POTENTIAL OF WOODLOT ESTABLISHMENT IN MEETING THE PRACTICAL AND STRATEGIC GENDER NEEDS OF WOMEN IN THE UPPER WEST REGION OF GHANA

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ABSTRACT

The formation of women's groups has become an important instrument for addressing various gender challenges in development. Both practical needs and strategic interests have been cited as motivating and propelling the need to integrate women's concerns in development. In the Upper West Region of Ghana, women's groups have been involved in woodlot cultivation as a means to addressing the problems of environmental degradation arising from domestic fuel-wood consumption. The endeavor has entailed the cultivation of plantations, which on maturity are harvested for domestic energy use and income generation. This paper presents, in part, an assessment of various governmental and non-governmental initiatives in the Upper West Region of Ghana for the extent to which it addresses women's practical needs while working toward strategic ends. Data were collected on participating women's groups in three districts: Wa East, Lawra and Nadowli. A field survey was conducted using participatory rural appraisal tools including key informant interviews, questionnaire and focus group discussions. Data derived from the survey were analyzed using flow analysis and logistic regression analysis. These revealed that the initial capital requirement for woodlot establishment was quite high for the women. As such credit for woodlot establishment and maintenance was very necessary and critical. Indeed, the most important factor influencing the women's decision to participate in woodlots was access to credit. The analysis also revealed that the NPV at 20% and 25% are ¢5,228,526 and ¢3,571,352 respectively, the discounted BCR at 20% and 25% are 3.4 and 2.7 respectively and the computed financial internal rate of return (FIRR) is 48.2%. Though all these values indicate that woodlots are profitable ventures, the actual benefit in terms of value of produce to individual women was found to be too small. Consequently, it was concluded that although the establishment of woodlots did address the practical needs of women by providing fuel for domestic use and served as good entry points for further interventions to address the practical needs further, they did not adequately serve the strategic interests of the women.

KEY DESCRIPTORS: Strategic Interests, Practical Needs, Woodlot Plantation, fuel-wood, domestic energy.

INTRODUCTION

Women have been traditionally associated with their reproductive roles as wives and mothers. Their productive roles especially in agriculture have been overlooked for a very long time. Women's roles as farmers, processors and produce marketers, among others, have been relegated to the background and so has been their status in society. The situation is gradually changing through advocacy and research. There is now some recognition of the critical roles women play in the development process in all economies.

In her groundbreaking work on women and the economy, Boserup (1970) criticized the oppositional duality of colonial and post-colonial agricultural policies of African countries, which associated men with the "modern" cash crop sub-sector and women with the "traditional" subsistence sub-sector. She also showed that there was positive correlation between the role of women in agricultural production and their status vis-à-vis men. Women, who for example, are able to produce cash crops and obtain income, have enhanced status. Other researchers have suggested that the failure to acknowledge and utilize women's productive roles within and beyond the household have resulted in inefficient use of resources (Apusigah, 2004; Young, 1993; Tinker, 1990). They argue that there will be an overall increase in efficiency of production if women's access to appropriate technology, credit and other productive resources are improved.

The subordinate position of African women in society has also been linked to the perceived low relative economic contribution of women. That perception has stemmed from the tendency to exclude most of women's activities from the marketplace. Rural farm women's productive and reproductive roles are often considered supportive and hence remain largely unaccounted and unpaid. Their unpaid labor at the household and community as well as on the farm is quite substantial (Young, 1993). Apart from growing their own side crops, farm women participate on the family land from start to the end in various ways. Yet, it is only those contributions that have direct monetary values on them that count. Studies by the Ghana Statistical Service show a high dependence on the unpaid labor of women and child in the production process (GSS, 2005.)

In a work on women's contribution to agriculture, a directorate of the Ministry of Food and Agriculture (MOFA), Women in Agricultural Development (WIAD) asserts:

> Women produce about 70% of food crops, are important stake-holders in agro-forestry and fisheries and major actors in post-harvest activities, where they make up 95% of the actors in agro-processing and 85% in food distribution. ... in spite of women constituting 52% of the agricultural labor force, contributing 46% of the total agricultural GDP and producing 70% of subsis-

> tence crops, they are faced with serious constraints, which negatively impact their agricultural productivity. (MOFA/WIAD, 2001: vii)

This unequal valuing and diminishing of women's contributions in production is not peculiar to Ghana. Similar studies on Africa and the Third World dating back to Boserup (cited above) are revealing of women's productive roles and contributions to the economies of the household and state (Kevane, 2004; Manu, n.d).

In a study on Ghana, Apusigah and Opare (2006: 37-38) contradicted the economic basis of women's subjugation as follows:

> Deductions from CWIQ II data on sex of household income contributors indicate that females are contributing more to household incomes at 51% while males are contributing the rest; 49%. Females in urban areas are contributing more at 52% to the household income than females in rural areas at 51%. This situation also diffuses the popular perception of males as breadwinners and how that translates to ownership and control of family/household resources especially against the background that women spend their incomes on perishable and/or consumption items while men invest in capital items. In spite of the popular misconception that women's low financial contributions to household define their subjugated position, women continue to occupy subjugated positions in household but also community and national decision-making structures. Indeed, financial contribution is only a part of the many factors hindering women's social participation. Hence, proposed interventions need to target the multi-faceted nature of women's subjugation.

In spite of this evidence, women remain largely under supported and excluded regarding access to productive resources. It is therefore logical to expect that better access to such resources would further enhance women's roles and contributions to households and for that matter state income. This situation has inspired various propositions. One major proposition for enhancing women's access to productive resources has emerged from the gender and development framework.

The literature on gender and development makes a distinction between practical gender needs and strategic gender needs of women (Surreshbabu & Apusigah, 2005; Apusigah, 2004; Molyneux, 1985). Strategic gender needs are "the needs women identify because of their subordinate position to men in their society. Meeting strategic gender needs helps women to achieve greater equality" (Molyneux, 1985: 233). Practical gender needs, on the other hand, refer to "the needs women identify in their socially accepted roles in society. These are immediate perceived necessities, identified within a specified context. They do not generally entail a strategic goal such as women's emancipation or gender equality; neither do they challenge the prevailing forms of subordination even though they arise directly out of them" (Ibid.: 233). Interventions are usually aimed at meeting the practical gender needs but the real

goal of development is or should be to support women to achieve the strategic gender needs. Apusigah (2004) justifies this important agenda by arguing that practical needs enhance conditions while strategic needs enhance status. The former constitutes a mere change situation while the latter transforms women's position. The latter entails political changes that result in personal and collective empowerment and rights enlargement. Yet the two are inextricably linked.

Another analysis, in which Surreshbabu and Apusigah (2005) compare the efforts of CENSUDI, Ghana and BRAC, Bangladesh programming for gender equality through micro-credit initiatives, reveals that the meeting of practical needs prepares the way for reaching strategic ends. They claim that the meeting of practical needs clears those impediments that hold women back from seeking those goals that enhance their status in society. For instance, women who have the financial wherewithal are not only able to support themselves and their children but are also able to make and affect decisions regarding their contributions. Their husbands and other family members consult them in matters affecting their families. The examples from Ghana and Bangladesh demonstrate amply that with planning and effort, interventions meant to meet practical gender needs can become stepping-stones to meeting women's strategic gender needs. In this paper, I explore the possibilities for forging that agenda using the case of women in the household energy sector.

Women as homemakers and caregivers in many parts of the developing world and particularly in Africa are major users of fuel-wood as an important domestic energy source. According to Nishimizu (2001), women spend between two to nine hours each day in fuel and fodder collection and cooking chores in developing countries. This places them at the centre of rural life (and also urban life) in the provision and use of household energy even though they have little voice in how the resource base is managed or might change.

Fuel-wood continues to be the main source of energy for almost all rural households and many urban households in northern Ghana as well as in Burkina Faso, Niger, Mali and other parts the West African sub-region (Noppen et. al. 2004). According to Ankrah (1996), firewood and charcoal are the most important domestic source of heat energy in the savanna regions of Ghana and account for more than 80% of the total fuel energy used in both the urban and rural areas in this zone. Awumbila (1997: 40) has also pointed out that in the Zorse area of the Upper East Region of Ghana, fuel-wood gathering sometimes become so critical in the rainy season that "women usually organize trips in groups about once a week and return carrying bundles of wood weighing up to 30kg." Norton (1988) also reports that in some areas of the Northern Region of Ghana, women are forced to walk up to 12 kilometers a day to get a head load of fuel-wood due to growing environmental degradation. The provision of fuel-wood for domestic use or even income generation places multiple burdens on women namely the time, energy, distance and health burdens. This situation tends to compound and increase women's workloads and labor burdens.

Fuel-wood is also a significant source of income to many rural women especially during the lean season in Northern Ghana. It is harvested and sold in markets, communities and roadsides to various people including food sellers, cottage industrialists, working women and urban domestics. Fuel-wood is particularly important in pito brewing, which is a common local economic activity for women in the Upper West Region. In many communities in the Region, pito is brewed in almost every other household. Its production entails the consumption of large quantities of fuel-wood.

Charcoal production is another source of energy for both rural and urban dwellers. It is used for cooking, ironing and micro-processing. Charcoal production has also become a major income earning activity in the Upper West, Upper East and Northern Regions and several other parts of the country. In a study on what he called charcoal communities, Makain (2007) found that charcoal production had become an important occupation in the West Mamprusi area of the Northern Region of Ghana with the number of communities, bags displayed for sale and producers multiplying. Indeed, for many rural households, charcoal is not a major source of domestic energy. Rather, it serves as an income source. In the dry season, it becomes an important off-farm activity. Among the largely rural poor, its free resource base in the wilds makes it an easy avenue for generating income. For rural women, who suffer severe resource limitations, charcoal production has gradually become an important occupation in spite of its many negative consequences. Charcoal producers harvest the wood, which is its raw material base, from the wild. Both fuel-wood and charcoal are produced from trees and shrubs. Their production is thus a major source of natural resource exploitation and destruction. Trees and shrubs are simply cut and not replaced in many situations. Yet, the very destruction of the raw material base in itself poses the danger of denying the poor, especially women, from even this limited window of opportunity for income generation.

From the foregoing, it can be deduced that one area of technological improvement that can be of great value to women as a practical need is the conservation and utilization of natural resources, particularly, fuel-wood. In their study for the African Development Bank, Apusigah and Opare (2006) suggested that the availability of simple technologies in the home relieve women of arduous domestic tasks while opening opportunities for men to participate in domestic activities thus helping to collapse the supposed division of labor that overburdens women and yet is hardly counted or rewarded. In most parts of Africa, women are important users of all types of natural resources and partly because of their intimacy with the environment they tend to have great knowledge of resource conservation. Appropriate interventions in the area of natural resource use and conservation can thus provide a means for women to improve upon their natural talents and empower them economically and socially. Such empowerment has been anticipated to change the fortunes of women and transform their situation. Yet, the extent to which this has been the case is often left unanswered. This paper examines the extent to which a group of women of Upper West Region of Ghana, who are involved in a woodlot initiative, have been able

to convert a practical needs programme into serving their strategic needs and ends. The establishment of woodlots has been lauded as an important solution to the unsustainable methods commonly used to obtain fuel-wood and charcoal; a practical need. There is, however, little empirical evidence on the factors influencing the participation or otherwise of women in establishing woodlots in the savanna areas of Northern Ghana. The idea of establishing woodlots, especially by women's groups, for the purpose of providing fuel-wood and charcoal for multiple purposes is an introduced woodland management practice that has the potential to meet the practical and strategic gender needs of women and is therefore likely to be widely adopted. However, it appears from the current trend of expansion of woodlots, that the expected widespread adoption may not easily take place until factors and constraints that militate against woodlot establishment and management are examined and appropriate decisions taken. Furthermore, the planting of woodlots and their management may not necessarily empower women in the context where there is limited land available to women. Therefore, the extent to which participation in woodlot establishment enhances access to and control over resources such as land is critical to understanding its impact on the empowerment of women and for that matter in addressing their strategic needs.

The following analysis, which represents the conceptual framing and empirical evidence during investigations, attempts to address the questions above.

WOODLOTS PROMOTION FOR ENERGY IN THE UPPER WEST REGION

Conceptual/Contextual Issues

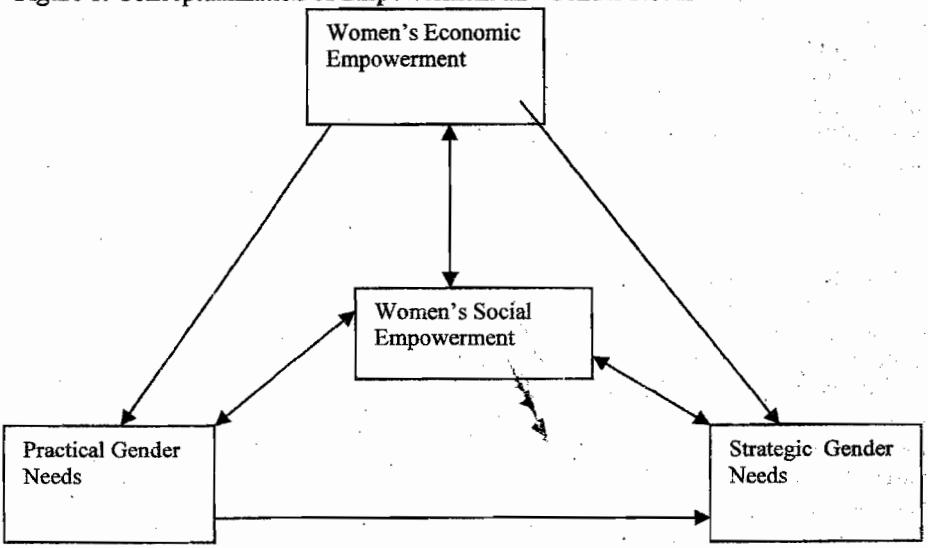
Women and men may play different and/or similar roles in society but often have distinct levels of control over resources due to archaic traditional bequeathals and defective socio-economic programmes that are unduly gendered. An argument, no matter how precarious and antiquated, has often been made on the basis of differential needs. Indeed, needs should define allocation within contexts of scarce resources. However, when allocations are underlined by biases and prejudices that subjugate and segregate, they assume a questionable character. Indeed, a prioritized concern of an individual is translated into a need (Molyneux, 1985). Development interventions should help to meet those needs. They should as a matter of fact transform the various needs of men and women into programmes that deliver at least basic satisfaction across the board. The optimization of needs satisfaction will however depend on how the interventions are designed and men and women positioned to meet their needs (same and different) and to benefit equitably.

In the Upper West Region of Ghana, the case of a woodlot initiative offers opportunity for analyzing programme design and impact in terms of benefits offered and/or delivered. The establishment of woodlots in the area has been used as a development intervention that can lessen the burdens of rural women as they carry out their repro-

ductive roles (Djarbeng & Ameyaw, 2006). It has been argued that the woodlots would reduce the time women spend in search of fuel-wood and also would ensure the availability of fuel-wood for domestic use. By extension, the long term occupation of land on which the women plant the trees would result in their control over and access to the land. This offers an opportunity for addressing a strategic end through a practical need programme. An opportunity for linking strategic and practical needs is offered here as suggested by Molyneux (1985), Apusigah (2004) and Surreshbabu and Apusigah (2005)

Indeed, both the practical and strategic needs are critically linked to the economic and social empowerment of women (see Figure 1). Women's levels of economic empowerment are best captured in the quantitative profitability of investment terms while their social empowerment can be captured in terms of the degree to which household decision processes have become more or less participatory or "democratic." Thus, the analysis concentrates on trying to capture both of these. Practical gender needs are said to be met if the economic and social empowerments only enable them to 'cope' with their socially accepted roles in the society. If they further ensure some economic and social equality with men then it means the strategic gender needs are being addressed. When women are economically empowered they can fulfill their practical needs but the fulfillment of strategic needs depends on the economic and social empowerment (Figure 1). The double arrows indicate the interdependence of processes. Most of the variables used to assess economic empowerment were obtained through the semi-structured interview tool, and most of the social issues were obtained through the use of participatory rural appraisal (PRA) tools.

Figure 1: Conceptualization of Empowerment and Gender Needs



This paper originated from a research that focused on the savannah woodlands of northern Ghana, specifically in the Upper West Region, and the role of women in the sustainable production and use of fuel-wood to meet their varying needs. The main study revealed that woodlot establishment was introduced in the Upper West Region by several non-governmental organizations in the 1980s to ensure the fast production of fuel-wood and charcoal as well as for the protection of the environment. The Adventist Development Relief Agency (ADRA), a major NGO and promoter of woodlot establishment in the northern parts of the country, operates on the premise that the gathering of fuel-wood is an important contributor to land degradation in the savanna zones of the country (Djarbeng and Ameyaw, 2006).

The ADRA project has targeted women's groups, largely, in the establishment and management of woodlots. The nature and extent to which the planting and management of woodlots affect both strategic and practical gender needs are important goals of development. The established woodlots can satisfy the fuel-wood requirements of women, a practical gender need. If the women's woodlot groups function well and have access to knowledge and skills, which are applied in transforming their subordinate to super-ordinate positions as they would re/position themselves deservedly as key players in decision-making, the productive economy and social interactions.

Methodological Issues

There are a number of organizations (governmental and non-governmental) involved in the promotion of woodlots in the Upper West Region and they had good records of woodlots established in the region (MOFA-UWR, 2006; RCC-UWR, 2006). A census of woodlots by women's groups in all the eight districts of the Upper West Region was taken and a combination of purposive (snowball) and stratified random sampling techniques was used to select districts, communities and the individual women for interview. The districts were selected purposively. They are districts with concentration of woodlots. Agricultural zones within the selected districts formed the strata. Some agriculture-related women's groups who do not have woodlots were also sampled from the chosen districts for comparison. Data were collected from 64 women involved in woodlot activities and from 25 women who are not involved in woodlot activities.

Various participatory rural appraisal (PRA) tools, including use of key informants, focus group discussions, and participant observations, were used to obtain the required information. Focus group discussions were held with adults and youth separately. Semi-structured interviews were also used to collect necessary information from the sampled units. PRA methods are appropriate in capturing qualitative information. It was necessary to probe into why some things were done the way they were done. Usually, the use of quantitative information collection tools such as questionnaires alone do not allow for appropriate probing to establish why particular actions ad/or decisions are taken. Table 1 below shows the data collection methods used and

the types of data collected.

Table 1: Data Collection Methods and Types of Data Collected

Data collection method	Type of Data Collected
Secondary data from files of governmental and non-governmental organizations	Census of woodlots established in the past 10 years
Focus group discussions with adult women and girls (youth)	The history of woodlots in the Upper West Region, the importance and practices of women's groups, varied perceptions of the role of woodlots in addressing the needs of women and general information on successes and failures of woodlots.
Semi-structured questionnaire administration	Cost items and values in woodlot establishment and maintenance, socio-economic information on respondents and their activities
Field observations and key informants' interviews	Crosschecks on information obtained

Source: Field Survey 2006

ASSESSMENTS OF THE WOODLOT INITIATIVE

Cash Flow Analysis of Establishing Woodlots

Cost of establishing and maintaining a hectare of woodlot

Over the assumed eight-year life of woodlots, costs are incurred in all years but revenues are obtained mainly in Year Seven and Year Eight when the wood is harvested. Values have been put on pruned leaves, since the leaves are fed to animals, but the amounts are relatively small as indicated in Table 2.

Cost items involved in the establishment of woodlots are as given in Table 2. Land is a very important factor in the establishment of woodlots. However, no where in the study was a charge for land encountered. The cost of seedlings constitutes over 80% of the total cost of establishing a hectare of woodlot in the first year. As a result, the women prefer to raise their own seedlings.

Table 2: Cost of Establishing a Hectare of Woodlot

Cost Item	Quantity required per hectare	Cost per unit (in Ghana Cedis)	Cost per hectare (in Ghana cedis)	Cost Share (%)
Land clearing and stumping	4 labor days	1.50	6.00	3.9
Seedlings	500 pieces	2.50	125.00	81.4
Transplanting	5 labor days	1.50	7.50	4.9
Weeding (2X)	6 labor days	1.50	9.00	5.9
Making of fire belt	2 labor days	1.50	3.00	2.0
Watering (in dry season)	2 labor days	1.50	3.00	2.0
Total			153.50	100.0

Source: Field survey, December 2006/January 2007.

Table 3 gives the components of costs incurred in the maintenance of woodlots from Year Two to Year Eight. As indicated, the main cost items are weeding in Years Two and Year Three, maintenance of fire-belt, and pruning in all years. Harvesting of the wood takes place in Year Seven and Year Eight.

Table 3: Maintenance and Harvesting Costs in Ghana Cedis (GHC)

Cost Item	Cost of maintaining a hectare of woodlot (in Ghana Cedis) – Years 2 to 8						
	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Weeding	10.20	5.70	-	-	5.00	5.40	-
Fire-belt maintenance	3.40	3.80	4.20	4.60	5.00	5.40	5.80
Thinning	3.40	-	-	-	-	-	-
Pruning	3.40	3.80	4.20	6.90	7.50	8.10	8.70
Watering (dry season)	3.40	-	-	-	-	-	-
Harvesting (including transportation of wood)	-	-	-	-	-	13.50	29.00
Total	23.80	13.30	8.40	11.50	17.50	32.40	43.50

Source: Field survey, December 2006/January 2007.

There are, on the average, about ten (10) women per woodlot and the average area per woodlot is about two hectares. That means on the average about five women share the costs and benefits of a hectare of woodlot. Contributions by women for the establishment and maintenance of woodlots are largely (about 70%) in kind. They however contribute cash to pay for weeding and fire belt maintenance, which is usually carried out by hired labor comprising largely men. The wage rate of GHC1.50 includes food given to the workers. It is assumed, in the analysis that wage increases by GHC 0.20 every year.

Estimated Revenue Flows

Table 4 depicts the estimated revenue from a hectare of woodlot over the eight-year period. It includes the valuing of pruned leaves that were used to feed to animals. It was valued at the going (current) market price. Pruning begins in Year Two. Information regarding quantity of leaves obtained and sold was also obtained during the survey in January 2007. The survey revealed that the sale of pruned leaves from woodlots was not a common practice. Hence, pruned leaves were identified mainly as a major source of feed for livestock. As indicated in the table, the value was low.

A similar method was used to value the harvested wood. Most of the wood was found to be used by the women as fuel wood to serve domestic needs. The use of the market price in January 2007, made it possible for estimating the revenue level from the harvested wood. It was also revealed that the price for a bundle of wood varied widely as sale was though bargaining. Buyers with strong bargaining skills were more likely to pay less while those with less would likely pay more for the same bundle of fuel wood. The total value of wood from a hectare in Year 7 and Year 8 was estimated to be ¢24,000,000. The revenues accrued from the valuing are depicted in Table 4 following.

Table 4: Estimated Revenue from a Hectare of Woodlot *(Leucenia)*

End of	Revenue items	Estimated income	Total yearly income
Year 1	-	-	-
Year 2	Animal feed	35,000	35,000
Year 3	Animal feed	70,000	70,000
Year 4	Animal feed	90,000	90,000
Year 5	Animal feed	120,000	120,000
Year 6	Animal feed	140,000	140,000
Year 7	Animal feed	160,000	
	Fuel-wood	6,000,000	6,160,000
Year 8	Animal feed	320,000	
	Fuel-wood	18,000,000	18,320,000

Source: Field survey, December 2006/January 2007.

Discounted Cash Flow Analysis of a Typical Woodlot Enterprise

Since costs and revenues were spread over a number of years, it became necessary to determine the present cost and present revenue of the stream of costs and benefits in order to calculate the Net Present Value (NPV) and the Benefit-Cost Ratio (BCR). The discounted cash flow analysis is presented in Tables 5 and 6.

Table 5: Discounted cash flow analysis at 20% (in cedis)

End of	Expenditure (Cost)	Income (Benefits)	Net Benefits	Discounted costs at 20%	Discounted Benefits at 20%	Discounted net benefits at 20%
Year 0	-1,535,000	0	-1,535,000	-1,535,000	-	-1,535,000
Year 1	-238,000	35,000	-203,000	-198,300	29,200	-169,099
Year 2	-133,000	70,000	-63,000	-89,600	47,200	-42,462
Year 3	-84,000	90,000	6,000	-50,100	53,700	3,582
Year 4	-115,000	120,000	5,000	-55,400	57,800	2,410
Year 5	-125,000	140,000	15,000	-50,300	56,300	6,030
Year 6	-270,000	6,160,000	5,890,000	-90,500	2,063,600	1,973,150
Year 7	-435,000	18,320,000	17,885,000	-121,400	5,111,300	4,989,915
Present Values and Net Present Value at 20%				-2,190,600	7,419,100	**5,228,526**
Discounted Benefit-Cost Ratio at 20% = **3.4**						

Source: Field Survey 2006

Table 6: Discounted cash flow analysis at 25% (in cedis)

End of	Discounted costs at 25%	Discounted Benefits at 25%	Discounted net benefits at 25%
Year 0	-1,5535,000	-	-1,535,000
Year 1	-190,400	28,000	-162,400
Year 2	-85,100	44,800	-40,320
Year 3	-43,000	46,100	3,072
Year 4	-47,200	49,200	2,050
Year 5	-41,000	45,900	4,920
Year 6	-70,700	1,613,900	1,543,180
Year 7	-91,400	3,847,200	3,755,850
PVs and NPV at 25%	-2,103,800	5,675,100	**3,571,352**
Discounted Benefit-Cost Ratio at 25% = **2.7**			
Internal Rate of Return (IRR) = **48.20%**			

Source: Field Survey 2007(January)

From the Tables 5 and 6 above, the NPV at 20% and 25% are ¢5,228,526 and ¢ 3,571,352 respectively. The discounted BCR at 20% and 25% are 3.4 and 2.7 respectively. The computed financial internal rate of return (FIRR) is 48.2%. All these values indicate that woodlot enterprises in the Upper West Region are profitable. The FIRR of 48.2% implies that even if bank interest rates are that high, a woodlot enterprise can break even.

The NPV of only about ¢5,228,526 and ¢3,571,352 at 20% and 25% discount rates are however very low. Since the average area of woodlots in the three districts is about 2 hectares and the average number of women per woodlot is about 10, it means about five women own a hectare of woodlot on the average. By this analysis each will be earning about ¢1,000,000 or less in eight years. This is definitely not a good economic incentive for the women to participate in woodlots. Although some short and long term gains accrue from the enterprise, these are very minimal and hence marginal. For instance, access to animal feed and fuel wood supports women's reproductive roles while saving them the burden to long distance search for wood and fodder. The woodlot enterprise also provides occupations for women especially during the dry season, yet the profits from the enterprise are too small in terms to addressing the liquidity needs and economic empowerment of women. In the need, the additional time and energy spent on the enterprise only go to support the reproductive roles of women without significant benefits in terms of productive participation and productivity gains. Hence, it does not also seem to be a good intervention source for meeting the strategic needs of women. It must however be noted that in the absence of alternative sources of earning income, this may not be totally useless. The intervention can also be improved upon. The non-monetary benefits must also not be underrated.

Logistic Regression Analysis of Determinants of Participation in Woodlots

Table 7 presents the logit regression results. As indicated, the most important determinant of participation in woodlots, from establishment to harvesting, is access to credit. Credit has continued to feature in all the analyses indicating its strategic importance in determining women's participation in woodlots. The women use the credit mainly to purchase seedlings and to hire labor. It is also for consumption purposes especially in the lean season.

The age variable in the model was significant at 1% with a negative sign and, thus, not meeting the a priori expectation. Therefore all things being equal, if the age of the respondents increase by a unit, the log of the odds ratio in favor of participation falls by about -1.157985. This means that as women's age increases, they tend to have less probability of participating in the establishment and maintenance of woodlots. In other words, younger women are more likely to participate in woodlot projects than older women. This is probably the case because the younger women are those who do the household cooking and are those who travel long distances to fetch fuel-wood.

Table 7: Logit Regression Results (probability that a woman in the Upper West Region will participate in woodlot establishment, i.e. from planting to harvesting)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	25.17576	9.572349	2.630051	**0.0085** ***
AGE	-1.157985	0.368011	-3.146604	**0.0017** ***
AGE*AGE	0.009820	0.003664	2.680340	**0.0074** ***
CREDIT	3.773948	0.792407	4.762638	**0.0000** ***
DWA	-0.771971	1.107112	-0.697284	0.4856
DNAN	2.167741	1.401326	1.546921	0.1219
DPRIM	-0.804521	1.455925	-0.552584	0.5805
DSEC	-3.181030	1.959884	-1.623071	**0.1046** *
DNONE	0.596899	1.457937	0.409414	0.6822
DISTANC	0.155371	0.278480	0.557924	0.5769
LR statistic (9 df)	80.73224	McFadden R-squared		0.718560
Probability(LR stat)	1.16E-13			

Source: Field Survey 2006 *** Significant at 1 percent

* Significant at 10 percent

The experience of women, as measured by age squared gave a positive sign and was significant at 1%. The implication is that as experience increases by a unit, the log odd of participation in woodlot establishment will increase by 0.0098. That means that even though younger women are more likely to participate in woodlots, experience has a very positive influence on participation. The implication is that there is a specific age range within which the negative sign of the first variable; age, will be relevant.

The credit variable in the logit model was significant at the 1% level, with a positive sign. This meets the a priori expectation. It implies that, ceteris paribus, the log of the odds ratio in favor of participation in the woodlot establishment will increase by 3.77. This means credit is a very significant determinant in women's participation in woodlot projects in the study area. It is important that credit is maintained as part of

the package for participation. There is, however, need for a more democratic and transparent way of administering the credit. This suggests that the non-transparent manner by which credit is disbursed to individual women causes a lot of dissatisfaction. It has the potential of not only stifling participation but it inhibits the drive towards achieving women's social empowerment and the strategic needs of women.

All the other variables were not significant to any appreciable degree. The estimated equation however had an R^2 of 0.72 indicating that the independent variables explained the probability of participation in woodlots to a very large degree. Marginal effects of the independent variables and their corresponding elasticities were computed from the estimated equation (See Table 4.9) and displayed in Table 4.10.

Group Formation and Group Dynamics

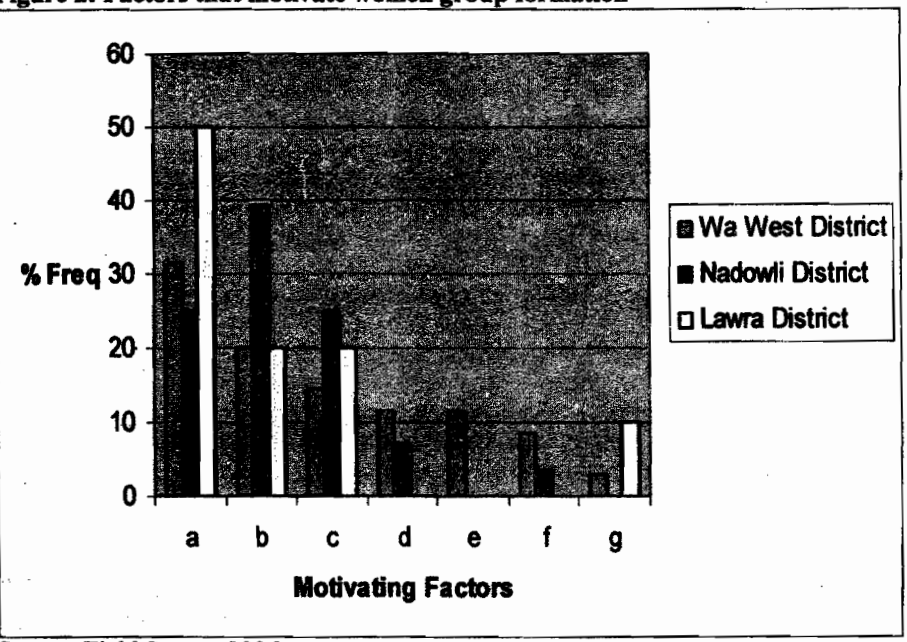
The study revealed that the social empowerment of women, which is critical to the achievement of their strategic needs, is obtained through formal and informal capacity building of the women. Women's groups offer good opportunities for building their capacities. They learn modern governance procedures through the way they organize their own groups. They also get training from various people from time to time and learn from one another.

Motivating factors for group formation

It has been established that there are benefits if people with the same interests and similar constraints work together in groups. However, it is important that groups operate under guidelines that ensure that goals are met and that actions lead to the development of the people and communities.

Figure 2 gives the responses obtained from respondents regarding factors that motivate them to join groups. The responses of both woodlot and non-woodlot group members are presented. All the women identified the opportunity created to access credit as the most important motivating factor in joining a group. Credit to the women is very important for their ability to survive in the harsh environment they find themselves. Another major motivating factor is the creation of a sense of belonging. Every one of them wants to be seen to be part of the community and thus there is need to belong to a group where community issues can be discussed from time to time. The responses in all the districts are very similar. It is informative that in all the districts, the women put some premium on "belongingness." It shows the degree to which the women, though mostly "illiterate" wish to address their strategic needs.

Figure 2: Factors that motivate women group formation



Source; Field Survey 2006

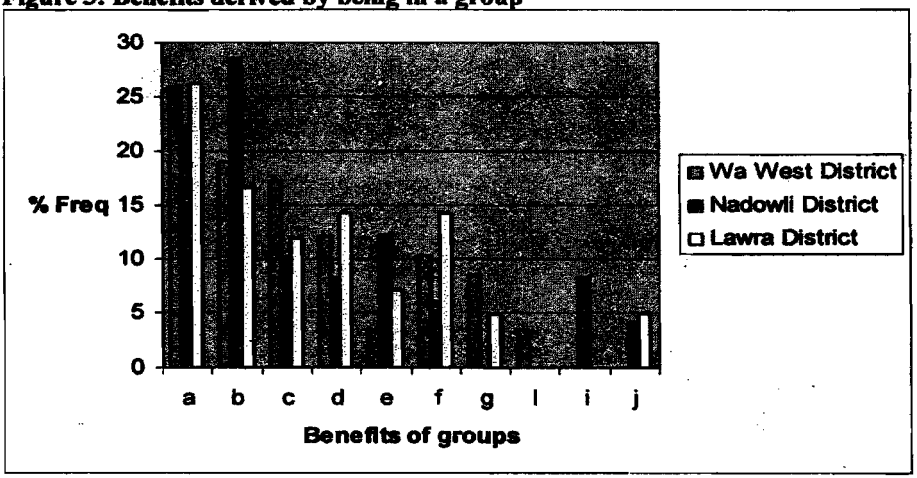
Key

a) Access to credit
b) Belongingness
c) Because of the success of other groups
d) Benefits from incentives
e) Income generation
f) Exposure
g) Poverty

Benefits Derived from Groups

Figure 3 below indicates responses with regards to the benefits women have derived from being in various women's groups in the communities. As already indicated, the overriding benefit mentioned in all the districts is their ability to access credit followed by the opportunity for self-help. It is quite clear from this result that the women value the social benefits very much and thus continue to be part of groups in spite of the relatively low returns indicated by the cash flow analysis. The woodlots give the women opportunity to achieve several non-cash benefits, which are important for the achievement of strategic needs. The non-cash benefits build the human capacity of the women.

Figure 3: Benefits derived by being in a group

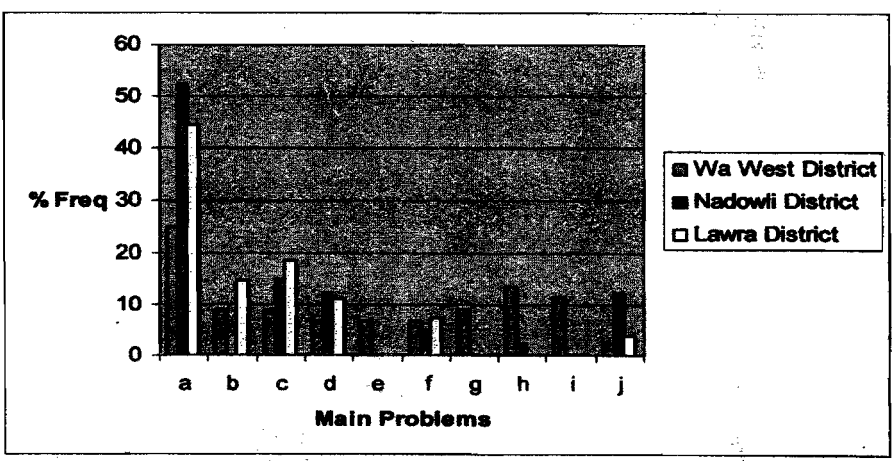


Source; Field Survey 2006

Key:

a) Access to credit
b) Contributions to help in times of need
c) Exchange labor
d) Assistance during funerals
e) Assistance in times of sickness
f) Training
g) Sharing of ideas at meetings
h) Embark on community projects
i) Getting incentives
j) Generate I&A

Figure 4: Main problems faced by groups



Source: Field Survey 2006

Key

a) Inadequate credit
b) Time for repayment is short
c) Mode of distributing loan among others
d) Lack of logistics
e) Members' inability to contribute regularly
f Lack of water in the dry season
g Lack of feed fro animals in the dry season
h Poor attendance to meetings,
i) theft of animals and
j) other

BENEFITS AND INHIBITORS TO WOODLOT ESTABLISHMENTS

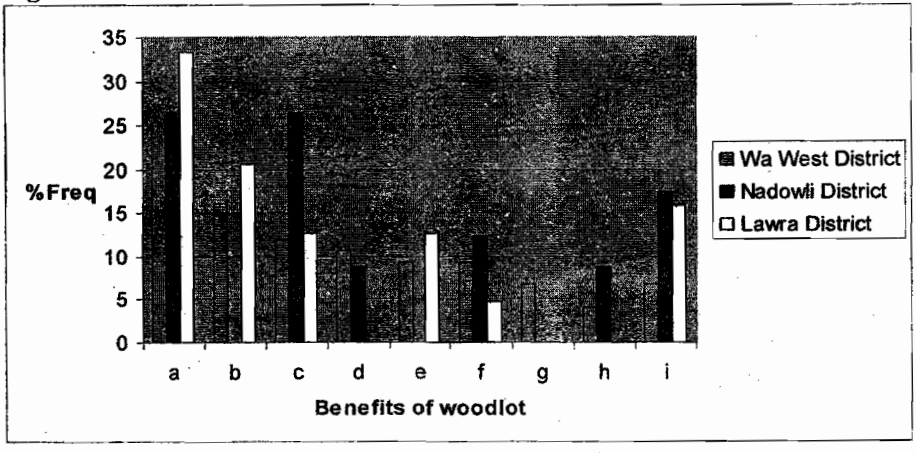
Benefits derived from woodlots

All the women interviewed identified a number of benefits they derived from the establishment of the woodlots as indicated in Figure 5 below. The most important benefit was the use as fuel-wood, despite the fact that the wood was obtained only after many years. Another major benefit was the income derived either from sales of wood or charcoal produced from the wood. That was particularly important in the Nadowli District as indicated in the Figure.

The use of woodlots as a major source of fuel-wood addresses a major practical need of women. Women in the Upper West Region, as in many other parts of Ghana, are major home makers and care givers. A major role regarding those functions is food preparation for family members. The income derived also addresses both the practical and strategic needs of women. As Figure 1 indicates, economic empowerment can lead to social empowerment.

The use of woodlots as windbreaks was not mentioned in Nadowli District but it was considered important in the other two, particularly in the Lawra District, as shown in Figure 5. Upper West Region is generally prone to wind storms especially in the rainy season and Lawra District is the northernmost district and thus is probably the most affected by storms. Woodlots serve as protection against such hazards.

Figure 5: Benefits derived from woodlots



Key

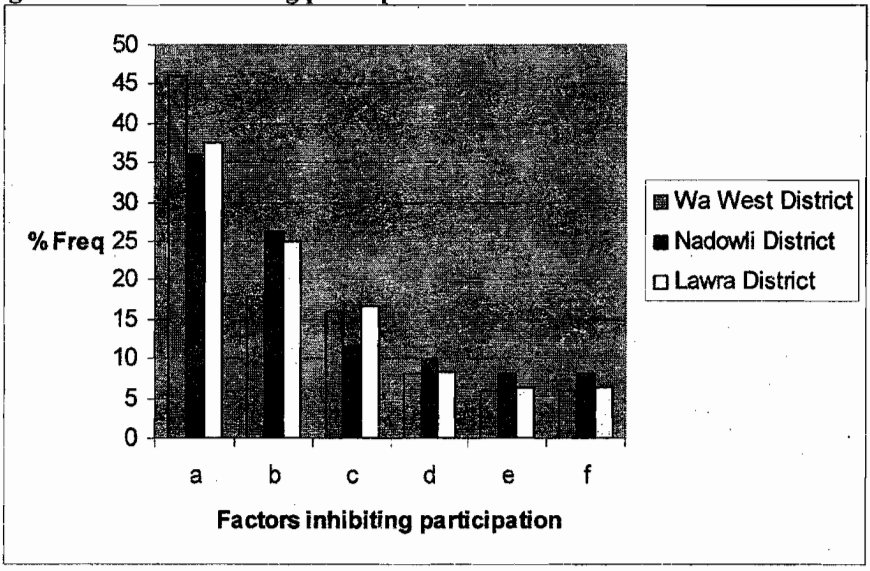
a) For fuel wood
b) Wind Breaks/Protection
c) Sale of wood/Charcoal
d) Access to credit
e) For Shade
f) Feed for animals
g) Used for roofing
h) Incentives from NGO
i) Others

Source: Field Survey, 2006

Factors Inhibiting Woodlot Establishment

The women interviewed identified several factors inhibiting the establishment of woodlots (Figure 6). The most prominent inhibiting factor identified is competition from farm work in the rainy season. During times of high demand for labor on farms, the woodlots are often neglected. The second most important inhibiting factor in all the districts is the non-transparent way credit is given to the individual women. There seems to be a lack of trust among the women regarding the methods used by their leaders to allocate credit accessed from NGOs.

Figure 6: Factors inhibiting participation in the establishment of woodlot



Key:

a) Farm Activities
b) The way credit is distributed
c) Water problems during the dry season
e) Difficulties in making regular contributions
f) Poor communication
g) Others

CONCLUSION

The analyses above have focused on drawing attention to the fact that women could be empowered through the use of natural resources while at the same time ensuring environmental conservation. Fuel-wood has been a major source of energy for domestic purposes in the Upper West Region of Ghana. However, wood fuel resources are depleting very fast as a result of unsustainable practices in the production, marketing and use of the products. The promotion of woodlot cultivation among women's groups in the area has been due to the need to address a practical need. Various studies show however that such practical needs endeavors have potential of meeting strategic ends through effective programming. Using the data from Nadowli, Wa West and Lawra Districts as case studies on woodlot initiatives among women's groups, the study sought to determine the extent to which the two needs had been met.

The analysis of information obtained show that the initial capital requirement for woodlot establishment is quite high for the women. As such credit for woodlot establishment and maintenance is very necessary and critical. Indeed, the most important factor influencing the women's decision to participate in woodlots is access to credit. The analysis also indicates that the NPV at 20% and 25% are ¢5,228,526 and ¢ 3,571,352 respectively, the discounted BCR at 20% and 25% are 3.4 and 2.7 respectively and the computed financial internal rate of return (FIRR) is 48.2%. Though all these values indicate that woodlots are profitable ventures, the actual benefits in terms of value of produce that will go the individual women is too small and not encouraging enough. The woodlots cannot therefore adequately address the women's practical and strategic needs. They, however, do address the practical needs to some extent by providing fuel for domestic use and are, more importantly, good entry points for further interventions to address the practical and strategic needs of women.

The research also indicates that there are other benefits, social and environmental, that are derived from woodlots and those benefits do enhance the capacity of the women to pursue actions that will enhance their moves towards meeting their strategic needs. Group woodlots have, for example, given the women the opportunity to acquire knowledge and skills through training in woodlot skills and technology and in group dynamics. Awareness of women's potential to create wealth and sense of belongingness has been created through the group activities and that is helping to sensitize them on their strategic needs as women.

RECOMMENDATIONS

Even though, the discounted cash flow analysis indicates that woodlots are profitable enterprises, it also indicates that the level of returns is low. There is, thus, need to make the enterprise more profitable. It is recommended that the inclusion of economic trees, such as teak, cashew and others, in the interventions should be intensified and areas under woodlots expanded to increase profitability.

Credit has been shown to be of very great importance in effecting change. It is recommended that District Assemblies, NGOs and micro-credit agencies should provide appropriate financial products, such as savings with credit, to assist women groups to expand and maintenance of their woodlots and other group productive activities.

Strategic gender needs of women can be met if women understand the importance of the roles they play in society and the need to improve their economic and social statuses. It is, therefore, recommended that intervention agents assist women groups to improve the dynamics of their group activities. The emphasis should be on both economic and social empowerment of the women.

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