

## UNDERSTANDING GENDER AND DIVERSITY DIMENSIONS OF IRRIGATION MANAGEMENT FOR PRO-POOR INTERVENTIONS<sup>†</sup>

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### ABSTRACT

This paper offers a critical review and synthesis of key issues and lessons on gender and diversity dimensions of irrigation in the context of poverty alleviation interventions. The paper is a part of the multi-country study carried out by the author at the International Water Management Institute (IWMI) in collaboration with national partners in six Asian countries (Bangladesh, China, India, Indonesia, Pakistan and Vietnam) during 2001–2002. The paper suggests that, while making large contributions to irrigated agriculture, women depend on, and benefit from, irrigation water in a variety of ways including water uses for domestic and livelihood purposes. Gender and diversity aspects are critical in irrigation management that aims to address poverty issues. An understanding of these aspects is important for designing pro-poor interventions in irrigated agriculture. Women and low socio-economic groups have benefited where gender and diversity issues have been incorporated in policy formulation, project design and implementation. Designing the irrigation infrastructure such that the irrigation systems become multiple use systems can enhance the benefits of investments in irrigation for the poor women. Finally, the paper suggests that policy and project level interventions that aim to address gender and diversity issues need to focus not only on areas predominantly inhabited by the poor belonging to low castes, clans, tribes and ethnic minorities, but also in areas where such groups are in minorities. Copyright © 2007 John Wiley & Sons, Ltd.

KEY WORDS: gender; diversity; irrigation; pro-poor interventions; male households; female households; Bangladesh; China; India; Indonesia; Pakistan; Vietnam; Asia

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### RÉSUMÉ

Cet article présente une revue critique et une synthèse des questions et des leçons principales sur les dimensions de genre et de diversité dans l'irrigation, dans le contexte des actions de réduction de la pauvreté. Il constitue un élément de l'étude internationale effectuée par l'auteur à l'Institut International de Gestion de l'Eau (IWMI) en collaboration avec des partenaires nationaux de six pays d'Asie (Bangladesh, Chine, Inde, Indonésie, Pakistan et Vietnam) en 2001–2002. Il suggère que, tout en apportant de grandes contributions à l'agriculture irriguée, les femmes dépendent et bénéficient de l'eau d'irrigation de multiples façons, parmi lesquelles les usages domestiques et de vie du foyer. Les questions de genre et de diversité sont essentielles dans la gestion de l'irrigation visant à s'attaquer à la pauvreté. Les comprendre est important pour concevoir des interventions en faveur des pauvres en agriculture irriguée. Les femmes et les groupes socio-économiques les plus faibles ont été bénéficiaires quand les aspects de genre et de diversité ont été pris en compte dans la formulation de la politique, dans la conception et dans l'exécution du projet. La conception multi-usages des infrastructures d'irrigation peut augmenter les bénéfices du projet qui vont aux femmes pauvres. En conclusion, l'article suggère que les interventions, de niveau politique ou

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<sup>†</sup>Comprendre les dimensions de genre et de diversité dans la gestion de l'irrigation pour des interventions en faveur des pauvres.

de niveau projet, qui visent à s'attaquer aux problèmes de genre et de diversité doivent se focaliser non seulement sur les secteurs principalement habités par des pauvres appartenant à des castes, clans, et tribus de rang peu élevé ou à des minorités ethniques, mais également sur les secteurs où de tels groupes constituent des minorités. Copyright © 2007 John Wiley & Sons, Ltd.

MOTS CLÉS: genre; diversité; irrigation; interventions pro-pauvres; foyers masculins; foyers féminins; Bangladesh; Chine; Inde; Indonésie; Pakistan; Vietnam; Asie

## BACKGROUND

It is widely known that women play important roles in all sectors of economies from household to national levels. In rural–agricultural settings, women make substantial contributions to improving and sustaining household income and food security by playing multiple roles in production, consumption, health and livelihoods both directly and indirectly. In Asia, estimates by the FAO suggest that women account for approximately 50% of total food production in the region, although there is considerable variation from country to country. However, since most of the work women perform for family production and livelihoods is unpaid and is of an informal nature, their contributions are often underestimated in official surveys and statistics.

In the Asian agriculture sector, men and women play complementary roles by jointly performing most tasks, with some division of labour. Men usually perform tasks requiring more physical strength such as land preparation, ploughing, irrigation, and fertilizer/chemical application. Women, in addition to contributing to most tasks performed by men, are usually involved in labour-intensive and time-consuming tasks such as transplanting, weeding and harvesting. Similarly, women perform most tasks related to livestock rearing. In Pakistan, women carry out 60–80% of the cleaning, feeding and milking of cattle. Studies in India also indicate that most livestock-related tasks are performed by women (Upadhyay, 2004). Besides, women usually have primary responsibilities for fetching water, processing food, childcare and other essential domestic chores including washing, cooking, cleaning, etc. Women's roles and responsibilities increase when men out-migrate from rural areas to towns and cities in their countries or abroad for more attractive jobs – a phenomenon generally referred to as “feminization of agriculture” which is growing in many countries. Contrary to common perceptions, women's involvement in agriculture and their daily working hours in agriculture are usually higher than those of men. Further, given their multiple roles including domestic chores, the overall average daily working hours of rural women are usually higher than those of men. For instance, women in China work 1.5 hours per day more than men (Arkestejin, 1998). This figure can be much higher in most settings in South Asian countries where women's contribution often goes unnoticed.

However, while women make significant contributions to the rural labour force, their role as decision makers varies across regions and countries. Van Koppen (2002) offers a useful classification of local farming systems based on gender of farm decision makers: (i) male farming systems – if only a minority of farm decision makers (less than one-third) is female; (ii) dual or mixed farming system – if male to female proportion of farm decision makers is roughly equivalent; (iii) female farming system – if a majority of farm decision makers (more than two-thirds) is female. In most Asian settings, male and dual or mixed farming systems prevail. South Asian countries have male farming systems, while South-East Asian countries and China have farming systems that are either dual or close to dual farming systems. In both types of systems, women play important roles either as farm decision-makers (or as “advisors behind the scene”), household managers and as farm labourers. This paper focuses on inter-household gender and diversity issues and their linkages to irrigation and poverty, particularly in relation to the headship of households. However, we recognize and acknowledge that intra-household gender aspects are also important and are closely linked to poverty issues.

## WOMEN AND POVERTY

Recent work on poverty in Asia recognizes the feminization of rural poverty in that poverty is more severe and binding for women and that it is harder for them and their children to escape it (IFAD, 1999). There is increasing

evidence that women and girls in poor households bear a disproportionately higher share of the burden of poverty. Gender discrimination and the differential impact of poverty among poor households is reflected in lower nutritional status, higher mortality and lower levels of education of women and girls. Their deprivation, particularly in male farming systems, is mainly due to their lower endowment of land and other productive assets, limited access to social services and discrimination in the labour market. More importantly, female-headed households in such systems are often at a disadvantage. In our study countries, the proportion of female-headed households at the national level varies from 7% in Pakistan (Government of Pakistan, 2001–2002) to 32% in Vietnam (General Statistical Office, 1995) [India – 11% (Gangopadhyay and Wadhwa, 2003); Indonesia – 12% (Tuoane *et al.*, 2001), and Bangladesh – 15% (Mannan, 2000). Among major South Asian countries, the proportion of female-headed households in Sri Lanka is higher, estimated at 17% (Tudawe, 2001)].

In Pakistan, Bangladesh and India, poverty among female-headed households (FHHs) is generally higher than among male-headed households (MHHs). FHHs in these countries have generally less access to, and control over, land and productive assets and greater dependency on wage labour for employment, working generally on lower wage rates, lower levels of education and more limited access to information and social services. In other countries, particularly Vietnam, studies indicate that there are no significant differences in poverty incidence across MHHs and FHHs. Our in-depth analysis in Nam Duang and Nam Thach Han irrigation systems in Vietnam further confirms that there are no significant differences in poverty across MHHs and FHHs (see Tuan *et al.*, 2004). Interestingly, unlike in South Asian countries (where FHHs often face discriminatory behaviour and often rely on casual labour with lower wages and experience inferior social position), rural FHHs in Vietnam are less vulnerable to poverty than rural MHHs (FAO, 2004).

In South Asia, female wage rates are considerably lower than male wage rates. For example, the average wage rate for women workers in India is around 70% of the male wage rate (Parthasarathy, 1996). Even for the same job and equal work, women receive unequal wages. While male and female wage rates are generally better in irrigated areas than in non-irrigated areas, male–female wage rate differences exist, although the gap is narrowing over time (Narayanamoorthy and Deshpande, 2003). In Bangladesh, women's wage rate in rural areas is 40% less than that of male (IFAD, 1999). In Sri Lanka, female labour is found to be paid around 10% less than male labour. The analysis for Indonesian systems indicates that female wage rates are around half the male wage rates. Overall, in most settings wage rates are highly gendered.

## WOMEN AND IRRIGATION WATER

Irrigation water does not just have a single use and is also not purely a men's affair. Women have even greater association with and role in water use from irrigation systems in many direct and indirect ways. Women use irrigation water for domestic as well as for productive and livelihood purposes, deriving a range of benefits from irrigation water. Domestic uses of water include water used for washing, bathing, cleaning, etc. Production uses include water for crop production where women contribute to various production activities along with men, and for small-scale activities that enable women to grow agricultural produce (such as vegetables and fruits), rear livestock and run micro-enterprises. These activities help households to increase their incomes, improve housing conditions including better sanitation for women, enhance food security and nutrition and overall family health. Access to good quality irrigation water from nearby irrigation systems in the local setting also helps save time and labour for women who no longer need to travel long distances to fetch water for washing, bathing and for livestock raising.

Among MHHs, crop production uses of irrigation water are largely male tasks while domestic and other small-scale uses of water are the females' affair. Among FHHs, all types of uses are usually the females' affairs especially in the absence of a male family member. With increased out-migration of males and resulting feminization of agriculture, women's roles in agriculture including irrigation is increasing. In general, since women in both MHHs and FHHs play a larger role in multiple uses of water (other than crop production) they can be expected to have greater understanding and knowledge about the potential local-level issues related to irrigation water use and management, and their solutions.

Does women's participation in irrigation management really matter? Despite the recognition that women play an important role in irrigated agriculture and of the gender-specific issues in access to water and resulting emphasis on

women's involvement in irrigation management, their participation in irrigation institutions continues to be very low, particularly in male farming systems of South Asia. The studies in Bangladesh, India and Pakistan suggest that women's participation in management institutions such as water users' associations (WUAs) is very low or non-existent, despite new laws and WUAs' rules and regulations that require women's participation. These findings are supported by several other studies (see for example Van Koppen *et al.*, 2001 and Upadhyay, 2003).

In the male farming systems of South Asia, often reported reasons for low or non-participation of women in irrigation management institutions and overall poor gender performance<sup>1</sup> are rigid norms, cultural traditions, religious constraints; women's high reproductive loads; female illiteracy lowering their self-confidence and capability to participate; timing and location of meetings of WUAs often not suitable for female participation (e.g. night meetings away from home); and participation limited to only formal rights holders (that women often lack in the male farming systems of South Asia).

However, female participation in male and dual farming systems is important for several reasons: (1) female-headed households (*de jure*), who constitute a considerable part of rural population are often among the poorest and most disadvantaged, as explained above, cannot be and should not be neglected; (2) female-headed households (*de facto*), who are growing due to increasing feminization of agriculture resulting from out-migration of male family members, also necessitate female involvement; and (3) females in both MHHs and FHHs use water for a variety of purposes, and derive significant benefits from these uses. It is now being increasingly recognized that much value can be added to irrigation water as it is used for domestic purposes, livestock, fodder, fish and other income-generating activities (Bakker *et al.*, 1999). As important users and stakeholders, females can be expected to have a better understanding and knowledge about local-level irrigation water related needs and issues. Their involvement is important not only for addressing gender inequities, but also for enhancing benefits of investments in irrigation for the poor.

#### UNDERSTANDING SOCIAL HIERARCHY (CASTES, CLANS, TRIBES AND MINORITIES) WHEN DESIGNING PRO-POOR INTERVENTIONS

The Indian subcontinent has a long history of occupation-based caste and clan systems. Whatever may be the origin and rationality of the caste structure, it has become very exploitative. Economic deprivation often goes hand in hand with social deprivation. With some exceptions, and in spite of efforts being made to bring in social change, lower caste people are the "poor" in the rural areas. The higher caste people have most of the assets in the form of land, and the lower castes, especially the schedule castes, have very little or none but have to provide labour and carry out other "dirty tasks" mostly for the higher caste people. The higher castes have dominated social relationships and they continue to look down upon the lower castes with disdain. These conditions have changed to a large extent in urban areas; however, these customs are still quite strong in many rural settings. Therefore, an understanding of the social hierarchy is important when designing pro-poor interventions.

In the systems studied in Madhya Pradesh, it was found that the poor households mostly belonged to scheduled castes/tribes (SC/ST) and other castes that were considered low on the social hierarchy. They were either landless or had small landholdings. The study findings suggest that the proportion of SC/ST in poor households is higher than the other castes. Of the households surveyed in Halali, 60% of the poor households belonged to either SC or ST. The proportion of upper caste poor households was 22%. In Harsi, 49% poor households belonged to either SC or ST communities. The proportion of upper caste poor households was 16%.

During the field surveys, some farmers expressed concern that the old social structure would reinforce itself with the formation of the WUAs. In the Halali project, the ST and SC farmers even opposed irrigation management transfer in its initial stages. The other side of the perception was that the influential local leader can effectively negotiate with government authorities for more water for their fields. For many of the office bearers this is a springboard for political progression. High caste domination is also shown among management committees of WUAs both in Andhra Pradesh and Madhya Pradesh.

Further, the representation of poor farmers is marginal in both states. This reinforces the observation of earlier studies (Jairath, 2001; Van Koppen *et al.*, 2002) that small and marginal farmers are by and large excluded from decision-making and the opportunity of negotiations with the leaders. These issues have been recognized and stipulated in the national water policy in that special efforts should be made to formulate projects either in or for the

benefit of areas inhabited by tribal or other specially disadvantaged groups such as schedule castes (SC) and schedule tribes (ST). However, the actual implementation and effectiveness of this policy for the benefit of low caste people remain to be seen.

There are similar problems with minorities in both South Asia and South-East Asia, where minorities are generally among the poorest and most deprived. For example, in Vietnam there are lowland ethnic Vietnamese known as 'Kinh' that constitutes the dominant ethnic group and make up 85% of the population. On the other hand, there are 53 ethnic groups who are ethnic minorities, who are among the poorest in the country. While poverty has decreased among ethnic minorities, it still remains very high and continues to be a major problem (Kenji and Yagi, 2001).

Overall, it can be concluded that as much as there is gender discrimination, there is also diversity discrimination. The policy and project level interventions need to focus not only on areas predominantly inhabited by the poor belonging to low castes, clans, tribes and ethnic minorities, but also on areas where such groups are in minorities.

Further, there is an important gender dimension to diversity/caste/minorities issues. As mentioned above, females in poor households bear a disproportionate burden of poverty. Females in low caste/minority households, particularly those in FHHs, suffer from the worst form of socio-economic deprivation. From the gender and social hierarchy standpoint, households can be classified in terms of female deprivation and poverty into the following four categories: (1) females in ordinary male-headed households; (2) females in ordinary female-headed households; (3) females in low caste/minority male-headed households; (4) females in low caste/minority female-headed households. The households can be subclassified based on whether or not a household is dependent on agriculture as a main source of income. It can be hypothesized that female deprivation and poverty increase in successive categories, with females in the fourth category being the most deprived; however, more research is needed to confirm such relationships.

## EXAMPLES OF INITIATIVES WITH PRO-POOR AND PRO-GENDER FOCUS

There are examples of initiatives where women have benefited when gender and poverty issues were explicitly incorporated in policy and project level interventions in irrigation and were implemented by establishing effective mechanisms. For example, in Bangladesh, labour contracting societies (LCSs), embankment maintenance groups (EMGs) and channel maintenance groups (CMGs) have been established in irrigation systems, providing employment and income-generating opportunities for the rural people, both men and women, and ensuring fair wages and achieving high quality of maintenance work. At least 25% of the earthwork of any public water project/sub-project/scheme is supposed to be reserved for the LCS. The affiliated agency is in charge of the recruitment of female labourers willing and capable of engaging themselves in an EMG/CMG for a period not shorter than 6 months. Priority would be given to FHHs. The majority of the members of both EMGs (as in the G-K system) and CMGs (as in the Pabna system) are vulnerable women. In addition to earning from wage labour, women use the slopes of the canals and the embankments to harvest vegetables and thereby earn an extra income.

As mentioned earlier, if irrigation systems are better planned and designed for multiple uses of water, in which domestic uses are also given priority, more benefits can be derived from the same irrigation scheme, especially for women. For example, in the design of rehabilitation/further extension of the Walawe scheme in Sri Lanka, 51 new structures were built to facilitate such domestic uses of water, especially benefiting the women. Similarly, women's participation in irrigation institutions is relatively better where effective approaches are adopted to mobilize and organize women. Of the four systems studied in Indonesia, women were relatively more active in only one system (Krogowan) – where women were organized by women from the Study Centre of Diponegoro University.

## LESSONS AND IMPLICATIONS

The study points to the following generic conclusions and lessons:

1. Women make large contributions to irrigated agriculture. Women depend on, and benefit from, irrigation water in a variety of ways including water uses for domestic and livelihood purposes;

2. In male farming systems of South Asia, poverty is generally higher among FHHs than among MHHs. Female poverty is likely to be much higher among FHHs belonging to low castes, clans, tribes and ethnic minorities in such systems. While there are no significant differences in poverty incidence across FHHs and MHHs in systems that are almost dual, as in Vietnam, poverty is high among ethnic minorities. Therefore, whatever the farming system, ethnic minorities are often discriminated against;
3. Participation of women and low caste households in irrigation management institutions and their decision-making processes is very low in male farming systems. Their lack of involvement means not only continuing inequities in participation and decision-making processes but also a missing out on opportunities for enhancing local benefits of irrigation investments through participation of these important households. Overall, gender and diversity issues are critical in irrigation management that aims to address poverty issues. An understanding of these issues is important when designing pro-poor interventions;
4. Women and low socio-economic groups have benefited where gender and diversity issues have been incorporated in policy formulation, project design and implementation;
5. Designing the irrigation infrastructure so that the irrigation systems become multiple use systems can enhance the benefits of investments in irrigation for the poor men and women.

Based on the study findings, we conclude with the following recommendations for action in Asian settings where male farming systems prevail:

- Female-headed households and those belonging to low social hierarchy should be given priority in:
  - creating physical assets and securing land and water rights;
  - improving access to inputs and services;
  - getting involved in irrigation management institutions with their greater representation;
  - and developing infrastructure facilities;
- in making new irrigation investments, multiple uses of water by women should be seriously considered.

In line with local cultures and traditions, involvement and representation of poor women in decision-making should be increased. Considering various constraints that women face especially in male farming systems, an effective strategy for enhancing women's participation would be to create separate local groups of women who can be represented by women group leaders or women extension workers in meetings at WUAs and at higher levels. Awareness raising, capacity building through training programmes for women by the women and enhancing their literacy levels would help in empowering women.

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### NOTE

<sup>1</sup>Van Koppen (2002) develops a useful gender performance indicator for irrigation (GPII) that consists of six key elements: (i) land rights; (ii) water rights; (iii) membership rights; (iv) inclusion in forums; (v) inclusion as leaders; and (vi) ability to function as leaders. She applies GPII to male, dual and female farming systems. She found poor gender performance in male farming systems in Andhra Pradesh and Gujarat in India. The gender performance was good in the Ridiyagama irrigation system in Sri Lanka where the male farming system was found to be close to a

dual farming system. However, it is not entirely clear whether some of the factors that constrain female participation in irrigation organizations in male farming systems also affect female participation especially in dual farming systems, and to what extent good gender performance helps alleviate poverty.

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