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**Irrigation, Gender, and Poverty:
Overview of Issues and Options**

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1. Introduction

Just two decades ago, the answer to the question ‘what are the issues related to irrigation, gender, and poverty’ would simply have been: ‘none’¹. As the study ‘Pro-poor intervention strategies in irrigated agriculture in Asia’ highlights (Hussain 2004), this has changed profoundly. The present paper aims to place the key empirical findings of the Asian study in the context of the global debates on irrigation, gender, and poverty. By going back to the origins of these debates and highlighting their global variation, the generic relevance of the empirical findings in Asia is further clarified, while the accompanying policy recommendations are specified to suit this variation.

Two decades ago, in Asia, and indeed worldwide, the only gender issue in water was women’s responsibility as housewives to ensure daily domestic water supplies. The issue of domestic water supply clearly combines gender and poverty: a lack of access to near, affordable, and safe water supplies is a typical feature of poverty in all its definitions. Improved domestic water supply has remained high on the agendas of governments, NGOs, and the international community, as also reflected in the Millennium Development Goals. Although alleviating women’s burdens is an important aim in this global endeavor to achieve improved access to domestic water for all, health considerations are usually seen as the primary aim. The gender dimensions of domestic water supply in the sense of society’s unequal division of unpaid domestic chores between women and men tend to go unnoticed. It seems to be silently accepted that domestic work is naturally a woman’s chore, which is sought to be alleviated. Men’s sharing in domestic tasks is no issue.

Up till the 1970s and 1980s women were categorically excluded from agricultural and irrigation policy and intervention and this was justified on the basis of the same, widespread stereotype that women were primarily housewives and that they have no relevant productive role, other than perhaps ‘helping’ their husbands. This persistent ideology of women as housewives and men as breadwinners had to be challenged

¹ This paper focuses on gender and poverty analysis. For most recent insights in gender staffing see CGIAR Gender and Diversity Program. Web: www.genderdiversity.cgiar.org.

profoundly to make the case that there *are* issues related to irrigation and gender. As the ideology of women as housewives concerned poor and non-poor farm households, gender issues took precedence over poverty issues, even though much of the research on gender and irrigation concerned smallholder irrigation in developing countries. Thus, the first gender and irrigation issue that was raised since the 1980s was that women are important agricultural producers, who also need access to irrigated agriculture, and that this has far-reaching implications for policy makers and intervening projects, including engineers. Agencies' option became to target men and women farmers at equal footing, to ensure improved access to water for all on equity grounds or, a step further, to ensure their projects to succeed on productivity grounds (Hanger and Morris, 1973; Dey 1980; Zwartveen 1994; Merrey and Baviskar 1998; Van Koppen 1998). This first gender and irrigation issue is elaborated in section 2.

Later studies, including the present study 'Pro-poor intervention strategies in irrigated agriculture in Asia' identified further variation on this theme on the basis of the basic feature whether women farm decision-makers are the minority or not. Issues and options depend upon this gender classification of farming systems (Van Koppen 2002, after Safiliou 1988). Gender issues and options vary greatly between, on the one hand, farming systems where at least one third or even more than two thirds of the farmers are women, the respective so-called 'dual' and 'female' farming systems, compared to, on the other hand, 'male farming' systems, where women farm decision-makers are a minority of, say, less than one third, so where the stereotype that men are the bread winners and farm decision-makers is valid in most cases. Or, more precisely in male farming systems, women are often engaged in agricultural production and irrigation, but subordinated to their male kin who controls the production process and its outputs. Wealth status and poverty come into the equation in the sense that the reliance on unpaid family labor tends to be higher among poorer farm households who cannot afford women to be housewives only. This is related to the tendency of replacing women's unpaid family labor by paid wage labor with increasing wealth status. Another evident poverty and gender issue concerns agricultural wage labor as such, which is highly gendered and a manifestation of poverty by itself. This variation in gender issues and the corresponding options are elaborated in the Sections 3, 4 and 5.

Today's widespread recognition that women *are* farm producers needing income and that there *are* critical gender issues in irrigation implies that pointing at women's roles as housewives ends being the implicit way to deny or belittle their roles as producers, as it was in the past. This gives the opportunity again to acknowledge the integrated nature of both domestic and income-generating activities for women *and* for men, and the role of water in meeting multiple needs for wellbeing – whether called 'irrigation' water, or not. It is artificial and unfruitful to split people's lives in a productive and reproductive part, also for men. This is even more so among the poor whose health, but even more so whose income is so critically hampered by the huge labor investments for less than basic domestic water and energy supplies – efforts that HIV/AIDS or malaria affected households can afford even less. It is definitely artificial and unfruitful to try and split water flows, especially among the rural poor where infrastructure development tends to be limited. In daily reality of poor rural communities, the same water source, whether called 'irrigation' or 'domestic' water typically meets multiple domestic and productive water needs simultaneously (Bakker et al. 1999; Moriarty et al. 2004). While the rural poor are well aware, the water sector

now also starts realizing that integrated water resources management can only be relevant to the rural poor if its own domestic and productive sectors are better integrated and if water management for domestic uses is included in 'resources' management. As further discussed in section 6, the new option is understanding water, gender, *and* poverty issues as bottom-up integrated water resources management which acknowledges the *joint* priority for agencies, men, and women to first address domestic water needs among poor households, then small-scale informal productive water uses by poor women and men, up to the larger and 'formal' water uses. By supporting the poor to climb the multi-purpose water ladder, poor women and men can liberate themselves from unpaid domestic drudgery and create more wealth, more health, and more happiness for poverty eradication and gender equity.

2. There is an issue: Women as farmers and irrigators

A vast body of research in the past two decades corroborated the first gender and irrigation issue: challenging the persistent stereotype among intervening agencies that women are first of all housewives and, therefore, irrelevant as farm producers. The answer to the question 'who is the farm decision-maker' is highly relevant for the irrigation sector which provides one input to the farm, water, and therefore primarily targets the person controlling the enterprise in which water is input.

An obvious category for which the stereotype that women are only housewives and no producers was clearly invalid, are the *de jure* and *de facto* female-headed households. Hence, headship of farm household is often used as a proxy to distinguish women who are engaged in income-generating and farming from women who are primarily housewives. Proportions of female-headed households vary considerably between and within countries. For example, in Southern African countries the proportion of female-headed rural households and women-led farms in incidental districts may go up to 50 to 90 percent (Safilidou 1994). In Zimbabwe's communal areas, women constitute 61 percent of the farmers and comprise at least 70 percent of the labor force in these areas (FAO 1998). In rain-fed and irrigated agriculture in the former South African homelands, their proportion is estimated to be 70 to 90 percent (Makhura and Ngqaleni 1996; Van Koppen 1999).

Many studies found that female-headed households are often poorer than male-headed households. Also, the present study in Asia confirm this finding for systems studied in Pakistan, India, and Sri Lanka. However, this relationship was found insignificant for countries like Vietnam. Other studies in Africa also did not find such relationships to be significant, so one cannot generalize *a priori*. Further, the relationship between female headship of the household and being the farm manager is often more complex, which renders headship of a household an important but not the sole proxy upon which to base interventions. First, the definition of the household head is problematic. The male-biased ideological tendency is still widespread to simply call any elder man in a household the head, and by default of that person call the woman a head². Therefore, a

² The problem of defining 'female-headed households' can be illustrated by the wide divergence in estimates. For example, the 1988 percentage of female-headed households in Latin America and the Caribbean is 17 percent according to the data of Jazairy, Alamgir, and Panuccio 1992. A more recent study (IICAIDB 1994) shows that in Central America, households headed by women account for between 29 and 48 percent of the total cases analyzed. In the Andean region, the number of such households ranged between 29 and 55 percent. Types of female-headed household that often have been

more accurate analysis to identify the farm decision-maker is to replace the concept of the unitary household with either a male or a female head by the detailed analysis of production sub-systems within farm households – who often deploy a range of income-generating activities. Such analysis reveals which production sub-units are managed by women and which by men. Management means controlling the process, the access to required resources, and the outputs, while interacting and bargaining with other household members, ‘each trying to get the best deal out of it’. For example, such more accurate analysis of male farming systems in seven large-scale irrigation schemes in Gujarat and Andhra Pradesh in India showed that only half of the women heading households also managed the irrigated farm. More importantly in terms of scale, by assuming that only women heading households can be farm managers, one overlooks the many married women in so-called ‘male-headed’ households who manage the family farm or their own production sub-unit. In the study in India, this was the case in 10 percent of the male-headed farm households cultivating less than one hectare. However, in none of the wealthier households with more land were women found to manage the farm (Van Koppen 2002). In contrast, in Burkina Faso married women typically have their own production sub-unit, besides their labor contributions to men’s plots. Women cultivate independently one fifth to one quarter of the total land (Imbs 1987; Burkina Faso, Ministère de l’Agriculture et de l’Elevage 1989). Women in male-headed households can also organize into women’s groups for cultivation on their own, as widely documented for Africa, Asia, and Latin America.

By the 1990s, the growing acknowledgement of women’s roles as farmers incited irrigation agencies to change their intervention approaches by assessing and building upon the gendered organization of farming in their project zones and purposively targeting and including all farm decision-makers, both male or female, from the design phase onwards and ensuring their membership in Water User Associations. Often efforts were undertaken to ensure that the gender composition of committees reflects the gender composition of the members. For example, farm leaders in the West Gandak Irrigation Scheme in Nepal made it compulsory to elect one woman member in the committees of the 173 *upatolis*, the lowest tiers, of the new Water Users Association (Van Koppen et al 2001). In South Africa, the government considers to include in its support for small-scale agricultural water use the condition that management committees of eligible WUAs must mirror the gender ratio of farmers, as well as the sliding-scale incentive that will allow greater subsidies to be provided to WUAs with over 30% female members (Barbara Schreiner, personal communication).

It was showed, again and again, that this approach is effective, at least in areas where women’s roles as farmers is widespread, so in dual or female farming systems. An early African example where such inclusion of all stakeholders and gender-balanced membership criteria from the very start onwards worked well is the Provincial Irrigation Unit in the Nyanza Province in Kenya. In this region, women contribute over 60 percent of all hours spent in rice farming, including irrigation, and manage 64 percent of all plots. Before the 1990s the project’s policy was to include predominantly men as members of water user associations. In its new policy the

missed in the past, are the consumption and production units in polygamous households headed by the respective wives.

project required a minimum of 50 percent attendance by women at the preparatory meeting of new water user associations. Parallel to these meetings, women were organized in women-only groups and trained to articulate their interests and to participate effectively in the mixed meetings. This policy proved to be effective. Women's attendance in the preparatory meetings and committees today is higher than in the male-biased fora in other schemes that continued in the usual way. Furthermore, women's knowledge on project matters has increased, as well as the participation of women in water distribution and maintenance. Performance of women leaders is judged to be similar to that of male colleagues (Hulsebosch and Ombarra 1995).

In Ecuador, Latin America, women were purposively included in the Licto irrigation scheme. Recognizing the local arrangements in which both women and men have water rights, the agency started by organizing both men and women in a local forum in which the proposed scheme layout was discussed and the construction activities were planned. Before the construction started, clear and inclusive membership criteria for the new water user association were established, and water rights were linked to obligations in the construction of the new scheme. So an inclusive organizational design was implemented at the very start. About 80 percent of all construction activities were carried out by women in working groups (*mingas*). The new water certificates were given in the names of both spouses of the household. Pregnant women also obtained water rights, but they were granted dispensation from carrying out construction work (Arroyo and Boelens 1997; Video. Irrigation in Andean community: A social construction).

An Asian example is in Gujarat, India, where the Aga Khan Rural Support Program successfully organized the women's group of Jambar to own and manage a collective mechanized pump to irrigate the homesteads on which they themselves were the main cultivator (Van Koppen et al 2001).

However, a closer analysis of these successes but also of the situations in which women remained excluded from access to irrigation water, membership of Water User Associations and committees, in spite of affirmative action, points at an important variation on the theme of women as farmers. A critical explaining factor is the proportion of women farmers: do they constitute a good proportion of all farmers, as they are, by definition, in dual and female farming systems (Section 3), or do they remain the minority, as in male farming systems (Section 4)? This variation on the theme of women as farm decision-makers brings two different patterns in gender issues and options to the fore.

3. Gender in female and dual farming systems: a non-exploitative mode of agricultural growth

In dual and female farming systems, a more gender-inclusive approach which does not discriminate against women (an equity issue) not only appears to meet a positive response on the ground, but is also a matter of hard core productivity. For the mere sake of production enhancement, a new, unprecedented pattern of agricultural growth is needed that stops being based on the exploitation of the labor of women 'helping' their husbands, and that strengthens property rights to productive resources, in particular land and water, of the producer. An example where this productivity issue is paramount is the revitalization of smallholder irrigation schemes in the former

homelands in South Africa, which are dual and female farming systems (Van Koppen et al. 2004)³. The productivity arguments in favour of a non-exploitative mode of agricultural growth are analogous to the arguments in the land tenancy and land redistribution debates, where the importance of non-exploitative resource rights has already widely been operationalized into reform policies – for men (*cf* Jazairy et al. 1992).

There is ample empirical evidence that gender-equitable agricultural production boosts productivity. Studies in the past decade, mostly from Africa, underscored that women producers are as efficient as men, provided they obtain equitable access to productive resources and human capital and reap the benefits of their efforts by controlling the output (for an in-depth discussion of these studies see Quisumbing 1996). Also for irrigated agriculture, research confirmed that the productivity of women farm decision makers is at least equal to that of men, for example in Burkina Faso (Zwarteveen 1997) and Senegal (Deuss 1994). Even stronger, it became clear that exploitative intra-household production relations are counterproductive. A wetland improvement project in Burkina Faso even collapsed because irrigated land was given to men, instead of to women, the traditional rice cultivators and land titleholders. Later schemes, in which improved land was allocated to women, performed significantly better (Van Koppen 2000). Other studies in Africa also highlight women's intra-household negotiations to allocate their labor in ways in which they themselves, rather than their husbands, benefit. Lack of control over, and too limited sharing in, the harvests of husbands' fields, were important reasons for women to reduce their overall labor input on their husbands' irrigated plots to the minimum level of culturally defined obligations. Sometimes, women even completely abandoned irrigated agriculture and returned to their original villages, as observed in the Mwea scheme in Kenya (Hanger and Morris 1973). Women avoid exploitative farming relations most, if they have alternative income-generation opportunities. Carney (1988) found in Gambia that Wolof, Fula and Serrahuli women with alternative options to cultivate highland groundnut plots, tend to put in less labor on male-controlled irrigated rice fields than the Mandinke women who do not have that option (Carney 1988: 74). Similarly, higher remuneration by their husbands motivated women to contribute more labor in the SEMRY irrigation project in Cameroon. Jones (1986) highlighted that women rejected a too low compensation, primarily by engaging in alternative income-generating activities like their own sorghum fields. Also, married women receiving below-average compensations generally spent more time hiring themselves out as paid laborers the following year. Women's remuneration could be in kind, usually as a share of the output, or a lump sum in cash 'in return for their sweat.'

The other side of the coin of women's contest, bargaining and labor withdrawal from male-dominated farming is that a gender-equitable mode of production is likely to be *more* productive than male-dominated farming. Indeed, the Kenyan study by Ongaro (1988) showed that the introduction of new weeding techniques increased yields of farms managed by female heads of households by 56 percent and of those managed by men by only 15 percent. Ongaro argues that female heads may have a greater incentive to adopt better weeding practices (traditionally a women's task) when they

³ The origins of this female farming system lie in the patterns of colonization, apartheid, and struggle for freedom – which, although through very different processes, also contributed to the fact that almost half of South Africa's current ministers, including the ministers of water and agriculture, are women.

control the proceeds of their increased effort (cited in Quisumbing 1996, 1,588, citing Elson 1995). The higher farm productivity under more gender-equitable production relations also emerged from a study in Greece. In areas where male farming systems used to prevail but where many small-scale farms are threatened by bankruptcy, Safiliou (2003) found that a higher chance of survival of small-scale farming was found among farm households that were flexible in gender roles. This means that women took over the traditionally male role of farm manager, while men engaged in other income-generating activities. Further, farm survival was more frequent if women farm heads were also recognized institutionally, e.g., in registration of land rights and in formal lists of farmers.

In sum, in today's farming systems that largely depend upon women's efforts as farmers, the issue of gender, irrigation in smallholder agriculture has become, for the first time in history: the design and implementation of a mode of agricultural growth and irrigation development that strengthens women producers' land and water rights (while women now only tend to have secondary use rights), and that avoids exploitative family labor relations. The production potential is increased by ensuring that both men and women producers directly control the production factors (labor, land, water, technologies, inputs, credits and markets) and reap the benefits of their efforts.

4. Gender in male farming systems : challenging deep-rooted male dominance in production relations

The patterns of gendered farming are different in male farming systems. An example of a male farming system was found in a study of seven large-scale gravity irrigation schemes in Gujarat and Andhra Pradesh, India (Van Koppen 2002). Among the 700 households studied, the majority of farm decision-makers were men, who decided about the entire farming process, including irrigation and the use of the farm's output, mostly by themselves and only sometimes jointly with their wives. Men also carried out all core farm tasks, such as the resource-related, technology-intensive and benefit-related tasks, which usually required interaction and negotiation with third parties, as in Water User Associations. Females in the family performed the labor-intensive unskilled tasks, such as weeding, and sometimes also irrigating the fields, harvesting, threshing and processing. In better-off farms, unskilled tasks of wives were often allocated to paid (male and female) wage laborers. In most cases, land rights were vested in men.

Yet, here, as in any male farming system, there is invariably a minority of women farm decision makers, like widows, single and divorced women, women whose husbands are engaged in non-farm income-generating activities, or women who have land rights in their own names. If these women want to farm with these resources, they face a myriad of sexist cultural norms and taboos curtailing their productive potential— norms that are much milder, if existing at all, in female and dual farming systems. As research in male farming systems in India, Nepal and north Sri Lanka, and also in Kenya indicates, the minority of women farmers face obstacles in farming like taboos to perform certain key tasks, like ploughing. Specifically concerning irrigation, norms dictate that women should avoid night irrigation, although women may still end up with this least preferred irrigation turn (Von Benda-Beckmann et al. 2000). Similarly, there are taboos on women doing canal maintenance work, which is

the obligation that one needs to fulfill for obtaining irrigation water rights (Adams et al. 1997). Women's physical and social mobility in production domains are also severely hampered. Interaction with strange men, certainly at places where women are not supposed to be, such as bus stands or bars, raises suspicion, while obviously essential for accessing inputs, technologies, loans or marketing arrangements and for effective participation in meetings of WUAs (Agarwal 1994; Zwarteveen and Neupane 1996; Merrey and Baviskar 1998; Van der Molen 2001; Van Koppen et al 2001). The obstacles are often so severe that women farmers in male farming systems may prefer leaving farming to their sons or leasing out their farms at typically below-market rates (Agarwal 1994). Thus, in the study in India mentioned above, only half of the women heading households were the farm decision-makers, while only a quarter of women land owners choose to manage the farm themselves (Van Koppen 2002).

Given these obstacles, the gender issues and options in male farming systems go far beyond water alone: women basically need to establish the full economic enterprise in which water is input, including women who already have some access to some resources. In such highly skewed gendered organization of farming, the issue of tall order is profound economic, political and cultural gender discrimination intrinsic to male monopolization of production factors, including women's labor. Agencies, farm leaders, and women can only challenge step by step. Pro-active support to the minority of women farm decision-makers not only boosts productivity of this minority, but will also challenge many of the firm gender stereotypes that curtail women's productive potential in general. Women's participation in committees also challenges norms, even if actual participation is weak. Exposing alternative norms and practices, for example on joint land and water rights; access to credits, technologies, markets, and skill training; women co-deciding on crops to be grown; women carrying out canal maintenance work and ploughing, or women deciding on the proportion of crops to be sold and the use of the revenue, this all contribute to women gradually establishing their own or households establishing truly joint enterprises in which water is input. Agendas on gender, irrigation and water have clearly to go beyond water alone to the roots of the exclusion of women as a gender from resource rights and other production factors.

5. Gender and poverty: agricultural wage labor

High income dependency upon wage work is a commonly used proxy for being poor. Agricultural wage employment is highly gendered. Women are often restricted to carry out the lowest-paid tasks and may be excluded from construction and maintenance work. If they do equal work, they receive unequal payment. For example, in Sri Lanka the female labor was found to be paid around 10 percent less wages than the male labor. Agricultural wage laborers are extremely weakly organized in general, and certainly for women.

Policy changes to accommodate for these inequities can have significant impact. For example, in Bangladesh, Labor Contracting Societies (LCS), Embankment Maintenance Group (EMG), Channel Maintenance Group (CMG) have been established in irrigation systems providing employment and income-generating opportunities to the rural people, both men and women, and ensuring fair wage and achieve high quality of maintenance work. At least 25 percent of the earthwork of any

public water project/subproject/scheme is supposed to be reserved for the LCS. The majority of the members of both EMG and CMG are vulnerable women. In addition to earning from wage labor, women use the slopes of the canals and the embankments to harvest vegetables and thereby earn an extra income.

6. Gender, poverty, and rural water: multiple water uses for freedom from drudgery, wealth, health, and happiness

While there are still long ways to go with regard to gender and irrigation in dual and female farming systems and certainly in male farming systems, the recognition that there *are* gender issues in irrigation and that both women and men need incomes have an important implicit effect. In the past women's role as housewives was abused as excuse for downplaying gender issues in productive spheres. However, as that is ending, space is opening up to acknowledge that the separation between two different but both vital and strongly interacting aspects of livelihoods is artificial, certainly for women, but also for men, as increasingly recognized as well. Moreover, explicitly taking up the poverty angle that the domestic water sector has pursued all along, the gender *and* poverty issues now encompasses the aforementioned gender and irrigation issues, *plus* the recognition that the major obstacles for poor households to increase their productivity and wellbeing and escape poverty are the tremendously time-consuming domestic chores for accessing water. While it is true that the direct burdens fall disproportionately on women's shoulders, men's cash and labor contribution to the provision of domestic water to their households is perhaps the most under-researched gender issue (Van Koppen 2001). In any case, the household as a whole would also benefit if women and girls and to some extent boys and men are liberated from these unpaid chores.

This new gender and poverty issue seamlessly fits the growing recognition within the water sector, that the sectoral divides between domestic and productive water sectors are artificial and unfruitful, at least in poor rural communities where infrastructure development is limited and, at these lowest steps of the water ladder, the same water source is used to meet multiple water needs. Although irrigation schemes were often designed with the primary use of irrigation in mind, the multiple uses of irrigation schemes and the required adaptations in design have been recognized since the early 1980s (Yoder 1981). More research was done in the late 1990s both in areas where irrigation schemes were by far the most important water source for any use, as in Pakistan (Jehangir et al 1998; Van der Hoek et al 1999) and Morocco (Boelee et al. 2004) but also in other areas where it challenged the growing perception that irrigation water was of low value. Many values are added to 'irrigation' water, as it is used for domestic uses, livestock, fodder, fish, and other income generating activities (Bakker et al. 1999). If irrigation schemes are better planned and designed for such multiple uses, in which domestic uses are also given priority, more benefits are derived from the same irrigation scheme, especially for women. For example, in the design of rehabilitation/further extension of Walawe scheme in Sri Lanka, 51 new structures were built to facilitate such domestic uses of water, especially for women.

In the past couple of years, a similar recognition took place in the domestic water sector, recognizing that factual small-scale productive uses of so-called domestic water supplies around the household, often for informal activities such as homestead gardening, are not only happening at large scales, but are also major contribution to

poverty alleviation and gender equity – as household based economic activities tend to be more accessible to women. Moreover, if properly planned, multiple use design of domestic supplies has the potential to generate income and, hence, improve cost-recovery (Moriarty et al. 2004)⁴.

Integrating domestic and productive water uses and women’s and men’s roles in both, starts at the household level, up to community and higher level, up to national and even transboundary levels. This form of pro-poor, gender-equitable bottom-up Integrated Water Resources Management surpasses a most persistent division within the water sector itself: that between the domestic and productive water sectors, with IWRM typically excluding domestic uses. Starting with the poorest households at the lowest services levels, a Multiple Use Water Supply Systems approach seeks to support the poor in climbing the multi-purpose water ladder, recognizing the priorities of domestic water uses. However, the conventional notion of service levels as climbing the water ladder is confined to domestic uses only. In a Multiple Use Water Supply Systems approach, productive uses are to be integrated. A hypothetical model is presented in figure 1. Further field testing has to specify at what service level rural people already start using scarce water resources for productive activities in reality, and which levels can be recommended for policy making

Figure 1. Climbing the multi-purpose water ladder – hypothetical example

Service level	Costs time/cash	Volumes	Needs met	Priority
No domestic access	>1 km>30 min	<5 lcd	cons/hyg too low ;	top priority
No MUS access	<1 km <30 min	<20lcd	cons just ok/hyg too low	very high
Basic MUS access	<0.2 km <5 min, roofwater	20 – 50lcd	cons just ok/hyg too low/basic livestock, fruit trees	high
Intermediate MUS access	1 tap on plot, roofwater, run-off, household tank	50 – 100lcd	cons, laundry & hyg ok, laundry/livestock, vegetables, trees, small enterprise	medium
Optimal access	more house taps, large storage	100-200lcd	domestic needs met/livestock, vegetables, trees, small businesses	low

7. Conclusions rural water, gender, and poverty issues and options

⁴ An example of the new global dialogue on gender and poverty mainstreaming in merging domestic and productive water sectors is the Challenge Program project on Multiple Use Supply Systems (www.iwmi.cgiar.org/multipleuses) This project conducts action-research to develop and test guidelines for community-level implementation of Multiple Use Water Supply Systems and for upscaling Multiple Use Water Supply Systems at district, national and global levels. These guidelines seek to tap the synergies of integrated, affordable and labor-saving investments in water development for multiple uses to create more wealth, health, and happiness, *also* among the poorest households.

After two decades, gender is widely recognized as a critical issue in irrigation and Integrated Water Resources Management. Paradoxically, the success of this policy commitment is also its risk. Policy statements remain toothless as long as they remain abstract and generic, and as long as it is suggested that one blanket policy would fit the huge global variation in gender issues. At such abstract level, one could share a vision of a gender-equitable mode of rural development alleviating unpaid domestic chores and with a mode of agricultural production void of stereotypical biases with regard to asset creation, resource property rights and decision-making over both the production and reproduction processes. However, concrete policy and intervention need to be tailored to fit local variation and women's and men's own aspirations.

For parts in Africa where female and dual farming systems prevail, this vision needs to be implemented at short-term for the sake of agricultural growth. In these African areas water will be an important input, and even more so because water resources are abundant and the need to finally bridge the water infrastructure gap is increasingly recognized (Africa Water Week 2004). What is needed is a similar rigorous scientific evaluation as the Asian study to identify the most suitable and effective strategies for water development and management in rural areas to create health, wealth, and happiness while liberating poor women and men from the drudgery and high monetary costs that accessing water still represents.

For the parts in Africa and Asia where male farming systems prevail, the study 'Pro-poor intervention strategies in irrigated agriculture in Asia' concludes with the following recommendations:

- ? Female headed households should be given priority:
 - ✍ for creating physical assets
 - ✍ security of land and water rights
 - ✍ improved access to inputs and services (credit, marketing)
 - ✍ Infrastructure facilities
- ? In making new investments, multiple uses of water by women should be seriously considered
- ? In line with local cultures and traditions, increase involvement and representation of the poor women in decision making
- ? Empower women through information, awareness raising and capacity building
- ? Incorporate the above in at the design and implementation stages of policies and project

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