Gender Aspects of Irrigation Management Transfer: Rethinking Efficiency and Equity

Margreet Z. Zwarteveen

INTRODUCTION

THROUGH IRRIGATION MANAGEMENT Transfer (IMT), governments basically pursue the following objectives:

* Improving the management performance and sustainability of irrigation systems.

* Reducing government costs for O&M.

* Reallocating scarce resources to more technically or more inherently governmental purposes (Vermillion 1991).

Performance improvements and cost reductions are primarily to be achieved through the introduction of quasi market incentives into the management of public irrigation systems (Rosegrant and Binswanger 1993), which is to be accompanied by the simultaneous development of strong grass-roots level institutions and organizations which are to form the link between the numerous small irrigating households and the agencies responsible for management at higher levels of the irrigation system (Small 1989). IMT holds out the hope that by changing the basic structure of socioeconomic relationships among irrigation agencies and farm households, the incentives and behavior of both will change to create more effectively managed irrigation systems (Seckler 1986).

Research results documenting irrigation management transfer experiences are scarce in general (Seckler 1993; Vermillion, 1991), but there are no studies at all about the impacts of these experiences at farm household level.[1] This is worrisome for a number of reasons, the most obvious one being that the gains of IMT are partly to be achieved by changes in the behavior of members of irrigating households.

This paper will explore the meaning of IMT from a gender perspective, i.e., the perspectives of male and female members of irrigating households. It will first argue that it is necessary to clarify who is included in the group of users of irrigation services. In most IMT literature, water users are implicitly assumed to be male individuals, while in reality water users are organized in a household collectivity with members of both genders who have parallel, complementary and sometimes conflicting roles, needs and interests with respect to water.

Gender differences at the level of the household indicate that women and men will be differentially affected by changes in the costs and benefits of irrigation as brought about by IMT. Those changes are to occur primarily through improved markets on the one hand, and improved institutions on the other. Both markets and institutions are known to be gender biased, in the sense that they do not fully recognize that all economic activity works through gendered relationships (see Elson 1993). Based on theoretical arguments that critically examine strategies of economic reform in other sectors with respect to their gender consequences, the second part of the paper will explore how "market gender distortions" (cf. Palmer 1991) affect the success of IMT in terms of effectiveness and impacts on women. In the third section, the fact that women are generally absent as formal and active members of water users organizations is discussed. It is argued that more active efforts to include women as participants in institutions that determine choices that directly affect their lives are justified.

Arguments will be illustrated with examples derived from case studies that are currently carried out by IIMI in Nepal and Sri Lanka,[2] and with examples derived from studies carried out by others.

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[1]This in itself is probably due to the emergence of a more "business like" climate in development thinking and practice of which privatization and turnover are important elements. Policy and research focus has gradually shifted from "individual farmers" to the agricultural sector; from the micro level to the macro level.

[2]See Annex 1 for basic background information on the irrigation systems studied in Sri Lanka and Nepal.

WHO ARE THE USERS OF IRRIGATION SYSTEMS?

Most articles and papers dealing with IMT refer to "farmers" or "water users" without specifying their gender, and some even explicitly deny the possibility of farmers or water users belonging to the female gender by systematically using "he" and "his" (see for examples Lam et al. 1993; Small 1989). This apparent gender neutrality masks the fact that water users may be female, and thus ignores differences that may exist between the needs of men and women.

Women are using water in different capacities. They first of all use water in their roles as co-farmers. Thinking of water users as (male) individuals reflects a deeply rooted and widespread conception of a farming household as consisting of a male head (who is the main farmer, decision maker and income earner) his wife (who is engaged in household tasks, looks after the children and occasionally helps her husband in the fields) and the children. Implicit in this conception is that the decisions and behavior of the senior male adult member of the household adequately reflect an intra-household consensus. This is not true in much of the world. Even in societies where norms and values strongly support the idea of the man as the provider and decision maker, the reality often is that women are actively involved in agricultural work, provide a large share of the household income, and participate in decision making regarding agriculture.

Farming is a collective endeavor of the various male and female members that belong to a farm household. The specific ways in which resources, labor and incomes are divided and shared among female and male household members vary across and within cultures and regions (although women are almost universally the ones most responsible for domestic activities and child care), but almost everywhere in the world women are much more involved in agricultural tasks than is assumed and reflected in official statistical sources.

Even the very task of irrigating is not necessarily or naturally confined to men. In Nepal, irrigating is a joint responsibility of both husband and wife. Men are more heavily involved in field work in the early stages of paddy production, during land preparation and plowing, and this is also the time when they take more responsibility for irrigating. During later stages of crop growth, women predominantly irrigate. Monitoring crop growth and deciding when water gifts are needed are very much linked to the predominantly female responsibility of weeding. When irrigation turns occur at night, both men and women prefer to go together, or with a neighbor or relative, out of fear for snakes (Neupane and Zwarteveen 1994). In Sri Lanka, irrigating of paddy is traditionally thought of as a male task. There are nevertheless quite a number of women that can be found in the paddy fields, opening and closing the bunds and monitoring the flow of water. Women's roles are more important when it comes to irrigating other field crops, such as chilies and onions. And, contrary to the common belief, there are even some women who are actively involved in water management at the level of the field channel (Zwarteveen et al. 1994).

However, whether or not to consider women as water users does not only depend on whether they are physically involved in the task of irrigating. In many cases, male and female farm household members both contribute to the production of irrigated crops and both benefit from the use or sale of these crops.[3] Because of intra-household gender based divisions of labor and responsibilities and because of intra-household income sharing arrangements, women and men do not always and automatically have the same interests and needs with respect to irrigated crop production, and by consequence, are also differentially interested in irrigation services, and thus differentially motivated to invest more time or resources in irrigated production.

In Nepal, when discussing the adequacy of water deliveries, men expressed most concern about enough water being available to allow a timely start of the paddy season. Women shared this concern, but unlike men they also stressed the importance of water being available during the season, because a lesser ponding depth in the paddy fields directly increases the time they need to spend on weeding (Neupane and Zwarteveen 1994). In Sri Lanka, especially in some of the poorer households, women find it difficult to secure a part of the income from the sale of the paddy harvest. Many of their husbands spend part of this income on buying liquor. As a consequence, some women prefer to work as wage laborers on others' field instead of working on the fields that belong to their husband: they themselves can control the wages thus earned (Zwarteveen et al. 1994).

A second way in which women are using water is as heads of farms. Farms may be de facto headed by women as in the case of some villages in the head-end section of the Chhattis Mauja Irrigation System in Nepal, where more than 80 percent of the farmers of irrigated land are women whose husbands are engaged in off-farm employment (Neupane and Zwarteveen 1994). Women farmers can also be widowed or divorced. In the Dry Zone irrigation systems under study in Sri Lanka, it is estimated that about 20 to 30 percent of the irrigated farms are headed by widows (Zwarteveen et al. 1994). What matters here is the fact that the gender of a water user or farmer will make a difference in terms of how water and other resources are used. Female farmers, for example, often have less access to credit, information and other support services. The rationale of irrigated farming may also

[3]See Annex 2 for a summary of how tasks are divided between women and men in the Sri Lanka and Nepal case studies.

change with the gender of the farm manager. This was observed in Niger, where widows who had inherited irrigated land from their husbands (8% of the total number of plot holders) depended much more on the proceeds of the irrigated land for their survival than male irrigators. Unlike widows, male farmers of irrigated plots have access to rainfed land in addition to the irrigated plots (Schaap et al 1994).[4]

The third way in which women should be considered water users relates to uses of water derived from irrigation systems for other purposes than irrigating the main crops. Irrigation water is such a valuable resource, whatever the official principles for water allocation, people will use it for a variety of purposes. Who uses water for specific purposes is often determined by gender. In all the irrigation systems under study, women were found using water from the irrigation canals for washing, bathing themselves and their children and cleaning. In Nepal and Sri Lanka, irrigation water is also used for watering cattle, a task which is often performed by women.[5] In Sri Lanka, some women divert water from irrigation or drainage canals for irrigating their homesteads.

THE INTRODUCTION OF MARKET INCENTIVES

Researchers and analysts concerned with the differential impacts of economic policies, and specifically of structural adjustment policies, on men and women have questioned the allocative efficiency of the market. The greatest concern is that macro-economic analyses are inadequate because of their neglect of one whole area of production, the unpaid production of human resources; and because of their ignoring the interdependence between this area of production and the areas macro-economics is concerned with. This neglect tells against women in a variety of ways because such unpaid production is largely women's work (Elson 1993) Market gender distortions also include unequal terms of exchange of resources between women and men in households; Palmer (1991) conceptualizes this in terms of intra-household markets in which the terms of trade are biased against women.[6]

IMT from irrigation agencies to farm households involves a shift of financial responsibilities from the agency to the households that make use of irrigation services. The emphasis on users taking on financial responsibility does not mean that policy makers are withdrawing from the irrigation sector. Rather, it means a different choice of policy instrument. Public expenditure organized around budgets is being replaced as the key policy instrument by cost recovery procedures.

The two most common pricing principles for directly recovering operation and maintenance (O&M) costs from users are area based fees and water pricing (see Small 1989; Rosegrant and Biswanger, 1993 and Seckler, 1993). In the case of area based fees, the fee for water is a fixed cost throughout the cropping season, regardless of the actual water use decisions. The amount users have to pay may vary in accordance with the area cultivated, season and type of crop to irrigate, but it does not vary according to the amount of water actually used. Instead, a system of water pricing relates payments to water use decisions. The total amount to be paid depends on the amount of water used, causing the cost of water to become a variable cost of production. This in turn creates a financial incentive for individual farm households to use less water (see Small 1989).

Both of these pricing principles will affect the ways in which farm households arrange labor, land, water and other resources between alternative uses. Also, they will change the way in which water is allocated, using the price response of users to reallocate water, instead of the now prevalent administrative allocation procedures. This entails a shifting from low-value uses to uses of higher value (Rosegrant and Biswanger 1993). Changes in resource mobilization at the household level, and changes in water allocation will be affected by and affect gender relations.

Changes in household resource mobilization

Payments for irrigation services can be in the form of cash, or in the form of labor. If farm households are required to provide labor to system maintenance, gender based wage differentials may make it economically attractive for households to send women for maintenance work, the opportunity cost of female labor being less. In Nepal, in the Bauraha Irrigation System, farm households had to contribute labor to the rehabilitation of the system, prior to

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[4]Gender, of-course, is not the only, nor necessarily the most important, source of difference between water users or farmers. The source of difference that receives most attention in irrigation management literature is the difference with respect to access to water; or the head-end tail-end difference.

[5]The important role of women in water use for domestic purposes is, in contrast to their roles in using irrigation water, quite well documented and widely acknowledged. The Dublin Statement of the United Nations Conference on Environment and Development (1992)--concerned with the emerging crisis in global fresh water resources--for example states as one of its four principles that: "Women play a central part in the provision, management and safeguarding of water."

[6]This paper does not intend to conduct a comprehensive review of either the theoretical or empirical literature on gender biases in economic analysis. Those interested are referred to the work of Palmer (1991); and the various articles of Elson (1989; 1993a and b).

turnover. The amount of labor to be provided was a function of the land area to be irrigated. About 70 percent of the laborers were women. Women and men were involved in the same types of work: transportation of sand, stones and cement; digging; making of aggregate and mixing mortar. The high proportion of women providing labor was partly because men control family labor, including that of their wives. Men decided on whom to send to the construction site. Women could refuse to go only when they had important tasks to do within the household or in the fields. More important is that many men were engaged in wage labor outside of the village. Women were not reluctant to provide labor, although they experienced considerable difficulties in coordinating construction work with their other tasks. They anticipated to have access to better and more reliable water supplies in return for their labor (Bruins and Heijmans 1993).

The requirement to pay for irrigation services in cash may induce households to change cropping patterns, either because fees are related to types of crops or because higher prices of water may lead farm households to shift to crops that use water more efficiently. Crops that require less water will have different requirements in terms of male and female labor contributions. In System H in Sri Lanka, farm households are asked to grow chilies and onions to make optimal use of the limited amount of water that is available in the dry season. Both these crops require much more female labor than rice does. With the exception of some of the richer farm households, most households in the Mahaweli H do not have the financial means to hire more laborers. Increased female labor requirements will thus be met by increasing labor inputs of female household members (Zwarteveen et al. 1994).

Increased costs of irrigation services may also induce households to save water. If water is freely available, it is often used to partly substitute labor. Examples of this are pre-season water applications to soften soil for land preparation or increasing the ponding depth in paddy cultivation to reduce weed growth and thus the time needed for weeding. At the household level, water savings can thus be achieved by increasing family or wage labor inputs to irrigated agriculture. It depends on the gender division of labor whether these water savings are achieved at the expense of women's or men's time, but also on female and male wages. When family labor is used, the higher opportunity cost of male labor makes it economically more attractive to increase female labor inputs.[7] When laborers are hired, the time female household members need to spend on cooking for laborers and on collecting fuelwood will also proportionally increase.

Instead of increasing production or increasing water use efficiency, it is also possible that increased costs of irrigation services are met through incomes derived from outside agriculture. While the IMT literature discusses the possibility of secondary incomes being generated at the level of the water users' organization (Small 1989; Kloezen 1994), it is also possible that off-farm incomes generated at the household level are used to meet irrigation fees. Where this occurs, it will encompass different sets of intra-household arrangements with different implications. In the Chhattis Mauja Irrigation System in Nepal, the main objective of irrigated agriculture is to ensure household food self sufficiency. Household cash requirements are increasingly met through off-farm employment of mainly men. Often, the income earned by men is not high enough to replace their labor contributions to the family farm with wage laborers. Their wives and children are thus forced to increase their labor inputs to make up for the loss of male labor. And since women are not allowed to participate in O&M of the system, the income earned by men is also used to pay O&M costs which were earlier paid through labor contributions of male household members (Neupane and Zwarteveen 1994).

Changes in water allocation

Water pricing mechanisms entail a shift from administrative water allocation procedures to allocation of water by the market. This carries the danger that water will only be allocated where the economic benefits are obvious, substantial and quantifiable to the neglect of those cases where the economic benefits are less clear (C;eaver and Elson 1993). The very common use of irrigation water for domestic purposes is the most obvious example here. Since women are often responsible for these uses of water, they are the ones most likely to be affected by water allocation principles that prioritize productive uses of water. An example is that of Rajangane, a dry zone irrigation system in Sri Lanka, where the implementation of rotation schedules for irrigation water supply during the dry season immediately affects the time women need to spend on washing, bathing, collecting drinking water and watering cattle. When the canals are dry, the next water point is often about 4 to 5 miles away. Also, wells used for drinking water run dry when canals do not carry water for longer periods of time. The recharge of these wells depends on seepage from irrigation canals (Zwarteveen et al. 1994).

Another aspect of the greater reliance on market principles for allocating water is the issue of property rights and ownership. Efficient market allocation is only possible when property rights are well-defined and nonattenuated (Rosegrant and Binswanger 1993). Most administrative water allocation procedures do not recognize or

[7]Increasing labor inputs from female family members may not be the most desirable option socially.

accommodate women's specific uses of water. However, low financial and social costs of illicitly taking water have in many instances allowed women to use it for a variety of purposes. In most irrigation systems, the large number of small farm households make it difficult and expensive to establish individual property rights. As an alternative, property rights are often allocated to associations or communities of beneficiaries, rather than to individuals, and communities are then given the right for internal water allocation and external trading (Ibid.). The fact that membership of these associations is often confined to men creates cause for concern about the possibilities women have to (continue to) use water.

Rethinking cost recovery from a gender perspective

All of the above examples show that the introduction of water pricing principles may increase female labor requirements to irrigated agriculture, while at the same time decreasing women's access to water. There is a risk that water savings and cash savings are both achieved by increasing the amount of labor female family members contribute to irrigation. This raises a number of questions about the equity and efficiency of IMT.

If cost recovery implicitly depends on increasing female labor contributions, this will undermine one of the basic principles underlying cost recovery strategies. This is the principle of financial accountability: the people who pay in return obtain a better service, i.e. a service that better suits their needs. The expectation of better services would in fact provide the incentive for people to pay. This principle obviously only works when those who pay are the same as those who benefit from better services. This will often not be the case because of gender inequalities. Women may end up paying most of increased costs by increasing their labor contributions, while it is not certain that they will have access to or share in the benefits of better irrigation services. When the proceeds of irrigated farming are largely controlled by men (which is not an unexceptional situation) there is a risk that the benefits of better irrigation services will be appropriated by men. This risk is further exacerbated by the fact that women have less direct possibilities of demanding improved services, because they are often excluded from water users' organizations and contacts with agencies which are mediated through men.

If the success of cost recovery requires additional labor inputs from women, it becomes pertinent to question women's ability and willingness to work more on irrigation related tasks. It may be that women have to forego individually controlled productive activities, incomes of which are often spend on households needs, in favor of irrigation related tasks. It may also be that they have to reduce time normally spend on domestic activities, for example by cooking only once a day or by spending less time on washing.

In the final analysis, women's *willingness* to contribute additional labor is a function of their bargaining position within the household. In the intra-household competition for labor and resources, women generally have a weaker position in bargaining because their fall-back position tends to be worse. The lack of viable alternatives and the avoidance of intra-household conflicts and social disapproval make it hard for women not to resist increasing demands for their labor (see Evans 1993; and Elson 1993 for examples) even when they are not sure of benefitting from the returns. However, there certainly is a limit to the amount of work women are willing to provide. There is evidence from the study in Sri Lanka of women resisting to work on family plots in favor of undertaking activities of which they are more certain to control the incomes. The high number of women in the Sri Lankan irrigation systems under study who have migrated to the Middle East, and the even higher number who dream of going there, can also be taken as an indicator of their wish to increase control over their own labor and incomes.

Women's *ability* to provide additional labor to irrigation depends on how much time they need for domestic tasks. There is a limit to the extent to which women can switch from human resource production and maintenance to irrigated crop production or O&M activities, especially since there is little hope that the burden of caring for others will be shared with men. As is explained above, women's time margin may even become smaller as a result of a shift towards a more market based allocation of water. In the worst possible scenario, "a breaking point may be reached, and women's capacity to care adequately for their families may collapse" (Elson 1993).

The real costs of increasing women's labor contributions to irrigation and irrigated agriculture are often not visible in economic analyses, because it is mostly unpaid time. However, women's time is not a free good, just as water is not a free good. Economic costs of increasing women's labor inputs will become apparent in statistics on health and nutrition of such women and their children. There is also an important social cost of cost-recovery mechanisms that implicitly rely on increased labor inputs, of women. The result of women losing individually controlled incomes and, as a result, becoming increasingly dependent on their husband for survival will further weaken their bargaining position within households and thus increase gender inequality.

INSTITUTIONS

IMT analysts recognize that a fair and efficient allocation of water cannot be achieved by relying exclusively on market arrangements. Surface irrigation systems are common pool resources, which makes it difficult to exclude beneficiaries but where one person's consumption does reduce the availability of water for others (Lam et al. 1993). Counteracting institutions are needed in addition to a competitive market. Much of the efforts in establishing these institutions focus on increasing the participation of water users in the management and governance (cf. Tang and Orstrom 1993) of irrigation systems. The development of strong and viable users' organizations is basically an effort of clearly delineating responsibilities and rights with respect to the use of water.

Participation in water users' organizations

If women are using the irrigation system (irrespective of whether their interests and needs with respect to irrigation are similar, complementary or conflictual to those of men) their involvement in users' groups should evoke little discussion or controversy. However, in reality most irrigators' groups or organizations consist of men only, irrespective of how much women and men make use of or benefit from irrigation water or contribute to producing irrigated crops. This is partly because planners, policymakers and irrigation agency staff find it difficult to recognize women as water users. But also gender roles and norms at the level of the water users' community may inhibit the equal participation of women.

Planned efforts to increase the participation of water users often suffer from the already criticized narrow conception of farmers, which pictures farmers as male individuals rather than as a household collectivity consisting of male and female members. As a result, membership of organizations is often confined to one member of each irrigating household, who is either the official landholder or the "head" of the household. Both criteria far more often apply to men than to women; the only women who are entitled to participate in water users' groups are either widows or women with no male adult living in the household. The one household--one representative rule--is not necessarily the most effective or adequate, as an example from the Philippines shows. Here, newly established irrigators' associations insisted in having both husbands and wives as members representing the household in the association.

One reason for this was that inclusion of both wife and husband as members of the association allowed for more flexibility; either the woman, the man or both would then be able to attend the meetings. Another reason was that, even though agricultural decision making is very much a joint affair of both husband and wife, women and men have distinct domains of influence. As most women control the cash-flow within the household, it was found that associations encountered problems when collecting irrigation fees, unless women were involved in formulating policies and membership fees collection schedules. Community organizers also learned that unless women were encouraged to participate, financial obligations of farming households could not be guaranteed (Illo 1988).

In the Sri Lankan irrigation systems under study, there are very few women members in the newly established farmer organizations. Although women are allowed to represent their husbands at meetings, this seldom happens. Even many widows often prefer to send a son, neighbor or male relative to meetings, rather than going themselves. While this is largely due to the perceived benefits and costs of participation, it is also true that women are not encouraged to participate. Officials' perception of irrigation as a men's world sometimes even leads to actively discouraging women to become involved in meetings and organizations. In a speech on the necessity for irrigators to become organized, a Sri Lankan irrigation official stated that all owners of irrigated plots should get together to collectively organize the operation and maintenance of the irrigation system. He then explicitly added: "In the case the landholders are women, they should send their husbands or sons." And, although women do sometimes attend meetings, records do not reflect female participation because women often sign with the name of their husbands. Or they simply go unnoticed, as was observed in one farmer organization in the Mahaweli where the secretary of the organization persistently claimed that women never attended meetings, despite evidence to the contrary gathered by the IIMI researcher (Zwarteveen et al. 1994).

The fact that only men's roles in irrigation are recognized also means that training and information about irrigation and irrigated agriculture are solely directed at men and that most contacts between officials and irrigating households are mediated through men. Women may thus have a disadvantage in terms of experience and knowledge, and women themselves may feel that they are less well qualified to deal with irrigation matters than their male counterparts.

The absence of women in water users' organizations is not only the result of the failure of irrigation professionals to recognize women. The principle underlying participatory management is that local problems are best dealt with at the local level. The community is to prove competent to undertake most of the tasks in which governments have failed; identifying needs, choosing technologies, providing adequate funding, operating and maintaining facilities,

and solving complex distributional issues. The related assumption is that the water users' community is a philanthropic social entity concerned with ensuring distributional equity amongst its members (Cleaver and Elson 1993). There is much to be said against this romantic vision of communities.[8] What matters most here is that a heavy reliance on local communities for managing irrigation systems risks to perpetuate or even reinforce existing gender inequities, in particular because the decision about who should be members of water users' organizations is also relegated to the community.

In many societies, public decision making and attending public meetings are thought of as typical male activities, associated with political gatherings which are often traditionally confined to men. In the Chhattis Mauja Irrigation System in Nepal, women are completely absent as members of the water users' organization, even in the villages with very high rates of de facto female headed farms. Women themselves explain this by referring to the cultural rule that women should remain silent in front of male relatives, and they also say that they lack the knowledge and experience to effectively voice concerns at meetings. A few women said that they would never attend the water users' meetings, because of the hostile and aggressive atmosphere in which the meetings were conducted. Other women referred to their illiteracy as the main reason for their inability to become active in the organization.

Also, the qualities required for assuming official functions in the organization are associated much more with male attributes than with female characteristics. Area and village level representatives should be mobile and they should be able to convincingly negotiate on behalf of the water users they represent in case of water shortages or other injustices. A few years ago, one woman was elected to be the president of a tertiary level water users' organization in the Chhattis Mauja. She was chosen because of her reputation as a leader; she had already been very active in a political women's organization. After half a year, she decided to resign, because she could not find anyone to work with her. Women were not allowed by their husbands to assume public roles, while men were reluctant to work under a woman (Neupane and Zwarteveen 1994).

Costs and benefits of participation

While the nature and degree of their involvement and interests in irrigation may call for the inclusion of both women and men in water users' groups, women and men will often have different perceptions of the costs and benefits involved in participation in users' groups. The attractiveness of participation may be less for women, because the costs and time spent on travelling to and from or attending meetings may be relatively higher for them; because social norms and values are not always supportive of women engaging in public roles and because it is less easy for them to voice their concerns at meetings.

In Sri Lanka, when asked directly whether or not they would like to become more actively involved in farmer organizations, some women (both those with husbands, as well as those without husbands) replied that they do not see the need to participate. This does not so much indicate their lack of interest in irrigation-related matters, as it is the outcome of their assessment of the costs and benefits of participation in farmer organizations. Many farmer organizations are still in the development stage, and with a few exceptions the real benefits of farmer organizations are not yet clear to most of the people involved.

In Sri Lanka, women and men differently assess the costs and benefits of participation in farmer organizations. Although both of them are happy with the official recognition gained through involvement in farmer organizations, most women in addition mention that they expect that membership of farmer organizations will improve communications with irrigation officials. They anticipate that this in turn will help them to quickly find solutions to problems related to irrigated agriculture. Men have a tendency to associate farmer organizations with other community organizations, and justify their own involvement as "doing a social service to the community." Many male office bearers are also concerned with their increased social and political status associated with their position in the farmer organization (Athukorala and Zwarteveen 1994).

The non-participation of women in water users' organizations does not necessarily mean that women are left without any means to exert some influence on irrigation-related decisions, nor that they are kept entirely uninformed about organizational matters and decisions taken at meetings. In Sri Lanka, irrigation officials receive relatively more complaints and demands by women than by men (Ibid 1994); in Sri Lanka and in Nepal women often personally meet with local area irrigation representatives to discuss their problems.

It may be that the effectiveness of these "informal" ways of influencing decisions in itself reduces women's motivation to participate more formally. This is especially true when women lack experience and confidence to

[8]Mick Moore, for example, critically comments on the claims that communities are good managers: "It is an interesting paradox that, in extremis, the practical viability of market principles should be perceived to depend on local, non-market patterns of social interdependence and hierarchy" (Moore, 1989).

express their views and ideas in male dominated meetings, and when norms about appropriate female behavior discourage women to speak up in public.

The efficiency and equity of organizations

The evidence provided by the Sri Lankan and Nepal case studies shows that at least half of the users of the irrigation system are not formally involved in the operation and management of the system. What does this imply for the efficiency and equity of the organizations?

The exclusion of women can be justified only if men are willing and able to adequately represent women's needs and interests. Unfortunately, this is only partly the case. In Sri Lanka, women do sometimes influence farmer organizations through discussions with men at the household level. Wives of office bearers in farmer organizations sometimes play important roles "behind the screens," by actively supporting their husbands in assuming the responsibilities as office bearers, and by helping them with whatever administrative or organizational work that needs to be done. Some women are also found to be instrumental in their husband's choice to assume official functions in the organization; one husband publicly admitted that he cannot accept a function in the farmer organization unless his wife approves (Zwarteveen et al. 1994). In Nepal, the fact that the local-level organizations to some extent recognize that the provision of labor and cash is more difficult for female farmers shows that women, despite their exclusion from the organizations, somehow do manage to get some of their specific needs looked into.

Notwithstanding women's capacity to get their messages across to farmer organizations, women's peripheral relationship to formal power structures is still deeply constraining. There is little doubt that women's exclusion undermines their capacity to respond to the changes induced by IMT processes. In particular, there is a risk that women loose access to water and other services provided by water users' organizations. While male water users are empowered with respect to their relationship to government agencies, female water users risk becoming disempowered by becoming increasingly marginal in decision making processes that directly affect their lives. The severity of this risk becomes even more apparent when realizing that in many irrigation systems water users' organizations tend to become the focal point for many other development activities in addition to irrigation management.

The fact that organizations function even without female participation cannot be taken as proof of their efficiency. Organizations and institutions do not persist only because they are allocatively most efficient. As institutional economists have begun to recognize: "institutional arrangements may actually be dysfunctional on strict efficiency criteria but persist because of a social ideology that seeks to preserve the status quo" (Evans 1993). A good example is the specific knowledge women can contribute to organizations. In Nepal, the absence of women in the water users' organizations made water stealing go unnoticed. Men thought water stealing did not occur, whereas women systematically reported incidences of water stealing. Stealing of water happens much more frequently when water is scarce, during the later stages of paddy cultivation when women are the ones to irrigate (Neupane and Zwarteveen 1994).[9]

CONCLUSION

The benefits and costs of IMT cannot be fully understood or realized when no attention is paid to prevailing gender relations, which structure markets as well as institutions. If the anticipated financial accountability between irrigation agencies and users is to become a reality, it should be realized that gender norms and relations may distort the incentive structure by disassociating payments from benefits. The inclusion of gender in the analysis of IMT processes is also necessary to make sure that O&M costs recovery is not achieved at the expense of the production of human resources by implicitly relying on an increase in female labor contributions to irrigation.

The fact that IMT processes entail a relegation of functions and responsibilities to markets and local communities makes it seem justifiable for policymakers, planners and irrigation agency personnel to also shift the concern for women's rights and powers to markets and local community organizations. However, there is no reason to believe that markets or community-based institutions and organizations will be better instruments to address gender inequalities and gender based inefficiencies than government agencies.

On the contrary, there is cause for concern that processes of IMT will in fact increase the time women directly or indirectly have to contribute to O&M of irrigation systems, without at the same time fully benefitting from the benefits produced by maintenance activities. Benefits are distributed within the "intra-household market" where the

[9]This example also shows that realistic assessments of the performance of water users' organizations cannot be made without considering women. In fact, one such assessment in the case of Chhattis Mauja which uses the absence of water stealing as a proof of the efficiency of the organization (Yoder forthcoming).

terms of trade are biased against women. And there is little hope that gender based market distortions will be countered by institutions, because evidence so far shows that women often have no formal access to water users' organizations in which the rules concerning the management and governance of irrigation systems are developed.

At the same time, the restructuring process that IMT entails increases the scope for critically re-examining some of the interactions and tensions between social institutions, gender relations and economic performance, and--at a more practical level--for exploring ways and mechanisms to make markets and institutions more responsive to specific women's needs. Through a focussed effort of policymakers and planners, IMT processes could in fact be used to redress the perception that irrigation is an all male affair, by explicitly gearing training and awareness programs to all stakeholders, irrespective of their gender, and by identifying and removing constraints to female participation in organizations.

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