Water: From Basic Need to Commodity: A Discussion on Gender and Water Rights in the Context of Irrigation

MARGREET Z. ZWARTEVEEN*

International Irrigation Management Institute, Colombo, Sri Lanka

Summary. — This paper examines the implications of changing water policies for women’s water rights and access to water in irrigation systems. With growing water scarcity and programs to increase the efficiency of water allocation and delivery, the allocation of water rights becomes critical. Although women often have informal means and mechanisms to obtain and secure access to water, in most systems studied there is no recognition of women’s specific water needs, especially for production, as opposed to domestic consumption. Current policies to privatize and devolve management of irrigation need to increase responsiveness to specific women’s water needs and interests if they are to address efficiency as well as equity concerns. © 1997 Elsevier Science Ltd

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1. INTRODUCTION

Property rights figure quite prominently in current irrigation debates, as well as in current gender debates. The renewed attention to property rights in these two debates can be partly attributed to the worldwide trend of liberalization and structural reform, and the related tendency to privatize state or community resources. While partly prompted by the same trend, there are large differences between irrigation and gender scholars in approaching and conceptualizing property rights. Irrigation scholars mainly see water rights as a mechanism for bringing about water markets, and the debate is primarily about the technical and institutional feasibility of markets as water allocation mechanisms. Water rights are seen as the legal complement to infrastructures and institutions, the three of which together are necessary for an effective allocation and distribution of water. Within the gender debate, property rights are mainly conceived as one potentially important mechanism for the empowerment of women. The gender debate centers around the relative weight of women’s independent entitlements in determining gender equality, and on whether market allocation of resources constrains or enlarges the possibilities for women to access and control those resources.

The two debates have so far carried on quite independently one from the other. Some irrigation authors do express social and equity concerns in respect to the introduction of market incentives in the management of irrigation (Moore, 1991; Seckler, 1993), but few refer to women or gender. Recent water policy documents do often make mention of the importance of women as managers of water, but unequivocally place women in the domestic water use domain. Gender scholars, on the other hand, have so far mainly focused on women’s rights to land. While some of the conceptual links between gender and property derived from the gender and land rights debate apply also to water rights, water is quite a different type of resource than land. The analysis of gender and water rights, therefore, requires a basic understanding of the nature of water as a resource. The few gender analyses that deal with water (Cleaver and Elson, 1995; Green and Baden, 1995) share the unverified premise with irrigation analysts that women’s uses of water mainly occur in the domestic or nonmarket sphere, in implicit opposition to men’s uses of water which are believed to be mainly productive and market oriented. This article instead argues that the most important source of gender differences with respect to water lies not so much in the gender specificity of water uses, but in

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gender differences with respect to access to and control of water.

The article aims to make a contribution to bridging the gender and irrigation debates on property rights. The main reason for doing so is that the changing water policy context appears to offer important new entry points for recognizing and demanding responsiveness to women’s water needs. Such demands are urgent in the current context of increased water scarcity and the accompanying search for measures to increase the productivity of water use. Unless women’s needs for water gain visibility and legitimacy at all levels of policy making and practice, proposed water conservation measures risk being ineffective, inequitable or both. At the same time, if indeed competition for water increases, independent entitlements to water may assume a growing importance in determining an individual’s bargaining position. Securing women’s rights to water may thus become an increasingly critical entry-point for women’s empowerment.

The article starts with a short introduction and analysis of the underlying reasons for the lack of recognition of women’s needs for water. After a brief introduction of water rights, some entry points for analyzing and understanding gendered access to and control of water are presented on the basis of empirical examples. The third section of the article explores the possible implications of new water management policies, with a focus on possible effects on women’s access and rights to water. Is there, as some authors have argued (Cleaver and Elson, 1995) reason to fear that women’s water needs will be further marginalized? Or do new policies, instead, offer new opportunities for increasing women’s access to and control over water resources (Green and Baden, 1995)?

2. WOMEN AS WATER USERS

(a) Irrigation professionalism

Normal irrigation thinking and practice used to display many of the gender stereotypes inherent in much development thinking and practice (Zwartev- een, 1994a). Water users, for instance, were usually thought to be individuals of the male gender, reflecting the deeply rooted conception of the farm household as consisting of a male head (who is the main farmer, decision maker and provider), his wife (who is engaged in household tasks, looks after the children and occasionally helps her husband in the fields) and the children. In this conception women do not need water as individuals or farmers, since they will indirectly benefit from their husbands’ rights and access to water. The longstanding assumption in economic theory and policy on which this idea is based is that of the household as a unit of congruent interests, among whose members the benefits of available resources are shared equitably, irrespective of gender (Agarwal, 1994).

The fact that irrigation policies and interventions influence distribution of resources and incomes within households as well as that between households has now been well documented. The logical implication however, that these inter- and intrahousehold resource and income distribution effects should be anticipated and taken into account in the design of policies, still remains contentious or problematic (Agarwal, 1994). This can be largely attributed to the way that irrigation problems and questions have long been phrased in more technical terms. Although most irrigation professionals probably recognized that irrigation interventions were in no way socially or politically neutral, it simply did not belong to the “normal professionalism” of irrigation engineers and planners to explicitly discuss social or political assumptions or implications of their designs and plans. Normal irrigation professionalism likewise never demanded distinguishing between different social categories of water users. The typical objective of irrigation engineers and managers was to make more water available for agriculture by controlling the available flow of water, according to planned geographical patterns and chronological schedules. Irrigation infrastructure (canals, reservoirs, dams and hydraulic structures) necessary to take water from a source and to convey it to irrigated fields has long been seen as the major tool in achieving this objective. Particular regions or communities were often consciously selected to benefit from state irrigation interventions. But, the question of which households — let alone which individuals within households — within communities or regions should be entitled to access and use water was rarely dealt with explicitly.

In addition, taking intra-household effects of irrigation interventions into account was rejected because of fear or unwillingness of policy makers and planners to openly interfere with the “private” sphere of families and policies. A closely related impediment to questioning gender differences in rights to water is that it appeared to extend the competition and possible conflict over access to and control of water that was known to exist between men, to men and women. It looked as if accepting women’s claims and needs for water would double the number of competitors for water. This is true of course for those who assume that women have never used water and have never competed for water.

(b) Getting women on the irrigation agenda

The main strategy used by women in development
(WID) and gender scholars to get women on the irrigation agenda has been to demonstrate that women have specific needs with respect to water. Most convincing in this respect was to show that women, as mothers and domestic caretakers, use water for domestic purposes, thus inventing a separate and clearly identifiable water use domain of women. Part of the attractiveness of a clear demarcation between women’s water use domain and men’s water use domain was that it greatly facilitated the difficult task of “making women visible,” of formulating women’s interests, and of devising “gender components” to irrigation projects. The strategy sometimes led to the incorporation of domestic water uses in the design of irrigation systems, most obviously in the form of washing places and bathing steps. In other projects, based on a rather arbitrary division between women as growers of food crops and men as cash crop cultivators, small plots of irrigable land were allocated to groups of women for the cultivation of vegetables. van Koppen (1990), for example, describes the pathetic situation of an irrigation project in Burkina Faso where 3,000 women, organized in groups of around 40, received as 12 ha of irrigated land, or 1% of the total command area.

Incorporating domestic water uses in irrigation designs and allocating small plots to groups of women is not in itself wrong or useless. Moreover, in terms of strategy, clearly delineating a female water use domain has probably been helpful in the initial stages of establishing political and social legitimacy for women’s needs for water (Facon, 1995). But, the confinement of women’s water interests to the domestic or nonmarket sphere risks leading to (and in fact has led to) a disregard for women’s productive activities as farmers and irrigators. Ultimately, it has allowed projects to conveniently add women on, alongside other vulnerable groups such as “youth” or “indigenous people” (Green and Baden, 1995, p. 94) without having to question and challenge the assumptions underlying current irrigation management policies and practices, and without having to question and challenge women’s rights and position within the gender division of labor.

An exclusive or narrow focus on women’s domestic water needs risks strengthening existing gender inequalities, by reconfirming the idea that women should primarily be good housekeepers and mothers.

Because household water provision is still a female responsibility in most African societies, especially in rural areas, donors and governments have tended to assume that women’s strategic interest in water is concentrated primarily in having access to convenient, reliable, and safe sources close to the home. Further, since women are seen to have first-line responsibility for the maintenance of family health, they are assumed to have a special interest in and responsibility for water and sanitation. Available evidence suggests that while both assumptions have some validity, they fail to capture women’s equally pressing needs for water to enable them to engage in economic production activities, whether in agriculture, in micro-enterprise, or in other income-generating areas (Rathgeber, 1996, p. 5).

Part of the problem with establishing women’s needs for water rights as a matter of legitimate concern is that it is very difficult to prove empirically that women need individual rights to water because there are almost no documented cases of women actually having such rights. There are a number of examples from West Africa of groups of women having successfully negotiated with government officials, irrigation project staff and community leaders to obtain access to water in the form of access to land in the command area of the irrigation system (see for example Deuss, 1995; Helsloot, 1995 and Carney, 1988). In the Dakiri irrigation system in Burkina Faso, a small number of irrigated plotholders (9% of the total) are women whose husbands also have plots. In Sri Lanka, there are a few cases of women having leased in irrigable plots, which they cultivate individually (Zwarteveld et al., 1994/1995). In all these cases, the fact that these women cultivate irrigated plots on an individual basis does not imply that they stop contributing labor to plots owned and controlled by their husbands. The main reason for these women wanting an individual plot — and by implication independent access to irrigation water — is that having an individual plot makes them less dependent on their husbands for income and food, and strengthens their bargaining position within the household.

What can be shown is that women almost everywhere use water both for productive and domestic purposes. They do so mostly in their capacity as co-farmers, working in close collaboration with their husbands to cultivate irrigated crops on their husbands’ plots. This is, for example, the prevailing situation in the Sri Lankan Dry Zone settlement schemes, and in the Chhattis Maur irrigation system in Nepal. In such a situation, the nature of men’s and women’s need for water for irrigating the husband’s plot is usually quite similar: both want and need a supply of water that is adequate for successfully growing one or more crops a year. Differences of opinion may nevertheless exist between women and men regarding the timing and timeliness of water deliveries. In Nepal, for instance, male farmers expressed most concern about enough water being available to allow a timely start of the rice season. Men are responsible for land preparation, for which they need enough water to soften the
soil. Men and women together transplant the rice seedlings, for which water is also essential. Female farmers shared the concern of male farmers, but unlike them also stressed the importance of water being available during the season. Women are responsible for weeding, and a reduced ponding depth in the paddy field directly increases the time they need to devote to this task, since water suppresses weed growth (Zwarteeveen and Neupane, 1995). Similar, though more indirect, gender differences in water needs may be caused by women and men having different crop preferences. Those differences of opinion rarely emerge as open conflicts, and are solved between husband and wife.

Women may also use water in their capacity as heads of farms. Those women who were widowed or divorced, as in, for example, the Mahaweli System H in Sri Lanka where it is estimated that 20 to 30% of the irrigated farms are headed by widows (Zwarteeveen et al., 1994/1995). Widows may or may not have formal entitlements to land and water. In some areas (Nepal, Peru, Ecuador) a large number of farmers is de facto female because of temporary migration of men (Lynch, 1991; Krol, 1994; Zwarteeveen and Neupane, 1995). In those cases, official titles to land and water are often with men. Female farmers may have different water needs from male farmers, either as a consequence of the reduced availability of male family labor, or because irrigated agriculture assumes a different importance in the household’s livelihood strategy. In the Chhatis Mauja irrigation system in Nepal, for instance, female farmers are even more keen than male farmers to be sure about the precise time of the first water delivery of the paddy season, since they (unlike most male farmers) have to hire male laborers for land preparation (Zwarteeveen and Neupane, 1995). Widows in an irrigation system in Niger depend entirely on the proceeds of irrigated farming for their survival. Unlike most other households, they do not have access to rainfed land. As a consequence, widows prefer to start earlier in the season with irrigated production than men, who choose to use the first rains for preparing their rainfed plots (Schaap et al., 1994). Another potential source of gender difference relates to the fact that female heads of farms often have to combine agricultural tasks with domestic duties. In Ecuador (Krol, 1994) and in Nicaragua (Blauuw, 1992), female farmers expressed a clear preference for irrigating at specific times of the day, when they were not busy with other tasks such as cooking. Differences in preference between male and female farmers about water delivery schedules may also be related to the amount of transaction costs required to actually get water. In the Bauraha irrigation system in Nepal, female heads of farms saw a clear advantage in the rotation system of distributing water during periods of relative water scarcity (as compared to an on-demand system): the rotational allocation required much less negotiation with the water guard (Bruins and Heijmans, 1993).

In addition to using irrigation water in their capacities as farmers or co-farmers, women may also use irrigation water for other activities. In the Chhatis Mauja irrigation system in Nepal, some women and men watered their cattle and cleaned the cattle sheds with canal water (Zwarteeveen and Neupane, 1995). In Sri Lanka, some women divert water from drainage or irrigation canals for irrigating homestead crops (Zwarteeveen et al., 1994/1995). In Burkina Faso and Niger, separate plots within the command area of irrigation systems are often allocated to groups of women for the cultivation of vegetables (van Koppen, 1990; Projet Sensibilisation et Formation, 1993; Schaap et al., 1994). In addition, as mentioned previously, almost everywhere women and men use irrigation water for domestic purposes: for washing, bathing and even sometimes for drinking water. The convenience of irrigation water as compared to other sources of water is its proximity; women can save a lot of time when they do not have to walk such long distances for fetching water.

The above examples illustrate that the gender division of labor and gender specific crop choices may partly govern men’s and women’s preferences for the quantity, timing and timeliness of water deliveries. Gender differences in actual water needs, however, are weak arguments to support the case for women’s individual water rights for two reasons. First, it should be realized that women’s needs for water cannot be identified on the basis of women’s actual uses of water, since these uses of water are often reflections of gender differences in access to and control of water. In other words, where women use water differently than men this is more likely to be caused by the fact that women have less access and rights to water, than by women having different water needs. A stronger security of water tenure is likely to alter significantly the way in which women use water, because it increases their negotiating power over the use of water, both at the household level as well as at higher levels of decision making. Second, it is somewhat misleading to think about irrigation water deliveries in terms of meeting people’s specific water needs, because in most cases irrigation water is not delivered according the specific demands of individuals or groups of individuals.

What the examples do nevertheless suggest is that women are as or even more interested in access to and control of water than are men. In theory, the case for granting individual water rights to women rests
very much on the same arguments as those used for granting right to any other resource to women. First the risk of poverty and the physical well-being of a woman could depend significantly on whether or not she has direct access to income and productive assets, and not just access mediated through her husband or other family members (Agarwal, 1994, p. 30).

In addition to increased well-being, directly attributing water rights to women is likely to have a positive impact on their overall bargaining position within the household, as within communities and the society at large. Improving women's access to water may also have positive efficiency and productivity effects. The most obvious efficiency argument is that security of tenure encourages investment in maintenance and improvement of productivity of the resource.

3. WATER RIGHTS AND ACCESS TO WATER
(a) Water rights

Water rights normally express how much, when and for what crops water can be used by a particular person of group of persons. Water rights may be expressed in exact volumetric terms over a certain period of time (m³ per year), but most often they are expressed in portions of the total available flow. Such portions can either be established in volume shares (e.g., 1/20 of the total flow), or in time portions (e.g., three hours of irrigating). In large canal irrigation systems, water rights are most often linked to the land, but there are also surface irrigation systems which allocate water to persons. A water right can be defined as “an authorized claim to a benefit stream of a water source” (Hoogendam, 1995). A water right thus gives the rightholder the possibility to subtract water from a particular source. The belief that others will not take the water before it reaches one’s own fields is the essence of the water right; that is, the security that one holds a particular rights, as against others, in the use of a particular amount of water at a particular time (Mitchell, 1993). This security can be based on a variety of grounds. It can be based on the formal legal system, the water law. It can also be based on less formal and locally adhered to allocation principles. What is important is that there is agreement about the legitimacy of the rightholder’s claim to water. Such agreement must exist within the group of claimants, but it is equally essential that rights over a water resource are recognized by those who are excluded from its use. It is in this sense that water rights embody social relations between people. Water rights are intimately linked to the existing social and cultural organization and relations of authority and power.

Having the legal possibility to take water in itself is meaningless without the adequate technology to subtract water from a source and convey it to irrigated fields; the means (labor and resources) to operate (and maintain) the technology and distribute the water according to the agreed rules and rights. This is why rights to infrastructure, and rights to participate in decision making about how to use the infrastructure are often part of a water right. Schlager and Ostrom (1992) distinguish between rights at the operational level, and rights at the collective choice level. Rights at the operational level are about the use of a certain amount of water flow during a certain period of time, and may include the right to use (part of) the canal infrastructure. Basically these are rights of access, and define whether or not someone has access to irrigation water. Rights at the collective choice level relate to three fundamental issues: (i) decisions about the management of the irrigation system: regulation of its internal use and rules regarding operation and maintenance; (ii) decisions about exclusion: whom should be in-and excluded from using irrigation water, which includes decisions about the transferability of water rights; (iii) decisions about alienation: the right to sell or lease collective choice rights. Collective choice level rights are rights of control, and deal with the possibility to decide about the use of the resource.

The collective aspect of water right is one important feature distinguishing water from many other types of property, which can be individually owned and controlled. With the exception of private tubewells, the use of irrigation water requires some kind of social organization. The different types of social organization with regard to property rights are commonly referred to as property regimes. Canal irrigation systems are usually held under a regime of public or common property. Public property is the case of bureaucratically managed irrigation systems. Here, the state or one of its agencies is the rightholder of all the collective choice rights, and thus determines allocation of water, regulates water use and decides about exclusion and alienation. Irrigation systems held under a common property regime are managed and maintained by a group of users: those with operational rights also hold the collective choice rights.

In actual fact, many larger canal irrigation systems are “jointly managed,” and are thus characterized by a combination of public and common property regimes. In many countries it is the state that has ultimate dominion over water. Usually one of the ministries or directorates is entitled by law to give out concessions of water to groups of water users. Such concessions do not imply ownership in the strict sense of the word. The group of water users is allowed to use part of a river flow, and to determine the internal division of rights
among those that participate in the group. The internal division of rights may be (partly) determined by formal rules, such as legal description of what a water users' association is, who is entitled to participate and how water should be divided among members. The division of internal rights may also be completely free, i.e. without any regulation by the state. Often, though, internal arrangements are backed up by national legislation (Hoogendam, 1995).

Rights to water are usually complemented by responsibilities for operating and maintaining the water resource or the canal infrastructure. This implies that water rights holders must comply with a number of obligations to be able to exercise their rights and to keep them over time. Such obligations can either be fulfilled through provision of labor, or through financial contributions. In principle, when someone fails to fulfill the duties linked to water rights, sanctions are applied. Possible sanctions include the exclusion from a water turn, the denial of the water rights for one or more seasons or the payment of fines (Hoogendam, 1995).

(b) Water control

A user’s water rights necessarily require, in addition to infrastructure, some sort of management capable of and responsible for delivering water. In many irrigation systems, this requirement is only partly met because management control of water is often weak. This is partly a consequence of the particularities of water as a resource, which make it difficult to deliver it accurately. Unlike land, almost all water exists in a transitory state; it has a high predisposition to flow, to seep vertically and horizontally through soils, to evaporate and to transpire (Moore, 1991). Water is not only fluid, most surface streams of water are also typically variable in time and space. There is great variation in stream flow from year to year, from season to season, and even from day to day. The water resource consists of an instantaneous “flow”, not gross “quantity” or an annual yield. The size of this flow also varies depending on location, implying that quantities of water available to users depend on the particular point in space where water is diverted (Gould, 1988).

The use of water increases the complexity. Most uses of water are not entirely consumptive; rather, some of the water diverted returns to the stream. “Return flows” of 50% from irrigation are not uncommon. The quantity of water available to one user is thus not only a function of physical parameters, but largely depends on water use practices by other users (Gould, 1988; Moore, 1991). In addition, the quality of water may change by containing more salts for example, or carrying residues of fertilizers and pesticides. These external costs and benefits incurred by a second party as a result of actions by a first party are difficult to account for, which in turn makes titling of water somewhat complex. Should rights (and charges) apply to water diverted or to water consumed, and how rights to return flows be defined?

The difficulty of delivering water according to defined rules and schedules can also be partly attributed to the common pool resource nature of irrigation systems; one person’s consumption does reduce the availability of water for others, while it is difficult to exclude beneficiaries from using the resource (Lam et al., 1993). These peculiarities of water as a resource make it difficult for irrigation suppliers to deliver water in the quantities and at the times preferred by users. This is why in actual practice, most canal irrigation systems are not “demand scheduled” in the sense that consumers are supplied with water as and when required and then charged accordingly. Irrigation water users are typically not even supplied according to the imprecise schedule laid down by the management agency.

From the users’ perspective therefore, irrigation water supplies are often quite unreliable, largely because of the lack of capacity of system managers to control and direct the available water. This also means that having a formal right to water does not always and automatically mean that one also has access to water, and vice-versa: even without a formal right, people may still be able to access water. This is why Uphoff’s (Uphoff, 1986) distinction between water allocation and water distribution is useful. Allocation is the process whereby official rights are assigned to users, and distribution of water refers to the actual delivery of water from the source among users at certain places, in certain amounts, and at certain times. In order to understand how access to and control of water is structured by gender relations, both processes need to be analyzed.

(c) Water allocation

There are various ways of obtaining water rights. The most common in large or newly developed irrigation systems are (i) through obtaining land in the command area of the irrigation system, or (ii) through participation in original construction works. In general, the allocation of rights to irrigated land and irrigation water is largely determined by those who invest in the construction of infrastructure. When those investments are done by state agencies, as is often the case in large scale irrigation development, the particular state agency generally has a determining role in creating new ownership or
tenure rights. One crucial step in this process is the identification and selection of future beneficiaries. Most irrigation projects have quite detailed rules and procedures for identifying beneficiaries. Welfare criteria such as poverty and landlessness may be used, as for instance in many settlement projects, or new ownership titles may be based on existing land tenure patterns. Alternatively, people interested in obtaining land and water may be invited to contribute labor to original construction works.

In many instances, those formal procedures for identification and selection of future beneficiaries already implicitly or explicitly exclude women. A very explicit case of exclusion of women occurred in Bolivia, in the Laka Laka project. When women went to the construction site to contribute labor in order to obtain water rights, they were sent back by the project staff. To the women’s surprise and anger, the project management had decided to exclude married women and people younger than 16 from the possibility of gaining water rights through participating in construction. The project staff’s objective in this decision was to reduce the number of people claiming water rights (Prins, 1996 cited in van Koppen, 1996). Less explicit is the criterion that only those heading a family with a minimum number of members are eligible to obtain land. This criterion excludes all married women with husbands. This was one of the rules for allocating newly developed land in the Mahaweli System H in Sri Lanka (Schrijvers, 1986) Implicit in the consideration only to allocate plots to household heads are the assumptions that all household members will benefit (equally) from the plot, and that all adult household members will voluntarily contribute labor to the cultivation of irrigated crops. The calculation of the optimal size of new plots used to be based on the this expectation. A number of studies done in West Africa have shown that it is precisely this wrong assumption which led to the failure of irrigation projects: women were often not willing to provide (additional) labor to plots controlled by their husbands (Carney, 1988; Jones, 1986).

Another often-used criterion is that those who originally held land in the project area are given priority in allocation of new plots. This criterion does not take into account those with usufructuary rights to land but without ownership titles. Existing customary laws and institutional arrangements which regulated the use and control of natural resources are seldom recognized, often leading to the exclusion of those without a voice in the decision making process about the re-allocation of land. As van Koppen (1996) claims:

The typical exclusion pattern, astonishingly uniform over the world, is the nullification of whatever water and land rights women, and youngsters, used to have and the reallocation of new claims in the name of "heads of households", who are supposed to be male.

Contributing labor to original construction works is another often used mechanism for identification and selection of future beneficiaries of irrigated plots and irrigation water. Evidence shows that women have to overcome a number of barriers in order to be able to actually obtain rights to land and water (van Koppen, 1996). The first barrier is that they need to be properly informed about the procedures. In the Dakiri irrigation system in Burkina Faso, information about the land allocation procedures was channelled through the all-male village organization. Women and other nonmembers of this organization were less well informed, and therefore hesitant to contribute labor to the construction works. They simply did not believe that they would be rewarded for their labor (Zoungrana and Zwartveen, 1995). A second barrier is that labor contributions by women are often counted as contributions by their husband (or the household as a collectivity), rather than as their own contribution. A third possible barrier is that women are not allowed to participate in construction works, on the ground that women are physically less able than men to do heavy manual jobs. The work done by women, such as preparations and transport of meals to those working on the construction site, may also simply not be counted as labor.

Even when formal identification and selection criteria do not exclude women, the actual process of land and water allocation is an inherently political one in the sense that those with most power usually have most possibilities to actually obtain plots and access to water. One very important source of power in land allocation negotiations is information. Irrigation project implementors normally heavily depend on local elites for arranging and deciding land expropriation and labor mobilization. In this respect, it is also important to realize that the possibility to irrigate usually substantially increases the value of land, and therefore also the competition over land. Not differentiating households by gender is an easy strategy to reduce the number of competitors. Women are seldom represented among those identified by irrigation project staff as intermediaries. Simply because they are not aware of what is going to happen, women (and others who are dependent upon the information and resources channeled through the elite) seldom openly question or challenge the elite’s power, at least not at the time when crucial decisions about allocation of land and water are taken.

In sum, available evidence suggests that the possibilities for women to obtain individual rights to irrigated land and water are very limited. Most often, separate water and land rights for women are simply not considered necessary, either because it is
thought that women can easily obtain water through their husbands, or because it is thought that women do not need individual access to water. Challenging these beliefs is likely not to be in the interest of those in the local communities who negotiate with project staff. Unless women are from the beginning explicitly recognized as potential individual irrigators and farmers, and unless they are well informed about their rights and supported in defending those rights, there is little chance that they will manage to obtain access to and control of irrigated land and water.

(d) Water distribution: Women’s access to water

The fact that women do not have official water rights in their capacity as individual farmers does not necessarily mean that they also lack access to water. In Sri Lanka, for example, women do sometimes divert water from irrigation or drainage channels to homestead or highland plots for irrigating their individually controlled crops (Zwarteveen et al., 1994/1995). In the Mogtedo irrigation system in Burkina Faso, male farmers sometimes lend out their irrigated plots to women during the dry season; women then cultivate vegetables on these plots, making use of the irrigation water provided by the system (Zwarteveen, 1994c). Moreover, in most irrigation systems there is recognition of the importance of the use of water for domestic purposes. In Sri Lanka when water is rotated among the irrigation channels, some water is released into the dry channels for supplementing ground water levels to prevent wells used for domestic water from running dry (Zwarteveen et al., 1994/1995). In Peru, “during periods of extreme scarcity, domestic water use has priority, followed by irrigation of a very small parcel for subsistence or corn cultivation” (Lynch, 1991, p. 39). It is likely that the importance of water for domestic uses is an accepted and agreed upon priority of most stakeholders, and since the quantity of water thus used is negligible when compared to water used for irrigation, the use of water for domestic purposes will usually not lead to any major conflicts of interest, though it may have consequences for timing of water deliveries.

The exceptional examples given above only serve to confirm the general rule that the main way in which women obtain access to water for irrigation is by making use of the water rights of their husband or some other male relative, for irrigating the husband’s plot. Women may do this either in their capacity as co-farmer or in their capacity as head of the farm (widows or wives of migrated men). When women irrigate as co-farmers, their husbands often interact with governmental or communal water authorities. Husbands are usually also the official members of water user organizations. Although there are examples from Sri Lanka of female co-farmers who are very active in securing reliable access to water through discussions with their husbands and with irrigation leaders and officials (Zwarteveen et al., 1994/1995), the one-household one-representative rule is not necessarily the most effective and equitable.

The detrimental effect on overall management performance of not recognizing women as irrigators is very clearly demonstrated by the example of the Chhattis Mauja irrigation system in Nepal. Here female farmers manage to obtain irrigation services, in spite of not belonging to the water user organization and not having formal water rights. In fact, female heads of farms in the head-end of the system use their very noninvolvement in the users’ organization for obtaining more water than their entitlement while at the same time providing less labor to maintenance than they officially should. The fact that women are not official members of the Chhattis Mauja organization makes it difficult for the organization to enforce its rules with respect to water distribution and labor mobilization on women. The four head-end villages with a high proportion of female farmers are in fact the only four villages which are a continuous source of trouble to the Chhattis Mauja organization, because of their nonadherence to the rules. The irrigation leaders are greatly embarrassed by the situation, and find it very difficult to punish women (Zwarteveen and Neupane, 1995).

In general, the absence of formal claims to water implies that women have to rely on other than legal support for securing access to water. Such support may, for example, consist of the social acknowledgment of the importance of their water need. In the same Chhattis Mauja irrigation system in Nepal, female heads of farms cunningly make use of prevailing gender stereotypes which picture women as weak and in need of support in order to get water in time. Female farmers do not attend village irrigation meetings, but personally meet with the village irrigation leader when they have irrigation-related requests. In principle, irrigation leaders use proportionality criteria as a starting point for adjusting irrigation deliveries from the main canal. In practice, notions of fairness and reduction of farmer complaints are other important criteria for water distribution and delivery. One such notion of fairness is that female heads of farms are prioritized when distributing water, because it is accepted that it is more difficult for them to arrange for plowing and transplanting labor than it is for male farmers (Zwarteveen and Neupane, 1995). In Ecuador, women use their social networks and contacts to obtain the right amount of water at the right time. Although many more women are involved in the
organization than in Nepal, and although wives of migrated male farmers are officially recognized as voting members in the organization, women generally feel diffident about their participation. Many women prefer to solve problems outside the organization, in informal ways, because it saves them the hassle of writing letters and making presentations in public. At the level of the secondary canals, female farmers’ access to water is not different or less than that of male farmers. Gender specific problems occur mainly because of an inappropriate timing of water turns for women. When a particular time for irrigating is inconvenient to a woman, however, she has multiple possibilities for exchanging part or all of her turn with other irrigators along the same secondary canal. In the absence of more formal powers, maintaining good social relations with a large number of people thus becomes of crucial importance to female farmers wanting reliable and timely access to water. Proper knowledge about rotation schedules is of equal importance, because this allows an exchange of turns (Krol, 1994).

Peruvian female heads of households were less successful in negotiating their water turns. In Alto Piura, female farmers complained that they always had to irrigate at night, in spite of the official rule that night turns should be equally distributed among irrigators. Since male irrigators have better relations with the irrigators’ committee and with the “water delegate”, they are often more successful in negotiating day turns (Pol, 1992). Here also, women had little formal access to water users’ organizations and seldom participated in water users’ meetings. Because of their problems, some women nevertheless clearly saw the need for female farmers to become more actively involved in formal decision making: “One goes to water users’ meetings to speak up for one’s rights, to fight. Of course! You have to fight for the water. Women also use water, so we also should go and fight” (Pol, 1992, p. 9).

Other examples also show the importance of social and political networks and relations in obtaining access to water. In Mexico and Niger these networks sometimes even override formal decision making structures and bodies, implying that formal water rights have little significance when not backed up with good relationships with officials. Experiences of female irrigators in a Mexican ejido document the difficulties they faced when trying to secure enough water for their sugar cane cultivation. The formal way of claiming access to water is through the local department of the Ministry of Irrigation. This is very time consuming, while giving little chance of success. Men secure their access to water either by bribing the water guards, or by maintaining good relationships with them by offering drinks and food and by inviting them to “mariscos” (seafood restaurants with the reputation of being brothels). A woman would lose her reputation if she were to follow the same course of action (Brunt, 1992). In Niger, the few widows who had inherited rights to irrigated land and water from their husbands found it similarly difficult to obtain water through formal mechanisms. Where men rely on their contacts with village leaders, established during men-only gatherings, women can only rely on the formal mechanism of paying their fees to the cooperative in charge of managing the system. It is no coincidence that female irrigators are, on average, much more punctual in paying their fees than men are (Schaap et al., 1994).

The evidence shows that, in the absence of formal water rights, female farmers and irrigators rely heavily on informal (and sometimes illegal) mechanisms to obtain access to water. Their success in doing so depends on the specific local political and social context. A higher proportion of de facto female farmers (as in the cases of Nepal and Ecuador) can usually be expected to increase the social recognition of women’s needs with respect to water, which in turn is likely to make it easier for women to have their needs accommodated. Where access to water is a function of one’s political connections (as in Mexico and Niger), women usually have less of a chance of having their water needs satisfied, since women often have less chances of establishing such connections than men.

4. NEW IRRIGATION MANAGEMENT POLICIES: EMPOWERING OR MARGINALIZING FEMALE WATER USERS?

(a) Privatization of irrigation

As a result of the increased awareness about the scarcity of water resources, and as part of the worldwide trend of liberalization and structural reform, there is emerging sympathy for privatization as a means for improving the performance, sustainability and cost-effectiveness of large surface irrigation systems (Vermillion, 1991; Seckler, 1993; Rosegrant andBinswanger, 1994; Kloozenand Samad, 1995). The term privatization includes turning over the operation and management responsibilities and costs of at least parts of irrigation systems to water users associations of various kinds; pricing of water on the basis of the quantity used; and establishing water markets for buying and selling water, both among individual users and the agricultural, urban and industrial sectors (Seckler, 1993). Privatization holds out the hope that by changing the basic structure of socioeconomic relationships among irrigation agencies and users the incentives and behavior of both will change to
create more effectively managed irrigation systems (Seckler, 1993). It is contended that privatization will create four major kinds of benefits:

Cost savings for the public sector, by forcing users to incur operation and maintenance costs themselves or to pay for public sector services they receive;

Increased on-farm irrigation efficiency through volumetric pricing;

Increased allocative efficiency of water through water markets;

Improved management of irrigation systems.

The faith in the success of privatization is based on two related arguments. The first is organizational in nature. It argues that the operational style of conventionally structured irrigation bureaucracies is too top-down and rigid to be effective in dealing with the dynamics of irrigation management. A more decentralized set-up is needed, with a central role for users organizations who will demand responsiveness and accountability from the agency. The second line of thought is based on rational choice theory, and complements the first in that it argues that appropriate and effective incentive and accountability structures can best be created through financial mechanisms. If a substantial part of the revenues of the irrigation agency depends directly on the quality and quantity of their services, the agency will be strongly induced to improve the services to the clients; similarly the behavior of clients will improve. This argument is partly based on the assertion that water should be considered as a commodity, rather than as a free good. The expectation is that when water users are obliged to somehow pay for water, the total amount of water used per user will decrease (Moore, 1991).

Although privatization in its various forms is being actively promoted by the World Bank and other major international agencies as a solution to solving performance problems in irrigation, the question of whether and to what extent water can in fact be considered as a purely economic good remains very contentious. Some authors have strong ideologically inspired reservations, and base their doubts on a fundamental disbelief that markets are capable of achieving socially or politically acceptable patterns of water allocation (Cleaver and Elson, 1995). These doubts basically stem from the recognition that not all benefits of water may be easily quantified or expressed in monetary terms, and therefore risk being undervalued by the market with negative effects for those dependent on those benefits. In particular, if water allocation were to be entirely dictated by the market, much of the water currently used for the production of low-value food grains would be transferred to higher value uses in other crops or sectors. Excessive transfer of water out of agriculture risks significantly reducing food production and farm income, thereby endangering the livelihoods of many peasant households (Seckler, 1993; Perry, 1995).

Achieving the expected benefits of privatization is crucially dependent upon the creation of secure and effective property rights to water. Property rights provide security of tenure to water users, which in turn is thought to be crucial when water users are expected to invest their own labor and resources in operating and maintaining irrigation infrastructures (Rosegrant andBinswanger, 1994).

(b) Cost recovery and financial accountability

The previous sections on gender and water allocation and distribution reveal a number of potential areas where privatization policies risk being inefficient and inequitable. Gendered structures of responsibilities and roles may in fact distort the anticipated accountability and incentive structures, both to the detriment of women’s rights and access to water as well as to the success of privatization policies.

First, gendered structures of roles and responsibilities and gender based wage differentials may inadvertently lead to women ending up paying most of the increased costs of operating and maintaining the irrigation system. Opportunity costs of female labor being less, households may find it economically more attractive to send women for maintenance work. This was the case in the examples of Peru and Nepal, where many men are engaged in off-farm employment, thus leaving the responsibility for irrigated agriculture to their wives. While the cash remittances of husbands may allow female farmers to pay cash contributions to comply with their maintenance requirements, often incomes from husbands are barely sufficient to meet basic subsistence needs. Anticipated water savings, to be achieved through some water pricing mechanism, may likewise be achieved at the cost of increasing the time women must to spend on agriculture. Water savings may be achieved by cultivating different crops, which will have different requirements in terms of male and female labor contributions. Most crop diversification projects in Sri Lanka, for instance, entail a shift from paddy to less water demanding crops. Many of these newer crops require more female labor, and unless households have the financial means to hire more laborers, increased female labor requirements will be met by increasing labor inputs from female household members. Water savings may also be achieved by substituting labor for water, as in the case of reducing the ponding depth in paddy cultivation which will increase weed growth, and the time needed for weeding.

The willingness and ability of women to pay more
for irrigation related services will, at least partly, depend on how much they expect to share in the benefits of these services. In fact, and as the previous sections have shown, it is not at all certain that women will share in the benefits of better services. When the proceeds of irrigated farming are largely controlled by men, there is a risk that men will appropriate a large share of the benefits of improved services. This risk is further exacerbated by the fact that in most situations female farmers have less formal and direct possibilities of demanding improved services. Water rights are often allocated to men only, and women are often not recognized as official members of water users’ organizations.

At the same time, women may find it hard to resist additional claims on their time because of intrahousehold gender inequalities. In the intrahousehold competition for labor and resources, women generally have a weaker bargaining position, because their fall-back position tends to be worse. The lack of viable alternatives and the avoidance of intrahousehold conflicts and social disapproval make it hard for women to resist increasing demands for their labor even when they are not sure of benefiting from the returns. This does not mean that women’s time is a free good. In order to be able to contribute additional time to irrigation related tasks, women may have to forego individual productive activities, incomes of which are often spend on household needs. They may also have to reduce time normally spend on domestic tasks, for example by cooking only once a day or by spending less time on washing. Although 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), economic costs of increasing women’s labor inputs will become apparent in statistics on health and nutrition of such women and their children (Cleaver and Elson, 1995).

(c) Women and water users’ organizations

Increasing the participation of water users in management is the second cornerstone of privatization policies in the context of irrigation. Efforts to organize water users in organizations often continue to suffer from the already criticized narrow conception of farmers, which pictures farmers as male individuals rather than as a household collectivity. As a result, membership of organizations is often confined to one member of each household, who is either the official landholder or the “head” of the household. Hence, the only women entitled to participate in water users groups are either widows or women with no adult male living in the household. As has been demonstrated, the one-household one-representative rule is not necessarily the most effective or adequate. An example from the Philippines (Illo, 1988) shows that alternative arrangements are possible, and may be more effective. Here, newly established irrigators’ associations insisted on having both husbands and wives as members representing the household in the association. One reason for this was that the inclusion of both wife and husband as members allowed for more flexibility; either the woman, the man or both would be able to attend meetings. Another reason was that, even though agricultural decision making was very much a joint affair of 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 with the collection of irrigation fees, unless women were involved in formulating policies and membership fee collection schedules.

Improving female participation in water users’ organizations may not be easy, because in many societies public decision making and attending public meetings are conceived as typical male activities, associated with political gatherings which are often traditionally confined to men. Moreover, the qualities for assuming official functions in organizations are often associated much more with male than with female attributes. Hence, the culture of water users organizations and their ways of doing business remains a barrier to women. Women tend to find it harder to have their voices heard than men, and in many contexts it is regarded as inappropriate for women to speak out or take the lead in public. Female farmers themselves may feel diffident about participating in mixed meetings (Cleaver and Elson, 1995).

Even though the examples discussed in the previous section show that female farmers may have informal ways and mechanisms to satisfy their water needs, exclusion of women from users’ organizations still risks endangering the equity and efficiency of organizations. First, if women have opportunities to influence decisions with respect to water distribution and labor mobilization in informal ways, this will often escape the view of policy makers and irrigation agency personnel, leading to ineffective exchange of information and increasing the transaction costs of irrigation management. In the Bauraha irrigation system in Nepal, for instance, women were often not aware of their water turns, because rotation schedules were devised in their absence, at meetings of water users organizations of which they were not formal members. Water often flowed through the canals without being used, or female farmers only started irriotting after having been warned by neighboring male farmers. In order to solve these problems, male farmers took the initiative of also inviting female farmers to the meetings (Bruins and Heijmans. 1993). Second, the absence of women in
organizations may make it difficult for the organization to enforce its rules on women. As in the Chhattis Mauja irrigation system in Nepal, problems of water stealing by women, or problems with the mobilization of labor for maintenance. Third, female farmers’ absence from organizations and their peripheral relationship to formal power structures may their capacity to adequately respond to and influence decisions that directly affect their lives.

5. CONCLUSIONS

The biggest impediment to establishing legitimacy for women’s need for individual water rights, is the astounding lack of recognition of women as irrigators and water users. This is partly due to the tradition in thinking about irrigation, which has long neglected any consideration of users and users’ needs. In this respect, the current debate about privatization of irrigation offers important new entry points for getting gender on the irrigation agenda. The privatization debate explicitly questions how socioeconomic and political conditions influence what happens within irrigation systems, and how irrigation practices in turn influence those conditions. By explicitly linking the irrigation practices of users to the management performance of irrigation agencies, the privatization debate opens the door to theories of human behavior, including gender analysis.

To make effective use of this opportunity, it is important that feminist scholars and advocates rethink their means. The past strategy of demonstrating that women’s needs for water are intrinsically different from men’s, thereby clearly demarcating a separate female water use domain, has certainly served advocacy purposes. But, it has also strengthened the prevailing belief that women, as a group, do not have to be treated as serious actors in the irrigation context and as serious competitors for irrigation land and irrigation water. It has, in short, allowed women to be treated as “different”, instead of as “equal” to men. The current attention to water rights in the irrigation privatization debate allows a shift in attention to the single most important source of gender inequality with respect to water: gender differences in access to and control of the resource. Water rights are almost always vested in men, and observable gender differences in uses of water are likely to stem from differential rights to water, rather than being dictated by culturally determined gender roles and responsibilities.

Water rights are normally obtained either through access to land in the command area of the irrigation system, or through labor contributions to original construction works of the system. Since land allocation policies in new irrigation systems usually favor men (or “heads of households”) women have little chance of obtaining either irrigated land, or water rights. Irrespective of who is actually using the water, and irrespective of who contributed most to the original construction of the irrigation system, men are nearly everywhere given priority when allocating water rights. Women’s access to water is thus in most cases mediated through their husbands and male relatives; female farmers make use of the water rights of their husband or male relatives for obtaining access to water.

Although female farmers may be quite successful in obtaining access to water, their means of access are often different than those of male farmers. This is so, because in most cases, women have no official entitlement to water in the form of water rights, and they also lack formal access to water users’ organizations, or the formal means to enforce their water rights. In the absence of formal rights and powers, women often rely on informal and sometimes illegal ways of meeting their water needs. Their success in doing so partly depends on the extent to which their specific water needs are recognized, which in turn may be partly a function of the number of female heads of farms as compared to the number of male heads of farms. For women, getting the amount of water they need at the right time often requires substantial investments in establishing and maintaining social contacts, either with village leaders or with government officials. Where traditional irrigation networks are typical male domains, this may be a difficult task.

Women’s lack of formal access to water is undesirable for a number of reasons. The most obvious one is the growing number of de facto female headed farms. When a large proportion of de facto farmers in irrigation systems are women, and when women lack formal rights and powers with respect to water, it implies that a large part of the actual water distribution will take place in the informal sphere. Inequities and inefficiencies in water distribution may be the result. But even where husbands are still around, there is no good reason for attributing water rights to men only. First, it is likely that the attribution of individual water rights to women would have similar effects as the access of any productive resource to women: increased well-being, improved bargaining position and increased efficiency and productivity. These arguments become particularly pertinent in view of the current shift in policy focus, away from considering water as a free good to considering water as a commodity. The very privatization policies that stress the importance of water rights and ownership of water in fact risks marginalizing female farmers even further from possibilities of benefiting from irrigation services. As a result of privatization policies,
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responsible for allocating and distributing water and for mobilizing resources for maintenance are increasingly relegated to communities of water users. While women (especially when the proportion of de facto female farmers is high) may end up paying most of the increased user costs of operating and maintaining irrigation systems, available evidence shows that women rarely actively participate in newly established water users organizations, thus severely restricting their formal possibilities of voicing their concerns and interests. This, in turn, endangers the very success of privatization policies, because it distorts accountability and incentive systems by disassociating payments from benefits.

Implicit in the belief that local communities are better irrigation managers than government agencies is the assumption that local communities are more equitable. With respect to gender equity in terms of rights and access to water, there is little reason to believe this is true. Irrigation benefits are distributed within the “intrahousehold market”, where terms of trade are biased against women (Palmer, 1991). Moreover, local water users organizations are often modeled on existing public decision-making forums, which in many societies are dominated by men. Women will often not be encouraged to participate, and even when they are, they themselves may feel diffident about participation.

New irrigation management policies thus not only open up new opportunities for placing women’s needs for individual water rights on the agenda, they also dramatically increase the need for doing so. Unless women are seen and treated as serious actors in irrigation, and as serious competitors for land and water resources, the fear that women may become further marginalized as a result of new water policies may well turn out to be justified. Properly informing women about rehabilitation and changes in the management set-up of irrigation systems is a crucial first step in this regard. Mechanisms to do so, and mechanisms to support women’s interests and rights, need to be devised. A second important step is to analyze explicitly and discuss the gender implications of (new) definitions of water rights and related responsibilities, including membership criteria of water users’ organizations. Women’s real participation and representation in all processes of change and (re-)organization is crucial. In many contexts, this may require separate meetings with women.

In order to inform properly irrigation policies and planners, more empirical information about the gender implications of privatization policies is needed. Much of the current debate on the pro’s and con’s of water markets and privatization of irrigation is based on an ideologically inspired critique of the functioning of markets. Arguments in favor of water markets rely on a few successful case studies, which are frequently referred to by all authors. The overall lack of empirical evidence automatically provokes rather sweeping statements and broad generalizations, and leaves a lot of room for authors to be led by their ideological or disciplinary beliefs. A sound gender analysis of processes of privatization should try to move away from such value statements, and aim at understanding changes in property and labor relations at the level of both the family and the irrigation system.

NOTES


2. van Koppen (1990, p. 10) gives an example of this: an irrigation project in Burkina Faso changed its policy of allocating irrigated plots to men only, when women — who were the main ones to work on these plots — turned out to be reluctant to invest time and money in the plots since they were afraid that men would take the plots away from them.

3. The high priority given to domestic water supplies makes it unlikely that policies which aim to increase water use efficiency through some kind of pricing mechanism would prioritize productive uses of water over domestic uses — a fear expressed by Cleaver and Elson (1995, p. 7).

4. At the sector level, where decisions have to be made about whether water is to be allocated to agriculture, industry, tourism or for domestic uses, the scope for disagreement may be higher. In India, for instance, national policy stipulates that priority with respect to allocating water to different sectors should be given to drinking water and sanitation. The irrigation “lobby” in India is so strong, however, that this rule is often tampered with, to the detriment of sound and reliable supplies of water for drinking and sanitation. At the same time, while inefficient uses of water in the irrigation sector considerably reduce overall water availability, solutions for drinking water shortages are not sought in increasing irrigation water use efficiency. Because drinking water has such a high social and political value, funds are instead made available for expensive investments in new infrastructure and purification plants. The drinking water sector may thus implicitly be subsidizing inefficiencies in the irrigation sector, and the real causes of water scarcity are not solved (van Wijk, 1995).

5. This section is partly based on an earlier paper. See Zwarteveen (1994b).

6. Evans (1993); Elson (1993) and Krol (1994) all give examples of women accepting having to pay more because of gender norms and structures.
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