G3: Water Governance and Community Based Management

Literature review

Gender and water management organisations in Bangladesh

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I. Introduction

This literature review was led to inform the project "G3 - Water Governance and Community-based Management", funded by the Challenge Programme on Water and Food (CPWF). G3 is part of a cluster of project in the Ganges Basin on Community Based Management. The specific objectives of G3 are to understand the different modes and outcomes of water governance in selected polders and the role that communities play in such governance.

Within the global trend to involve communities in water management, women often continue to be excluded from water governance mechanisms across the world and in Bangladesh (see review in 2009, Hussain, 2007). Women's participation in water governance has been advocated by a wide range of actors for a variety of reasons, including integrating women's needs and knowledge, enhancing women's status and increasing women's voice in governance in general (see review in Harris, 2009) but often the major concern that has driven women's integration in water projects has been that of ensuring project effectiveness and efficiency (GWA and UNDP, 2006). A few scholars have been critical of the overall rationale and approach taken by aid organisations and government implementing agencies. Some have warned against the dangers of individualistic and equalizing measures which do not take into account the historical and social context in which gender relationships are embedded (Ahlers and Zwarteveen, 2009). Others have observed that enhancing women's participation in formal organisations should be considered carefully as it might devolve responsibilities without actual power and even, in certain instances, disempower women by weakening some of the informal rights they had (Harris, 2009).

This review of gender and water relationships in Bangladesh aims at taking stock of the current research findings and identifying gaps and key issues that might need further investigation within the G3 project. The objectives are to ensure a gender sensitive approach of water governance issues within the project and make sure that recommendations on institutional change do take into account gender aspects. The focus of this review was primarily on gender and water management organisations (WMOs) but it was equally important to locate gender relationships within the broader social, political and biophysical context in which they are embedded.

II. Methodology

The review was conducted based on a search on the following databases: CAB Abstracts, Water Resources Abstracts, Digital Library of the Commons and IWMI HQ Library. The following search motor engines and services were also used: PROQUEST and Google Scholar Search. Finally a search was also made on the full collections of online journals: Science Direct, Taylor & Francis and Wiley.

The review first examined the broad literature on gender and water relationships, with a focus on water use for agriculture, in order to define a broad framework for analysis. Then it more particularly explored gender and water issues in Bangladesh. A large chunk of the literature on gender and water in Bangladesh has addressed arsenic contamination but a relatively small number of studies have investigated women's participation in agricultural water governance in Bangladesh. Whereas this has limited the identification of very specific issues within this broad theme, it also indicates the need for in-depth studies on this topic.

III. Gender and water governance in the literature

1. Gender and water relationships: Progressing our understanding, debunking the myths

Gender relationships are diverse, dynamic and complex and various gender-analysis frameworks have been used to analyse this complexity, e.g. , the Harvard analytical Framework (or gender roles framework); the Moser Framework (or triple roles framework); the Social Relations Approach (or framework); the Gender Analysis Matrix; the Women's empowerment Framework and the Capacities and Vulnerabilities Analysis Framework (Warren, 2007). Some of these frameworks have also been applied to analyse gender and water relationships. Their major features are synthesized in Table 1.

Such frameworks have various theoretical underpinnings and give prominence to distinct aspects of gender relationships, for instance, the gender division of labour or the analysis of relationships between men and women and also tend to be associated with different objectives, e.g. efficiency or empowerment (Warren, 2007).

Research on gender and water relationship has largely focused on particular elements, such as the division of tasks and labour between men and women, rights and access to water and women's participation in decision-making through their involvement in water management organisations. Common research questions have been: how are tasks shared between men and women and between productive and reproductive uses of water?; who has access and control over resources and benefits?; how do current access mechanisms include/exclude men and women?; and who makes decisions over water management? (Crow and Sultana, 2002).

Considerable progress has been made in understanding the gendered dimensions of water use, but simplistic assumptions on women's needs and preferences still prevail in mainstream development discourses (Cornwall et al., 2007, Parpart, 1993). A striking example is the common belief that women prefer to spend less time fetching water in order to use their time for income-generating activities. This rationale has driven most interventions on drinking water. Whereas this holds true under certain settings, several case studies have shown that women do not always follow this type of rational behaviour (Cleaver, 1998, O'Reilly, 2006). Labour is not always and not only a burden but also carries a social function and cultural meaning. Designers and implementers of water projects often have not considered that labour division follows temporal and complex patterns which have to be understood in their cultural context and have often assumed that there is a universal recipe for women's well-being. Similarly, a common postulate within the increasing trend in the devolution of water management to communities that has marked the agricultural sector for the past decades, is that a greater participation of women in local WMOs would result in women's empowerment. However several studies have challenged some of the common assumptions underlying the concept of women's participation.

Table 1. Overview of the main characteristics of gender frameworks

Framework	Source	Assumptions	Focus of analysis	Key variables	Limitations
Harvard analytical Framework	Overholt et al., 1985 (developed by Harvard Institute of International Development and USAID Office of Women in Development)	It is efficient and economically sound to invest in both women and men. Activities are either productive or reproductive	Analyses the differences between men's and women's activities, access and control over resources	1) Activities and needs, 2) access and control over resources and benefits, 3) influencing actors	No consideration of power relations and other social divisions such as ethnicity or class; Local perceptions not included; Roots of gender inequality not addressed; Oversimplified vision of gender relationship; Static
Capacities and Vulnerabilities Analysis Framework	Anderson and Woodrow, 1989	Development is a process through which capacity is increased and vulnerability reduced	Focuses on capacity and vulnerability	1) Material and physical resources; 2) Social relations and organizations; 3) Motivation and attitudes towards change	Designed for use in humanitarian interventions and disaster preparedness.
Moser Framework	Moser, 1989	Women have three role: productive, reproductive and community management	Links women's role with the development and planning process	1) Women's activities and roles; 2) gender practical and strategic needs; 3) access to and control over resources; 4) impact of development approaches on women's roles and needs	No consideration of other social divisions such as ethnicity or class; Static; Gives antagonistic vision of different development approaches;
Gender Analysis Matrix	Parker, 1993	All requisite knowledge for gender analysis exists among local people. Gender analysis is transformative as so far it is done by local people themselves	Self-identification of problems and solutions by the community	1) Project objectives evaluated at four levels: women, men, household and community; 2) Impacts of project on men's and women's labor practices, time, resources, social roles and status	Since it is a participatory approach, results might be biased by the relationship between funders and the community
Social Relations	Kabeer, 1994	Development is not economic growth	Analyses how institutions (the	Rules, activities, people,	Bias towards structure with analytical unit as institution

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Approach		but well-being. Social relations determine people's access to resources, their claims and responsibilities	state, the market, the community and household) produce certain social relations which result in inequities	resources, power	might lead to a neglect of minority groups within the institution
Women's empowerment Framework	Longwe, 1995	Women's inequality and poverty result from structural oppression and exploitation	Assesses the levels of equality and empowerment and the level of recognition of women's issues in development projects	Five levels of equality, ranked from least to most: Welfare, access, conscientisation, mobilization, control	No consideration of other social divisions such as ethnicity or class; Static; neglects rights and responsibilities; Poor at identifying causal factors for empowerment

Source: International Labour Organization (1998) and March et al. (1999)

2. Women's participation: Gap between premises and outcomes

What is participation?

Participation was a concept first developed to promote a power shift among different groups of stakeholders, e.g., between development practitioners and researchers on the one hand and communities on the other hand (Chambers, 1997). However, 'participation' has become a buzzword with multiple meanings, allowing different actors to use it in a way that fits their particular agenda (Cornwall, 2001). Its political content has largely faded away and for many international agencies, it has become an efficient and cost-effective way to reach the poorest (Mayo and Craig, 1995). The concept of participation has also often been used as an alibi for transferring responsibilities without actually delegating decision-making power (Cornwall, 2001).

Pretty (1994) defined a useful typology of participation, where he distinguishes between "passive participation", "participation in information giving", "participation by consultation", "participation for material incentives", "functional participation", "interactive participation" and "self-mobilisation". This classification is based on two criteria (Figure 1): 1) the distribution of decision-making power between the community and the external project implementing agency and 2) the type of contribution the community makes in the development planning (situation analysis, setting objectives, implementation) (Leeuwis, 2000).
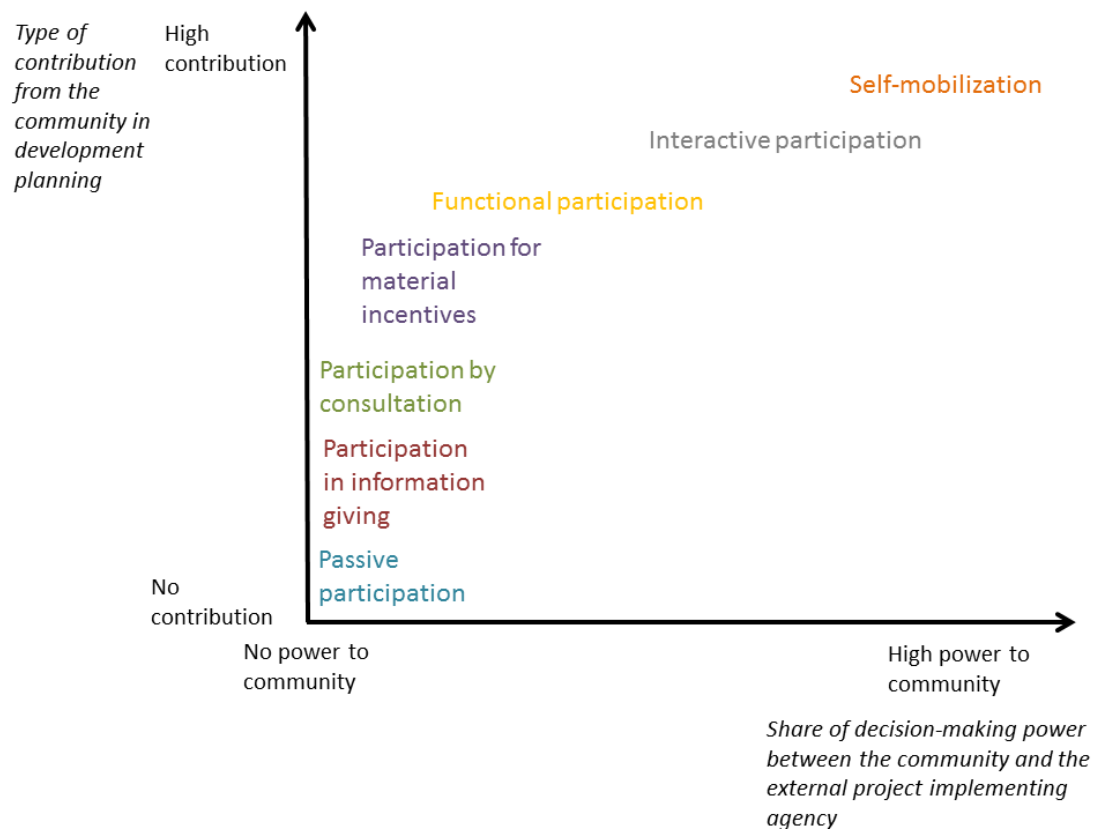

Figure 1. Typology of participation (adapted from Pretty, 1994)

Why fostering women's participation?

The rationale for involving women in WMOs has been based on different premises. First, according to certain principles of collective action and management of common pool resources, a lack of participation of users in management might result in poor performance due to reduced

accountability and limited representation (Ostrom, 1992). A commonly quoted case study to illustrate this argument is that of Zwarteveen and Neupane (1996) who found that a male-dominated irrigation committee failed to enforce the rules to prevent women from 'stealing' water. Formal structures and rules to manage common-pool resources have also been said to be less prone to elite capture than informal ones by some scholars (Meinzen-Dick and Zwarteveen, 1998) although the effectiveness of formal versus informal institutions has been the object of debate.

Second, participation in collective action and community matters has always been part of the 'triple role' of women defined and popularised by Moser: reproductive, productive and community management work (Moser, 1989). These have formed the basis for many development projects in South Asia and notably micro-credit programmes in Bangladesh.

Lastly, women's participation is said to lead to greater equity, enhance women's status and increase women's voice in decision-making in general through increased self-esteem and self-confidence (Harris, 2009, Ivens, 2008). However, further three decades of government and non-government interventions to involve women in water management, these theoretical promises have faced difficulties in being translated in the ground.

3. Explaining the gap

Constraints for women's participation in WMOs

First, despite of their important involvement in agriculture and their multiple uses of agricultural water, women's participation in WMOs has been low (Krishnaraj, 2011, Cleaver, 1998, Meinzen-Dick and Zwarteveen, 1998).

Some scholars explain this outcome by institutional reasons and rational choice, i.e., criteria of membership restricting women's participation (e.g. land ownership) and overall costs higher than benefits for women to participate (e.g. in terms of time spent versus benefits) (Meinzen-Dick and Zwarteveen, 1998). Other social and cultural factors have been commonly reported in South Asia, including social norms and cultural practices, stereotypical ideas about gender division of labour, women's lack of mobility, women's low level of confidence and low capability to participate in formal settings due to a high illiteracy level and male dominance (Upadhyay, 2010, Sultana, 2009a)). Finally, implementing government or non-government agencies often contact male elite farmers, either because they are known from them or because they are a compulsory entry point in the community to lead any intervention (Meinzen-Dick and Zwarteveen, 1998, Sultana, 2009a). But even when women are members of the WMOs, the outcomes have not necessarily contributed to enhanced women's rights and access over water.

Participation: empowering or disempowering women? Representation, accountability and power

Three major factors matter in the outcomes of the decentralisation of natural resource management: representation, accountability and power (Agrawal and Ribot, 2000). WMOs are often male- and elite-dominated as irrigation has, in many countries, fallen under the male domain. Participation has in some instances disempowered women through discriminative criteria for memberships, or inexplicit ways to exclude them such as prevailing social norms, time and location of meetings, education and class (Sultana, 2009a). Even within the household, the woman who makes water decisions might not represent the needs and interests of the woman or girl who actually goes to fetch water. Lastly, even when the membership criteria are fair and inclusive, poorer women often have more time constraints to participate in meetings (Cleaver, 1998).

Elite members, men and women, often do not have incentives to defend the interests of disadvantaged groups as those might be competing with their own interests unless they are downwardly accountable.

Even when poor men and women are part of the organisation or decision-making committee, decisions are largely determined by power relations among social groups within the community (Sultana, 2009a) and gender relations within the household (Krishnaraj, 2011). Creating a committee and having meetings in the presence all community members might not be sufficient to overcome existing power inequities and prevailing social norms (Sultana, 2009a, Krishnaraj, 2011). Even when rules for participation are fair, marginalised individuals might be reticent to oppose privileged committee members unconsciously because of people tend follow usual practices and prevailing social norms rather than challenging them or consciously to preserve useful or vital relationships and networks (Sultana, 2009a). At the end, most disadvantaged people have few benefits to participate in meetings where they have no or little decision-making power. External projects can also 'institutionalise inequities' by giving to the rich and the elite opportunities for economic benefits, by extending their decision-making power or strengthening their social networks, e.g. relationships with government agencies (Mosse, 2005).

Participation: empowering or disempowering women? Informal and formal institutions

When externally supported, WMOs are encouraged to follow a set of rules, like holding regular meetings, taking minutes, enforcing rules, as specified for instance in the Guidelines for Participatory Water Management (Government of People's Republic of Bangladesh - Ministry of Water Resources, 1994, 2000). These might actually undermine existing informal institutions through which women were usually gaining access or were exerting influence (Cleaver, 1998). .For instance, Ahlers (2002 in Harris, 2009) report that women lost their access to water during the water reforms in Mexico in the early 1990s: first, they lost their customary access to water when being given formal water rights and then their 'secure' rights when selling them off on the market due to the precarity of agricultural livelihoods. Some communities also prefer not to strictly enforce rules to avoid social conflict, which can be considered as particularly stressful and damaging. Instead, some communities prefer formal and tacit arrangements to let the most disadvantaged people 'stealing' water. Such arrangements are in many cases not compatible with the formalisation of rights and rules defined by the WMO. Whereas international development agencies have generally defended a formalisation of institutions as a way to ensure secure rights for the poor, both institutional theorists and anthropologists have defended the importance of informal institutions, norms, cultural meanings and 'symbolic capital' in the management of common pool resources (North, 1990, Colding and Folke, 2001, Mosse, 1997, Cleaver, 2000).

Participation: empowering or disempowering women? Agency and identity

In developing the argument that participation in WMOs is not a panacea or the only solution for women to improve their access to water, it is worth considering women's and men's agency and identity. Women's interests are not necessarily antagonistic to that of men, and when different, can be balanced and negotiated within the household (Cleaver, 1998). As Cleaver puts (1998), the household can neither be reduced to a homogenous unit neither to a place of struggle. Similarly women are not necessarily passive victims and their agency needs to be recognised (Jackson, 1998). Even when women do not formally participate in WMOs, they can still have an influence over decisions on water management through informal means (Meinzen-Dick and Zwarteveen, 1998). Women might notably make use of their identity as mothers to work around the structures that constrain them(Sultana, 2009b). Under some settings, it might be easier for them to informally claim right to water as a caretaker of their family than formally as a farmer in a water user association (Meinzen-Dick and Zwarteveen, 1998). Formalising institutions, and notably on the basis of an approach where women's individual rights are stressed and opposed to men's rights, holds the risk to lead to social conflicts within the household and the community (Ahlers and Zwarteveen, 2009, Harris, 2009).

4. Moving forward

Key issues

Suggested avenues for moving forward need to recognise the complexity of women's preferences and needs and how gender relationships are embedded and continuously renegotiated within their social context. Water projects tend to apply simple and linear models of empowerment or participation, which do not stand when applied on the ground. Such issues are not specific to gender but relate to broader concerns related with development aid in general.

Development studies bring useful insights in this matter. Notably, they point to the need to evaluate interventions beyond the project model that was envisioned and to look at indirect and unintended outcomes and impacts (Mosse, 2005, Lund, 2010). This section highlighted the potential risks associated with imposing predefined and fixed models of community-based water management and of women's participation.

Interventions have also had indirect positive outcomes, such as bringing women into the public sphere and increasing their confidence and negotiation skills (Kulkarni, 2011). A potential avenue for further research would be to explore how these unintended positive impacts can be supported while minimising negative ones. Some scholars have proposed specific actions such as strengthening capacity, developing access to public services and information and increasing women's space outside the household (Krishnaraj, 2011). Similarly, since women often gain access to water through informal rights, strengthening these informal institutions and giving women the capabilities to negotiate for their rights could offer a more promising pathway than externally imposing formal institutions. In any case, the process through which interventions are implemented will be as important in determining outcomes as selecting the type of intervention itself.

Proposed analytical lenses

Conventional institutional analysis on common pool resources management has explored which factors affect enduring and sustainable management. Three main variables are identified in the Institutional and Analysis (IAD) framework developed by Ostrom and her colleagues (Kiser and Ostrom, 1982, Ostrom et al., 1994): The biophysical conditions of the resource, the attributes of the community managing the resource and the set of institutions governing resource management (Figure 2). These factors determine the institutional fit, that is, whether institutions are adapted to the characteristics of the social-ecological system.
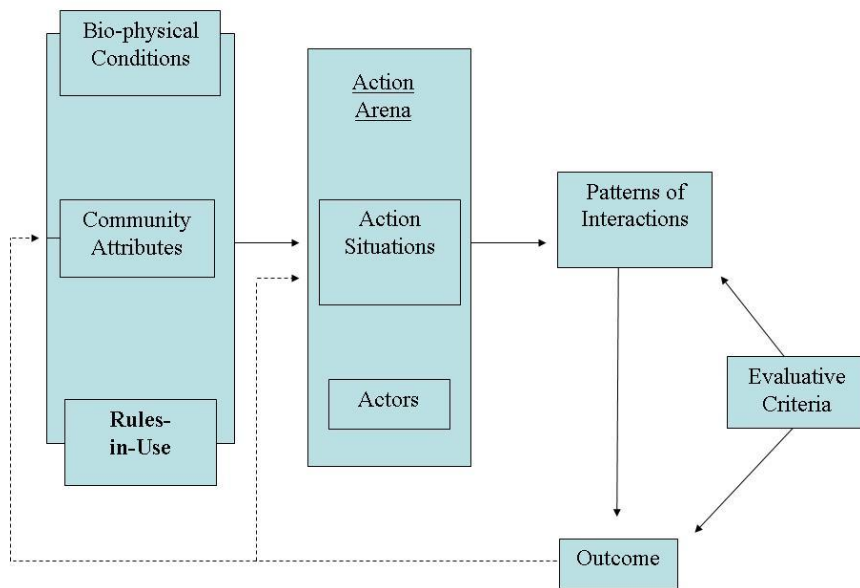
Figure 2. **The focal level of analysis of the IAD framework**
Source: Kiser & Ostrom 1982; Ostrom et al. 1994

Feminist scholars have argued that analysing gender and water relationships require a core focus on power and politics (Ahlers and Zwarteveen, 2009). The political ecology literature has proposed useful avenues to develop the framework in a way that locates power at the centre of the analysis (Clement, 2010):

1) Mainstream **discourses** have played an important role in water project design and outcomes. They have often legitimised certain forms of institutional change such as privatisation and marketization of water by presenting women empowerment as an individual struggle which requires equalizing measures between men and women: e.g. giving titles to women and making them participate in water associations. Such narratives have emphasised men and women relationship as conflicting and antagonistic.

2) The political ecology feminist literature has highlighted the need to contextualise gender relationships within the **social, historical and political economic context** (Harris, 2009, Cleaver, 1998).

3) Political ecology scholars recognise **nature as an active agent** with its own causal power (Forsyth, 2003, Mitchell, 2002) instead of a resource to be exploited. This was very clearly illustrated by Sultana in her study of the gender impacts of arsenic contamination in Bangladesh (Sultana, 2009b).

4) **Women's identity and sense of self** are important attributes of the actors. Lastly, we need a refined model of human behaviour that goes beyond that of a rational egoist (Cleaver, 1998, Sultana, 2009b).

Institutional analysis can therefore be greatly enriched by adding the political economic context and discourses as causal variables in the IAD framework, recognising agency to the biophysical conditions and refining the model of the actor's behaviour within the action arena.

IV.   Women's well-being in Bangladesh

In this section, we propose to set-up the broader context of gender and water relationships by examining the well-being of women and men from a capability approach. The capability approach as proposed by Sen defines well-being as the capabilities or freedoms people have 'to do the things they have reason to value' (1999, 18). This perspective departs itself from the approach adopted by traditional welfare economics, which considers well-being equivalent to either opulence (income, commodity command) or utility (happiness, pleasure, desire fulfilment) (Sen, 1985 in Clark 2006). Various authors have attempted at defining a list of essential capabilities (see in Clark, 2006). We have chosen a few here, drawing from Nussbaum (2000): life, bodily health, bodily integrity, self-esteem and control over one's environment including political and material control. These were chosen according to the information available in the literature and statistics.

1. Social, cultural and religious norms and practices affecting women's well-being

Bangladesh is a highly patriarchal society, where traditional and religious beliefs and practices still largely dictate men and women's behaviour within the society and within the home and family. Practices include the *purdah*, which consists of women's veiling and confinement to home. Other important gendered customs are the "patri-lineal principles of descent and inheritance, patrilocal principles of marriage and strict patriarchal authority structures within the family" (Kabeer and Mahmud, 2004, p. 94). The role of women is subordinate to that of men and their access to the external world is to be mediated by men, either fathers, brothers or husbands. In their absence, widowed or divorced women are often at high risk of oppression, injustice and exclusion (Sultana and Thompson, 2008).

The transformation of the customary payment system for arranged marriages in the 1970s has substantially affected women's well-being. Muslim families traditionally followed the *mahr* system, whereby the groom's family used to make a payment in the form of gifts to the bride's family during the wedding. It has been progressively replaced by the dowry system which prevails in the Hindu society (Custers, 1997), whereby the bride's family has to pay money/goods and also more recently services (Rao, 2012) in exchange of getting their daughter married to the groom. This shift has notably been accompanied by an increase in domestic violence generated by the husband and his family (Custers, 1997).

As seen in the next section, these norms and practices have had a far-reaching impacts on women's well-being in Bangladesh, which despite of recent progress due to proactive policies and non-governmental actions (see next sub-section), recently ranked 146 among 187 countries in the Gender Inequality Index in 2010 (UNDP, 2011).

2. Past and current initiatives to improve women's well-being

The concept of women's empowerment entered NGOs and aid agencies' discourses in Bangladesh in the 1980s, under the instrumentalist rationale that empowered women could contribute to the development of the country. Actions from both NGOs and political parties have remained apolitical to avoid controversies around religious issues, with many interventions on micro credit but little action for social justice (Halim, 2004). Discourses have a strong orientation towards what can be done for women but not necessarily working with/alongside them (Nazneen et al., 2011).

This instrumentalist discourse has aimed at valuing and fostering women's contribution to local and national economic growth and served to promote individual empowerment. It has contributed to significant changes in women's condition notably in the fields of education, health and labour. However cultural and institutional changes have been much slower. Hopefully these will be fostered by the recent emergence of other types of discourses and other more political forms of empowerment (e.g. addressing legal aid, trafficking, funding women's right organisations, etc). The

latter were favoured by the feminist critique's influence on donors and NGOs discourses and the entry of Bangladeshi feminists into national offices of donors and NGOs (Nazneen et al., 2011).

The Government of Bangladesh (GoB) has taken symbolic steps on the national and international arena to signify its commitment to reduce gender inequalities. In the Constitution, equal rights are to be ensured to all citizens (but only in public life) and discrimination and inequality on the basis of sex is prohibited. In Article 10, the Constitution pledges that "[s]teps shall be taken to ensure participation of women in all spheres of national life." The GoB also signed several international contentions and declarations such as the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1984 and its Optional Protocol in 2000, as well as the Beijing Declaration and its Platform for Action (PFA) in September 1995 at the Fourth World Conference on Women. The latter expresses a global commitment to achieving equality, development and peace for women worldwide.

In 1997, under the Awami League (AL) government, the Ministry of Women and Children Affairs launched the National Policy for the Advancement of Women. The policy was modified in 2004 by the Bangladesh Nationalist Party (BNP)-led government which led to high criticisms from the civil society and donors. The GoB finally revised the policy in 2008 after consultations with the civil society. The current AL-government launched the new policy on the International Women's day in on March 8, 2011. The government has also made a commitment to equality between women and men in its recently-approved Poverty Reduction Strategy Paper (PRSP) and in the Bangladesh Sixth Five Year Plan (2011-2015), e.g. to enhance women's participation in decision-making; promote gender equality and empowerment of women (also a Millennium Development Goal); and ensure women's full participation in mainstream economic activities (Government of People's Republic of Bangladesh - Planning Commission, 2005).

The National Water Policy 1998 has set as one of its objectives to recognise the water needs of women and to enhance the role of women in water management (Government of People's Republic of Bangladesh - Ministry of Water Resources, 1994). Yet several critics have highlighted flaws in policy documents and gaps in implementation (Wasata and Haque, 2012). Overall progress remains to be made, notably regarding the enforcement of laws.

Ministry of Women and Children Affairs (MWCA) is the lead ministry for mainstreaming gender in all other line ministries. However it is headed by the State Minister and is considered a weak ministry both in human, as well as financial, resources (USAID Bangladesh, 2012). In addition to the Ministry of Women and Children's Affairs, the Government also put into operation a comprehensive national machinery to promote the advancement of women with a National Council for Women's Development (NCWD), chaired by the Prime Minister, an implementing agency for the National Action Plan for Women's Advancement and focal points in all line ministries, servicing ministries and the MWCA. Below the MWCA, the Department of Women's Affairs (DWA) also hosts a focal point, which oversees the district DWA (USAID Bangladesh, 2012).

National and international NGOs and donor agencies have led many initiatives to reduce gender inequalities in Bangladesh, notably organising women and raising their awareness about their role and status in the society. More than 90 per cent of the members of the groups formed by the Grameen Bank, which is a quasi-NGO, are women. NGOs have also campaigned for women's rights, notably related to dowry and violence issues (Zafarullah and Rahman, 2002) and for women's participation in the political sphere (Hossain and Akther, 2011). Despite these initiatives, there is still a high disparity between men and women's well-being as evidenced in the following sections.

3. Life and bodily health

Bangladesh is one of the few countries in the world characterised by adverse sex ratios where men outlive women (Kabeer and Mahmud, 2004). Women generally receive less and poorer quality healthcare compared to men. For instance, rural girls suffering from diarrhoea are less likely than boys to receive an antibiotic (Larson et al., 2006). Maternal mortality rate was also still very high in 2008: 340 per 100,000 live births (UNDP, 2011). Lastly, women have a poorer nutritional status than men, e.g., a higher calorie-deficiency and chronic energy deficiency (Cannon, 2002). Around 30 per cent of women are chronically malnourished (National Institute of Population Research and Training (NIPORT) et al., 2009) and 50 per cent of pregnant and lactating women suffer from anaemia – which in turn impacts on babies' health.

Women are more vulnerable than men to extreme climatic events. In the 1991 cyclone and flood, the death rate for women was almost 5 times higher than the one for men (Ayers, 2011). Women confinement to home and lack of direct access to timely information played a major role in this gender gap. Women are often ashamed of leaving the house and find refuge in overcrowded public shelters (which can accommodates only 27% of the population considered to be at risk in the National Water Management Plan (WARPO (Water Resources Planning Organization), 2001b)). Women's mobility is also hindered by children's responsibility. Lastly, they are less likely to know how to swim than men (Cannon, 2002). As indicated previously, women are also more vulnerable because of their poor nutritional status and poor access to health services of good quality.

4. Bodily integrity

The *purdah* implies women's confinement at home. Such seclusion is said to be both an expression of protection and care from the in-laws and husband and a restriction on women's movement driven by the fear of extra-conjugal relationships (Trawick 1992 in Rao, 2012). The boundary between the 'public' and 'private' domains has become more flexible notably because of extreme poverty which forced women and men to renegotiate women's role and mobility (Makita, 2009, Jordans and Zwarteveen, 1997). Mahmud et al. also found that a higher level of mobility was positively correlated with women's level of schooling and their media exposure (2011). Yet women's mobility is still much more restricted than that of men (Birner et al., 2010). Even if women are more mobile now compared to a few decades ago, they still have to seek for permission. In a study recently led on the current status of women's empowerment across 128 villages (Mahmud et al., 2011), only 5% of women respondents appeared to be empowered in terms of freedom of mobility. Restrictions on women's mobility has had serious implications not only on women's participation in economic activities, and especially in rural areas (e.g. marketing, wage labour), but also on women's health (in arsenic contaminated areas) and life (during natural disasters).

Despite the Women and Children Repression (Special Provisions) Act 2000, violence against women, such as rape, acid throwing and dowry-related violence, has seen a dramatic increase and many acts of violence against women remain unpunished (Zafarullah and Rahman, 2002). Women who have to work beyond 8 p.m., notably in the garment industry, are particularly at risk of violence on their way home. It is also reported that a large numbers of women and girls have been killed in fires and stampedes in garment factories because of inadequate protection or inspection (Zafarullah and Rahman, 2002).

Lastly, the downward trend in the fertility rate indicates that women have more choices in terms of reproduction. In 2011, women had on average 2.2 children compared to 7 children in the late 70s (UNDP, 2011).

5. Self-esteem

In a study of women's empowerment led among 3500 women in 128 villages across Bangladesh, (Mahmud et al., 2011) found that 43% of respondents experienced empowerment in feeling that their opinion should be important in household decision-making and a little less than one third of the respondents (29%) experience empowerment in the dimension of self-esteem indicated by non-acceptance of wife-beating. The results from the overall study suggest that women value herself as individual within the household but accept to be men's subordinate in society more generally (Mahmud et al., 2011).

6. Control over one's environment

Both material and political control, and more generally women's agency and their capability to exercise their voices within and outside the household, is suspected to be influenced by female literacy and participation in the labour force (Drèze and Sen, 1995). The link between empowerment and women's own income was evidenced in several studies led in Bangladesh, where a decrease in domestic violence was observed when women work in a formal job outside the home (Kabeer, 2008), involved in credit programmes (Kabeer, 2010) and earn a certain level of income (Schuler et al., 1998 in Makita, 2009). The relationship between education and material and political control seems to be less straightforward. Ahmed et al. (2007) report that 92 per cent of women with no education are ultra-poor. Some case study research on women's role in community-based organisations suggests that women's education level was one of the key factor for greater involvement and influence of women within the organisation (Sultana and Thompson, 2008, Mowla and Kibria, 2004). In Mahmud et al.'s study, formal education was associated with only two of the empowerment indicators, namely mobility and one indicator of self-esteem, but not correlated with the indicators related with involvement in decision-making and control over resources.

Education

A strong gender bias prevails in schooling with more than one in three women with no schooling in 2007 compared to one in four among men (National Institute of Population Research and Training (NIPORT) et al., 2009). Yet progress has been made thanks to supportive state policies for the last couple of decades, e.g., through stipends for secondary school since 1994 in most parts of the country (UNDP, 2010), free primary education for all, and free secondary education for girls (Organization, 2010) and thanks to the programmes of non-governmental organisations, e.g., trainings and capacity building programmes for women's groups (Rao 2012). The gap between men and women older than 25 years with secondary level education has reduced with respectively 35.3 and 32.1 per cent among men and women in 2007 compared to 28.0 (men) and 17.9 per cent (women) in 1997 (National Institute of Population Research and Training (NIPORT) et al., 2009).

The practice of dowries, recently re-emphasised in marriage negotiations (Rao, 2012), has had a significant impact on girls and their education. 'Caring for a daughter is like watering a neighbour's tree' is an old Bengali saying illustrating the rationale for parents to exclude their daughters from education (UNDP, 2010). Girls are often considered a burden, especially for poor households, and are at risk of marriage at an early age. However, nowadays, a woman who has minimum level of education is considered as easier to marry as migrating men might want to delegate some of their domestic affairs to them when they are away. However, most girls have to drop out before completing secondary education as they would have to marry a higher educated husband who would usually ask for a higher dowry (Rao, 2012).

Participation in labour force

In Bangladesh, men's role has been that of breadwinner and male work is recognised as essential to masculinity. Women's work outside the home is considered as a threat to male honour and can

cause loss of status of the household (Rao, 2012). Generally, women's work is constrained by the *purdah* and domestic obligations (Kabeer, 1994 in Rahman 2010). Restrictions on women's mobility in the public domain mean that they either work as unpaid family or carry out paid work at home. Invisible work has led to very low participation of women in labour force in the statistics (Kabeer and Mahmud, 2004, Hussain, 2007). For instance, 70 per cent of women engaged in the agriculture, fisheries, and livestock sectors are unpaid family labourers.

There is a rigid division of labour and a highly segregated labour market by gender across sectors. The garment and shrimp processing industries are the largest employers of women labourers. Notably, the former has offered income opportunities for 1.5 million of women (Kabeer and Mahmud, 2004). Other sectors with a high women representation are the agriculture, fisheries, and livestock sectors and construction with women representing 43 per cent and 24 per cent of labourers respectively (Zafarullah and Rahman, 2002). On the other hand, fishing has traditionally been a men activity and the overall involvement of women in fishing was estimated to be 3 per cent among the 36 per cent of the labour force in 1996 (Sultana and Thompson, 2008). Such division of labour is often accepted or seen as 'normal' by women who might be reluctant to attend trainings to engage in male-dominated economic sectors (Sultana and Thompson, 2008).

In rural areas, women's work outside the home is tolerated in less conservative communities and in extreme cases of poverty or for women from female-headed households (Sultana and Thompson, 2008). Women have had increasing employment opportunities within government-led food and cash for work programmes (Birner et al., 2010) and shrimp farming. Still women might see motherhood as more secure option than working outside the home in poor conditions and under social disapproval (Rao, 2012).

Women's wages remain lower than their male counterpart and in some industries women are in unsecure position. A recent study from the International Labour Organisation (ILO) reports that women earn an average of 21 per cent less per hour than men, with the largest wage gap among illiterate workers and literate workers with less than a primary school education (Kapsos, 2008).

A shrimp value chain analysis was recently led among 188 individuals representing each node of the chain and focus group discussions in Khulna, Chittagong, Cox's Bazar, and Greater Noakhali region (Gammage et al., 2006). The analysis reveals a highly sex-fragmented labour market with women representing 40% of fry catchers and 62% of processing plant workers, but very few are intermediaries. Women receive lower wages than men. Women fry catchers and sorters earn 64% of what their male counterparts earn. Women receive 82% of male's salary in pond repair and casual agricultural labour, but 71%/60% of men's wages in the packing/cooking section of the plants (Gammage et al., 2006). Women are recruited as a cheap and compliant labour force and are mostly in casual or temporary employment (Gammage et al., 2006). Within the household, women's employment is seen as a complement to that of their husband and an extra buffer against external shocks but is not valued as men's work.

Noteworthy, there are several organisations to defend the rights of women entrepreneurs: two women's chambers, the Bangladesh Women's Chamber of Commerce and Industry (BWCCI) and the Dhaka Women's Chamber of Commerce and Industry (DWCCI), and two entrepreneurs' associations, the Women Entrepreneurs Association of Bangladesh (WEAB) and the Bangladesh Federation of Women Entrepreneurs (BFWE) (USAID Bangladesh, 2012).

Assets

Women in Bangladesh have fewer assets than men, including land (Quisumbing and Maluccio, 2003, in Birner et al., 2010) as men have authority over all the resources owned by the household. Women do not have access to secure and long-term access to land. In a case study research led among 60 respondents over two villages, women reported that they were still dependent on their

family or in-laws for access to land (Mowla and Kibria, 2004). The landholdings of male household heads are twice those of female household heads (FAO, 2011, pp 23-24). In the study led by Mahmud et al. (2011), only about one fourth (23%) of the women respondents experienced empowerment in the dimension of control over resources in terms of having access to cash to spend.

Inheritance laws have followed traditional religious Muslim, Hindu and Christian customs. Islamic laws guarantee inheritance rights to women but not equally to their male counterpart (Hatcher et al., 2005). Furthermore, women cannot traditionally take any decision to sell, give or manage the goods inherited (Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008). Under the Hindu laws, married women having no son are not eligible to inherit property (Rural Development Institute for the World Justice Project, 2009) and have only limited control over the property inherited. The draft Women Development Policy 2011, approved by the Government of Bangladesh, declares to ensure women's full control on their earned property, land and inheritance but does not change the distribution of rights under religious laws. Muslim and Hindu women have often given up their rights to inherited property to maintain good relationships with their natal family, and secure their right to visit their parents and benefit from their support (Hatcher et al., 2005). It is unclear to which extent the law will allow women to overcome prevailing norms and challenge this social practice.

Micro-credit programmes targeting women from poor and landless households have had a great impact on women's opportunities for self-employment. It is reported that women's access to financial services has led to individual and household improved economic status (Pitt and Khandker, 1996). For instance, 68 per cent of borrower families who have been with Grameen Bank for more than five years crossed the poverty line (Grameen Bank, 2009). Studies also show that credit to women increased women's non-land assets (Pitt and Khandker, 1996) and savings in women's own names have contributed to their economic security. Other studies have challenged the contribution of micro-credit to women's empowerment arguing that women generally had little or no control over their loans (see review in Kabeer, 2010). Micro-credit has as a whole contributed to women's empowerment, in the sense of an 'expansion of potential choices' available to women which has taken different forms – sometimes increased or decreased mobility (Kabeer, 2010). For instance, poor women who used to do wage work on public roads might prefer to stay confined at home if provided the choice.

Participation in governance and politics

Key ministries (Ministry of Foreign Affairs, Ministry of Home Affairs and Ministry of Agriculture) are led by women ministers. Two women hold positions as State Ministers, one for the Ministry of Women and Children Affairs and one for the Ministry of Labor and Employment. A quota of posts and seats for women in the civil administration and elected bodies was introduced in 1997. In the civil service, many of the posts under the quota system have not been filled by women (Jahan, 2007) and women still hold less than 5 per cent of senior Civil Service posts (USAID Bangladesh, 2012). However, change is occurring in other areas: in the last Parliamentary election in 2008, 19 of the 64 women elected, i.e., 18.6 per cent of the total members, did not benefit from the reservation quota (UNDP, 2010). Women's number in rural local governments has also raised with 13,000 women elected in 1997 and 2003 thanks to gender quotas, however only 0.2% have been elected as chairs (Hossain and Akther, 2011).

Say in decision-making
Microfinance is said to have allowed poor women to interact with government officials at the local and national level, build social networks and increase their mobility (UNDP, 2010). In their study,

Mahmud et al. (2011) indicated that on average 39 per cent of rural married women were found to be relatively empowered in terms of having an important say in decision-making in the household.

7. Conclusion

Considerable progress has been made to improve women well-being in Bangladesh over the past decades thanks to the action of multiple government and non-government organisations and the influence of feminist scholars and activists. However, progress has been uneven across the multiple dimensions of well-being. Such difference was also highlighted by Mahmud et al. in their recent study of women's empowerment in Bangladesh (2011), where results suggest that women are most likely to feel empowered with respect to household decision-making and one self-esteem indicator, but relatively less likely to experience empowerment with respect to access to cash and least likely in terms of freedom of mobility.

V. Women and water management in the flood plain zones of Bangladesh

1. Changing context: gendered division of labour

According to statistics, women constituted 45 per cent of all farm workers in Bangladesh in 2006 (FAO Statistics 2006 in UNDP 2010) and female labour was shown to contribute significantly to productivity and technical efficiency (Rahman, 2010). In the Asian agricultural sector, men and women play complementary roles with tasks performed jointly and some separately. Traditionally men have been working in the field whereas women have been involved in pre-planting and post-harvesting activities at home (Custers, 1997). Yet women – particularly from landless and near landless households – have increasingly worked as wage labourers in the construction or agricultural sector due to extreme poverty (Faisal and Kabir, 2005). It is reported that after the 1974 famine, 30 per cent of workers in the externally-funded food-for-work programmes were women (Custers, 1997). Today about 60-70% of women from landless and near-landless households work as agricultural wage labourers (FAO et al., 2004). However, decreasing economic returns on agricultural activities have recently reduced opportunities for wage labour (Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008).

Beside traditional homestead vegetable and fruit cultivation, poor women have been increasingly involved in small-scale poultry and livestock activities through micro-credit schemes and NGO programmes (Faisal and Kabir, 2005). But the return of these activities have also been relatively low in rural areas and many women have migrated to cities, either with their husband or alone when widowed or divorced (Kabeer and Mahmud, 2004). Social norms of seclusion and male's work are less strictly enforced in cities, thereby allowing a higher female participation in paid work, notably in the garment industry. An increasing number of women in the flood plain zones have also been involved in the shrimp industry.

2. Changing context: shrimp farming

Driven by a rising demand from export markets, the shrimp industry has boomed with the support of donors and successive governments since the 1980s. The industry has led to substantial changes in access to resources, farming systems and the nature of the economy. Several case studies indicated that these changes have had significant environmental, economic, social and cultural impacts on poor communities and marginalised groups, and particularly on women (Crow and Sultana, 2002, Halim, 2004, Pouliotte et al., 2009).

Access to resources

In order to acquire land for shrimp farming, gher owners have displaced poor people away from their ancestral homestead and the latter lost their rights to khas land. The conversion of mangrove forests and ponds to shrimp farms has led to an increase burden for women to collect fuel wood and to find suitable places for bathing and washing clothes (Crow and Sultana, 2002, Halim, 2004).

Farming system

Conversion of agricultural land to shrimp farming also dramatically changed the farming system. When based on rice cultivation, the latter offered more opportunities for diversification. In their case study, Pouliotte et al. (2009) report that the rice-based system included vegetable cultivation, with vegetables grown on a rotational basis with the rice crops, cattle rearing, homestead gardening and fishing in the rice farms at the time of harvesting. Several studies have underlined the difficulty to pursue these activities after conversion of rice land to shrimp farming. Lack of fodder and loss of grazing commons affected cattle rearing; homestead gardening ceased because of high salt content in the soil induced by water salinization; and fishing opportunities drastically reduced because adult and young fishes were caught in the nets together with shrimp fries (Pouliotte et al., 2009, Crow and Sultana, 2002, Halim, 2004).

Women's involvement and shift from subsistence to cash economy

Pouliotte et al. (2009) report that rice production provided more regular and continuous employment for men than shrimp farms and the shift to shrimp farming has accelerated male migration to neighbouring villages. In this context, income from women's labour has become increasingly crucial to families' survival. Most women irrespective of religion, age and marital status are today involved in shrimp fry collection, driven by extreme poverty (Sultana and Thompson, 2008). It is reported that women could earn in 2000 around USD 95 in a fry catching season (from January to March). Sultana and Thompson indicated that in their study areas, fries collection provided additional sources of income for wealthy women, which were mostly spent on petty luxury goods. But for poor women, shrimp incomes were used for basic food requirement and did not help to meet other expenses such as clothes or medicine. Other common employment opportunities in the shrimp sector taken up by poor women are wage labour to build embankments, maintain service roads, weed shrimp fields, prepare *gher* and work in processing plants (Halim, 2004).

Several studies observed an increase of personal insecurity for women in shrimp farming areas, either when working outside (Pouliotte et al., 2009), or on their way to collect water, due to harassment from shrimp farm guards (Crow and Sultana 2002; Faisal and Kabir 2005). Women who worked outside were also threatened to lose respect from their family and community or to be subject to increased domestic violence because of the deviance from patriarchal norms. Women also increasingly suffered from health problems as collection of shrimps in waist-deep water increases the risk of skin and other diseases (Crow and Sultana, 2002).

Lastly, women have been subjected to forms of bonded labour where loans from local *farias* (shrimp retailers) bind the lendee to sell their fries to the lender below the price market. Women are forced to sell to the *faria* alone and have to collect fries as a requirement of the loan (Halim, 2004).

To conclude, poor men and women lost access to key resources for their livelihoods. Overall employment opportunities offered by the shrimp industry gave women some economic independence but did not improve their status and control over their development (Halim, 2004). Furthermore, women have been subjected to exploitative forms of labour (see p12) and shrimp farming increased their exposure to health and safety hazards.

3. Changing context: water and society relationships

Arsenic contamination

A critical drinking water issue in Bangladesh is that of arsenic contamination. Arsenic primarily occurs in shallow aquifers. Above 27% of the shallow tube wells (<150m) have arsenic levels above the standard of 0.05 m/L (British Geological Survey and Department of Public Health Engineering, 2001). Government programmes have been subsidising the installation of collective deep tube wells but still most households do not have access to a safe tube well in their close-by vicinity.

Arsenic contamination, social norms, class and gender relationships have considerably interplayed in water access. Usually the senior woman in the household has control over who will fetch water and the task is often assigned to the younger daughter-in-law (Sultana, 2009b). Women's access to water is largely determined by class and location. As better-off families can afford a deep tube well in their home, wealthier women might not have to go outside to fetch water. They might also be able to hire a machine van to get water from a distant tube well[1] or have some leverage to ask poorer women to fetch water for them (Sultana, 2009b). Women's mobility to fetch water is restricted to specific places, e.g., the *bari,* a group of households located around a common courtyard. Women (especially younger women and unmarried/teenage girls) are usually not allowed to fetch water in public places such as bazaars, mosques and roadsides (Sultana, 2009b). Exceptions can be found in some tribal communities, where it is often accepted that women fetch water outside the home (Faisal and Kabir, 2005).

Many women are therefore confronted to the dilemma of violating social norms by fetching water in public spaces versus fetching contaminated water and endangering their health and that of their family (Sultana, 2009b). To avoid women venturing in public spaces, girls are sometimes sent instead of their mother at the expense of their education.

Together with social norms, women's labour time for economic activities might also affect access to safe water. Some women might have time to travel to safe tubewells or have to sacrifice water quality to attend other tasks essential to their livelihood and that of their family (Crow and Sultana, 2002). In a few case studies, many women had to revert to arsenic contaminated tube wells or to polluted pond water (Crow and Sultana, 2002, Sultana, 2009b).

Water privatisation

Water resources constitute the most important form of common pool resource for the poorest section of the rural population in the floodplains of Bangladesh, with floods ensuring re-fertilisation of the land and flooded areas providing fish for the landless. About 800 small-scale and large-scale water management projects dependent on water surface have been implemented by the Bangladeshi Water Development Board (BWDB) and the Local Government Engineering Department (LGED), with the overall objective of fostering agricultural growth, on an area representing two-thirds of the country (Chowdhury and Rasul, 2011).

The construction of polders has transformed common fishery resources into private resources. Contrarily to floodwaters which were freely accessible, water entering polders via sluice gates can be controlled by a group of individuals and thus becomes a private economic good (Custers, 1997, Rasul and Chowdhury, 2010). Some scholars report that this ecological and social process has largely benefited rich farmers and moneylenders who became the owners of the fish ponds and

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[1] Observation during field research by G3 in December 2011 in Satkhira District by Camelia Dewan.

dispossessed of access to a valuable resource landless fishermen and women (Custers, 1997, Rasul and Chowdhury, 2010).

At the same time, such changes have pushed certain social groups towards wage labour, notably shrimp farming or the new employment opportunities offered by labour contracting societies (LCSs). The latter together with embankment maintenance groups and channel maintenance groups have been established to provide employment opportunities for men and women with fair wages and to ensure high quality maintenance. At least 25 per cent of the public earthen works are to be reserved to LCSs with priority to be given to female-headed households. Success stories on women members of LCS are reported by the LGED, who claims that savings from LCS employment opportunities have allowed women to initiate other livelihood options, e.g., by buying a piece of land, a rickshaw for their husband or small animals (Government of Bangladesh, 2011). In addition to earning some income, women can also use the slopes of the embankment to cultivate vegetables (Hussain, 2007). New sources of income have not necessarily been sufficient to challenge existing relationships of subordination (Sultana, 2010).

There has been in parallel a privatisation and marketisation of groundwater. On the one hand, it is said to have allowed small farmers, including women's groups to participate in the irrigation water market as 'water vendors' and to have contributed to increase the income and status of women (Van Koppen and Mahmud, 1996). On the other hand, the growth of water markets is said to have led to an increasing male domination over water as new technologies have been under men's control (Crow and Sultana, 2002).

The privatization of surface and groundwater has transformed social relationships, creating economic opportunities but also new forms of exploitation and dominance. The next section explores some of the tensions that have been exacerbated in this process around the multiple, and sometimes conflicting, uses of water among different social groups.

Multiple and conflicting uses of water

Water projects in the flood plain zones, either from government agencies, donors or NGOs, have aimed at flood control and at supporting the most visible productive uses of water, e.g., irrigation for paddy cultivation and water supply for shrimp farming. They have in turn often ignored the other uses of water and the range of ecosystems it supports (Rasul and Chowdhury, 2010). There have been winners and losers in the process. First, flood control projects acquired substantial areas of land, which mostly affected small agricultural landholders. Second, many natural bodies dried up, reducing an important source of free water to poor people who cannot afford to pay for water from irrigation schemes or groundwater. Third, projects have modified the natural environment in a way that has caused loss of livelihoods for fishermen and boatmen (Rasul and Chowdhury, 2010). Lastly, flood control has had important environmental impacts, notably water logging, by modifying the hydrological features of floodplains and the water regimes. Such impacts have in turn affected the livelihoods of those who most depended on fisheries and livestock.

The focus on the most productive uses of water has also had strong gender implications as water management for irrigation and shrimp farming have been under the male domain, whereas other water uses have fallen under the female domain. Women use a variety of water sources, such as ponds, wells, rivers, canals for productive (kitchen garden, livestock) and domestic purposes. These water sources have been traditionally managed by men or by organisations headed by men who have largely ignored or neglected women's needs (Faisal and Kabir, 2005, Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008). Similarly water projects have been male-dominated and have focused on economic growth, neglecting women's needs and non-monetized activities such as kitchen garden (Crow and Sultana, 2002).

Case study research has evidenced how the neglect of the multiple uses of water in polder management can adversely affected women – as indicated previously in the case of shrimp farming, through loss of ponds and salinization of water. The impacts on women's livelihoods were tangible: increased time to fetch water and find suitable places for bathing and poorer nutrition due to decreased vegetable cultivation and increased reliance on the cash economy for food items such as rice and fish.

The expanding use of groundwater for irrigation has caused many hand pumps used for drinking and domestic water to run dry (WARPO (Water Resources Planning Organization), 2001a), worsening women's tasks to fetch safe water especially in arsenic-contaminated areas.. In conditions of water scarcity, this has led to conflicts over water (Crow and Sultana, 2002).

Generally, it is reported that water projects have reinforced existing tensions between productive/domestic and less productive uses of water, between economic growth and health and between men's and women's needs. Unfortunately, few steps have been taken to reconcile these multiple uses. Generally more attention has been paid to technology and physical infrastructure and less on the social organisation and management (Rasul and Chowdhury, 2010, Crow and Sultana, 2002). Furthermore, the role and responsibilities of the WMOs in the polders have been delineated along the same division: WMOs are solely in charge of the productive uses of water and it is suspected that they have not considered other water uses, which are particularly important for women: drinking water, bathing, sanitation, livestock and homestead garden irrigation. A major rationale for women's participation in WMOs is therefore that it can improve the integration of their needs within water management and therefore improve their livelihoods.

4. Women in water organisations

Women's level of participation

Usually, women have not been involved in agricultural water management at all. For instance, in a case study led among 700 respondents in seven villages across seven agro-ecological zones of Bangladesh, only about 4% of women surveyed said they were helping their husband to repair irrigation ditches or manage irrigation water (Faisal and Kabir, 2005). However, with increasing out migration of men and the introduction of quotas for women in WMOs, women have been increasingly involved in irrigation management (Hussain, 2007). The guidelines on participatory water management also require that the monitoring and evaluation of the participatory process includes the participation of women in the WMO (Government of People's Republic of Bangladesh, 2006). ADB reports that the participation of women in WMOs within the small-scale water resources development sector project (SSWRDSP) has raised between 1997 and 2007 and that women were actively taking part in decision-making processes (Asian Development Bank, 2007). Another study by the Government of Bangladesh also report a dramatic increase in women's participation in WMOs (Government of People's Republic of Bangladesh, 2006). Findings indicate 40 per cent of women's membership of the water management cooperative associations surveyed, with an increase in membership of 760% on average.

The following discussion draws from three case studies presented in Table 2.

Table 2. Characteristics of the case studies

Authors and date of publication	Period of fieldwork	Case studies in Bangladesh	Methods	Focus
IPSWAM, 2008	Projects implemented in 2004-2006 – study	9 polders across 2 zones – BWDB embankments	?	Process of gender mainstreaming in WMOs

	made in 2008			
Sultana 2009	2003 to 2005	18 villages of 4 arsenic-acute districts	Participant observation, case studies, focus group discussions and 232 in-depth interviews with men and women	Water projects to halt arsenic contamination implemented by different types of organisations (state, international donors, NGOs, research) with a focus on institutions
Sultana and Thompson, 2008	2002 to 2004	3 beels under BWDB embankment, covering 14 villages + data from 35 other sites	Baseline household surveys, focus group discussions, household impact surveys	Development of WMOs, the role of women and men and their decision making, and outcomes

Constraints for participation

Reasons reported across various case studies in Bangladesh include rigid norms, cultural traditions, religious constraints, high domestic workload, female illiteracy and resulting lack of confidence, timing and location of meetings, participation limited to formal right (Hussain, 2007, Mowla and Kibria, 2004). Mowla and Kibria (2004) reported that in the two village case studies located in Patuakhali and Barguna districts, women work on average 15-16h/day, with little free time to attend meetings. In the IPSAWM project, similar time constraints were observed.

There was also a strong initial resistance from both men and women to participate in meetings due to biased ideas on their respective role and capability. For instance, in Sultana's case studies, men perceived women's role as deciding where to fetch water and negotiating access and not on water control and management.

In the case of IPSWAM, overcoming these constraints required continuous efforts, door-to-door visits, good convincing skills and organisation of formal/informal field trips and discussions to build trust and create awareness (Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008). Replicating this approach within government agencies has been hampered by the lack of female field staff, *instrumental* for its success, notably within the BWDB (Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008). Lastly, involving local leaders was also key to secure a suitable place for meetings and helped to overcome initial resistance for women to attend the meetings.

The next sections examine participation outcomes in the light of

Participation: empowering or disempowering women?

Representation and accountability

In the IPSAWM case study, women constituted in 2008 around 40 per cent of members in the water management groups and 34 per cent in the executive committee (a quota of one third seats for women had been imposed). Water management associations at the polder level were formed with one male and one female representative from each WMO and women membership therefore represented 50 per cent. However there is no indication on the level of representation of women members of other women's interests and their degree of accountability to the community as a whole.

Sultana indicates a low level of representation of the community as a whole. For instance, the majority of villagers knew about the existence of a water committee but did not know how it functions, especially women. Few people knew about or attended the meetings, again particularly women. Lastly, because of non-inclusive rules of membership and the varying costs and benefits from involvement for different social groups, women and the poor were poorly represented. Household heads were designated to be members of the WMOs and thus were mostly men. Furthermore, many poor households envisioned their participation under the form of a financial or labour contribution and believed that decision-making should be left to others. Men were mostly interested about technology and financial benefits and therefore did little to defend women's access. As a result, water projects reinforced existing inequalities in water access (Sultana, 2009a).

Power delegated

In the IPSAWM case studies, women were said to have progressively taken an active role in meetings, but it is unclear what 'active role' actually means – participation in the discussion or actual influence and decision-making power. In Sultana's case studies, elite and elders dominated the decisions. She notes that the creation of the committee and the participation of the community in meetings were not sufficient to overcome existing relationships of subordination and marginalisation. In the case studies informed by Sultana and Thompson (2008), the roles of women varied across the three WMOs studied. In one of then, women's position changed over time with an increase from 30 to 52% of women's members in the committee (in 1999-2002 and 2003) and from 0 (1999) to 2 out of 5 (2000-2003) office bearers in the advisory committee, to reach finally 52% (2004). Women from this committee reported that they have been accepted by men as playing a more active role in decision-making and feel they have roughly equal role to that of men (Sultana and Thompson, 2008). However such changes were not observed in the two other sites. In one of these, women are in the committee but none is member of the advisory committee. However women reported that having men in the advisory committee was useful to them as men have better linkages with local institutions and also could help for the tasks of night guarding.

Sultana and Thompson conclude that the facilitation by an NGO is not sufficient to overcome social barriers and ensure women's participation in decision-making. Women's decision-making power in the organisation was found to depend on the local community norms and culture, the acceptance of women's involvement in economic activities outside the home and their education level (Sultana and Thompson, 2008).

Informal and formal institutions and women's agency

There was no evidence on whether the formal rules of the WMOs had affected informal forms of access and control women had over water. However, Sultana reports that since participation in water management organisations was not equitable, women were likely to use informal means to defend their access to safe water, such as making alliances with men who would represent their interests during meetings (2009a).

In IPSAWM study, women said they felt more confident to stand for their rights and for the rights of their daughters after the intervention. After a few years, social changes were observed in the communities: women's mobility and participation in decision-making within the household and the community had increased together with men's acceptance of the new roles taken by their wife (Government of People's Republic of Bangladesh - Ministry of Water Resources and Government of the Kingdom of the Netherlands, 2008). It is unclear whether such changes come from women participation in the WMOs or from the various trainings provided by IPSWAM. However, IPSWAM gender team reported that training was essential to build women's confidence and skills and change men and women's attitudes.

VI. Conclusion and avenues for research

The literature review has highlighted several gaps in the current literature on gender issues related to water management organisations in Bangladesh which allowed identifying a few critical avenues for research.

1. Reconciling multiple water uses

First, water projects in the floodplains of Bangladesh have induced a tension between the needs and interests of different social groups, including men and women. It is not clear to which extent WMOs are equipped to address this tension. A first step would be to explore the diversity of men's and women's needs. Then, research could analyse the trade-offs between different needs and different objectives such as productivity and economic growth on the one hand, and equity, resilience, sustainability and justice on the other hand. More especially, are these trade-offs considered and how are they addressed by WMOs? Who are the winners and losers among social groups, including men and women? Beyond is important to consider the unintended outcomes of WMOs along with expec

2. Decentralisation of water management

Second, available case studies have highlighted a high variability in the forms of participation of men and women within the current decentralisation framework. There is overall very little evidence on whether members are representative of and accountable to all social groups within the community, and particularly the marginalised and disadvantaged. Key questions would be:

a) What are the role, responsibility and power of women members in the WMO; what are the factors affecting their power?

b) To which extent is the WMO is representative of women's needs in the community and accountable to marginalised women, including landless women and widows; How do non-member women from different social groups and pursuing different livelihood strategies perceive the WMO and its potential impact on their water use and livelihoods? What informal means have women members and non-members been using to influence decisions taken by the WMO?

3. Informal and formal institutions, women's identity and agency

Lastly, the existence of WMOs and their decisions are likely to directly or indirectly affect informal and formal institutions governing access to water, thereby reconfiguring power distribution among social groups. Again, there is a need for more research on these aspects in the particular case of WMOs in Bangladesh. Research would investigate how WMOs have affected:

a) The power distribution within the community and gender relationships within the household related to access and control over domestic and productive water management; and

b) The formal and informal mechanisms through which the most disadvantaged men and women secure safe and sufficient water for their health and livelihoods.

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