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**A STRATEGIC EVALUATION OF GENDER AND
NATURAL RESOURCE MANAGEMENT:**

The USAID/Mali Strategy

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Executive Summary

This evaluation was undertaken to assist the Mali mission in the process of revising its program. It draws on field results and a review of the literature to provide recommendations for a mission strategy which will better take into account the gender dimensions associated with improved natural resource management in Mali. The study is also intended to provide insights in methodology for use by missions conducting similar studies.

The evaluation was designed to test the assumption, implicit in the mission strategic plan, that current natural resources management sub-targets direct the mission to develop projects, non-project assistance and policy dialogue, that increase the income generation opportunities for Malians of both genders. Additionally, the study produced information enabling the elaboration of viable alternatives to the current strategic framework.

Study Findings

The fieldwork and document review conducted for this report do not bare out the assumption found in the mission's strategic plan. Mission efforts in natural resources management do not directly lead to increased income generation opportunities for women. They do not for two basic reasons. First, strategic targeting of improvements in staple grain production directs mission investment to a productive domain outside of women's control. Only in a limited number of cases have projects extended technologies in domains in which women participate in their own right.

Second, mission efforts are implemented by gender-biased institutions using gender-biased methods. Even if mission natural resources management sub-targets identified productive domains over which women have control, the institutional context would deprive them of many of the potential benefits. Three of the most significant institutional factors limiting positive participation by women are sector-specific, top down planning; male dominated personnel; and gender-biased extension methods.

Despite these impediments to the direct participation of women in mission supported activities, various activities may indirectly increase income generation opportunities for both genders. However, the impact of such indirect effects is difficult to assess. Given its stated commitment to gender issues, the mission should not on one hand directly improve men's income generation opportunities, while on the other hand hoping that women will indirectly benefit from these actions.

Study Recommendations

To address the targeting issue, the mission should avoid focusing on a domain from which women are effectively excluded. Instead, the mission should develop a strategy based on the acceptance of the economic validity of rural producer strategies of diversification. It should encourage development of the under-researched, marginalized yet essential productive activities that complement existing producer strategies, and over which women maintain a

certain amount of control. A revised logframe would not focus efforts on "areas of high productive potential" but on "areas of highest potential for increase in productivity." Sub-mission level identification of productive activities would allow for the participatory, geographically and temporally flexible process of selection critical for realistic gender planning.

The evaluation recommends a sub-target "Technologies in new commodity chains are adopted by rural producers." "New" here would mean, of course, new to receive GRM and donor attention.

To address institutional issues, a revised logframe could address institutional gender-bias at two locations: in sub-targets under agricultural sector targets, and in targets relating to democracy and governance. A sub-target located under an agriculture-related target could be written: "Communities with established natural resource management institutions in which resource-user sub-groups participate." The achievement of this sub-target would require the development of a new methodology for working with local populations, one which would encourage multi-purpose and multi-sectoral, problem-specific planning. It would include all users of the natural resources affected, whether they be controllers of resources or simple users.

Should the mission decide to support Mali in its effort to decentralize government, the logical place to address the participation of women in the local institutions would be within a target designed to influence the reform of local government structures. Here the mission should consider targeting women specifically, with a target such as: "Increased opportunities for women's effective participation in local government."

Table of Acronyms

API	Assessment of Program Impact
AV	Association Villageoise
CDIE/SDS	Center for Development Information and Evaluation/Systems Design and Support Division
CMDT	Compagnie Malienne de Développement des Textiles
CPSP	Country Program Strategic Plan
DRSPR	Département de Recherche sur les Systèmes de Production Rurale
FSR/E	Farming Systems Research and Extension
GRM	Government of the Republic of Mali
NEF	Near East Foundation
NGO	Non-governmental organization
NRM	Natural Resources Management
NPA	Non-project assistance (USAID)
OHV	Opération Haute Vallée
OHVN	Office de la Haute Vallée Nationale
DHV	Development of the Haute Vallée, the USAID project working in the OHV zone.
MSI	Management Systems International
PLAE	Projet Lutte Anti-Erosive
PRISM	Performance Information for Strategic Management
R&D/WID	Bureau for Research and Development/WID Division
USAID	U.S. Agency for International Development
VRP	Village Reforestation Project

I. Introduction

Purpose

The purpose of the present strategic evaluation is to assist the Mali mission in the process of revising its present strategic program. It was designed to test the assumption in the mission's present strategy that current natural resources management sub-targets lead to increased income generation opportunities for Malian men and women. The evaluation draws on field results and a review of the literature to provide recommendations for a mission strategy. The study is also intended to provide insights in methodology for use by missions conducting similar studies.

Report Outline

In addition to this introduction, the study includes five sections. Section II describes the research strategy and methods used. It presents the research hypothesis and rationale. (Annex A presents research methods at greater length.) Section III presents the mission's strategic plan, focusing on the natural resources sub-targets. To situate these sub-targets within the logic of the strategic plan, this section also presents a brief analysis of the mission's agricultural strategy. Section IV considers the socio-economic context for mission intervention. It focuses on gender as a determinant of access to and control over productive resources in rural Mali. (Annex B addresses these issues in greater detail.) Section V outlines the limits and opportunities for women's participation in natural resources management activities in Mali. (Annex C discusses these issues in greater detail.) Section VI draws on this analysis to propose new targets for the mission's strategic plan, and indicators for monitoring program performance.

II. Evaluation Strategy and Methods

Current mission strategy determined the parameters for the strategic evaluation.¹ The mission Program Logframe includes natural resources management activities in sub-targets under Strategic Objective 2, "***Increase Incomes in Areas of High Productive Potential.***" We took this medium-range, relatively stable mission strategic objective as a touchstone for organizing research, and, consequently, chose increases in incomes as the criteria for assessing field-level results. The research hypothesis thus developed may be presented as: *the Mali mission's strategic plan allows for and promotes the development of natural resources management projects, non-project assistance and policy dialogue, that increase incomes for both men and women.*

¹ Because the mission has modified its strategy since developing the FY 1990-1994 *Country Development Strategy Statement* (written in May, 1988), to better approach current mission thinking, and prove more useful in the upcoming planning exercise, we based this assessment upon the mission strategy as formulated in the 1992 *Assessment of Program Impact*. We nevertheless did rely upon the FY 1990-1994 *Country Development Strategy Statement* to provide background on the present strategy.

Although anchored by this hypothesis, the evaluation was not limited by it. The mission will soon revise its development strategy (it has scheduled the writing of its Country Program Strategic Plan for 1994), and the terms of reference for the present study call for recommendations towards the new strategy. Therefore, to be useful to the mission, research was designed to both test the underlying gender assumptions of the present program strategy, and to reveal missed opportunities; to compare mission strategy against other possibilities, and assess new directions in planning for natural resources management. Research had to be not only retrospective, but also prospective.

Methods targeted three interrelated levels of the development process: 1) mission strategic planning; 2) project development, implementation and impact; and 3) Malian production and commercialization systems. Different methods were developed to conduct research and organize findings at each level, and findings produced by each set of methods were used iteratively to inform analysis at other levels.

Time and personnel limitations necessitated that research rely heavily upon secondary sources, principally interviews with researchers and project personnel, and a review of the literature. Field visits were limited to a period of 10 days between September 12th and September 22nd, during which time the senior evaluator, accompanied by the mission Women In Development coordinator, visited three non-governmental organization project sites in Douentza and Djenné, and USAID project personnel and sites around Mopti.²

III. The Mali Mission Strategic Plan

Overview

The most recent *Country Development Strategy Statement* (FY 1990-1994, written May 1988) includes natural resources management activities as one means of improving agricultural productivity and thus promoting economic growth.³ The document proposes the development and extension of techniques to improve agroforestry, reduce fuelwood consumption, prevent soil erosion, and reverse the degradation of resources. In addition, it proposes policy dialogue with the GRM on the relative rights and responsibilities of government, local communities and individuals with regard to land, tree and resource tenure.

² Although the *Terms of Reference* for the study provided for a total of 16 days of field work, we decided that six of those days would be better spent consulting documents and conducting interviews in the capital. We made this decision because the critical field issues being researched, household income and gender distinctions, are unamenable to rapid research, and because the senior evaluator, who resides in Mali, was already familiar with the USAID projects in Mali. The total level of effort for this evaluation was 53 work days.

³ The *Country Development Strategy Statement* identifies two strategic objectives: "more efficient resource allocation," and "increased production, productivity and incomes." To pursue these objectives it proposes "slow economic growth" as one of three problems to be addressed by the mission, and "improving agricultural sectoral performance" as one of two activities to be undertaken to address this problem. As one of five critical areas to be focused on to improve agricultural sector performance, the Statement identifies natural resources management.

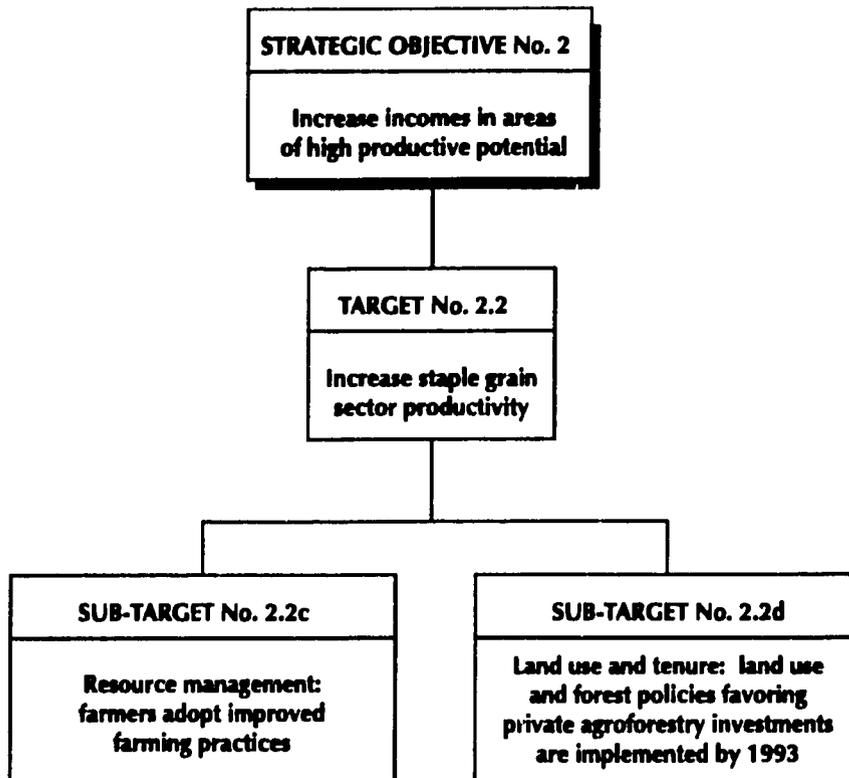
In this case, the aim is to bring about institutional and policy change to create greater incentives for private, as opposed to government, management of natural resources. According to the strategy, the mission should undertake natural resources management activities in projects or policy dialogue devoted specifically to natural resources management, and as part of other crop and livestock research and extension activities.

The Program Logframe included in the 1992 *Assessment of Program Impact* succinctly articulates this strategy. It explicitly mentions natural resources management activities in two sub-targets: Sub-target 2.2.c, "Resource Management: Farmers adopt improved farming practices," and Sub-target 2.2.d, "Land use and tenure: Land use and forest policies favoring private agroforestry investments are implemented by 1993." These Sub-targets fall under Target 2.2, "Increase Staple Grain Sector Productivity," which itself falls under Strategic Objective 2, "Increase Incomes in Areas of High Productive Potential."

Boiled down, in Program Logframe form, a strategic emphasis on staple grains becomes much more evident: to promote economic growth, the mission targets increased incomes; to improve agricultural productivity, the mission will increase the production and productivity of staple grains. To rest within the logic of this strategy, then, the mission's natural resources management efforts should contribute to increased incomes by improving staple grain production and productivity.⁴

⁴ The mission has also targeted increases in livestock exports, and the *Country Development Strategy Statement* proposes that the mission undertake natural resources management activities in its livestock projects. (And it has done so.) However, the livestock targets elaborated in the *Assessment of Program Impact* don't measure improvements in natural resources management. Instead, they identify fiscal and regulatory measures, and improvements in animal health.

Strategic Objective 2: Key Elements



Analysis of the Current Agriculture Strategy

The mission focus on staple grains grew out of a series of agricultural sector studies conducted in 1987 and 1988, as part of the process of developing the *Country Development Strategy Statement*. While developing this strategy, it appears, the mission was under pressure from USAID Washington to create a "growth oriented" strategy, emphasizing macro-economic development issues. In this context, the mission even felt obliged to explain why it wasn't promoting a strategy of industry-based development, and why, if it was going to focus on agriculture, it targeted "low value" crops. It had to defend a strategy which targeted "overcoming hunger," as well as economic growth.

Although analyses of the development context included arguments from both macroeconomic and microeconomic (household) perspectives, the bottom line was defined by the national government's short term balance of trade priorities. The *Country Development Strategy Statement* commits the mission to seek "increased production, productivity and incomes" for "rural households engaged in agriculture or related activities," in order to contribute to "better nutrition and food security at the household level" (*Country Development Strategy Statement*: 1988, 25). However, the strategy identifies only the household products

that can be entered into a macro-economic evaluation of the national economy, not the various products of the household economy, the products that keep the household viable.

While documents, such as the *Country Development Strategy Statement*, argue for a strong mission commitment to agriculture-led economic growth, in which livestock and cotton exports play a critical role, the production of staple grains for domestic consumption is also critical: both for providing for food security, and for decreasing the demand on imported grains. A summary of the agricultural sector studies presents four reasons why the mission agriculture portfolio should focus on staple grains:

- Demand for staple grains is increasing in Mali, and will continue to increase.
- Mali's comparative advantage in food production: domestic production allocates national resources better than does purchasing imported grains with revenues generated in other sectors.
- Increased farm productivity frees up resources for other economic activities. (Once they have met targets for domestic grain consumption, rural households move on to employ their resources in other income generating activities.)
- Coarse grains have promising economic growth linkages, via processing, marketing and animal feed (Atwood: 1989, 7).

These are all solid reasons for mission support for coarse grain production, as opposed to supporting rice production, or industry-led growth. At the same time, they do not represent an argument against support for other local food crops; to the contrary, they are all solid reasons for such support. Given this context, the mission did not waste energy explaining why it did not invest in the development of local crops other than staple grains; it was not challenged on this front. Atwood (1989) does, however, note simply that such crops face "technological and marketing" constraints. The document does not add that these are types of constraints which USAID has long invested in overcoming.

The mission has based the *Country Development Strategy Statement*, and thus the current Program Logframe and the 1992 *Assessment of Program Impact*, (as well as the projects reviewed for this study⁵), upon the conclusions of this series of studies; they all focus investment in household production of staple grains. The *Assessment of Program Impact* and Logframe propose "increasing incomes through increases in areas of high productive potential," by increasing staple grain sector production and productivity.

The Program Logframe sub-targets also reflect this concentration on staple grains. Sub-target 2.2.c, the only place in the logframe where natural resources management is directly mentioned, focuses on "farmers" and "improved farming practices." The *Assessment of Program Impact* (FY 1992) discussion of Sub-target 2.2.c., "Resource Management: Farmers adopt improved farming practices" gives examples of "soil conservation, soil fertility,

⁵ The redesign of DHV and VRP in particular were influenced by this strategy (Atwood:1989,1).

and water management" practices, as well as "animal power and animal drawn equipment to increase farmer productivity."

Sub-target 2.2.d, although it mentions the broad, cross sectoral issues of land and tree tenure, focuses on the limited area of private agroforestry. The logframe is consistent: of all the subsectors of forestry, agroforestry is the one which may be developed in conjunction with staple crops. As the *Assessment of Program Impact (FY 1992)* discussion of this sub-target indicates, however, policy change cannot always be so focused. The mission's work in forestry has resulted in USAID support for the ongoing process of forestry code reform, which is linked to the general government process of decentralization in Mali. While these reforms will undoubtedly have an impact upon agroforestry, they have evolved, and now encompass the enabling conditions for community resource management in general.

One of the attractive aspects of the concept of Natural Resource Management is that it provides the logic for investment free of the blinders of traditional interventions in agriculture, opening the opportunity to plan for the whole system, and addresses a wide range of productive domains in which producers diversify. From a gender perspective, this may be very important. The Mali mission's strategy, unfortunately, while it mentions natural resources management, in the final examination, focuses on agriculture, in its more limited sense.

The Strategy's Gender Assumptions

Although in the stripped-down program monitoring form above, the mission's agricultural strategy does not explicitly refer to women, the *Country Development Strategy Statement* does emphasize the importance of women to Mali's agricultural development. The document's discussion of strategic objectives identifies the primary target group as rural small farm family, with particular attention paid to women (*Country Development Strategy Statement*: 1988, 24). In the analysis of the problem "low income levels and the key role of agriculture," the *Country Development Strategy Statement* underscores the "tremendous burdens placed on farm women" as one of the four key constraints that remains to be addressed (*Country Development Strategy Statement*: 1988, 14).

But is this enough? Must the *Assessment of Program Impact* and the logframe explicitly mention women? Can the mission assume, for example, that because women play such a critical role in providing labor for agriculture, it does not need to conduct a specific analysis of gender roles within production and commercialization systems at the household level, and adjust the strategy accordingly? Does the mission need to target investment specifically to women or the specific activities women dominate?

The present study examines two propositions. The first is that the current strategy has led the mission to develop natural resources management efforts that *directly* involve women in such a way that they increase their incomes. This is the path to which the mission has committed itself. In its "Strategy for Promoting Economic Growth" discussion the *Country Development Strategy Statement* states that the mission will develop "activities to improve

agricultural performance...tailored to the resource and labor endowments of specific groups, including women and poor farmers" (*Country Development Strategy Statement: 1988, 32*).

However, there is another possibility, left unmentioned in the *Country Development Strategy Statement*, that the current strategy has led the mission to develop natural resources management efforts that *indirectly* result in increased income generation opportunities for women. Has the mission indirectly increased women's income generation opportunities by developing natural resources management interventions that improve household production of staple grains?

Has the mission achieved its objectives in either of these ways? Does the Mali mission's strategic plan allow for and promote the development of natural resources management projects, non-project assistance and policy dialogue, that increase incomes for both men and women? Or, must the mission develop a more gender-specific strategy, with gender focused targets, sub-targets, and indicators?

IV. Opportunities for Income Generation by Women in Mali's Agricultural Systems

The gender aspects of Mali's economy offer great opportunities for mission investment. They also entail significant constraints. Women are intensely engaged in rural production and commercialization; they contribute a great proportion of the labor, skills and knowledge that keep the country's economy going. On the other hand, women maintain little control over productive resources. Understanding this dichotomy is crucial: mission success in increasing income generation opportunities for rural producers of both genders depends largely upon strategy sensitivity to the gender dimensions of production systems, patterns of household income management, and the nature of the country's institutions.

Mali's rural producers provide for food needs and generate income in a virtually infinite number of ways. They gain their livelihoods by fishing, raising livestock, conducting commerce, practicing forestry, and farming. Not limited by "sectors," they shift from one activity to another, or straddle several at a time in an effort to spread risk and diversify sources of income. Indeed, Mali's rural producers don't stay rural, but migrate to urban centers, and then, sometimes, come back again. Without this diversification, rural producers would not survive the volatile environmental and market conditions they face.

Nevertheless, in the center of this great diversity, one method of organization for production predominates among Mali's agricultural and agro-pastoral populations: the "big-field" system. Using this system Malians produce the bulk of the country's grains for domestic consumption. In this system, senior male members of individual residential units, the compounds, take prime responsibility for coordinating domestic production on joint "big" fields. Beyond the compound, a succession of interlocking patriarchal and gerontocratic institutions reinforces the "big field" system: the extended family, the clan, age groups, the village, and in some cases casts, and inter-village organizations. Beyond these "traditional" institutions, other local, national and international institutions also support the method of organizing production which grants priority to the "big-field."

Despite the importance of organized grain production, rural Malians also rely upon strategic diversity within agriculture. A great variety of productive activities, undertaken primarily by women, complements the big-field system. Through kitchen gardening, animal husbandry, wood cutting, charcoal production, and forest product gathering and processing, women produce virtually all non-grain foods eaten or sold by the compound. Working individually and in rotation, women take responsibility for coming up with the "sauce" which tops bowls of sorghum, millet, corn, or rice and makes meals nutritionally complete. They also provide special dinners for husbands, and supplemental "snacks" for their younger children and infants. Through coping strategies such as foraging in periods of shortage and drought, women keep Malian families alive.

This central importance of Mali's female producers is remarkable given the limitations they confront. Malian women produce using residual resources; to fulfill their responsibilities, they employ the productive resources left unused by the big-field system. In time, women must first fulfill their considerable domestic and big-field obligations. In space, they farm the fields unused by the big-field system; fallow land, land close to the household, or land off in the bush or forests. And even for these hard-won moments and patches, women derive access indirectly, through their social links with men -- because they are wives, mothers, sisters aunts, or daughters-in-law. And they retain access only as long they meet the social obligations inherent in these relationships. To individual women, Malian agricultural systems attribute small amounts of low quality resources, and limited time to work them.

Although all of Mali's women gain access to resources with difficulty, they do not all gain access to resources with equal difficulty. Within certain limits, a number of factors influence variation in gender rights and responsibilities. Seniority generally confers women greater control over resources, and greater free time. Household size and food security also tend to correlate positively with free time to engage in income generating activities. Ethnicity may also influence expectations placed on women for big-field labor. And as a general rule, integration with international markets decreases women's control over resources. (For example, while in most parts of Mali women dominate the process of fruit and nut production and commercialization, men dominate high-value commercialization.)

Although a number of Mali's institutions, typified by the big-field system, impinge upon women's opportunities for individual productive activities, what women do manage to earn, they keep; spouses maintain separate accounts. What little women do manage to produce outside of the big-field system, they stock, distribute or sell on their own. What income they do manage to generate, they keep, spend or invest themselves. Conversely, when big-field surplus produce is sold, the head of the compound manages the income generated.⁶

⁶ This is not to say that either women or the managers of the income from big-field activities spend income strictly on themselves. In fact, they reinvest heavily in their families and relatives, though to differing degrees. To cite one figure, the *Country Development Strategy Statement* reports that women "contribute 100 percent of women's income to family support," as compared to 35 percent for men (*Country Development Strategy Statement*:1988,14).

The effects of this separation of budgets on development initiatives in general, and on natural resources management projects in particular, are significant. Separation encourages women to generate income, but also excludes them from the profits generated through improvements in the big-field system. Their incentive lies elsewhere.

Local tenure and fiscal institutions alone do not cause women's lack of control over natural resources. They exist in a larger institutional context defined by supra-village institutions, the creations of government and religion, that play an important, yet often indirect, role in defining women's resource tenure. Over time, the State and Islam have reinforced and validated local patriarchal beliefs and institutions in a number of ways: through administrative and church validation of local patriarchal structures; court blindness to fundamental laws affirming equal rights for all citizens; legislative silence concerning women's rights to inheritance; women's legal status as minors in marriage; an educational system biased towards boys' participation; research and extension targeting men. Although the State in the Sahel has historically been impotent to supplant local tenure systems, and local Islam has been notoriously syncretic, government and religious institutions have nevertheless reinforced and helped maintain male dominance in local institutions, and through them, male control over productive resources.

The interstitial nature of women's access to resources is a function of women's status, and the nature of their membership in the institutions that mediate resource tenure. Women have access to resources, but little control over them. This gender-based imbalance of resource control reflects the changing definition of authority in Mali; it reflects, not immutable customs, but the constantly reinterpreted rules of local institutions, reinforced by government and donor policy and practice. It is tested each time resources increase in value, and each time development happens.

V. Natural Resources Management Projects and Women's Income Generation Opportunities

USAID Projects

The Mali mission program includes four major projects that focus on Strategic Objective 2 and address the natural resources management sub-targets in the strategic plan⁷. These four projects promote natural resources management through a variety of implementation modes in a range of agro-ecological zones, and reflect the diversity of USAID Natural Resources Management projects in the Sahel.

⁷ Development of the Haute Vallée (DHV, 688-0233); PVO Co-Financing (688-0247); Village Reforestation (VRP, 688-0937); and the Farming Systems Research/Extension Project (FSR/E, 688 - 0232). The Animal Production and Export Project (APEX, 688-0244) also addresses Natural Resources Management, but it has begun too recently for an assessment of field-level impact. Various other small projects also promote Natural Resources Management activities.

Most of the activities of these projects fall under logframe Sub-target 2.2.c and conduct research on or extend particular natural resources management technologies. Some NGO activities (supported by the PVO Co-Financing Project) have begun to address local institutional issues, and the Village Reforestation Project conducted research on tree tenure. These activities fall under Sub-target 2.2.d, and address the policy context. (For discussion in this section, refer to Table 1, page 14.)

The activities of these projects may increase women's opportunities for income generation either directly, or indirectly. The direct involvement of women in project income generation activities clearly meets the mission's Strategic Objective 2, at least in the short term, for the life of the project activity. Indirectly, natural resources management efforts may provide women increased income generation opportunities by changing the socio-economic context. In this case, even if women do not participate in project activities, they may benefit.

For projects that fall under logframe Sub-target 2.2.c and concentrate on extension or research, the selection of technologies determines, to a large extent, the gender dimensions of project people-level impact. Projects that select to extend technologies that address a productive domain over which the members of one gender have little control virtually exclude them from participation.

For women, such technologies include soil and water conservation activities (such as waterways and water diversions, check dams, dikes and ridges) and certain agronomic practices (such as contour planting, micro-catchments, and tied ridges). Because they require secure field tenure, these technologies address a productive domain over which women have little control. While these techniques have proven to be useful conservation tools, and greatly increase crop yield over time, they require control over fields equivalent to the big-field management responsibilities exercised by the head of a household. When persons who do not maintain such control try to invest, and improve the land (by digging micro-catchments or building bunds, for example), they often lose access, as "owners" reclaim fields to reaffirm their own rights, and take advantage of the investments.

In an extensive review covering the Sahel, Monimart found that land reclaiming activities neither touched the few fields that women control, nor the individual fields women farm. Only 6 percent of the women involved held property rights in improved land, although they formed the majority of the work force (Monimart: 1989). In Mali, women build stone bunds in two exceptional cases that "prove the rule:" they build them in a few villages of the Gana ethnic group, where they have very secure rights in rice fields; and in rare cases, "for the appreciation of the village" (Perquin, 1992: 26).

Certain agroforestry activities also exclude women from participating, in this case because they require control over the production and cultivation of field trees. The planting of trees presupposes land rights in most cases in Mali, and local tenure rules prevent land-borrowers from planting trees without authorization. Furthermore, even if owners do not prematurely reclaim land, women do not farm individual fields long enough to derive benefits from such long-term investments. Only in cases in which women maintain an expectation of

secure tenure, such as in community fields and gardens, do they plant live fences or windbreaks.

Although the mission's current plan orients much of USAID's investment towards natural resources management activities associated with the cereal production domain of the big-field system, the mission has also supported the extension of new technologies or practices that address domains in which women participate extensively. A number of projects have undertaken natural resources management activities outside of the areas targeted by the current strategic plan. These are generally activities available to producers with simple access rights, or limited control over resources. They include certain agronomic practices, gardening and sapling production. NGO projects have been the main, though not exclusive, promoters of these activities.

Certain crops that improve the sustainability of agriculture fit into the mix of productive resources available to women. For example, improved nitrogen-fixing crops such as niébé beans increase the productivity of land without increasing demands on producer labor or capital input. While the adoption of these new or improved crops may contribute to sustainable agriculture, and in fact improve soil quality or fertility, they don't improve the value of land so much that marginal producers, such as women, loose access.

Nor do gardening and sapling production presuppose control over fields; women dominate these project activities under most conditions. Gardening does require continued access to land, but a limited area can be very productive, and thus used by many producers. Even though gardening often involves improvements (wells, fencing, fertilizer) in this case, women secure access by pooling resources to assert political and social pressure. Similarly, on a small scale, producers don't need field rights to produce saplings. Individuals can establish nurseries in their own compounds, but the most successful formula found has been association with community gardens, where land, water and labor are already available.

Outside of these donor supported projects, Mali's female rural producers undertake numerous other forestry and agroforestry activities. Without government or donor assistance, women gather, transform and sell forest and field tree produce. They could profitably participate in project activities that improve the sustainable production and commercialization of these resources. However, despite the fact that these activities often form a primary source of income for women, few projects have focused on them, except for the extension of improved cookstoves. Nor has research focused on the technical issues involved, such as methods for generating improved production from field trees.

Table 1
Analysis of Women's Participation
in Selected NRM Activities

Activity (Examples)	Field-level constraints to women's participation	Conditions under which women participate	Potential interventions within USAID's manageable interest
Soil and Water Conservation (waterways and water diversions, checkdams, dikes and ridges)	Women lack control over land; if they invest in land they lose access.	Rare cases of women's secure rights in land; under strong project/village pressure.	None in short/medium term.
Improved Agronomic Practices (contour planting, micro-catchments, tied ridges)	Women lack control over land; if invest in land, lose access. Women lack access to extension, inputs, and labor.	Rare cases of women's secure rights in land; under strong project/village pressure.	None in short/medium term.
Agro-forestry (live fences, windbreaks, fruit and nut trees, field trees)	Women lack control over land, field trees, and high-value forest resources.	Traditionally and with limited training and access to seeds women produce and plant exotic fruit trees in concessions. With village support may produce and plant around fields or plant/nurture indigenous multi-purpose trees in fields.	Legislative revision reinforcing and clarifying farmer rights to field trees; improvements in transformation technology of field tree products; research in local practices of cropping, census of species, etc.
Forestry (producing, transforming and marketing renewable forest products; Improved wood stoves)	Forests poorly managed; men dominate community resource management institutions.	Women participate extensively under present conditions, but investment for sustainability of resources limited.	Legislative revision; continued exploration in community forest management; technological improvements in transformation; marketing improvements.
Certain land-intensive agricultural practices (crops improving soil fertility; improved fallow crops; forage crop production)	Women's limited decision making in farming process; limited control over land; limited control over own labor/time; limited access to extension.	Areas of low population/land ratio; women's common fields.	Improvements in transformation technology; marketing improvements; continued improvements in varieties.
Improved home gardening practices (improved indigenous vegetables; conservation; institutional support)	Infrastructure (wells); market saturation; donor/government neglect.	Extensive local experience. NGO support; urban markets; access to water.	Research on improved varieties and conservation/ transformation.
Community resources management	Men dominate public decision making at village, NGO, GRM, donor levels; present policy environment limits <i>all</i> local participation.	Rare/limited.	Support for development of based methods of community resources management; pilot community land management contracts.

Policy and Institutional Constraints to Women's Participation

Some Natural Resources Management activities clearly preclude women's participation because they extend big-field technologies. Others target activities over which women have some control, and thus offer the possibility of women's productive participation. Yet even in these cases women's participation may not be sustainable because of the basic constraint women face in development: the lack of voice in the institutions that mediate resource control.

For example, while women may use the produce of field and forest trees in most situations, it is not clear that they hold the critical rights necessary to invest in the long-term development of these resources. In the first place, the state has created real tenure insecurity; its policies have strongly weakened local perception of ownership of both forest and field trees. Secondly, local tenure rules grant field owners broad rights in field trees. As noted previously, the exploitation of tree produce falls to women by default; men usually reap the benefit from high value tree crops. Local agreements would have to be negotiated for women to risk serious investment under these conditions.

In Mali, as in much of the Sahel, natural resources management projects are increasingly taking community organization and planning as the point of departure.⁸ The best of these projects provide for the opportunity for the redefinition and renegotiation of tenure rights. They present the possibility for a greater inclusion of women in project activities, and continued participation over time -- not by "picking the right activity," but by addressing tenure head on.

The great popularity of community based Natural Resources Management projects in the Mali indicates a recognition by the donor community and GRM of the gravity of one of the major constraints to women's participation in natural resources management projects -- the planning constraint.

Even more than men, women undertake productive activities that span the abstract "sectors" categories of development planning. Although surveys indicate that Mali's women perceive the seriousness of natural resource degradation, they do not all perceive it to be their most pressing concern all the time (for an example, see Perquin: 1992). To involve women, projects must sometimes help women address other constraints before they can address natural resource degradation (Monimart: nd). As does the pluri-sectoral nature of women's work, the great variation in gender roles in agriculture necessitates flexible, community based, problem-oriented project planning and implementation.

If the "top" in top down planning is removed from the concerns of male rural producers, it is invisible to female rural producers. For women not to be marginalized by

⁸ Such projects come in a great number of shapes and colors. The approach currently most popular is the "Gestion des Terroirs" approach. Under USAID, some NGO activities, supported by the PVO Co-Financing Project, have begun to address local institutional issues, and the Village Reforestation Project conducted research on tree tenure.

development, new tenure arrangements will have to be negotiated locally as resources increase in value. What these arrangements will look like is presently unknown, making the development of appropriate policy difficult. Rocheleau, who suggests the development of "equitable project participation contracts," proposes that such agreements, developed and tested at the sub-village level, could eventually set precedents for eventual formalization at higher levels of the government (Rocheleau: 1989, 48).

Although they begin to address the planning constraint, even the most advanced community based natural resources management projects share two other institutionally based constraints with more traditional projects: gender-biased personnel and gender-biased extension methodology.

The conclusion to be drawn from the cumulative experience of agricultural projects in Mali does not differ from that the world over: projects in which women don't play a role in decision making have a harder time designing and implementing activities that involve women. Much attention has been given to the need to hire women as extension agents, for it is clear that male extension agents have difficulty communicating and working with women, while female agents, even when they are not explicitly assigned to work with women, do so. However, for efforts to capture the gender dimensions of development, women must play a decision making role at all levels of the process.

Despite their potential, community based natural resources management projects have not included women as major actors more than have more traditional projects. Women exercise very little decision-making authority over natural resource use issues within existing local management structures and projects do not change this fact. Women do not participate significantly in any of the community based natural resource management projects reviewed for this study. Nor do they participate in village associations in Mali as a whole: the Selingué seminar on extension and village associations concluded that the country's village associations do not take women's concerns into consideration.

Resolving the gender problem in personnel in Mali presents great, but not insurmountable difficulties. Although the country's schools produce a surplus of qualified people, projects often have a difficult time hiring women, particularly married women, for working in remote regions, where spouses have a difficult time finding employment. Government restrictions on hiring also limits projects to change the gender distribution of personnel, even if they are committed.

In addition to the question of the gender composition of extension staffs, the methods agents use to work with communities also influences women's participation. As Cloud found in her desk review of 20 agriculture projects:

In case after case, the evidence showed that project planners should never assume that female farmers will be automatically included in training or extension activities simply because there are no formal barriers to their participation. Even in cases where the project focused on a women's crop or activity, project resources bypassed them when they were not explicitly ear-marked for women. (Carloni: 1987, 15)

Extension agents, by scheduling meetings when women are not available, working in languages they don't understand, and otherwise targeting the male audience, often contribute heavily to this lack of women's participation (Perquin: 1992, 38-39).

The Indirect Creation of Income Generation Opportunities

Mission strategic planning presently focuses investment towards a domain of agriculture over which women have no or little control, thus virtually excluding their *direct* participation. But, do USAID efforts in Natural Resources Management *indirectly* increase women's income generation opportunities? The mission has been reaching Strategic Objective 2 indirectly if it has enabled compounds to reach domestic grain production targets more efficiently, and thus freed resources for women's use.

For a new technology to enable women to engage in more *off-farm* income generating activities, compounds must meet big-field production goals using less female labor, *and* off-farm opportunities must exist. To enable women to engage in more *on-farm* income generating activities, technologies must not only decrease demands on female labor, but also free up enough land to be used by *both* male and female labor freed. If only a small amount of land is made arable, it is likely that men will use it. In this process, labor productivity is the primary constraint, the intensification of land use is secondary.

Thus, for natural resources management activities to actually create income generation opportunities for women, an number of conditions must hold true. Technologies that intensify production by substituting labor for land will not enable women to participate in new income generation activities. Nor will technologies that increase the productivity of male labor, while maintaining or increasing demands on women's labor. Technologies that simply allow producers to use land more intensively, with no increase in the productivity of labor, will not free up women time to use the land economized. Yield must be higher for a given amount of labor.

This distinction between types of intensification has proven important in agricultural development outside of natural resources management projects. Various of the technologies extended by projects the mission supports have intensified production, but not decreased female labor use. For example, the most widely adopted technology in the *Opération Haute Vallée* zone is animal traction, which reduces labor necessary for plowing, but not for weeding and harvesting, the agricultural tasks for which women are responsible. Because farmers using animal traction farm do not intercrop, they must increase the amount of land they farm. If a given house adopts animal traction, demands for women's labor are likely to rise, not decrease. (For an example in Mali's Koro region, see Harts-Broekhuis: 1993, 223. For an example in Mali's Koutiala region, see Perquin: 1993, ix.)

A number of the natural resources management activities promoted by the mission meet these conditions, and improve farm yields for a given amount of labor. It is thus

possible that they contribute to Strategic Objective 2, and provide the possibility for women to increase their income generation activities.⁹

Some soil and water conservation structures increase the productivity of both land and labor. Waterways and water diversions reduce soil erosion and water damage to crops, thus saving farmers from over-cultivation to compensate for this potential loss. Check dams reduce the impact of inadequate rainfall, and may save labor for the same reason. Some agronomic practices also increase the productivity of a family's labor input over the long term by maintaining individual field productivity. In Mali, water catchments, such as *zais*, have transformed virtual wasteland into productive fields. As is also the case with tied ridges, *zais* can dramatically increase yields when complementing the use of fertilizer. Manuring, fertilizer use, and increased fallow increase yield per unit of labor by improving soil fertility, and have proven particularly effective in more humid climates. (However, under certain circumstances they can increase women's labor responsibilities by increasing weeding.)

In addition to the potential direct benefits upon women's income generation opportunities mentioned above, the integration of leguminous multi-purpose trees in the farming system may enable farmers to reach crop and livestock production goals with less labor in various ways. Malian farmers have long recognized the value of field trees, particularly the *acacia albida*, to promote their growth in fields. Research has indicated that intercropping with *acacia albida* can increase millet and sorghum yields by up to 150 percent. Although the benefits of field trees are not immediate, they continue for the remaining life of the tree.

The use of live fences and hedges remains limited in Mali. They nevertheless have the potential of reducing wind erosion and evapo-transpiration. And they may improve soil fertility by adding organic matter and nutrients to the soil. Potentially interesting to women, they may provide fuelwood and fodder. Their benefits for vegetable gardens serving to demark fields and protect crops from livestock have been referred to above.

Women may also indirectly benefit from community based Natural Resources Management projects in a number of ways.

- Increased local control over the harvesting and sale of firewood increases local revenue, some of which is captured by a limited number of women who resell firewood. Local management also reduces the loss of firewood for domestic consumption to stranger cutters, which saves (local) women's time invested in gathering wood.
- As local management rationalizes fines for abusive cutting, it decreases the loss of income to forestry agents and keeps a greater proportion of fines collected in the

⁹ No studies were found in Mali concerning the effects of the introduction of Natural Resources Management technologies on the gender division of labor in farming systems. The following discussion presents hypothetical cases, based on discussions of the economics of particular Natural Resources Management practices in Shaikh, A. et al. (1988).

village. In some cases, it may increase income to women who receive a fee for catching illegal cutters.

- The designation of trekking routes by villages draws a clientele of herders, who buy processed millet or exchange it for milk. It may also reduce the number of herder/farmer conflicts, protecting women's fields and gardens. In some cases increased local management of routes may increase the opportunity for women to contest and receive compensation for crop damage by passing herds.
- To the extent that community management of forests rationalizes access to forests products and limits competition over resources, it will protect an important resource for food and income of women. In addition to this coordination of forest exploitation, management actions (such as setting dates for harvesting, the prohibition of bush fires during the flowering season, the prohibition of cutting fruit trees, and the organization of fire-fighting efforts), may encourage community investment in forest resources due to greater security of control.

This last example could prove to be the most important for women throughout Mali. The goal would be to convert forests and other lands not under the tight management of communities into managed systems, and preserve them as sustainable resources useful for coping in times of stress or diversification/accumulation in good periods (Davies: 1993, 341).

Thus, it is possible that, although no research was found to support the hypothesis, these natural resources management activities indirectly increase women's opportunities for generating income.

Research does indicate that women of food-secure households engage more frequently in income generation activities and market a greater proportion of the produce from their individual fields (Sundberg: 1990, 7). Unfortunately, such synchronic analysis does little to resolve the issue. Households go through cycles, at certain stages of which they have more resources, and a higher labor to dependant ratio. Peaking in such a cycle is different from attaining food security through the adoption of new technologies. What must be known is: what kind of households adopt the technologies, and what transformations in the gender aspects of production occur as a result, and under what conditions? Moreover, and more important in the long run, how do such changes within individual households change the system as a whole?

The brief field interviews conducted with farmers and project staff for this study suggested that, although these technologies may improve labor productivity over the long term, they nevertheless do not visibly free up labor and land for women to use. These natural resources management technologies, particularly as they are used in the Sahel, are employed primarily by labor-scarce compounds to reclaim an impoverished resource, and thus resources saved are likely to be resources needed. Even the labor saved, by not bringing households up to production targets, may not result in labor freed for women.

For example, soil reclamation activities, such as *zais* and stone bunds, involve a great amount of labor; farmers undertake them only in response to great pressure on land. They are used to reclaim hardpan, barren flats of pounded earth. The men who invest the labor, and pay the transaction costs involved in organizing the construction of structures, do so because they are desperate for land. They install big-field activities on the new lands. While it is possible that they leave other land in order to farm the reclaimed fields, the land they leave they forsake for hardpan. While farming more fertile land may reduce demands on labor, creating or expanding big-fields through this process will increase big-field demands on women's labor.

Conclusion

Mission supported projects have for the most part not extended Natural Resources Management activities "tailored to the resource and labor endowments" of women (CDSS: 1988, 32). This is due, in large part, to strategic targeting of staple grain production, which has concentrated research and extension on a domain over which women have little control. Only in a limited number of cases have projects extended technologies in domains in which women participate in their own right. These productive and commercial domains are often locally portrayed as peripheral, but nevertheless prove to be strategically vital the survival of producer families and their livelihoods. This lack of attention in the past means that they represent a pool of potentially profitable areas for investment, technical research and innovation.

However, local producers treat these domains as peripheral in large part because of their relative lack of commercial potential; they are residual categories, left to those who have no alternatives. In each of these cases, improvement of the production system threatens women's access. Without changes in the decision making process for resource allocation, women would probably be excluded from these activities if they increased greatly in value and became integrated in regional and international markets.

Other projects, responding to Sub-target 2.2.c. address institutional and policy constraints to improved natural resources management. However, these community based projects have to date had little success in addressing the concerns of community sub-populations, including women. Three of the most significant factors limiting positive participation by women, for all projects, include sector-specific, top down planning, male dominated personnel, and gender-biased extension methods.

Despite these impediments to the direct participation of women in income generation activities afforded by projects, projects may be indirectly reaching the Strategic Objective 2 for both genders by changing socio-economic conditions to enable women greater income generation opportunities. However, for this to be the case, two further assumptions must hold true: that the labor saved translates into free time for women, and that other viable income generating opportunities are available. Research was unable to confirm these assumptions. In any case, by adopting this strategy, the mission would be creating for men, what it would be asking women to create for themselves. Given its stated commitment to gender issues, it is

unlikely that the mission would be satisfied to so explicitly relegate the development of women's conditions to second place.

To reach its stated strategic objective through improvements in the productive activities in which women are involved, the mission need not design on the assumption that women will lose access with changing values of resources, or that all local tenure arrangements must be modified. Instead, development interventions should be designed with sufficient attention paid to the particular institutional context in question -- local communities, government, and donor -- so that the path for institutional evolution is paved before resources are introduced.

VI. Suggestions Towards a New Program Strategy

Introduction

The fieldwork and document review conducted for this report do not bare out the assumptions found in the mission's strategic plan. The mission cannot assume that by achieving the Targets and Sub-targets as they are, the incomes of Malians of both genders will be increased. Analysis of four major Mali mission projects involved in natural resources management indicates that there are two basic reasons the mission activities elaborated under Sub-targets 2.2.c and 2.2.d do not incorporate women in their activities, and thus do not achieve the mission's Strategic Objective. One reason is that these projects extend activities that take place outside of women's domain of production and resource control; the targets are wrong. The other reason these projects do not provide people-level results for producers of both genders is that they are implemented by gender-biased institutions using gender-biased methods.¹⁰

The mission's strategic plan must make improvements in both of these areas, targets and institutions, to achieve its Strategic Objective; one or the other will not do. In the mission's strategic plan they should be, as they are in rural Mali, integrated. (For the discussion in this section, see Table 2, page 21).

Getting the Targets Right: Diversification within Agriculture

In order to develop a country program which attains the strategic objective of increased incomes for Malians of both genders, the mission must develop a strategic plan which does not target the productivity and production of staple grains only, but which recognizes the economic validity of rural producer strategies of diversification -- both within agriculture and between various productive sectors.

¹⁰ The propositions that follow are based on the author's assumption that the mission will not attempt to *indirectly* increase women's incomes, but, for the reasons stated in section VI, will continue to attempt to *directly* involve women in its activities.

Such a plan would not exclude local grain production, but include it among other productive activities. Nor would it target the non-agricultural activities rural producers engage in, for these non-agricultural activities could not provide the basis for an agriculture export diversification strategy capable of generating the foreign exchange required to meet a growing grain import need (Atwood: 1989, 12-13). Instead, it would enable USAID to "design for the whole system," not just the production of staple grains, but for the research, development, and extension of new practices and technologies to be used in big-field, individual field, garden, and forestry production (Rocheleau: 1989, 47).

This strategy would realistically address Malian domestic food consumption needs. As Cloud, writing in 1977 noted in an analysis of the USAID regional budget for the Sahel -- of the \$24 million budget for food production, "the overwhelming amount is going to cereal and cattle production, which are primarily men's crops in the monetized sector...no one seriously proposes that the Sahelian diet should consist only of grains and meat" (Cloud, 1977, 14).

In addition to promoting food security, focusing on diversity would promote greater income security by encouraging producers to develop the food production activities that are less subject to the price swings of in the grain market. This would address a Strategic Objective focusing on "security of incomes," and not simply "increased incomes:"

Investment in women's productive activities, such as vegetable gardening, shea [*butyrospermum parkii*] butter and condiment production, small livestock management, production of milk products, etc. would improve family income and consumption levels in good years, and provide a larger margin against low grain harvests due to "acts of God" (Caye: 1988, 9).

This is not an argument against targeting; supporting diversity does not mean lack of focus. Resources would still be invested in the development of specific productive activities, perhaps even in activities related to specific crops. However, the identification of these crops or productive activities would not be made at the mission level. Instead, at the mission level, USAID would define a strategy, a *type of intervention* to support. It would state that mission activities will concentrate on the development of the under-researched, marginalized productive activities that complement existing producer strategies. As the authors of a recent evaluation of the Development of the Haute Vallée project argued, the strategy would be based upon the existence of "a range of niche opportunities which exist for the so-called "lost crop species" and other underexploited, indigenous resources which may have economic potential [including] strong domestic and regional markets (Bingen, 1992, 13).

The crop or productive activity selection would be made on a sub-mission level because the appropriate activities to be focused on cannot be identified by the mission; their selection should evolve out of a process of researcher-producer experimentation. Such a participatory process of selection would allow more geographic and temporal flexibility in activities supported.

Table 2
Logframe Analysis

Logframe Level	Current Mission Objective	Constraints to Achieving Objective for Both Genders	Mission Opportunities	
			Opportunities to Build Upon	New Objective
<i>Strategic Objective</i>	Increases in Income in Areas of High Productive Potential	Women do not generate income in areas considered of "high productive potential," such as export crops.	<p>Women generate income through a wide range of activities in which there is "potential for large increases in productivity."</p> <p>Female and male household members manage separate budgets.</p> <p>Producers rely on the diversification of activities for food and income security.</p>	Increased Income Security
<i>Target</i>	Increase Staple Grain Sector Productivity	<p>Women have limited control over critical resources for staple grain production, particularly land and labor.</p> <p>Land law reform effectively changing gender division of rights in land unlikely in near/medium term.</p>	<p>In periods of food sufficiency women manage income generated from sale of self-produced grains.</p> <p>Women predominate in <i>non-grain</i> food production, transformation and small-scale marketing, particularly vegetables and forest products.</p> <p>Women have vast knowledge of forest resources.</p>	Reinforced rural producer diversification strategies (in areas of highest potential for increases in productivity)

Logframe Level	Current Mission Objective	Constraints to Achieving Objective for Both Genders	Mission Opportunities	
			Opportunities to Build Upon	New Objective
<i>Sub-Target 1</i>	Resource Management: Farmers adopt improved farming practices	<p>Rural women are producers, not primarily "farmers."</p> <p>Women play a limited role in decision making in farming systems.</p> <p>Women play a limited role in research, development, and extension.</p>	<p>Women perform a great spectrum of NRM activities and are primary producers of forestry and vegetable production.</p> <p>Women are resource-intensive producers.</p> <p>Recent initiatives in targeting and involving women (e.g. FSR/E and DHV projects).</p>	Technologies in new commercial chains are adopted by rural producers
<i>Sub-Target 2</i>	Land Use and Tenure: Land use and forest policies favoring private agro-forestry investment are approved and implemented	<p>"Private" often seen to indicate "household," a patriarchal structure.</p> <p>Women have limited rights to field trees and bushes.</p> <p>State unable to enforce changes in gender division of land rights.</p> <p>Forest resources poorly managed.</p>	<p>Private forestry and agroforestry production chains dominated by women, except for firewood to urban consumers.</p> <p>Ongoing legislative and institutional reform may improve forest management, increase local management of natural resources, and provide opportunities for improved women's participation.</p>	Communities established with natural resource management institutions in which community sub-groups participate

Centralized determination of the mission's sub-sectoral areas of field level investment -- even when such targeting is designed to reinforce strategies of diversification -- will not assure participation by producers of both genders because the gender division of roles in production varies greatly over time and space. It shifts in periods of productivity, and periods of drought. It changes as economies develop.

The GRM and the donor community have recognized the necessity of time and location specific targeting of project interventions. It is a central idea behind decentralized governance, and one of the reasons for the present enthusiasm for community based planning of natural resource management in which locally determined areas of investment can cross sectors, and vary from one community to another.

The present Strategic Objective 2 focus on areas of "high productive potential" not only concentrates investments within a limited range of productive activities, but also focuses them on activities from which women are generally excluded. It reinforces the focus on grain production for local consumption and on products for regional or international export. Although these productive activities play a large role in the national economy, and in the national balance of trade, this does not guarantee the greatest returns on investment. To be most cost effective, efforts should focus on areas with the highest potential for increases in productivity, the under-researched, under-extended activities that have been overlooked. A new logframe should not focus efforts on "areas of high productive potential" but, as underscored by De Wit and Bruinsma in the research context, "areas of highest potential for increase in productivity" (DNRSPR: 1993, 137).

New Program Performance Indicators would be needed to reflect these changes. The indicator(s) selected to track mission accomplishment of the strategic objective of "increased security of incomes" would be produced with a methodology designed to track both food security and increases in incomes. Such a system would focus on neither imminent famine, nor potentially ephemeral increases in incomes, but on changes in rural producer strategies over time. This approach to monitoring livelihood vulnerability/security would not only bring the potential down-side of development into planning, but would also be more cost-effective for the mission, being incorporated into, or at least complimented by, the mission's overall food security warning system.

To be meaningful, Program Performance Indicators would have to be generated through a combination of in-house and external field-level monitoring systems. The mission should not base its programming on standard, generic macro economic statistics taken from government and donor sources of dubious validity. Indicators that could be locally monitored to produce composite Program Performance Indicators include: number of months of annual food gap; number of months of food acquired via the market; level of diversification of sources of entitlement; and rural employment opportunities. (For a thorough discussion of just such a methodology for Mali, see Davis: 1993).

A potential intermediary result toward achieving reinforcement of rural producer diversification strategies in areas of highest potential for increases in productivity could be included in the logframe in the form of a sub-target such as: "Technologies in *new*

commodity chains adopted by rural producers." "New" here would mean, of course, new to receive GRM and donor attention.

<p><u>Strategic Objective 2:</u></p> <p>Increased Income Security</p>	<p><u>Program Performance Indicators:</u></p> <p>A. (Mission generated composite)</p> <p>B.</p>
<p><u>Target:</u></p> <p>2.1 Rural Producer Diversification Strategies Reinforced in Areas of Highest Potential for Increases in Productivity</p>	<p><u>Sub-target:</u></p> <p>a. Communities with established natural resource management institutions in which community sub-groups participate</p> <p>b. Technologies in new commercial chains adopted by rural producers.</p>

Addressing Institutional Issues in the Strategic Plan

The second reason the projects reviewed do not provide people-level results for producers of both genders is that gender-biased institutions using gender-biased methods implement them. A target "Reinforce Rural Producer Diversification Strategies," will not be achieved for both men and women if the critical national and local institutions mediating access to resources remain dominated by men. However, these issues of implementation are difficult to address given the sector and goal-based nature of the strategic planning process. It is a problem of process; "getting the targets right" does not assure that projects will avoid the marginalization of certain producers.

Nevertheless, a revised strategic plan could address this institutional gender-bias at two locations: in sub-targets under agricultural sector targets, and in targets relating to democracy and governance. Location would depend, in part, upon the general structure of the mission's logframe. Linked to agriculture, the issue could be addressed through a sub-target under a new rural development strategic objective, or under a modification of the existing strategic objective (e.g. "increase security of incomes in areas of potential for high increases in productivity"), or even under the existing strategic objective ("increase incomes in areas of high productive potential"), if it is kept.

A sub-target located under an agriculture-related target could direct projects, NPA and policy dialogue to foster local institutions that provide opportunities for members of community sub-populations to participate in decisions concerning the management of local natural resources. If written in the manner of the current logframe, the sub-target

performance indicator could be written: "number of communities with established natural resource management institutions in which resource-user sub-groups participate."

Women have not participated fully in the experiments in community managed planning for development that Mali has seen so far. However, their participation is necessary to the success of this effort. The achievement of this would require the development of a new methodology for working with local populations, one which would encourage multi-purpose and multi-sectoral, problem-specific planning, and neither be blind to nor blindly accept existing institutions. It would grant voice to all users of the natural resources affected, whether they be controllers of resources or simple users.

The number of communities specified would be determined by the planned magnitude of USAID investment. Whatever the absolute number, it should be several times the number of such institutions USAID would expect to work with directly, in order to insure that the methodology would be a "product" sufficiently useful and accessible that communities, NGOs, the GRM, and other donors pick it up. Setting a larger number would also encourage the mission to address enabling conditions for the development of such institutions, when necessary.

This sub-target would also encourage the institutions responsible for achieving it to decrease their institutional gender-bias through reforms -- such as improving the gender balance of their personnel -- without which the target would not be reached.

Proposing a target that would address the institutional constraints in natural resources management under a strategic objective designed to improve governance in Mali is much more difficult, because it is presently unknown how the mission will address governance issues. Should the mission decide to support Mali in its effort to decentralize, the logical place to address the participation of women in the local institutions would be within a target designed to influence the reform of local government structures. Here, the mission might even consider targeting women specifically, with a target such as: "increased opportunities for women's effective participation in local government."

Mission restructuring of the logframe along the lines suggested above would not change the basic argument, implied in the *Country Development Strategy Statement*, that reaching Strategic Objective 2 for Malians of both genders will enable the mission to contribute to the Program Goal, "Promote Economic Growth." Because women invest a greater percentage of their incomes in the family, achieving the strategic objective of "increased security of incomes" for both genders will increase investment in human capital. It will thus reinforce the foundation of the economy. Furthermore, achieving the strategic objective for both genders also concords with the mission strategy of targeting smaller farmers. It thus reinforces the belief, less explicit in planning documents, but supported by an ever growing body of economic literature, that inequitable growth hinders long-term economic development.

Annex A

Presentation of Evaluation Methods

Evaluation methods targeted three interrelated levels of the development process. To give the study a scope broad enough to identify new opportunities for Natural Resources Management planning, one set of methods targeted the gender dimensions of Malian productive resource management systems. A second set of methods situated mission activities within this socio-economic context; they identified gender constraints to the adoption of the Natural Resources Management activities promoted by the mission. Finally, a third set of tools structured the examination of the mission strategic plan. They, in conjunction with the other methods, tested the validity of the gender-related assumptions of target and sub-target level objectives.

Findings produced by each of these sets of methods were used to inform analysis at the other levels.

Methods Used Investigating Resource Management Systems

To examine the role of gender in resource management, the senior researcher, with assistance from the mission WID coordinator, drafted *access and control profiles*. Our focus on this aspect of resource management was based on the observation that, in West African agriculture, women contribute labor heavily, without corresponding control over factors of production or markets, and that, in other contexts, this lack of user control has limited investment. Through the *profiles*, we attempted to characterize the influence of gender on an individual's opportunities to control resources, and to highlight the various constraints women face in managing resources that also limit their investment of time and labor in Natural Resources Management activities.

To create the profiles, we developed tables to help us identify issues and summarize data before going into the field (see Table A-1 below). We based these tables on examples from the literature (Overholt: 1984, 47-50; and Simard: 1990, 30-33). In the field, and while working with our findings, we further modified the tables. The tables were as much thinking tools as data collection devices. In the long run, we did not complete all the details for each activity because the final research objective was at a relatively high level of abstraction, and all the details of each productive or commercialization activity were not necessary.

The table defines as units of analysis *women's productive activities*. Document and informant selection determined the samples; to the extent possible, we considered *all* income generating agricultural activities mentioned in the literature and interviews. Documents reviewed included those collected in interviews, and a census of several local collections (this included the USAID, World Bank, Dutch Embassy and GTZ libraries). Logistics and reported success in promoting women's participation in Natural Resources Management activities determined field interview sites.

- 26'

**Annex A, Table 1
Analysis of Production Sequences**

Productive Activity:						
Productive Resource Analysis			Analysis of Product Disposal			
Resource	Conditions of ♀ Access	Extent of ♀ Control	Product or by-product	How Value is derived from Product or Production Activity	Conditions Influencing Value Derived	Extent of ♀ Control over Benefits

27

In the field, and upon reviewing the literature, we studied individual cases which were eventually synthesized to create a single profile for women in Mali, while noting differences that occur under various conditions (e.g. climatic, population density, ethnic).

The "Analysis of Production Sequences" table provides a means to organize questions, and sort information concerning specific production and commercialization sequences. The analysis of the various resources of each of the principle products being considered requires a separate page.

To use the table, list the resources employed in each production process in the first column, "Resource." Possible categories of resources include land (which contains sub-categories defined by soil type, humidity, location, forest cover, zoning, etc.) and labor (with possible sub-categories: domestic, local dependant, sharecropper, wage labor, village, age group, pick up work teams, gender based, association). Other resource categories include capital, inputs, education, training, extension, market, transportation. Each of these categories may also be further specified.

For each resource listed, determine the conditions of women's access. Can any woman have access to the resource, at any time? Under what conditions can she loose access to the resource? One set of possible categories for analysis relates to a woman's status. They include marital status, seniority, association membership, family status, natal village, etc. External conditions, principally those influencing demand for the resource, may also influence access. Categories include market conditions, population pressure, seasonal and climatic variations.

The "extent of women's control" column complements the previous column. There, note rights women maintain beyond simple access. These vary from resource to resource. For land in African agricultural systems, people assert control principally by granting or denying access to farm. The whole range of possibilities includes, the right to sell, to loan, to clear, to put in fallow, to trade, and to sharecrop out. People manage forest product exploitation by such rules as the setting of dates for harvest, or the determination of allowable tools for harvesting. Possibilities for control over labor also depend upon the nature of the resource, the type of labor. Because women in African agricultural systems use primarily their own labor, it is very important to consider factors influencing the control over their use of their time.

To be used in the field as an interview instrument, the right half "Analysis of Product Disposal" should be detached to a separate sheet of paper, with a "resource" column added to the left. However, its present location reinforces the idea that production is not an end in itself. Opportunities for using, exchanging, or investing a product may constrain production as much as resource constraints. As possible ways of using or disposing of a product, consider sale, domestic consumption, trade, and giving gifts.

People engage in activities for many reasons. In addition to direct and more obvious benefits gained from engagement in a productive activity, consider also possible side benefits related to activity and its disposal. These may include, membership in a group associated

with productive activity or association with other people related to the activity. Potential other people include other producers, buyers, extension agents, or politicians supporting the activity. In some cases, people engage in a productive activity not for the produce, but to maintain a claim on the productive resource. For example, in some cases an individual will simply plow and plant a field, and not weed or harvest, to maintain a claim on the land. Such "land banking" may increase with conflicts over land. People engage in other productive activities because they are associated with a certain status. For example, in some african cultures certain ways of working indigo cloth is limited to "freeborn" people, and producing such cloths may be a way of gaining prestige.

Methods Evaluating Projects

The access and control profile was developed with the intention of informing higher levels of research and analysis. Information concerning the socio-economic context was used to complete the analysis of project impact. Because the primary function of the mission's current strategic plan is to target domains of program intervention, the research assessed the appropriateness of the domains of project intervention. The central method used to study project impact was thus to analyze a selection of Natural Resources Management interventions through field and project personnel interviews, and literature review. Analysis focused upon field-level constraints to women's participation in particular activities; conditions under which women do participate; and potential changes in enabling conditions within USAID's manageable interest. Activities chosen to be analyzed included all activities promoted in current and recent Mali USAID-funded projects, as well as activities which appear promising cited elsewhere in the literature, or by informants. A table was developed to organize and summarize findings (see Table 1 in the main text, page 14).

Research at the project level did not focus simply upon project impact, but also included issues involved in project implementation and design. While the access and control profiles shed light on the appropriateness of project targeting particular productive activities or technologies, they did not provide thorough analysis of project-related institutional constraints. Fortunately, project level institutional constraints are relatively well understood and documented. Research in this regard consisted of confirmation of generalizations found in the literature through interviews with project personnel.

In order to develop proposals concerning the institutional environment and policy conditions, research also addressed government-related institutional constraints, such as judicial and administrative policy. The relationship between such factors and women's productivity, although important, is generally indirect, and mediated by local village institutions. Methods to research these constraints consisted of a literature review, and, to a lesser degree, field interviews on projects where these conditions are being changed. However, this is a relatively new field and information on the impact of changes in governmental policy on women's natural resource management activities are limited. This is in part due to the fact that the government has only recently implemented policy that would effectively change conditions for local resource governance.

Methods Evaluating Mission Strategic Planning

Research on the first two levels, socio-economic factors and project factors, was used to inform the third level of research, which focused on mission strategic planning. The objective of research at this level was to provide a critique of the existing mission logframe, and propose new targets more likely to achieve the mission strategic objective of "increases in incomes" for Malians of both genders.

Resources for this level of research consisted of project documents, and interviews with project and mission personnel. Methods used to research the relationship between mission strategy and project design included a case study of the Mali Village Reforestation Project (VRP), and interviews with project and program officers. The case study followed gender issues through ten years of documents produced for the Village Reforestation Project, and was supplemented by discussions with available project personnel.

The analysis of constraints to women's participation in selected Natural Resources Management activities fed into the analysis of the mission's strategic program by identifying instances in which project goals were not in harmony with socio-economic realities with regard to the gender distribution of resources. To organize results of the analysis, an "Objective Tree Linkage Analysis" table was developed. The table "explodes" the relevant portions of the program logframe, and includes relevant projects and NPA activities under the sub-target level. In it, constraints and opportunities derived from research on socio-economic and project levels are presented at each level of strategic planning. (See Table 2 in the main text, page 24).

Annex B

Opportunities for Income Generation by Women in Mali's Agricultural Systems

The effectiveness of a mission's strategic plan depends largely upon its relevance to the context for which it is developed. One critical yet frequently overlooked factor defining all planning contexts is gender. In Mali, gender is important to the effective planning of the mission's Natural Resources Management portfolio because it strongly influences the allocation and control of productive resources.

Depictions of Sahelian agricultural production systems commonly focus on the compound¹. Yet, while the production organized under the heads of Malian compounds plays an important role in Malian agriculture, sub-compound production units, and in particular the married women of the compound, play an equally important role. To overlook the independent productive activities engaged in by the women of Mali's compounds is to overlook much of Mali's economy; to describe the whole system, a more inclusive model of is necessary.

Gender Dimensions of Resource Tenure in Malian Agriculture

The first goal of Malian strategies for agricultural production is to assure domestic consumption needs. When it comes to food consumption, the market is perceived as too risky, and farm families prefer to rely as much as possible on home production.² Income generation from agriculture, as a result, is dependant upon food security.

The system developed to achieve this goal has two interdependent but distinct components. One component is charged with producing and distributing grains. The other is responsible for the production and distribution of virtually all other foods.

Compound heads, usually male, in conjunction with other senior males, organize and direct the grain producing first component. The rest of the members of the compound -- the

¹ Given the choice among various unsatisfactory terms, we prefer to use "compound," which suggests solidarity less than do the terms "household," and "extended family," and does not imply exclusiveness the way the term "production unit" does. The term generally allows for the possibility of a more complex, "compound" social institution.

Cloud, who prefers the term "household," nevertheless provides an excellent definition: a kinship-based group engaged in both production and consumption with corporate ownership of some resources and a degree of joint decision making among members. Its boundaries are assumed to be permeable and to change over time, as well as under different macroeconomic conditions. Such a definition can include monogamous, polygamous, and women-headed households, as well as compounds or extended families (Overholt: 1984, 21).

² "The market is risky due to both physical conditions (huge supply fluctuations due to climate and pests) and institutional ones (changing government marketing policies, underdeveloped marketing channels), and hence unpredictable changes in price or availability of food." (Atwood: 1989, 12)

senior male's brother(s) and or son(s), their wives and children, and other relatives, lodgers or dependents -- provide labor and, occasionally, capital.

Under the direction of the compound head, the labor of the compound³ produces grains on fields selected from the lands the village and other supra-compound structures, such as clans, have allocated the compound. (In the local language Bambara, a field worked under the direction of the compound head is called the "foroba," which may be translated as "big-field," the term we use in this report.)

The compound stores this big-field produce in a granary (or granaries) controlled by the head of the compound. It is destined for joint consumption by the members of the compound. In principle, this produce is only sold to fulfill obligations incurred by the compound (in the form of the head of the compound fulfilling his formal duties). This income may thus be spent on such things as production-related purchases (or debts), and taxes. Additional surplus is sold only if several years of consumption needs are first met. As an indication of the amount put on the market in Mali, in the very productive Opération Haute Vallée zone, for the relatively good years of 1985-1988, only 3 to 10 percent of grain produced was sold (Sundberg: 1990, 2).

When big-field surplus produce is sold, the head of the compound manages the income generated. In addition to paying taxes and production related expenses, this income is used to contribute to marriage, baptism and funeral expenses, and, additionally, to buy and upkeep various consumer items, such as radios, and bicycles.

The second production component is nested within the first. Its first goal is also to meet domestic consumption needs, though of a slightly differently defined population. This component produces virtually all other foods eaten or sold by the compound, and consists of a compound's women. It takes responsibility for producing or purchasing the sauce eaten with the grains consumed, and for providing occasional special meals for husbands, and "snacks" for younger children and infants. Because the members of compounds may eat only two, rarely more than three set meals a day, these "snacks" may be critical to children's health. If more than one married woman lives in a compound, the responsibility for preparing the daily sauce may be shared among them. Individual women take responsibility for the special meals for their husbands, and snacks for their children.

To provide this food, this component employs the productive resources left unused by the first component. Individual women provide the labor, with the assistance of their unmarried daughter(s). Their access to and "management" of this labor is subject to the prior needs of the big-field production activities, and the domestic labor demands of the compound. These additional labor demands may be considerable. Perquin calculates that in south-eastern Mali, women work three hours more a day than men. Davis, in her study of livelihood

³ This component may also draw to lesser and greater degrees upon labor external to the compound. Such labor, which is sometimes very significant, is organized in a variety of ways, ranging from rotating labor groups, and contributions from dependents of the compound, to sharecropping and wage labor. Such labor of external origin is also managed by the head of the compound.

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systems in the Delta, estimates that women perform 30 hours of domestic work a week, on top of their other productive activities.

For resources other than labor, this component's access is also a matter of taking what is left over. In space, a woman's agricultural production domain is situated either very close to the household, or in the forest. In between, a village's field-belt is dominated by the big-field system; women use abandoned, fallow or otherwise vacant fields to produce the ingredients for sauces (groundnuts, niébé beans, *hibiscus cannabinus* (dah), okra). They derive their access to these fields indirectly, through the men in their lives, from their status as wives, mothers, sisters aunts, or as daughters in law. They retain access only as long they meet these family obligations. It is an uncertain attribution of small amounts of low quality land, which is unavailable to all. In the Opération Haute Vallée zone, women in only three quarters of the compounds farm individual fields (Sundberg: 1990, 4). In the villages of south-eastern Mali Perquin studied, the total land farmed on individual fields by women ranged from 1.3% to 13% of total compound lands, with the total surface area of fields farmed by the women of compounds averaging more than one hectare in only one of the three zones studied (Perquin: 1993, 22).

In addition to these individual fields, this component exploits home gardens, field trees and the forest to produce the sauce ingredients, drinks, fruit, nuts and medicines that keep Malians alive.

Women's exploitation of tree and forest produce does not compete with the big-field system for the critical (non-labor) resource, as do women's field-based activities. In most cases of higher-value field tree produce, however, women's access is just as indirect as is their access to fields; in fact, tree tenure is based on field ownership. To gain access, women must be married; they then gain access to the fruit of field trees on the fields cultivated under the direction of the compound head. In areas of *butyrospermum parkii* (shea nut) production, for example, access to trees in fields under exploitation is limited to the women of the compound (Perquin: 1992, page 24; Grigsby: nd).

In many cases, renewable forest and fallow field tree produce falls under loosely coordinated open access regimes; whoever takes the time and energy to gather produce may have it. This means that women are the primary collectors, in part because it can be combined with firewood collection. In some cases, villages may establish limits on the use of more valuable products, declaring open and closed seasons for harvesting, or excluding harvesting by strangers.

Although, in most instances, women have access to forest, fallow field, and field tree nuts and fruit, this is not always the case. Their claims are secondary to those of men, whether the men claim access as heads of compounds, or simple husbands. In some villages in southern Mali women do not collect the fruit of *parkia biglobosa* (nééré) field trees. Instead, men, with the help of children, collect the fruit, and then turn the pods over to their wives, who pound them, using the powder for domestic consumption. The men then sell some of the seeds, and store the rest for ceremonial uses, and for feeding laborers (Perquin:

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1993, 50). A similar situation was found in a Dogon village visited for this study. There, men, not women, collect, transform and sell *néré* powder and seeds.⁴

The women of the second component stock and manage the distribution and sale of the produce of these various activities themselves. Women maintain separate budgets and decide how to spend the income generated.

As is the case with big-field production, produce is sold only once consumption targets are met. This said, women generate the greatest proportion of their income by gathering, transforming, and selling the nuts of the *butyrospermum parkii* (shea nuts) in the villages of south-eastern Mali studied by Perquin in 1993. Similarly, in the nearby district of Bla, shea tree exploitation is the greatest income generating activities for women when the trees produce well. However, when the shea doesn't produce, as in recent years, groundnut production is the most important income generation activity (Schweitzer, 1992: 46).

Outside of the shea tree zone, the wild produce women gather also plays a significant role in generating household and individual income. Davies estimates that 14% of the income of agro-pastoralist households in the Delta comes from gathering (Davies: 1993, 271). In 1985-86, wild foods supplied an average of 85 day's worth of household food availability in the delta, 23% of annual minimum requirements (Moorhouse, cited in Davies: 1993, 261).

The second component also provides a large proportion of animal products consumed in Mali. Women invest money generated from the activities discussed above (as well as other activities such as small scale marketing and craft production) in poultry and small ruminants, goats and sheep, which are both sold and consumed domestically.

Variations in the Gender Dimensions of Resource Tenure

The gender division of rights and responsibilities in the Malian agricultural production system varies greatly. However, within the sedentary agricultural populations, the general parameters remain basically the same. Perhaps the most critical variation concerns the amount of time and labor women are expected to contribute to big-field cultivation, and the amount of time and land they are granted for individual field production. In some cases, women's responsibility for farming big-fields may exclude the possibility of their cultivation of individual fields (for examples see Perquin: 1992, 10 and Simard: 1990). In such cases, women who contribute extensively to big-field cultivation may be granted a portion of the produce.

At the other extreme, women may be expected to contribute very little to big-field cultivation. In such cases women may be given greater security of tenure in land than is suggested in the model presented above. However, greater security in individual fields often brings with it an increased responsibility for providing for compound grain needs, which is drawn from the produce of individual fields. For example, in the village of Youré, outside of

⁴ Generally though, while men also collect the fruits of trees on the Dogon plateau, women and children are the principal gatherers, and women the sole sellers (McLain: 1990, 17).

Mopti, women spend more of their time working their individual fields than they spend working on the group fields. In fact, they only participate in the compound's fields during the harvest (Maiga: 1992, np). In this village it has even been reported that once a woman is given a field, she cannot be deprived of that field. However, a portion of the grains women harvest in their individual fields is contributed to the compound granary. It appears that their increased rights are counterbalanced by increased responsibility (personal visit; Mariko: 1993; Maiga: 1992).

This variation in gender rights and responsibilities depends on a wide range of diverse factors. Village history and the influence of individual village women or men may cause neighboring villages, otherwise very similar, to vary greatly in their expectations concerning women's role in agricultural production. Despite this complexity, a certain number of factors appear to influence this variation in consistent ways. These factors include: individual producer status; household structure; ethnicity; agro-ecological zone; food security considerations; and economic development.

Individual producer status: As a woman ages and her status increases, she becomes senior and may gain the authority to require junior women of the compound -- her unmarried daughters, junior wives, daughters in law -- to perform the more demanding, less remunerative household and farm work. She thus frees herself to undertake more income generating activities. In some communities, senior women also obtain access to fields in which they may expect relatively secure tenure.

Household structure: As a general rule, the larger the compound, the less it draws on women's labor to cultivate big-fields. Residence in such compounds frees women to cultivate individual fields, if available, or work on other income diversification activities. Conversely, the very smallest households draw more regularly on women's labor for big-field cultivation, particularly during periods of peak labor demand.

Ethnic group: Ethnic identity also correlates with variations in the gender division of field labor. Most obviously, women's participation in agricultural work varies according to the dominant livelihoods practiced by different ethnic groups; fisher women have less time to farm. Among sedentary populations, Perquin quantified distinct differences in the amount of land farmed by women in Bobo, Minianka, and Senofo villages, with Senofo women receiving by far the most land (Perquin: 1993, 22). Women of the two Bambara villages studied by Grigsby participated in more stages of the big-field agricultural cycle than the women of the Malinke villages he studied.

In addition to such scattered, small-sample quantitative evidence, stereotypes portraying women's involvement in agriculture are common in Mali. It is said, for example, that in Khassonke villages, women do all the agricultural work; in Dogon and Rimaibé villages, women farm their own plots; Bozo, and Fulani women don't work in fields at all. (Despite the general truth to these stereotypes, research also reveals great differences in the extent and manner of women's participation in field work and access to individual fields within villages dominated by the same ethnic group.)

Agro-ecological zones: The gender distinctions in agricultural production systems vary from one agro-ecological zone to another, largely as a function of variations in the composition of crop portfolios, and in particular the relative importance of cash crops within portfolios, which is addressed below.

Food security: A number of factors relating to food security considerations also influence the gender division of agricultural rights and responsibilities. Drought, annual shortages in production, and individual household food security have all been demonstrated to influence the definition of gender roles in agriculture.

Long term declines in rainfall, such as those that occurred in Mali in the early 1970s and 80's, by changing the natural resource base, may alter the distribution of access to resources based on gender. For example, in the Manghadie area of the central delta, shifts in climate have rendered certain fields unsuitable for rice cultivation, an activity previously performed by men. These lands are now farmed as gardens by individual women (Simard: 1990).

Contrary to isolated cases such as this, the overall impact of drought and resource degradation in Mali has been to increase demands on women's labor, most often by increasing the time necessary to gather firewood and draw water. Both Simard and Davies found that, "as livelihood systems become more vulnerable...demands on female labor intensify" (Davies, 1993: 370).

Yearly production shortfalls -- whether related to drought or not -- also influence the gender dimensions of production and distribution systems.

One widespread household response to shortfalls is to centralize the distribution of produce; when central big-field granaries empty, compounds draw upon individual granaries. The larger family taps women's stores, which would otherwise go to either her husband or children, or be sold.

In addition to centralizing the distribution of produce stored in individual granaries, household members undertake a wide range of new activities to cope with production shortages. One of the most important agricultural coping strategies, which women perform, is gathering products otherwise unused or considered secondary, such as wild grains and forest products:

The importance of gathering wild foods increases many fold during years of crop failure. This is very important. Wild foods in time of stress provide a most vital reserve...There is scarcely a plant that is not used for feeding people or keeping them well (Weber, quoted in Cloud, 1977).

The food security fitness of households also correlates with gender differences. The women of consumption--secure households market a greater proportion of the produce from their individual fields. They also engage more often in other income generation activities (Sundberg: 1990, 7).

Economic development: Women frequently lose rights to resources with economic development, particularly when development is driven by integration into larger markets.

To take the classic example, the introduction of cash crops generally increases demands upon labor, but does not increase women's control over the income generated. In cotton growing southern Mali, women's access to land has been reduced by expanding big-fields and the introduction of cotton. This increase in size of the big-fields has increased demands on women's labor. Moreover, women become more and more responsible for big field labor and less and less independent producers (Perquin: 1993, 93)⁵. "Policies attempt to increase productivity of agriculture by providing a rational incentive structure for men while depending on traditional constraints to mobilize constantly increasing amounts of unremunerated female labor" (Davidson: 1988, 251).

While in most parts of Mali women dominate the production and commercialization chains for fruit and nuts, men have become more heavily implicated in the commercial chain of high-value fruits, such as mangoes. Even increases in the value of the same tree crop may cause a shift in the gender distribution of rights. With the construction of the road into the village to Julafundo in Mali's Opération Haute Vallée zone, women have less access to mangoes because men have begun trucking them out to distant markets (Grigsby: nd, 45). A similar shift has been observed with regard to garden production. In 1977 Cloud reported that "already, men are moving into the production of vegetables as a cash crop in several areas where an urban market exists. Care needs to be taken that women are not squeezed out of vegetable production for the money economy" (Cloud: 1977, 8).

The Institutional Context of Local Tenure

Local systems of tenure exist in a larger institutional context, defined primarily by government administrative, judicial, extension marketing and development policies, as well as religious institutions. The relationship between these institutions and women's resource tenure, although important, is generally indirect, and mediated by local village institutions. For example, a women's access to land is largely determined by marriage, clan, and village institutions, whose control over land is in turn influenced by government policy and religious culture and structures.⁶

⁵ Over time, plots women have access to have gotten smaller because of the introduction of cash crops (cotton and peanuts) and because of the plow, which has replaced the system of intercropping (including the "women's crops") with monocultures, and which causes an increase in the size of family fields. The competition for arable lands is becoming more and more intense, which works to the detriment of independent, private fields. The increase in the size of family fields has also resulted in an increase in manual agricultural work. Especially for the weeding and the harvesting which take a large part of women's time, and they have less time for farming on their own fields (Perquin: 1993, ix., my translation).

⁶ The following discussion is, admittedly, based on limited research. A thorough analysis of the long history of policy impact on the gender dimensions local tenure is beyond the scope of this study, and would probably require much original research. The literature available in Bamako, at least, is extremely limited on this subject. Section VI, does, however, address the impact of extension and decentralization policy, the most important current issues in this regard.

Over time, the effect of these extra-local institutions has been to reinforce the male dominance in local institutions through the cumulative effect of a range of interventions: the administrative validation of local patriarchal structures; court blindness to fundamental laws affirming equal rights to citizens; legislative silence concerning women's rights to inheritance; women's legal status as a minor in marriage; the educational system targeting boys and not girls; research and extension targeting men, etc.

Thus, although the history of state intervention in land tenure in the Sahel is one of virtual impotence in the face of local systems of tenure (colonial administrations and the independent governments that followed have not been able to achieve the elusive goal of privatizing tenure), government institutions have reinforced male dominance in local institutions, and through them, male control over resources.

Mali presently faces a crossroads in its policy addressing rural development. Both land and forestry codes are under revision. The government has also committed itself to the democratization and decentralization of governance, and is deeply engaged in this process which, if carried out, promises to transform society. If these reforms succeed, they will empower local communities to govern natural resource management. The effect of these developments on the gender distribution of resource tenure will vary as widely tenure regimes presently vary. Their eventual impact is presently unknowable, but analysis of ongoing experiments in community based resource management can suggest the range of possibilities.

Conclusion: Woman's Production and Income Generation Arena

The great diversity of Mali's economy limits the usefulness of any generalized description of the local organization for agricultural production and commercialization. Malians organize themselves for rural production in an infinite number of ways. They gain their livelihoods by fishing, raising livestock, conducting commerce, practicing forestry, and farming, and they mix and switch these modes of production. Not limited by "sectors," they shift from one to another, or straddle several at a time, in an effort to spread risk and diversify sources of income. Indeed, Mali's rural producers don't stay "rural," but migrate to urban centers, and then, sometimes, come back again.

The problems posed by this great and shifting diversity are particularly acute in describing the gender organization for agricultural labor, because of the super-micro-level nature of the variation -- it differs from one compound to another, within each compound, and for each woman over her lifetime.

Despite these difficulties, there is no doubt that the "second component" of Malian agricultural production, the individual women of the rural households, plays a vital role in the country's production for domestic consumption and income generation. This component provides the nutritional complement to the daily meals of grains. It also distributes the foods it produces more directly to the people more at nutritional risk, the infants of the household. In periods of production shortage and drought, the produce of this component keeps Malian families alive.

This central importance of the second component is even more surprising given the limitations it confronts. Malian women produce using residual resources. In space, a woman's agricultural production domain is the absence of big-field system; it is fallow land, or land close to the household, or off in the forest. In time, the component functions on time left over after domestic and big-field obligations are fulfilled.

This interstitial nature of women's access to resources is a function of women's status, and the nature of their membership in the institutions that mediate resource tenure. Women have access, but not control. This gender monopoly of resource control reflects the changing gender division of the definition of authority in Mali; it reflects, not immutable customs, but the constantly reinterpreted rules of local institutions, reinforced by government and donor policy and practice. It is tested each time development happens, when resources increase in value.

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Annex C

Opportunities for Income Generation by Women in Natural Resources Management Projects

The Mali mission program includes three major projects that address the Natural Resources Management targets in its strategic plan. These projects are: Development of the Haute Vallée (DHV, 688-0233), PVO Co-Financing (688-0247) and Village Reforestation (VRP, 688-0937)⁷. These three projects promote Natural Resources Management through a variety of implementation modes in a range of agro-ecological zones, and thus reflect the diversity of USAID Natural Resources Management projects in the Sahel.

The Development of the Haute Vallée Project has supported a wide range of agricultural and rural development activities over the past 14 years, working primarily with the government agricultural development agency, the OHVN, which functions in the Opération Haute Vallée zone just north and south of Bamako. In recent years, financial and technical support has focused on efforts to establish self-managed village associations.

Through the Village Reforestation Project, which began in 1981 and reached its project completion date in 1993, USAID has worked to improve the forest resource base in Mali's fifth region. In its second phase, begun in late 1989, the project provided bilateral program assistance to the forestry service for training, extension and management. Technical activities included promotion of tree nurseries, agroforestry and soil and water conservation activities, promotion of private and community woodlots, and the introduction of improved wood-burning stoves.

The Mali PVO Cofinancing project, begun in 1989, provides PVO grants in child survival, small enterprise development, and natural resource management. By 1992, the project had provided 20 grants to 8 PVOs. Through these grants the project has promoted a wide range of Natural Resources Management activities through various approaches. The 1992 Interim Program Assessment Report cites particular success in the areas of water management, agriculture, forestry and cattle-breeding.

Project Activities Considered in the Socio-economic Context

One of the primary functions of strategic planning as it is used by USAID and the Bamako mission is to identify particular domains of intervention. In agriculture and natural resource management, strategic planning documents target particular sectors and sub-sectors of the agricultural system for investment. Many Natural Resources Management projects materialize this planning focus through the selection of technologies or practices they choose to extend or reinforce. The composition of this package of activities determines, to a large

⁷ The Animal Production and Export Project (APEX, 688-0244) also addresses Natural Resources Management, but is too new to assess field-level impact. The mission's Farming Systems Research and Extension project, as well as various other small projects also promote Natural Resources Management activities.

extent, the gender dimensions of project people-level impact. Thus, to analyze Natural Resources Management activities in terms of their relationship to women's productive activity in Mali, we may sort them according to their relationship to women's control over essential productive resources. (For discussion in this section see Table 1, in the main text, page 14). They thus fall into three broad categories:

- 1) activities requiring secure tenure in agricultural land;
- 2) activities currently requiring neither secure tenure to land nor membership in critical institutions, but which, if successful, may require such membership and;
- 3) activities addressing tenure issues.

Limited Women's Participation: Activities Requiring Secure Land and Tree Tenure

Women do not undertake Natural Resources Management project activities that require continued control over fields or the produce of field trees. In fact, it has proven unwise for them to do so. Soil and water conservation activities, and many agronomic practices presuppose secure rights in fields. Certain agroforestry practices presuppose secure rights to field trees and their produce, which is largely dependant upon field tenure. With each of these types of Natural Resources Management activities, women's insecure tenure reduces their incentive to make the necessary investments involved.

Soil and water conservation and certain agronomic practices:

The goal of these activities is to improve a given section of farm land. While these techniques may be very useful conservation tools, and greatly increase crop yield over time, they are only accessible to individuals or groups who do not endanger their access to land by undertaking them. Examples of soil and water conservation activities include waterways and water diversions, check dams, dikes and ridges. Examples of agronomic practices that presuppose control over land include contour planting, micro-catchments, and tied ridges.

These activities all entail investment in land, and require a certain degree of control over that land, such as the control -- which often takes the form of management responsibilities -- exercised by the head of a household in a village with relatively stable land dynamics. Persons not maintaining such control may be deprived access once improvements have been made; the field reclaimed for use person or group who loaned it initially.

For example, through use of *zais* -- the improved micro-catchments which have shown to be very successful in Mali's sahel zone -- farmers can transform barren hardpan into productive farmland within a couple of years. However, in the projects visited for this study, few women have chosen to farm with *zais*. This new practice takes a lot of labor (seeds must be planted in individually dug holes) and requires new inputs (organic manure); unless a producer has no alternative source of food, return on these investments is not seen in the first few years. Under extension agent encouragement, a few pilot producers, women, have used *zais* in their fields, but in interviews revealed that they fear these fields will soon be reclaimed. They have reason: in both the CARE Djenné project and the Near East

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Foundation project in Douentza, cases were found of women losing access to fields after making fixed investments in them.

Similar problems also arise extending these technologies in non-USAID financed projects. In the Mali-Sud zone, for example, the CMDT (Compagnie Malienne de Développement des Textiles) has been implementing a program against the erosion of the soils since 1986 (Programme lutte anti-érosive, PLAE). Few women have participated in the program to date. Women don't attend the extension meetings, and themselves say that the activities of the project don't interest them. So far, their participation has been basically limited to improved wood stoves (Perquin, 1992: 20, DRSPR: 1993, 35).

In an extensive review of land reclaiming activities in the Sahel, Monimart found that they touched neither the few fields that women control, nor the individual fields women farm. Only 6 percent of the women involved held property rights in improved land, although they formed the majority of the work force (Monimart: 1989). In Mali, women build stone bunds in two exceptional cases that "prove the rule:" in a few villages of the Gana ethnic group in the Sikasso region, where women have very secure rights in rice fields, and in the few villages where women do it "pour avoir l'appréciation du village" (Perquin, 1992: 26).

Certain agroforestry practices: Certain agroforestry activities exclude women's participation because they require a greater control over the production and cultivation of field trees than women generally maintain. These activities involve planting trees, which presupposes land rights in most cases in Mali. Except for a few rare cases, women do not plant live fences or windbreaks in Mali. One reason for this is that local tenure prevents land borrowers from planting trees without authorization. A more important reason is that women do not farm fields long enough to derive the benefits from such long-term investment. Only in cases in which women maintain an expectation of secure tenure, such as in community gardens and fields, do women plant field trees.⁸

Extensive Participation by Women: Activities not Requiring Control Over Resources

By comparison with the activities that depend upon secure tree or field tenure, other Natural Resources Management activities be successfully employed by producers with simple access rights, or limited control over land. These activities may be divided into three groups 1) activities exploiting renewable forest products; 2) the extension of certain improved or new crops; and 3) activities that use land very intensively, such as home and market gardening, and sapling production.

Producing, gathering, transforming and marketing forest and field tree products: Certain forestry and agroforestry activities do not categorically exclude women; they may be adopted by producers who have simple access to field or forest tree products. Women are currently heavily involved in activities of this sort, and it is possible for them to profitably

⁸ Interestingly, although McLain found women plant field trees at a much lower rate than men in central Mali, she also found that women protect trees found in the fields they cultivate at a rate equal to that of men. This, too, may be a function of their lack of rights to alter the land they borrow (McLain: 1991, 26).

participate in project activities that improve sustainable production using these renewable resources.

Activities that involve the gathering transformation, and sale of tree products attract women participants. However, other than improved cookstoves, few projects have focused on this domain. Only one German project in *butyrospermum parkii* (shea nut) processing seems to have attempted to develop production and commercial linkages to field and forest tree produce. Nor has research focused on techniques for generating improved production from field trees (DRSPR: 1993, 43).⁹

While women may use the produce of field and forest trees in most situations, it is not clear that they hold the critical rights necessary to seriously invest in the long-term development of these resources. In the first place, the state has created real tenure insecurity; its policies have strongly weakened local perception of ownership of both forest and field trees. Secondly, local tenure rules grant field owners broad rights in field trees. As noted previously, the exploitation of tree produce falls to women by default; men usually reap the benefit from high value tree crops. Local agreements would have to be negotiated for women to risk investing under these conditions.

Project activities with this focus would have to negotiate tenure conditions carefully. However the possibility exists. Under some conditions women are interested in planting field trees, if they can be assured secure access to the produce; and men are interested in granting them access, so that women will plant the trees, and the men may profit from the secondary benefits of the trees. (For an example, see Perquin: 1992, 23).

Improved or new crops: Certain crops that improve the sustainability of agriculture fit into the mix of productive resources currently available to women. For example, improvements of certain forms of nitrogen-fixing crops have increased the productivity of land, without increasing demands on producer labor or capital input. While the adoption of these new or improved crops may contribute to sustainable agriculture, and in fact improve soil quality or fertility, they don't improve the value of land so much that marginal producers, such as women, loose access. In the case of new crops constraints to adoption are more likely to stem from the gender-biased nature of research and extension institutions.

Niébé is the classic crop in this regard. It is a legume which fixes nitrogen. The beans are eaten or sold, and the leaves used for forage. Numerous projects have extended improved varieties of the niébé bean in Mali. It is adopted both for use in the big-field system, and by individuals on smaller fields, both men and women. When a forage-variety was introduced to the Kayes region, it was sewn in the big fields intercropped with millet. Women used the fresh leaves in sauces, and men harvested the crop for forage. The Village Reforestation Project promoted the cultivation on women's individual and common fields to be stocked and sold when prices rise.

⁹ In fact, research and extension have worked in the other direction -- replacing tree crops with field crops. In the OHV zone, the GRM has developed soy beans for cultivation in women's collective fields as a substitute for the fruit of the *parkia biglobosa* (nééré), which is used in sauces.

As it has commonly been practiced, the introduction of new species as a project activity requires the participation of the research institutions, working in conjunction with extension agencies. If introduced crops are to fit the needs of women farming their individual fields, detailed analysis of existing production systems is necessary. Unfortunately, Mali's major research institutions have only recently become serious in addressing the gender dimensions of agriculture.

To give an idea of the complexity of the issue, the Farming Systems Research and Extension project in Mali's fifth region found that weeding takes the greatest proportion of women's time in one of their zones. To address this bottleneck, researchers recommend looking at ways of increasing productivity per unit of land, and proposed increasing the productivity and production of ground nuts, which women have started to farm in the area only relatively recently. (They were previously farmed exclusively by men). Groundnuts would be rotated with millet, on millet fields, to which women have relatively secure access. This would increase the overall production of groundnuts, but not exclude the millet crop, the production of which women are to some extent responsible.

On the other hand, the *Département de Recherche sur les Systèmes de Production Rurale* (DRSPR) is further along in experimenting with a short cycle niébé, GOROM-GOROM, which produces grains as well as leaves that can be used for fodder. However, farmers who have used this variety believe that, for it to be interesting to them, insecticide must be used. This puts it out of the reach of most farmers in Mali, and especially women. Other fallow field activities would fit even more directly into women's production domain. Erdmann, mentions the possibility of introducing the production of bushy species on fallow fields, for firewood (Erdmann: 1992, 81).

Once developed, such new crops need to be extended. Here too, both NGOs and state agencies in Mali are just beginning to address gender issues. In the Opération Haute Vallée zone, for example, there are fewer than a dozen *animatrices* as compared to 80 male extension agents (Bingen: 1992, 22). (It must be said that, in response to heavy criticism, Development of the Haute Vallée appears to have made great strides recently. Hiring restrictions limit the OHVN's ability to hire more *animatrices*, but the last few years have seen a flurry of new gender sensitive activities, and three gender specialists now work in the national direction, in extension, agricultural credit, literacy and community development.)

Land intensive activities such as gardening and sapling production: Gardening and sapling production do not presuppose control over fields, and women dominate these project activities. Gardening is one of the major "women's activities" in many NGO Natural Resources Management projects. Government projects are also involved. This year, the Development of the Haute Vallée project is introducing 10 solar dryers to help conserve the vegetables produced in community gardens. The *animatrices* of Village Reforestation Project also worked with women's gardens.

Adding to the attractiveness of gardening for women is the fact that -- in addition to being free of field tenure constraints -- gardening fits well with women's resource profile. Because it takes place close to home, gardening economizes time in getting to the site, and

can flexibly fit into the scattered schedule of domestic tasks. It is also labor efficient, and has the possibility of minimizing crop risk through great diversity of plants (Erdmann: 1992, 19).

Although gardening requires continued access to land, a limited area can be very productive, and thus used by many producers. The formation of user-groups to manage community gardens secures tenure in land. As a result, even though gardening often involves improvements (wells, fencing, fertilizer) a concentration of claims secures continued access, as groups pool their resources to assert political and social pressure. In a vivid example of this, the individual women of the gardens supported by Village Reforestation Project *animatrices* contribute to group treasury, which they apply towards a variety of social and political ends, such as hosting important visitors.

The production and sale of saplings also does not face land tenure constraints and appears popular among women in Mali. On a small scale, producers don't need much land, and individuals can produce saplings in their own compounds; but the most successful formula found has been association with community gardens, where land, water and labor are already available. In addition to fitting well into the existing production and marketing context, association with community gardens also provides institutional cover. In addition to the authority gained through association, group member production of vegetables for their own consumption and sale establishes a precedent for sapling production.

Women produce saplings for sale in all three of the projects visited, the Near East Foundation (NEF) project in Douentza, the CARE project in Djenné, and the USAID Village Reforestation Project in the Mopti region. Development of the Haute Vallée has also begun, this year, promoting women's tree nurseries. In-house project evaluation documents indicate that in the first three years of the CARE Djenné project, almost 60,000 trees have been produced, largely in this fashion.

Although sapling production and gardening do not face land tenure constraints, and are thus activities in which women are often willing to invest and benefit, these activities face other serious constraints. One of the most frequently cited is the limit on the market for products. (For one summary of the limitations to market gardening in the Mopti region, see Davies: 1993, 339.)

Limited demand also insures that private tree production and gardening remain woman's activities. The limited market for saplings discourages large scale production, in which economies of scale would increase the attractiveness of the activity. Cases in which projects have encouraged large scale production demonstrate the danger: in both the Village Reforestation Project and Near East Foundation projects village men have claimed and sold saplings produced by women once the activity proved to be a success. And men own and run the flourishing peri-urban gardens feeding the great Bamako market.



Potential for Women's Participation: Activities Influencing Tenure

The focus of some Natural Resources Management activities clearly precludes women's participation. While others target productive domains dominated by women and thus offer the possibility of women's productive participation, they may not be sustainable because they still do not resolve the basic constraint women face in development: the lack of voice in the institutions that mediate resource control.

Sahelian governments and donors have long recognized that appropriate technology alone does not make for development; institutional issues, such as the policy environment and local governance, must also be addressed. In Mali, as in much of the Sahel, Natural Resources Management projects are increasingly taking community organization and planning as the point of departure.¹⁰ The best of these projects provide for the opportunity for the redefinition and renegotiation of tenure rights. Such community natural resource management efforts present the possibility for a greater inclusion of women in project activities, and continued participation over time -- not by "picking the right activity," but by addressing tenure head on.

Despite potential, community based Natural Resources Management projects, to date, have not included women as major actors. Women exercise very little decision-making authority over natural resource use issues within existing local management structures and projects do not change this fact.

The Near East Foundation project in Douentza, and the Development of the Haute Vallée project around Bamako have very successfully promoted community associations; neither of them has successfully promoted women's participation in their activities. In fact, women are essentially excluded from the Development of the Haute Vallée credit system (Bingen, 1992, 25). At Development of the Haute Vallée, one problem is that, although

"over half of the village associations [AVs]...include at least one women's activity, women's groups within the AV must negotiate for access to credit with the AV leadership. The limits on the annual credit line available to each AV means that the women's loan requests must compete with the overall request for production and equipment loans. The absence of women on AV boards further weakens their role in the negotiation for credit" (Bingen, 1992, 47).

The problem exists for all the "Gestion des Terroirs" projects reviewed for this study, and, indeed, is generalized in Mali: the Selingué seminar extension to farmers and village associations concluded that the country's village associations do not take women's concerns

¹⁰ Such projects come in a great number of shapes and colors. The approach currently most promoted is called the "Gestion des Terroirs" approach, although any project Natural Resources Management which works with local associations presents the opportunity for community based Natural Resources Management to some extent.

into consideration.¹¹ However, it is ironic that community based Natural Resources Management projects, that so directly address the issues of the local control over resources, do not include all producers in the process. Indeed, far from providing the opportunity for the renegotiation of tenure relations, projects tend to reflect and reinforce existing local gender differences in resource control. Community based Natural Resources Management projects seek to empower communities, to shift to a lower level the locus of decision making authority over resources. They are attempts to decentralize of government, and address the struggle of local communities in the face of national government. Because they emphasize the national/local opposition, they depend upon the solidarity of communities, and overlook intra-community divisions (Painter: 1991; Moore: nd).

Although women lack membership in associations created through community based Natural Resources Management projects, they may nevertheless benefit from such projects, whose impact is more generalized than, say, the extension of bunds in a number of big-fields. The Near East Foundation experience in the fifth region provides examples of how women may derive income from different components of local management of the forest of Boré.

Firewood management: Increased local control over the harvesting and sale of firewood increases local revenue, some of which is captured by a limited number of women who resell firewood. Local management also reduces the loss of firewood for domestic consumption to stranger cutters, which saves (local) women's time invested in gathering wood.

Controlling abusive cutting: As local management rationalizes fines for abusive cutting it decreases the loss of income to forestry agents and keeps a greater proportion of fines collected in the village. In some cases, it may increase income to women who receive a fee for catching illegal cutters. (However, women who cut browse for their small ruminants are more likely to be caught and possibly more likely to be fined, as are women who illegally use wood products in other ways, such as gathering fruit out of season.)

Development of livestock trekking routes: The designation of trekking routes by villages draws a clientele of herders, who buy processed millet or exchange it for milk. It may also reduce the number of herder/farmer conflicts, protecting women's fields and gardens. In some cases increased local management of routes may increase the opportunity for women to contest and receive compensation for crop damage by passing herds.

Management of non-firewood forest products: To the extent that community management of forests turns open access to forests into common access regime, with certain management rules followed (periods of harvesting, prohibition on bush fires during the flowering season, prohibition of cutting fruit trees, and organizing fire fighting efforts), it will protect an important resource for food and income of women.

¹¹ Seminaire sur l'Analyse des Systemes de Fourniture de Service aux Paysans et aux Associations Villageoises, held November 1991. Seminar conclusions are presented in Bingen: 1992, Annex C.2

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This last example, could prove to be the most important for women throughout Mali. For forests and other lands not under the tight management of communities, the goal would be to convert these into managed systems, preserved them as sustainable resources useful for coping in times of stress or diversification/accumulation in good periods (Davies, 1993, 341).

Project and Government Generated Institutional Constraints

The great popularity of community based Natural Resources Management projects in the Mali indicates a recognition in the donor community and GRM of the importance of local institutional building in development. These projects have begun to address one of three major categories of institutional constraints to women's participation in Natural Resources Management projects, the planning constraint. However, even the most advanced community based Natural Resources Management projects share other institutionally based constraints with more traditional projects: gender-biased personnel and extension methodology.

Sector-specific, top down planning: Personnel responsible for the implementation of both the CARE Djenné project and the Village Reforestation Project found that women could not be interested in the centrally-defined package of technologies and practices the project was to extend. The CARE project is in the process of modifying its package to include credit, small enterprise, and cereal bank activities. The Village Reforestation Project co-director also eventually concluded that women did not consider Natural Resources Management a priority. To bridge both the gender and Natural Resources Management goals of his project, he proposed hybrids, such as village sanitation activities with a compost component. However, the project's sectorial constraints eventually obliged him to focus the project on gardens and improved stoves. The Near East Foundation project, with more flexibility, made a shift from women's tree production to small credit in the arrondissement of Ngouma.

Even more than men, women's productive activities span the abstract categories development planners term "sectors." Although surveys indicate that Mali's women perceive the seriousness of natural resource degradation, they do not all perceive it to be their most pressing concern (for an example, see Perquin: 1992). To involve women, projects must sometimes help women address other constraints before they can address natural resource degradation (Monimart: nd). As does the pluri-sectoral nature of women's work, the great variation in gender roles in Natural Resources Management necessitates flexible, community based, problem-oriented project planning and implementation. If the "top" in top down planning is removed from the concerns of male rural producers, it is invisible to female rural producers.

If incorrectly implemented, the current wave of policy changes could be simply the newest guise for top-down planning. For women not to be marginalized by development, new tenure arrangements will have to be negotiated locally as resources increase their value. What these arrangements will look like is presently unknown, making the development of appropriate policy difficult. Rocheleau, who suggests the development of "equitable project participation contracts," proposes that such agreements, developed and tested at the sub-

village level, could eventually be used set precedents for eventual formalization at higher levels of the government (Rocheleau: 1989, 48).

Gender weighted personnel: The conclusion to be drawn from the cumulative experience of agricultural projects in Mali does not differ from that drawn the world over; projects in which women don't play a role in decision making have a harder time designing and implementing activities that involve women. Much attention has been given to the need to hire women as extension agents, for it is clear that male extension agents have difficulty communicating and working with women, while female agents, even when they are not explicitly assigned to work with women, do so. However, for efforts to capture the gender dimensions of development, women must play a decision making role at all levels of the process.

Resolving the gender problem in personnel in Mali presents great, but not insurmountable difficulties. Although the country's schools produce a surplus of qualified people, projects often have a difficult time hiring women, particularly married women, for working in remote regions, where spouses have a difficult time finding employment. The turn over rate of women personnel is also higher than that of men. The CARE project in Djenné, which once had roughly equal numbers of men and women agents, now has only one woman agent to seven men due to scarcity of willing female agents and their high turn-over once hired.

Government restrictions on hiring also limits projects to change the gender distribution of personnel, even if they are committed. To increase the number of women extension agents, the Village Reforestation Project was obliged to contract agents, outside of the government system. With the conclusion of the project, these contracted agents dropped back out of the system.

Extension methodology: In addition to the question of the gender composition of extension staffs, the methods agents use to work with communities also influences women's participation. As Cloud found in her desk review of 20 agriculture projects:

In case after case, the evidence showed that project planners should never assume that female farmers will be automatically included in training or extension activities simply because there are no formal barriers to their participation. Even in cases where the project focused on a women's crop or activity, project resources bypassed them when they were not explicitly ear marked for women. (Carloni: 1987, 15)

Perquin has developed a summary of extension-level causes for the lack of women's participation in community based Natural Resources Management activities:

- Extension workers send meeting announcements through the males of the village (such as the chief of the village, without contacting the president of the women's group), and do not make explicit the necessity for women's participation.
- The timing of meetings does not take into consideration women's schedules.

- Meetings are conducted in a language women don't understand.
- Extension agents are men and focus on men. They make limited efforts to contact sub-populations of the village (youth, women), and involve them in group exercises.
- In mixed group sessions, women are not directly questioned about issues, and won't speak up on their own, particularly in a group dominated by men.
- Activities and issues brought up for discussion are not those that directly concern women.
- When sub-groups are formed, such as technical teams, they are composed entirely of men.
- Men are chosen for farmer to farmer visits, and the themes of such visits often concern only men's activities (Perquin: 1992, 38-39).

The Development Impact of Women's Exclusion

Investment in activities that exclude women from Natural Resources Management project activities may be limiting the achievement of the mission's program goal, "to promote economic growth" for three reasons: first, the strategic objective of "increased incomes" for men and women may not be achieved. Second, opportunities for economic growth may be missed. Third, it may put rural livelihoods at risk.

Increases in women's incomes: Common sense suggests that women do not increase their incomes through activities in which they do not participate. This said, it is nevertheless possible that, at least in the short term, the development of big-field grain production, by assuring household food security, indirectly increases women's opportunities for generating income. Research indicates that women of food-secure households engage more frequently in income generation activities and market a greater proportion of the produce from their individual fields (Sundberg: 1990, 7).

The long term risk lies in the fact that the hypothesis of indirect income increases presupposes the continuation or creation of alternative means of generating income. Although the women of food secure households presently market a greater proportion of their produce from independent fields, the development of the big-field system displaces these fields in the long run; it won't work on a macro scale. The most common alternative source of income, gathering, transforming and sale of *butyrosperum parkii* (shea) products, may also be threatened by the (over) development of the big-field system (particularly forest trees).

Opportunity costs: Furthermore, opportunities for economic growth may be missed if women's are excluded.

In the first place, expanding big-fields displace the most resource-efficient producers; project activities don't reach the most deserving. When pressure on the land decreases soil

fertility, it hits women the hardest. These producers are less able than men to compensate by expanding the size of their fields, or applying organic or purchased fertilizer. Even if they can get a hold of organic fertilizer, they still have problems transporting it (Perquin: 1992, 10).

Women have been found to produce a significantly higher yield from their individual over a range of Mali's agricultural zones (Perquin: 1993, 44). It is possible that this is a result of a fact that, the second component of local production systems is closer to the western concept of private enterprise, being individually and not group organized. Women reinvest a greater proportion of surplus, in both productive and "reproductive" resources, by investing in the health and education of family members. A greater percentage of income gained by women goes back into their productive activities, and the produce which is domestically consumed goes more directly to children at risk. Instead of targeting these producers, policies that target the big-field system "attempt to increase productivity of agriculture by providing a rational incentive structure for men while depending on traditional constraints to mobilize constantly increasing amounts of unremunerated female labor" (Davies: 1993, 251).

In community management projects, the exclusion of women from decision making in forest management wastes the opportunity to capitalize on much knowledge of forest ecology.

Increased risk: Investment in activities that exclude women and displace or marginalize the range of activities in which they are engaged may also put rural livelihoods at risk by decreasing the opportunities for diversification within agriculture, and undermining valuable coping strategies for rural households. "Focusing on one or two crops does great injustice to the diversity of both communities and household production portfolios. Taken to extremes, such a development strategy may not constitute 'development' at all. In fact, over-concentration upon a single cash crop may expose families to greater economic, nutritional, and other risks." (McCorkle, quoted in Bingen, 1992, 13)

In the volatile natural and economic environment, diversification within agriculture is necessary for survival. As farmers have demonstrated through their selection of strategies, it is not clear that the income generated by grain sales would be available to purchase the ingredients needed daily for sauces and snacks, or the staples necessary in years of crop failure.

Conclusion

The "fit" between the extension package and the socio-economic realities of the target population -- particularly existing patterns of resource access and control -- influences who will participate. An individual will not take advantage of an innovation if it requires continued access to a resource to which their socio-economic status does not give them security of tenure.

As we have seen, women's status in Mali -- and in particular their lack of membership in critical institutions mediating resource control -- limits their access to land, and their

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control over other resources of perceived high value. This in turn influences their participation in Natural Resources Management project activities.

For women in Mali, this means exclusion from activities dependant upon continued access to land. It may also mean barring from other activities, if successful adoption increases the value of a critical resource, and tenure institutions allow men to claim (or reclaim) exclusionary access. In the development context, access, and its assurance is, in the long run, an institutional issue.

Thus, women are generally excluded from profitable participation in a whole range of Natural Resources Management activities -- including some "standards" that projects are built around -- because successful adoption of the technology requires control over land or trees. However, land and tree tenure is only the most important, binding, constraint to women's participation in these activities. Were land and tree tenure (miraculously) granted women, other constraints would come into play. A number of these activities demand a large up front labor input. Others, such as stone bunds, require access to transportation (for stones and manure) and technical skills or training.

On the other hand, Natural Resources Management interventions in the second category considered target productive activities in which women participate heavily. These productive and commercial domains are often portrayed as peripheral, but nevertheless prove to be strategically vital the survival of producer families and their livelihoods. This lack of attention in the past means that they represent a pool of potentially profitable areas for investment, technical research and innovation.

However, local producers treat these domains as peripheral in large part because of their relative lack of commercial potential; they are residual categories, left to those who have no alternatives. In each of these cases, improvement of the production system threatens women's access. Without changes in the decision making process for resource allocation, women would probably be excluded from these activities if they increased greatly in value and became integrated in regional and international markets.

A third category of Natural Resources Management project activities presents the opportunity to address the fact that the institutional context in which production and commercialization of products takes place is just as important as the productive domain targeted. However, these community based Natural Resources Management projects have to date had little success in addressing the concerns of community sub-populations, including women.

A third reason Natural Resources Management projects in Mali exclude women's participation -- in addition to targeting exclusively big-field production activities, and inadequately addressing intra-community institutional factors -- is institutionalized gender-bias in institutions that develop and implement Natural Resources Management projects. Three of the most significant factors here are sector-specific, top down planning, male dominated personnel, and gender-biased extension methods.

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Projects need not be designed on the assumption that women will lose access, or that local tenure arrangements are fixed. Instead, development interventions should be designed with sufficient attention paid to the institutional context -- local communities, government, and donor -- so that path for institutional evolution is paved before resources are introduced.

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Bibliography

- Atwood, David and Elliott, James. 1989. *Economic Growth, Food Crop Research, and Agriculture in Mali*. USAID/Mali.
- Bagnoud, Nicolas. 1992. *Aspects du Role Socio-Economique des Arbres Dans les Parcs a Karite et Nere de la Zone du Mali-sud, et Consequences pour l'evolution Future*. Travail de Diplome. ETH-Zentrum Zurich.
- Bingen, James et al. 1993. *Analysis of Service Delivery Systems to Farmers and Village Associations in the Zone of the Office de la Haute Vallée du Niger*. Washington: Development Alternatives, Inc.
- Buvinic, Mayra, and Mehra, Rekha. 1990. *Women in Agriculture: What Development Can Do*.
Washington: International Center for Research on Women.
- CARE International in Mali. 1992. *Djenné Agro-Systems Project. Multi-Year Plan*.
- CARE International in Mali. 1992. *Evaluation des Activités Phase 1*. In-house Evaluation of the CARE Djenné project.
- Carlson, Alice Stewart. 1987. *Women in Development: A.I.D.'s Experience, 1973-1985, Vol. 1. Synthesis Paper*. Washington: USAID.
- Caye, V. and McGowen, L.A. 1988. *Report on the Gender Issues Consultancy: Report submitted to USAID/Bamako*. Xeroxed document.
- Caye, V. and Rollings, A. *The Gender Information Framework: Gender Considerations in Design*. Document prepared for The Office of Women in Development, USAID.
- Creative Associates, Inc. 1980. *Participation of Women in the Economic Development Process: a suggested strategy for the Africa Bureau*. Washington: Creative Associates.
- Creevy, Lucy, ed.. (n.d.) *Women Farmers in Africa: Rural Development in Mali and the Sahel*. (Xeroxed document, chapters 2 and 3).
- Creevy, Lucy. (n.d.) "The Role of Women in Malian Agriculture." in *Women Farmers in Africa: Rural Development in Mali and the Sahel*.
- Cloud, Kathleen. 1977. *Sex Roles in Food Production and Food Distribution Systems in the Sahel*. Washington: USAID, Bureau for Africa, AFR/SFWA Project Activity No. 625-11-625-0907
- Davidson, Jean. 1988. *Agriculture, Women and Land: The African Experience*. esp. chapter

51

12 "Where Can We Go from Here?" Boulder: Westview Press.

Davies, Susanna. 1993. *VERSATILE LIVELIHOODS Strategic Adaptation to Food Insecurity in the Malian Sahel*. Institute of Development Studies, University of Sussex.

Department de Recherches sur les Systemes de Production Rurale. 1993. *Synthese des Resultats du DRSPR/Sikasso Campagne 1992/93*. Sikasso: Ministere du Developpement Rural/Institut d'Economie Rural/Department de Recherches sur les Systemes de Production Rurale.

Department de Recherches sur les Systemes de Production Rurale. 1992. *Elements de Reconnaissance Generale dans les Zones du Seno et du Delta en 5 eme Region*. Mopti: Ministere du Developpement Rural/Institut d'Economie Rural/Department de Recherches sur les Systemes de Production Rurale.

Diarra, Aminata Doucoure, Kamara, Abdoulaye. 1993. *Identification des contraintes a la Culture du Fonio a Kadiolo*. Sikasso: Ministere du Developpement Rural/Institut d'Economie Rural/Department de Recherches sur les Systemes de Production Rurale.

Earl, Julia and Moseley, William. 1992. *Integration of Indigenous Knowledge Systems and Adult Non-Formal Education in the Development Process: The Case of Mali*. The University of Michigan Population-Environment Dynamics Project. Preliminary Synthesis.

Ellis, Frank. 1988. *Peasant Economics: Farm households and agrarian development*. Especially chapter 9, "Women in the peasant household." Cambridge: Cambridge University Press.

Erdman, Thomas. 1992. *An Analysis of Ten African Natural Resource Management Practices*. Washington: USAID/AFR/ARTS/FARA.

Falk-Moore, Sally. 1990(?). *Reflexion sur une mission au Burkina Faso 4-15 septembre*. Xeroxed copy of report.

Fattori, Thomas. 1992. *Income Diversification in Mali: Analysis and Methodology for Vulnerability Assessment*. Working Paper no. 2.6 produced for the USAID Famine Early Warning System Project in Mali.

Fortmann, L. and Rocheleau, D. 1989. "Why Agroforestry Needs Women: Four Myths and a case study." In *Women's Role in Forest Resource Management: A Reader*. Prepared by van der Borg.

Grigsby, Bill. n.d. *Lending, Borrowing, and Women's Social Organizations in Rural Mali*. Consortium for International Development. University of Idaho: Moscow.

Jonckers, Danielle. 1987. *La Société Minyanka*. Paris: Karthala.

55

- Lansry, Nana Yaya Haidara. 1991. *Composante Femme et Developpement PGRN*. Report on the World Bank Natural Resource Management project in Mali.
- Harts-Broekhuis, E.J.A and de Jong, A.A. 1993. *Subsistence and survival in the Sahel*. Netherlands Geographical Studies. Utrecht: Koninklijk Nederlands.
- Hornwirth, Bruce, ed. 1989. *Gender Issues in Agriculture and Natural Resource Management*. USAID Gender Manual Series. Washington: USAID.
- Humpal, Donald, et al. 1988. *MALI ACTION PROGRAM*. Natural Resources Management Project. Washington. D.C.: USAID.
- Luery, Andrea. 1989. *Women's Economic Activities and Credit Opportunities in the Operation Haute Vallée Zone, Mali*. CID/WID Technical Assistant report. Tucson: University of Arizona.
- Management Systems International. 1991. *Role et Participation de la Femme dans le Developpement: le Context et les Outils Analytiques*. Document prepared for USAID/Mali workshop.
- Mariko, Oumou DIALLO. July, 1993. "Rapport de Mission" Study conducted for the Women's Task Force. Ministere du Developpement Rural Institut d'Economie Rural
- McLain, Rebecca. 1992. *Recommendations for a New Malian Forest Code*. Land Tenure Center Paper 109. Land Tenure Center: Madison Wisconsin.
- _____. 1990. *Le Regime Foncier et la Gestion de l'Arbre au Plateau Dogon: Trois Etudes de cas au Badiagara, Mali*. Land Tenure Center: Madison Wisconsin.
- Morel-Seytoux. 1992. *Integration of People-Level Impacts and Gender-Disaggregation in USAID's Program Performance Reporting System*. Management Systems International. Report Submitted to USAID Office of Women in Development.
- Monimart, Marie. 1989. "Synthesis" of the Study "Women in the Fight Against Desertification." NP.
- Nathan Associates. 1989. *Impacts of Economic and Agricultural Policies on Women in Agriculture: four case studies*. APAP Technical Document no. 506.
- Office of Analysis, Research and Technical Support. May 1992. *Plan for Supporting Natural Resources Management in Sub-Saharan Africa. Regional Environmental Strategy for the Africa Bureau*. Washington D.C.: USAID Office de la Haute Vallée du Niger. 1993. *Rapport Annuel D'Activites: Campagne Agricole 1992-1993*.
- Overholt, Catherine, et al. 1985. *Gender Roles in Development Projects*. West Hartford: Kumarian Press.

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- Painter, Thomas. 1991. *Approaches to Improving Natural Resource use for Agriculture in Sahelian West Africa: A Sociological Analysis of the "Amenagement/Gestion des Terroirs Villageois" Approach and its Implications for Non-Government Organizations.* CARE Agriculture and Natural Resources Technical Report Series, No.3. CARE: New York.
- Perquin, Barbara. 1993. *Les Femmes dans les Systemes de Production Rurale au Mali-Sud.* Sikasso: Ministere du Developpement Rural/Institut d'Economie Rural/Department de Recherches sur les Systemes de Production Rurale.
- _____. 1992. *Les Femmes et la Gestion du Terroir: Une approach pour intégrer les femmes dans le Programme Lutte Anti-Erosive de la CMDT.* Sikasso: Ministere du Developpement Rural/Institut d'Economie Rural/Department de Recherches sur les Systemes de Production Rurale.
- Project Amenagement de Terroirs. "Note de Presentation du Project Amenagement de Terroirs dans la Zone Agro-Exologique du Moyen Bani-Niger (AT/D2) Segou." Presented to the Workshop of Groupe Pivot-GRN 29 March - 3 April 1993, Bamako.
- Reardon, Thomas, et al. 1988. "Coping with Household-level Food Insecurity in Drought-affected Areas of Burkina Faso." *World Development*, Vol.16, No. 9, pp 1065-1074.
- Rocheleau, D.E. 1989. "Women, Trees and Tenure: Implications for Agroforestry Research and Development. In *Women's Role in Forest Resource Management: A Reader.* Prepared by van der Borg, Brigitte.
- Sankare, Ousmane, and McLain, Rebecca. 1993. *Decentralized Management of the Segue Forest: Ecological, Economic, and Institutional Considerations.* Bamako: CARE International.
- Schweitzer, Christiane. 1992. *Possibilities d'Impliquer Davantage les Femmes dans la Gestion des Ressources Naturelles dans le Cadre des Activites Conduites par le Projet Agro-Ecologie (PAE) Bla.* Bamako: Service Allemand de Développement, DED.
- Secretariat d'Etat a l'Action Sociale et a la Promotion Feminine. 1992. *Politique de Promotions Feminine.* Bamako: GRM.
- Shaikh, A. et al. 1988. *Opportunities for Sustained Development, Volume III Financial Analysis.* USAID AFR/TR/SO
- Shaikh, Asif. 1985. *Forestry Development Options in the Fifth Region of Mali: The Economic Tradeoffs.*
- Simard, Paule. 1990. *Territorialite et Autonomie des Femmes Bambara du Manghadie (Mali): L'Exemple de l'Acces aux Ressources Naturelles. Serie Conferences no 23. Centre Sahel, Universite Laval.*

- Staatz, John, et al. 1990. "Measuring Food Security in Africa: Conceptual, Empirical, and Policy Issues." American Agricultural Economics Association.
- Sundberg, Shelly and D'Agostino, Victoire. 1990. "Household Production and Income Strategies as Indicators of Consumption Security in South Central Mali." Paper presented to "The Agriculture-Nutrition Linkage Workshop," Arlington, Virginia, February 12-13, 1990.
- Skutsch, Margaret M. "Women's Access in Social Forestry: Guide to Literature" in *Women's Role in Forest Resource Management: A Reader*. Ed. van der Borg, Brigitte.
- Sy, Ousmane. 1990. *Bilan analytique des projets et programmes relatifs à la gestion des ressources naturelles et la lutte contre la désertification au Mali*. Club du Sahel/CILSS.
- Thiam, Mariam. (n.d.) "The Role of Women in Rural Development in the Segou Region of Mali." in *Women Farmers in Africa: Rural Development in Mali and the Sahel*.
- Touré, *** Maiga. 1993. *Mise au Point des Activités Champêtres, Menagères, Artisanales et Commerciales des Femmes du Village de Youre*. Report produced for the USAID Farming Systems Research and Extension Project, Mopti Mali.
- UNICEF. 1989. *Enfants et Femmes au Mali: une analyse de situation*. Editions l'Harmattan.
- USAID, Office of Analysis, Research and Technical Support. 1992. *Plan for Supporting Natural Resources Management in Sub-Saharan Africa: Regional Environmental Strategy for the Africa Bureau*.
- USAID/MALI. 1993. *Program Assistance Initial Proposal: Mali Forestry Reform Program*. (Especially Annex J: "Resource Conserving Technologies.") DRAFT. USAID: Bamako.
- USAID/Mali. 1992. *Interim Program Assessment Report: PVO Cofinancing Project*. (Especially Berthe, et al. "Report Summary Natural Resource Management.")
- van der Borg, Brigitte. 1989. *Women's Role in Forest Resource Management: A Reader*. FAO: Bangkok.
- World Bank, 1992. *Mali: Women in Development Assessment and Strategy Paper*. World Bank Population and Human Resources Operations Division, Sahelian Department, African Region.