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An Enquiry into Time Allocation and Rural Household Production, and their  
Implications for Economic Well-Being

## **1. Introduction**

The objective of this paper is to analyse certain aspects of time allocation and their implications for economic well-being. Based on broad information of time-use studies and keeping in mind the lack of data regarding time-use in Mozambique, the paper intends to explore some aspects of household activities that are underpinned by time allocation within the household production context in rural Mozambique.

While there is much to be discussed about time-use and more broadly time allocation, this paper will focus on some aspects of time allocation. The paper will focus first on the review of the literature, concerning particularly gender, intra-household allocation, social norms, poverty and access to basic resources as a baseline to inform the application of the principles and experiences to the Mozambique situation. Based on the review of the literature, the paper will then identify the implication of time allocation in the Mozambique context, a peasant-dominated country where patterns of household and gender relations are entrenched in norms and values of time allocation that informs household economic well-being.

The paper will build on previous work in the field and will focus mainly on issues that arise from doctoral field-work data. The theoretical basis of the paper is informed by structuralist theory in the sense of examining power and class relations in society to explain or access the development process as an element that can work locally, nationally and internationally. Structuralists consider the importance of the structure of society as well as class power analyses to understand development within and between societies.

## **2. Mozambique: a Peasant-Dominated Country**

Approximately 70 per cent of all Mozambicans live in rural areas and about two-thirds of all rural citizens live in absolute poverty.<sup>1</sup> This negative impact on human capital is exacerbated by low education levels and the poor health of much of the

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<sup>1</sup> See for instance the report [Understanding Poverty and Well-Being in Mozambique: The First National Assessment \(1996-97\)](#).

population; low productivity in the agricultural sector, where most Mozambicans are employed; inadequate physical infrastructure; and poor access to basic services, including potable water, health facilities, transportation, communications, and markets. There is also a high rate of population growth resulting in correspondingly high dependency ratios, as well as a general inability to access basic foods. Agriculture, the main activity in rural areas, accounts for about 32 per cent of the Gross Domestic Product (GDP), employs about 70 per cent of the labour force and accounts for 40 per cent of export value (Zandamela, 2004, p.3).

The majority of the population of Africa, as in Mozambique, lives in rural areas where levels of poverty are more accentuated. Although agriculture has decreased in the last decade mainly because of the war and limited investment in the countryside, it continues to form a significant part of the Mozambique GDP. Agriculture in Mozambique is, and will continue to be, a fundamental source of income for rural people.

However, it is interesting to note that other activities (informal trading, crafting, brewing traditional beer, carpentry, fishing, etc) are performed in the rural communities. These activities complement the main activity (agriculture) and are also the main activity for some household members. This is significant since farm activities play an important role in the household and rural economy. This diversification is, in fact, a better coping strategy for maintaining a certain income for household families. This requires an understanding of how power relations are involved and to what extent these power relations impact on household activities in Mozambique rural settings. This raises the question of how time allocation is perceived and constituted in the context of rural household production and its implications for economic well-being. More broadly, all these aspects suggest a particular importance of time allocation on rural household production as a crucial factor for economic well-being in Mozambique. This is especially important in considering the agricultural sector in Mozambique, where two main types of producers are operating, namely the commercial farmers<sup>2</sup> and smallholders.<sup>3</sup> Agricultural activities are carried out by peasant farmers who cultivate 92 per cent of the total cropland. Commercial farming occupies only 250 000 hectares, 8 per cent of the total land cultivated.

### **3. Overview of Conceptual issues in Time Allocation**

#### **3.1 Time Allocation Issues**

The importance of time-use data is widely discussed in the literature. For instance, Joyce and Stewart (1999, p.3) point out that time-use data could contribute to research and policy analysis in a number of areas. According to them, one area that has recently received considerable attention is the prospect of measuring and valuing

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<sup>2</sup> These includes the privatised former state farms, and ranges from large estates owned by foreign capital to emerging Mozambican-owned commercial farms of less than 50 hectares (CLUSA, 1997).

<sup>3</sup> This is the smallholder or family sector, comprising between 3 and 3.5 million households, cultivating an average of 1.8 ha each. They account for 90-95% of the total area cultivated (PARPA, 2001 and CLUSA, 1997 in Zandamela, 2004).

unpaid but productive activities (that is, non-market work) with the ultimate goal of including the value of these activities in a satellite account of the National Income and Product Accounts. They also observe that, although the valuation of non-market work has been the primary political impetus behind the collection of time-use data, it is by no means the only use of these data<sup>4</sup>. Ilahi (2001, p.1) in the same vein observes that there are a number of sound conceptual and policy reasons for studying time-use in developing countries. First, time is a resource. It is an important resource in a developing country context where the economic agent's (individual or household) interaction with the outside world (through market activities) is relatively more restricted than in developed countries. Since developing country households are largely self-sufficient in a number of dimensions, it is inadequate to concentrate only on market exchanges.

Focusing on the theory of household production, Becker (1965 in Smeeding, 1997, p.2) has for decades stressed the importance of time as an input for producing services and utility more generally.<sup>5</sup> Therefore, as Smeeding (1997, p.2) acknowledges, the value of time needs to be included with other inputs as well (e.g. market goods), when considering the basic inputs which produce utility. However, this path leads to difficult estimation problems and related identification issues in valuing joint production (i.e. when non-market "work" produces outputs *and* satisfaction simultaneously; preference measurement; joint production; equivalence scales, etc.) and in valuing leisure.

With regarding to the tradition of labour theory, Tu (2001, p.2) explains that the discussion of working time has been focused on commodified time with market or exchange value. However, the concept of commodified time is not necessarily applicable to self-employed labour and household labour. It is especially difficult to conceptualise women's unpaid labour in the farm family. One reason is that the monetary definition of labour time tends to devalue household work time. In human resource theory, the worth of time spent on household work does not equal that of market labour time, especially male labour time, because household labour is not specialised and has no market value.

One should concur with the idea put forward by Ilahi (2000, p.1) noting that analysis of time is essentially an analysis of allocation of time to various activities such as work for wages, work on the family farm or enterprise, 'inside' chores in the household (childcare, cooking, washing etc.) and 'outside' chores (fuel and water collection, etc.). This paper will pay attention to outside chores of work in the family. There is usually a reference period in which time allocation is studied. This can range

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<sup>4</sup> Joyce and Stewart (1999, p.3) also argue that the most fundamental application of time-use data would be to provide nationally representative estimates of the amount of time that Americans spend in various activities. The types of activities that could be captured include: productive non-market activities such as housework; home maintenance and repairs; child care and care of elderly and disabled persons; leisure activities such as watching television, reading books or magazines, pursuing hobbies, and socialising with friends; and non-productive, non-leisure activities, such as waiting in line and commuting.

<sup>5</sup> Becker already considered "time" an important measure of the value of labour. In Becker's conception, time is divided into paid working time, unpaid working time and consuming time (Tu, 2001, 2).

from the last 24 hours to time spent in various activities over a year (usually measured in terms of months or weeks). While the first studies of time-use mostly concentrated on the time allocation of females in North America, it is now more common in empirical work to consider the time of the various members of the household (men, women and children) (Ilahi, 2000, p.3).

We have been using often the idea of household activity, and more particularly with importance for Mozambique, farm household activity. Bruck (2004, p.4) attempts to define this in a useful way, explaining that a farm household activity (or coping strategy or income diversification strategy) is defined as the allocation of labour to a task designed to generate subsistence or market income. Farm household activities considered in this paper include agricultural and non-agricultural income activities, on-farm and off-farm income activities, market and non-market activities, the choice between food and cash crop adoption and the choices of the number of income activities and the area farmed per household.

The important of time-use is broad, and in this paper its focus is on providing ingredients to observe how the allocation of time within the household is linked to the general activities of the household that can affect their well-being.

### **3.2 Estimates in Time Allocation**

The importance of estimation on time-use has been highlighted in the literature. Joyce and Stewart (1999, p.3) point out that conducting a time-use survey on an ongoing basis would allow researchers to study how the time spent on various activities changes over time. In addition, Smeeding (1997, p.1) reveals that increasingly, family and social policy researchers are coming to the realisation that time-use is both important to public policy and is neither adequately nor frequently measured by nationally representative surveys. Care-giving, volunteer time-use, time and human capital formation, time-use by children and adolescents, and more generally the division of work (market, non-market) and leisure within and across households is of growing policy interest. Smeeding also argues that, without household survey data on time-use, income, wealth, and consumption data may provide a misleading picture of economic and social well-being. As such, time use and the value of time spent in various activities, is the last major under-explored household resource (Smeeding, 1997, p.1)<sup>6</sup>. Smeeding (1997, p.7) also quotes Michael (1996) and others (e.g. Levy 1996) arguing that measurement of the money value of output and its distribution can be misleading because it ignores the value of non-money production. It also leads to mis-measurement of the distribution of real economic well-being across households and the level of real income derived from market work.

There are a number of ways time-use data can be collected and the results obtained are sensitive to the approach taken. For Ilahi (2000, p.3) there are two ways in which

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<sup>6</sup> Additionally Smeeding (1997, p.5) points that because household work, care-giving and related activities have a value to families and to society, these form an important input to social policy decision-making and the measurement of real economic position of different groups in society. Unless we go beyond the macroeconomist needs and look into the specific distribution of home production and time-use across the economic and social spectrum, we miss or ignore these insights.

time-use data are typically collected. One is the traditional survey method in which the respondent is asked how much time he/she spent in activity in the reference period (e.g. past 24 hours or last seven days). An alternative is the more detailed time diary method, usually based on a 24-hour recall. Here the emphasis is on the chronology of events over the past day. The two approaches differ in merit as well as cost. The latter, because it is more detailed, tends to be more costly in the sense that it requires a certain degree of sophistication of the interviewer. It also requires more time for the respondent to recall in detail and so it can have cost overruns in data collection. The former approach of traditional survey is much less costly and it can be incorporated in most existing integrated household surveys without difficulty (Ilahi, 2000, p.3).

Juster and Stafford (1991, in Ilahi, 2000, p.3) note that the traditional and the time diary approaches differ substantially in their merits. The traditional survey method can miss activities that do not leave market traces. On the other hand, Ilahi (2000, p.4) says that under the traditional approach, labour supply spikes at 40 hours per week. The time diary method appears to give a better indication of 'actual' hours. This is due to the fact that in the traditional approach, respondents give a 'conventional' number of hours that they were 'supposed' to work rather than the actual hours which are variations around the 40 hours per week spike.

However, the time diary method also has some shortcomings. According to Juster and Stafford (1991, in Ilahi, 2000, p.4) the problem is related to the fact that this method tries to record all activities, and it runs the risk that respondents will confuse between multiple or simultaneous activities. Thus if one takes care of children while cooking, then there is a likelihood of reporting both activities, a sort of 'temporal double-counting'.

Apart from the specific issue related to the two approaches, there is a much broader problem in data collection that creates problems for the time-use. Since most surveys are based on the premise that consumption is the indicator of welfare, they pay little attention to the measurement of leisure activities. Leisure as an activity does not simply include sleep time but also includes the time take in personal care and "lazing around" (Harvey and Taylor, 1997 in Ilahi, 2000, p.5). Ilahi (2000, p.5) notes that in economic theory individual welfare is a function of both consumption and leisure. However, the lack of attention given to the direct measurement of leisure in surveys means that it ends up being calculated as a 'residual' term that inherits the measurement errors of the other time-use components (such as the temporal double-counting). Now this will be problematic if one of our objectives is, for example, to use the lack of leisure as one measure of poverty.

Given the peculiar and dynamic nature of unpaid time, it becomes crucial to choose an accurate method to estimate farm women's time-use. According to the literature (Tu, 2001, p.3) time diary is a good method to measure farm women's time devoted to farm work and household work based on the existence of the exaggerated working time from stylized estimates. As noted above, specific studies in time-use data are scarce, particularly in Mozambique. But information on it provides bases to analyse some implications of time allocation in the household context.

#### 4. Social Norms and Time Use

Every society is embedded in norms and values that underpin the particular ways that time is allocated to members of the household. Blackden *et al.* (2005, p.22) point out that the different structural roles of men and women in the market economy (notably agriculture and the informal sector) are coupled with their equally different, and unbalanced, roles in the household economy. A further distinguishing characteristic of African economies is that the boundary between economic and household activity is less well-drawn in Africa than in other regions. Ilahi (2000, p.25) indicates that it is argued that women are predominantly found doing household chores and men are largely in income-generating activities because those are largely the roles society prescribes for them<sup>7</sup>. Social norms and roles may differ by ethnicity or culture and may differ for household members - fathers, mothers, daughters-in-law, etc. Traditional economic theory and models do not explicitly account for these differences. He goes further in saying that existing roles in agriculture are such that men tend to spend a greater proportion of their time in agriculture and women in home-based activities. Most often, men tend to control farm-generated incomes in most regions. Africa is one exception where women have independent access to their own plots, but most of the crops grown on these are 'food' crops for family consumption (Ilahi, 2000, p.25).

The norms affect also intra-household allocation of time. According to Smeeding 1997 (pp.20-21) there is a belief that households are not unitary decision-making units but rather that decisions on the allocation of resources and labour *within* households depend on individual decision-maker's preferences and on bargaining within households based on market income and on power relationships. On the other hand, Ilahi (2000, pp.1-2) notes that like any other resource in the household, time is not equally distributed across members. There are significant differences, not just along gender lines but also by age, social status, wealth etc. The issue of what determines intra-household time-use is important for the same reasons the study of intra-household consumption is important.

Ilahi (2000, p.40) also observes some particular aspects of intra-household dynamics, noting that the existence of functioning labour and goods markets is also important in the relationship between modernisation of, and technical change in, agriculture and intra-household time-use. In regions where labour markets exist, there is little effect of time-use, partly due to the fact that any increased demand for labour is absorbed through hiring in. However, in regions where such markets do not exist, intra-household bargaining determines the allocation of tasks and time. If new technology is male-biased (in that it is in crops that are typically grown by men) then women are able to 'negotiate' an arrangement whereby they may also be able to share the benefits of technological improvements. However, it appears unlikely that they benefit as much as men do.

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<sup>7</sup> As a result, women bear the brunt of domestic tasks: processing food crops, providing water and firewood, and caring for the elderly and the sick (Blackden *et al.* 2005, p.22).

Overall, one can conclude that roles and norms are important determinants of time use. It is worth noting at this point that what is important about the effect of social roles and norms on time use is that they can bias the effects on time-use of other more important policy-related variables. The above situation is typical for Mozambican society where also roles and norms account generally for women's and girls' lack of equal access to: (i) time; (ii) education and health opportunities; (iii) use of direct productive assets; and (iv) decision-making. In sum, the traditional allocation of gender roles is a major cause of gender inequality in access to these resources (Economic Commission for Africa, 2004, p.6).

## 5. Gender and Time Allocation

Gender constitutes an important dimension of the household. The literature discusses several gender aspects that have implications in time allocation. Ilahi (2000, p.4) discussing the composition of male-female time tasks explains that women work more than men in almost all regions. The example of Peru indicates that the total work of men and women there is such that women spend 15-20% more time in all work activities than do men (Ilahi, 1999a). According to Ilahi, in Africa, 15 of the 17 studies summarized by Brown and Haddad (1995) find women work more than men do. In Nepal, women spend 50-80% more time working than men. Gender differences in time-use vary by rural-urban status also. Men work less than women in both rural and urban areas, but rural men and women work a lot more than their urban counterparts. Urban women's work time is not much different from that of rural men (Ilahi, 2000, p.6). Blackden *et al.* (2005, p.5) also argues that women face time constraints due particularly to high burdens associated with household tasks and large families. These constraints sharply reduce the ability of women to engage in market production and thus their assets are not being used in ways that is captured by income growth and income poverty statistics<sup>8</sup>.

In addition to the effect of wages on own time-use, the literature points out that it is also of interest from the perspective of gender analysis to assess cross-effects (see Ilahi, 2000, p.7). For instance, what happens to male time-use in response to an increase in female wages, and vice versa. It should be noted at the outset that while there are a number of studies that analyse male and female labour supply in developing countries, very few include 'non-market' activities such as housework as a dependent variable<sup>9</sup>.

The seasonality and time-use by gender is similar to that described by Ilahi (2000, p.7). Time-use is not constant over the cycle of the year especially in rural areas. In

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<sup>8</sup> In addition Ilahi (2000, p.6) acknowledges that the composition of male and female work is also different. Women undertake most of the housework while men do most of the work on farms or work for wages. The picture varies along a regional spectrum. In Africa, women spend longer hours in both agricultural and non-agricultural activities than do men. A larger proportion of male time is spent in self-employment and wage work activities than that of females (Ilahi, 2000, p.1).

<sup>9</sup> Taking into account that women are supposed to do household work in a patriarchal society, the question of how we redefine women's unpaid household labour or how we transfer women's contribution to unpaid household and farm labour into market exchange value becomes crucial (Adam 1989, 1990 in Tu, 2001, p.2).

Mozambique there is a large variation in this by season and by region. In the April-July dry season women spend less time in agricultural work and more time in the collection of fuel and water. In winter - associated with low overall labour use on the farm - there is a clearer division of labour across gender. In this season men work in farm activities and women do housework. This is altered in the late season when farm labour use is higher. Then, women contribute more work on own or others' farms but men *reduce* their contribution to housework. It appears also that women tend to consume a slightly higher proportion of household leisure than do men in the peak season than in the lean season. In a similar perspective Tu (2000, p.2) points out that due to the typical nature of self-employed/family-based farm production, the length of women's time spent in farm work is somewhat irregular and flexible. The length of time varies with the natural process of farm production (especially crop) and seasons. Time flexibility results from the autonomy of their time allocation and use of other family labour as supplementary labour input. Furthermore, women may be engaged in two different tasks at the same time. The coexistence of different activities comes from the self-employment status the women have.

Blackden *et al.* (2005, p.5) highlights that the household plays a particularly important role as a producer of economic goods as well as human assets in Africa and thus a full understanding of the gender issues involved requires an analysis of household and intra-household issues - an area where economics has historically shied away from and where the data is often quite patchy and the evidence circumstantial. Second, the importance of gender issues may not be as directly visible as some other issues affecting growth due to the fact that a considerable share of the economic contribution of women is not included in national income aggregates and income-based poverty measures. According to Blackden *et al.* (2005, p.5) this has two important implications. For one, the economic contribution of women to well-being and poverty (in a wider multidimensional perspective) is underplayed in conventional national income and income poverty statistics. Similarly, the economic constraints women face in their productive activities often do not receive enough attention. In addition, researchers interested in uncovering the growth issues related to gender will have to move beyond direct influences of gender inequality on growth and include complex indirect influences. As shown below, indirect linkages might include issues such as the 'quantity' and 'quality' of children, the importance of time constraints for women's productive activities, and the impact of intra-household relations and resource control issues on women's willingness to invest in the improvement of land or in technical progress.

The situation of the women-headed households is more severe. In Mozambique, according to CLUSA (1997, p.5 in Zandamela, 2004), women head<sup>10</sup> about 20 per cent of rural households, but there are sharp regional differences, and in the southern provinces, where male migration is widespread, the figure rises to 30 per cent. Female-headed households are generally poorer than male: whereas 25 per cent of male-headed households cultivate less than one hectare of land, while for female-headed households the equivalent figure is 44 per cent. With regard to the household

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<sup>10</sup> The concept of household is used in the same sense that Knauder (2000, p.157 in Zandamela 2004) uses it: "we speak of a female household head only if an unmarried woman, single, separated, divorced, or widowed is leading the household. A married woman has little chance of being considered a household head, particularly if the husband is present."

context, there are organic aspects that underpin the position of women in Mozambican society.<sup>11</sup> While not necessarily uniform in Mozambican society, the general situation is that women are discriminated against from birth, and this trend continues into adulthood. There is thus an organic type of reproduction process within the family that discriminates, and tends to perpetuate that discrimination. In reality, it is found that women, because of their unequal social position, only have access to the fields and to production that are the patrimony of the families. The tendency is to allocate to them production for subsistence.<sup>12</sup> Although improvements in access may have undergone some notable and rapid changes, control over resources has changed more slowly, reproducing and at times reinforcing the inequality of the gender structures. In a situation of extreme poverty, access to agricultural credit, to factors of production and to extension services are directed preferentially to production destined for the market, where men predominate (Andrade *et al.*, 1997, pp.58-59 in Zandamela, 2004).

In many areas, Mozambican women have long been primarily responsible for hoeing, but men were also engaged in agricultural work and management of common household farming. The diversification of rural livelihoods has meant that many women have become the true everyday organisers of agricultural production (O’Laughlin, 1996, p.12 in Zandamela, 2004). This suggests that time allocation analysis is important to deepen the understanding of the dynamics within the household context.

## 6. Time use and Poverty

A significant part of the survival of poor households in developing countries is through home production. The primary resource used to attain this is time of household members. At the same time leisure (which is the flipside of ‘work’) is a good that individuals obtain welfare from. According to Ilahi (2000, p.2) an important question then is whether we should worry about the shortage of this resource as an indicator of poverty as much as we think of a shortage of money as an indicator of poverty. The World Bank (1999 in Blackden *et al.* 2005, p.22)) also notes that time burdens are considered serious causes of poverty. People can be poor in terms of *time* as well as *money*. Women, especially in rural areas, are subject to heavy time burdens due to their need to balance the demands of their productive, social, reproductive, and community management roles. When women are overburdened at the household level, lower productivity and increased production costs are manifested both in the

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<sup>11</sup> Akum (1999, p.18) discussing the problem of access to credit in Cameroon, points out that “Doubly oppressed by gender and class hierarchies, impoverished rural women suffer the most, their restricted access to resources, especially cash resources, and limited participation in decision-making renders them particularly vulnerable. More details can be found in Akum (1999) “Access to ‘empowerment credit’: a case study of Alabukam, Ndzong and Alah’nkei quarters in Mankon, Mezam division – Cameroon”

<sup>12</sup> Simba (1996 in Zandamela, 2004) noted a similar problem in Tanzania highlighting that “women who seek capital from the financial institution are faced with rules and regulations, which are difficult for them, taking into consideration their social, cultural and legal position in society. For example, socially business activities in Tanzania are generally expected to be done by men. Women’s place is at home.

household and market economies. Women's time burdens could affect the level of output of all sectors and perpetuate poverty.

Ilahi (2000, p.2) argues that development policy interventions, be they poverty alleviation, safety nets, basic services projects, agricultural extension programmes etc., have a lot to learn from the information that comes from time-use. Whether there exist constraints on the time of some, or all household members can have crucial impacts on the success of projects. For instance, if household members spend a lot of their time travelling to work on foot then there is a high likelihood that the provision of rural roads would have high returns. Then the following question can be posed, is there a correlation between poverty and time-use? The point is that most quantitative measures of poverty are based on consumption (and some on income). But the typical approach to counting the poor in developing countries is to rank the households by per capita consumption and then count the proportion that falls below the poverty line. This measure of poverty raises a problem because it glosses over the issue of home production (Ilahi, 2000, p.8). The policy-relevant issue then becomes whether the conventional (consumption-based) measures of poverty present a 'different' picture of poverty than what actually exists. It is probable that some of the households that fall among the poor according to the consumption metric are poor for different reasons. They are not poor because their consumption is low but because some members (mostly women) have high work burdens and low leisure (Bhushan and Chao, 1997, in Ilahi, 2000, p.8). Thus what may appear to be gender-blind poverty on a consumption metric may in fact be gender-differentiated poverty. It would be important as a first step to see how conventional poverty and well-being indicators correlate with measures of work burden (Ilahi, 2000, p.8).

Time use and poverty are intimately related. Households that rank poor on a consumption metric are also those where women have high work burdens. These work burdens fall as household income increases, provided a market for labour exists. In labour-scarce regions where there is little hired labour like Mozambique, work burdens do not fall (leisure does not increase) with income. According to Ilahi (2000, p.40) the empirical literature on the determinants of intra-household time-use finds that the more traditional measures of economic conditions - wages, non-wage income, demographic composition of household etc - do have an effect on time-use by gender. One should agree with Ilahi (2000, p.40) that the existence of markets - not just for labour but also for other services - plays a role in defining the regional picture of time-use as well as a rural-urban one. Women and men respond well to economic incentives in situations where markets exist. Therefore taking into account the limited agricultural development activities and consequent limited non-agricultural wage employment opportunities only local agricultural crop markets were the most important markets, addressing women's time use should be one of the highest priorities for poverty reduction strategies, particularly those measures that save time or improve the productivity of time-use, such as women's access to education, land, credit, information, and technology.

## **7. Time Allocation and access to basic services**

In Africa and Mozambique particularly, the question of access to basic services such as water and energy is a matter of concern. These concerns relate to the failure of absence of markets for the basic goods. As a consequence, households have to devote

part of the time to address these necessities. According to Ilahi (2000, p.18) noting the consequence of the market failure for these basic goods, as a consequence rural folk are forced to allocate their time to acquire these basic goods from either community sources (such as wells or taps) or open access areas (such as forests and rivers). In most settings the burden of provision of these services to the household largely falls on the female members, though there is some evidence that men may also be involved. Since these are 'outside chores' that are time- and, most often, energy-intensive, a few obvious questions are of interest. First, do 'outside' chores constrain women from allocating time to income-generating work more than they do men? Second, do they increase the total work burden of women more than men? Bulk (2004, p.5) notes the constraints arising from spending a lot of time collecting water and firewood indicating that they may reduce household income.

Ilahi and Grimard (1999) find that wages reduce women's time in water collection and increases their time in housework. Interestingly they do not find spouse (male) wages to increase the demand for leisure. Part of this explanation may be that they consider only rural households that tend to be poorer and therefore less able to afford leisure (in Ilahi, 2000, p.14). Ilahi and Grimard (1999) also find non-wage income tends to lower time in water collection and income-generating activities and increases time in housework with no appreciable effect on leisure. They also use the value of 'home assets' (sum of net financial position, cash holdings, value of financial holdings and value of durable goods) and 'productive assets' (sum of value of livestock, farm land and other non-farm commercial assets) (in Ilahi, 2000, pp.14-15). Home assets only lower the probability of water collection. Productive assets have no effect other than strongly increasing the time in income-generating activities.

The existing empirical evidence is largely mixed. The earliest systematic work on this is by Kumar and Hotchkiss (1988) who use a sample of households from the hilly regions of rural Nepal. They find that a deterioration in access to forest wood (measured by the time it takes to collect a standard head-load of firewood from the forest) tends to increase the total time women spend in collecting firewood and lowers their time in on-farm activities. This leads to the conclusion that forest degradation can have potentially serious gender-differentiated effects on time allocation and also on general household nutrition and welfare, through reduced farm output. On the other hand, water collection is perhaps a more important task in the scheme of household chores than is firewood collection. The findings on the effects of water collection on female time-use are somewhat different. Ilahi and Grimard (1999) find a deterioration in the access to water in rural Pakistan is positively related with the total time women have to allocate to water collection but also that it is negatively associated with time allocated to earning activities. This is understandable when one considers the fact that in general, household demand for water is likely to be quite inelastic (it has few substitutes) whereas that for firewood may not be since it has a number of substitutes (coal, kerosene, dung etc.) (in Ilahi, 2000, p.19).

In Mozambique, energy and water are two important factors in time allocation of the household activities. The evidence during the research has shown that women bear the burden of these activities underpinned by allocation of time within the household that is also informed by the norms and values that point to women being involved and ensuring supply to the household of the basic necessities such as water and energy.

The patterns described in the literature apply to Mozambique particularly because of the market failure to provide these basic services.

## **8. Conclusions**

The paper reviewed the literature on time allocation with particular focus on issues related to social norms and values, intra-household allocation, gender, poverty and access to basic resources as a baseline to inform the application of the principles and experiences to the Mozambique situation. The paper highlighted the peasant-dominated characteristic of Mozambique that suggest particular importance of rural household activities. It has demonstrated how the power relations work against women forcing them to carry the burden of the household activities in general. Taking into account the predominance of poverty in Mozambique, the paper argued for the importance of addressing women's time allocation as a way to improve productivity of the household and consequently address poverty. These aspects were particularly highlighted in the context of access to basic services such as water and energy that the markets are not able to provide. Broadly, the conclusion points out that all questions related to time allocation are entrenched in a broader social context that can be influenced by public policy or raise issues with implications for public policy. This suggests that the study of time allocation is an important aspect to consider in attempting to deepen the understanding of rural production and search for ways to enhance the quality of rural life.

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