews

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were used to enable the researcher to explore in detail each smallholder farmer's perspective on gender differences in access to rural transport infrastructure. Hence, in four districts of Horro Guduru Wollega zone a total of 32 in-depth one-on-one interviews (8 in-depth interviews in each district) were conducted. These face to-face in-depth interviews were carried out with one male and one female smallholder farmers in each rural kebeles of the four study districts making up a total of 8 and 32 in-depth interviews in each district and across four districts of the study area respectively (Table 1). IDI participants ranged in age from 30 years to 65 years, with an average of 45 years of age. Just like in FGDs, an equal number of men and women smallholder farmers were participated in in-depth interviews.

The participants in the in-depth interviews were purposively selected from the focus group discussants based on their knowledge of the issues of investigation. Each IDI took approximately 30 to 40 minutes and carried out by the researcher together with one trained facilitator between January and February 2016. Most in-depth interviews were held in neutral venues which provided reasonable privacy for the participants.

The central questions of the in-depth interviews focus on women's rural travel needs and choices, intra-household decision-making on the use and control over household resources including rural transport facilities and the availability of IMT. Women's disproportionate rural transport load and their agricultural productivity, respondent's personal attitude towards the division of productive and reproductive work among male and female family members as well as social and cultural norms hindering rural women's access to rural transport infrastructures were also among the main topics addressed during in-depth interviews.

To obtain detailed information from in-depth interview participants, an unstructured interview guide was used. This interview guide was pre-tested with two smallholder farmers (one male and one female) and amended based on this pilot test. All of the in-depth interviews were conducted in Afan Oromo, translated in to English and then transcribed. Of the total 32 IDIs 23 of them were tape recorded, for the nine unrecorded interviews, the researcher took notes and wrote up the detailed accounts after each interview session is completed.

c) Key Informant Interview (KII)

Key informant interviews provide more vertical depth to the information already gathered through participant observations and focus group discussions. It also helps to obtain expert opinions and perceptions on appropriateness, effectiveness, and sustainability of programs and strategies directly related to the topic under study. Key informant interviews were mainly aimed at gaining appropriate contextual information and to clarify some issues that appeared vague or uncertain from the information gained through the focus group discussions (Bernard, 2006).

Key informant interviews were used to collect information from people with specific knowledge and experience of rural transport infrastructure and agricultural production. The aim was to obtain information that would not easily be obtained from focus group discussions and IDIs. Hence, for this specific study three key informant interviews were conducted in each district making up a total of 12 KIIs (Table 1). The interviewees were a District Agriculture Officer, a District road transport Officer and a District Gender Officer.

One one-on-one semi-structured interview with district level women gender officer who work on gender equality and empowerment were conducted in all study districts. KIIs were conducted towards the end of the field work (during April 2016) after FGDs and IDI were completed. For the purpose of these interviews, interview guide was made available aiming at answering the already set research objectives.

Key informant interviews were conducted with local government officials who were professional expertise and knowledgeable in matters related to gender differences in access to rural transport infrastructure and agricultural production. Key informants were purposively selected from different sector offices (agriculture and rural development, rural transport and gender office) on the basis of relevance, functions and involvement in transport, agriculture and gender issues. Key informants were interviewed at their places of work.

X. Method of Data Analysis

Qualitative inductive thematic data analysis was used to manage and analyze data collected from FGDs, IDI and KIIs. After collecting the primary qualitative data from the study participants, all information is coded according to specific individual code number. Focus group discussions, in-depth and key informant interviews were tape-recorded, transcribed verbatim and analyzed using inductive thematic analysis method. A Field note was organized into easy to retrieve sections to help the researcher to familiarize himself with the data. The researcher read through the interview responses to look for and uncover themes, trends and patterns, which were used to code the findings. Coding then began for each category of research participants of women and men smallholder farmers, from which themes emerging from the data were generated for analysis. Field notes and Interview transcripts were analyzed using an inductive thematic approach geared towards identifying patterns in the data by means of thematic codes (Bowen, 2005). Thus, the themes of analysis emerged from data coding after the data was collect, rather than before the fieldwork. Data coding and analysis was done manually using Microsoft Excel

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for recording. The themes that emerged from the codes form the basis of findings.

XI. Ethical Issues

Maximum care was taken to ensure the privacy, respect, and dignity of all research participants at all levels. Personal Identities of participants in the FGDs and in-depth interviews remain anonymous. FGD moderators received one-day training in research ethics, including confidentiality. Confidentiality was also emphasized at the beginning of each FGD, in-depth interview and key informant interview and a statement agreeing to maintain confidentiality was included as part of the participant consent forms.

XII. Results and Discussion

a) Gender differences in access to rural transport infrastructure

In rural areas access needs and patterns of travel and transport vary from men to women depending on types of local culture and tradition. Differences between female and male key informant interviewees were noted on their opinions regarding gender differences in access to rural transport infrastructure. Overall, all but one of the female key informant interviewees thought that gender equality in access to rural transport infrastructure is an important development goal as well as something that should be integrated into government policy and program at all levels. The male key informant interviewees, however, had a wider variety of opinions regarding the importance of gender equality in access to rural transport infrastructure, from very supportive to very negative.

In general, two main points of references arise when gender differences in access to rural transport infrastructure are discussed with key informant interviewees. The first and most common view is that gender differences are important in the context of the rural transport sector. This perspective is held by a majority of the women and four of the men. It is based on the reasoning that there are differences between women and men smallholder farmers and their travel needs or modal choices, such differences demand careful rural transport policy and program at all levels. Such experts and practitioners believe that it is more important that all users be ensured equal accessibility regardless of sex and that this aspect is already covered in ensuring that the transport system be accessible to all. The other four of men key informant interviewees doubt the relevance of gender equality in access to rural transport infrastructure.

There is a marked gender gap in access to and control over productive resources. This finding is in line with the study conducted in Uganda by World Bank (2014) that states women comprise a significant share of the work force in agriculture but have unequal access to and control over productive resources including access to rural transport resources. The same study revealed that, due to gender differential access to rural transport infrastructure, women's productivity in agriculture still lags significantly behind men's.

The second perspective held by women and men key informant interviewees is that gender differences in access to rural transport infrastructure is less important in the context of the rural transport infrastructure and agricultural sector. This view is held by half of the men and one of the women. It is based on the premise that even though there are differences in access to rural transport infrastructure between women and men and their travel patterns and demands, such variations lack relevance and therefore have no effect on agricultural productivity of smallholder farmers. These groups of KII participants believe that rural transport policy and planning are gender neutral.

b) Gender and rural transport mode choice

Traditional or local means of transport, including donkeys, horse, mule and animal drawn carts, may have an important role to play in filling the transport gap where conventional motorized transport services are poor. However, women focus group participants in Amuru showed that the ownership and use of traditional or local means of transport is widely male-dominated as a result of economic and/or socio-cultural factors. In other districts of the study site women focus group discussants mentioned several constraints that women face in accessing and using local transport means including women's more limited income to purchase local transport means, their restricted access to such means without the permission of their male counter parts, women's perceived lack of physical strength to handle draught animals or push animal drawn carts, cultural prohibitions on women in riding draught animals like horse and mule (Porter, 2007).

According to personal observations across all study districts, Walking and back loading, shoulder loading or head loading are the major means of travel and transport. Animal drawn carts are available only in very few rural kebeles due to the absence of accessible roads. The available animal drawn carts are mostly used for non-domestic travel and transport activities as opposed to domestic and social activities carried out by women. In its appraisal report about Wacha-Maji road upgrading project, African Development Fund (2002), clearly showed the heavy work load and consequent time constraints of rural women in Ethiopia.

c) Gender similarities and differences in relation to travel pattern and behavior

One of the core gender issues of access to transport services that emerged in the mixed sex focus group session in Ababo Guduru district was gender differential impacts of rural transport infrastructure. These focus group discussants seem to agree that the

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multiple reproductive roles of women tended to dictate their mobility in terms of how far and how long they can travel from the residence. As it is possible to understand from the views of women and men KII participants, while men consistently travel further than women and are more likely to travel by traditional or motorized transport means, the mobility patterns of women in rural areas tend to relate to their domestic, economic and social tasks. Women make trips to take care of their children, fetching water, firewood and food processing, handle household responsibilities and to maintain community and social networks. These major differences in the mobility needs of rural men and women are grounded in the traditional gender-based division of labor. Yet, gender-related norms, practices and perceptions continue to ensure that men's and women's opportunities remain unequal. For rural women the most prominent mode of travel remains walking and head-loading or back-loading. Because rural women are vulnerable members of the society due their multiple productive, reproductive and Community roles, considering how rural transport policies and projects address their needs is important for socially and economically sustainable rural transport policy.

Many researches on gender travel characteristics revealed that a dichotomy exists between men and women mobility patterns in both developed and developing countries particularly with respect to modal choice, distance travel and frequency of trips to different locations (Peter, 2000; Oyesiku, 2002; Adetunji, 2013).

Improved rural access roads required women to exercise more caution in looking after children, fearing that without their constant supervision children would run onto the road. Similarly, one of women in-depth interview participant in the same district commented on significant differences in access, mobility and accessibility between men and women in utilizing both local level transport and motorized transport methods. Studies elsewhere have identified some major gender differences in access to transport where women experience constraints on their mobility due to their reproductive work, cultural restrictions, and different travel needs from their men counterparts (Porter 1995, 20002; Mandel 2004).

Therefore, this study explored the gender differences in access to rural transportation and mobility, responsiveness of rural transport systems to needs and choices of women and their participation in decision making over the use and control of household transport facilities. The results of this qualitative research study show significant disparity in trip rate, duration and purpose of travel, travel behavior, travel mode between women and men in all districts of the study area. Therefore, increasing women's access to rural transport assets and narrowing the gender gap would directly improve women's agricultural productivity by reducing their vulnerability and enhancing their self-esteem, bargaining power and sense of control. This is not only important for women's benefit alone but for the well-being of the household in general.

d) Women's domestic responsibilities and rural transport

This qualitative research study investigated in detail travel patterns in four districts of Horro Guduru Wollega Zone for access to domestic facilities, with a special focus on the transport of water, firewood and of crops to grinding mills. According to FGD results almost all households travel to a grinding mill once in a week. The time and energy involved is directly proportional to the distance to the mill. Establishment of crop grinding mills at village level or closer to the home reduces the transport burden of women related to this activity at the same time would release time and energy for productive and socially beneficial activities. Many women focus group participants emphasized the need to form rural female cooperatives that provide grain milling services for their communities and thus reduced women's heavy burden.

With the exception of 3 women participants in IDI, all others make trips to the grinding mill on foot through either head-loading or back-loading and almost all households are more than one and half hour away from the grinding mill. For those who used local transport means like donkey to carry grain crops to the grinding mill and back home, even though the load was carried on a donkey-the owner still walked. It was the woman who went to grind the grain in almost all cases. In occasions when a woman gives birth for a child or get sick, a man will be forced to go to the grinding mill. But, he tends to use a locally available means of transport or other intermediate means of transport.

A closer look at the view forwarded by both men and women focus group discussion participants reveals that gathering firewood for cooking represents a significant portion of rural women's time and energy. Shackle ton et al. (2011) and Sunderland (2012) also confirmed that firewood collection is a solely female responsibility. Time spent collecting firewood for fuel as well as the cooking and related cleaning activities are a drain on the time of the women primarily responsible for these tasks. Especially as local firewood supplies continue to diminish due to deforestation, rural women have to cover substantial distances on foot to collect firewood from distant sites. In another study (Green stream, 2010) it was reported that women have to cover considerable distances on foot to collect firewood for household use and for sale, as it is one of the few avenues open to them to meet their requirements for a basic income. Lack of rural transport facilities are additional barriers to women in accessing firewood in the form of limited supply. In terms of addressing households' need for firewood, planting fast-growing

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trees close to the village was given greater attention by key informant participants across all study districts. Various fuel saving technologies (fuel-efficient or improved stoves) therefore important in order to reduce the amount of firewood women have to use for cooking and freed-up time for income-generating activities.

e) *Trip chaining characteristics of men and women smallholder farmers*

"I have three reasons for going to market. One, I must buy for household consumption, two, I have to go to grinding mills, three, I have to ask relatives and four, sometimes taking sick family member to health center." [41 years aged women IDI participant, Horro district]. This comment was made as a response to a travel pattern during in-depth interview. Many other women farmers in other districts of the study area made similar comments. Their words draw attention to the fact that women are most likely to form complex trip chains (combine several purposes into one trip) and their multiple responsibilities require them to combine work trips for different purposes. This finding is in line with the findings of (Rosenbloom, 1988; Rosenbloom, 1989; Strathman and Dueker, 1994; McGuckin, and Murakami ,1999; Al-Kazily et al., 1994, which argues that compared to men, women are more likely to trip chain on the way to and from work. Therefore, rural transportation issues for women differ from those for men in that women frequently face circumstances that many men do not. In particular, among women FGD participants (Horro, Amuru, and Abedongoro) the determining factors for transport modal choices are: the necessity of making multiple activities (trip-chaining)-marketing, grinding mills, taking child to clinic for medical follow up. Therefore, this analysis reveals that trip-chaining behavior is related to gender roles and responsibilities.

XIII. Conclusion and Recommendation

Gender is an important but largely neglected aspect of rural transport infrastructure planning and provision. Men and women hold different socio-economic roles and responsibilities that are associated with different patterns of transport access, needs, and use. For many women in rural areas, walking remains the predominant mode of travel, because other transport modes are often not available, are culturally not encouraged, are too expensive, or are located too far away from home for women to access. In Ethiopia, despite women's essential contribution to household food production and provision, their access to rural transport infrastructure is limited. The existing rural transport systems of Ethiopia are not adequately geared towards the needs of women. This research aims to find ways forward in order to alleviate rural women's disproportionate transport burden in rural districts of western Ethiopia.

The problem of gender differential access to rural transport infrastructure is apparent in Horro Guduru Wollega Zone, where women's control and decision making power over household incomes are low and transport services are few. Conventional rural transport planning has overlooked village level transport solutions for short-distance transport, especially the needs of women smallholder farmers. Based on Inductive thematic analysis approach in rural districts of western Ethiopia, this study explores gender differences in access to rural transport infrastructure and its implication for agricultural production.

To improve rural women's mobility and hence their agricultural productivity, greater consideration needs to be given to investment in local footpaths, footbridges, village level roads, intermediate means of transport, and other time- and load-reducing measures. Rural transport infrastructure planning efforts should consider the needs of women smallholder farmers. Intermediate means of transport plays a great role in facilitating local level transport activities. Because women were responsible for most transport around the village, they benefited from the spread of animal drawn carts, hand carts, wheelbarrows which could be used to carry people, water, firewood and crops. Therefore, to improve rural women's access to rural transport infrastructures and hence their agricultural productivity, greater consideration needs to be given to investment in intermediate means of transport, and other time-saving and load-reducing measures such energy saving cooking equipments and rural child care centers.

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