

Living in hazardous waterscapes: Gendered vulnerabilities and experiences of floods and disasters

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Considerable literature exists on floods and weather-related disasters, but limited attention has been given to the varied social implications of hazards in the lives of people, especially from a gender perspective. This is particularly poignant in floodplains and coastal areas, where water is a key element in giving, sustaining and taking away life and livelihood. Critical social and geographical analyses enable better understanding of the ways hazardous waterscapes are perceived, experienced and negotiated by people across social categories in their everyday life. This article attempts to highlight the gendered and classed coping strategies and adaptation measures that men and women engage with (that both challenge and reproduce social relations and vulnerabilities) in their attempts to survive in hazardous environments. Drawing from an analysis of the gendered dynamics of floods and disasters as well as the interventions that were undertaken via the Flood Action Plan in Bangladesh, I demonstrate the differential and gendered implications of both water-related hazards and the structural interventions that were envisioned to address the hazards. With climate change likely to exacerbate floods and disasters, it is important to heed such differentiations and marginalizations, so as to draw insights to better inform current and future adaptation approaches, flood management and disaster management strategies.

Keywords: Bangladesh; disaster; flood; gender; vulnerability; water

1. Introduction

While there is considerable literature on gender relations in natural resources management (e.g. Agarwal, 1992; Rocheleau et al., 1996), the ways in which gender relations come under stress and are negotiated and reproduced vis-à-vis natural hazards and disasters have been less studied. Only a handful of academic scholars have focused on the gendered implications of natural hazards and disasters in recent years (Enarson and Morrow, 1998; Fordham, 1999, 2003; Enarson and Fordham, 2001; Cannon, 2002; Sultana, 2004; Wisner et al., 2004; Seager, 2006; Neumayer and Plumper, 2007). Most of the literature dealing with gender dynamics has emanated from disaster management reports and practitioners working in the field, shedding some light on the gendered dimensions of disaster

preparedness, recovery and relief. Since social constructions of gender play important roles in determining the ways in which people of different backgrounds are affected by and respond to hazards and disasters, it is important to carefully and critically consider the nuances and differences in the gendered outcomes of the ways in which hazardous waterscapes are perceived and experienced by people across social categories. With climate change likely to exacerbate floods and disasters, it is important to understand such differentiations and marginalizations, so as to draw insights to better inform current and future adaptation approaches, flood management and disaster management strategies. This article draws attention to such concerns with evidence from Bangladesh.

In undertaking a gender analysis of hazards and natural disasters, it is particularly important

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to pay attention to the various axes of social differentiation that cross-cut and interlink groups of people. In overwhelmingly patriarchal contexts in much of the world, and definitely in Bangladesh, gender matters considerably, where women as a group generally face greater marginalization and oppression than their male counterparts (Baden et al., 1994; Kabeer, 1994; Alim, 2009). While it is crucial to tease out and understand the differentiated perceptions, experiences and impacts on men and women, it is important not to see men and women as isolated and imperious categories. Women are not a homogeneous group, because intersectionality with class, caste, religion, age, etc. affects the resources, rights and responsibilities that any woman has. Similarly, while men may be dominant in largely patriarchal contexts and generally have greater access to power, resources and rights, they themselves are fragments by class, religion, educational status, etc. In general, men and women are often treated as separate categories, but it is important to understand the social relations that produce and reinforce gender differences and inequalities in any given context, especially when relating to natural resources or natural hazards (see O'Reilly et al., 2009; Sultana, 2009a). The relational nature of gender constructions and the power relations that are embodied through norms, practices and beliefs are important in the ways that gendered identities are understood and experienced. In most of Bangladesh, floods, tropical cyclones, storm surges and river erosion are key water-related hazards that interact with gendered power differentials to create situations where men and women cope, experience and suffer the hazards and disasters differently. Differences in the gendered divisions of labour, gendered rights and constructions of femininity/masculinity result in gendered subordination and suffering before, during and after each disaster event.

In what follows, I undertake a gender analysis of hazards and disasters in the context of floods and water-related disasters in Bangladesh. I draw from both the existing published literatures and my own field research and work in Bangladesh,

which involved investigating the ways in which people cope with and react to water-related hazards and disasters. This work draws from ongoing research in Bangladesh over the last 15 years, but specifically from fieldwork carried out in Dhaka, Tangail, Barisal, Jessore and Khulna districts during 1998–1999, 2004–2005 and 2008–2009. I also draw from relevant news and media coverage over the years, as well as experiential knowledge in having lived and worked in Bangladesh for many years, particularly drawing from insights of a number of environment-development projects that I managed while at an international organization between 1998 and 2001 in Bangladesh. In the first section, I look at the gender dynamics of the flood hazards and disaster events, highlighting the ways in which gender analysis is important in understanding the multiplicity of ways that floods and disasters come to affect people differently. In the next section, I analyse the gender dynamics of the infrastructural interventions that were implemented to address the hazards, with a focus on the Flood Action Plan (FAP), demonstrating that both the hazards and the interventions envisioned to mitigate the hazards have gendered implications but in different ways. I conclude with some thoughts on incorporating gender in the hazards and disasters literatures broadly, and demonstrate the importance of undertaking gender analysis for both the hazards themselves and interventions to mitigate the hazards, in order to formulate robust policy prescriptions and management plans.

2. Floods and water-related disasters in Bangladesh

There are a number of ways that water-related hazards and disasters come to affect society and social relations in Bangladesh. While annual flooding is common (to varying depths and degrees in different parts of this monsoonal, deltaic and floodplain country), extreme flooding that submerges large parts of the country for longer durations of time has occurred in recent years (1987,

1988, 1998 and 2004 being notable), along with devastating tropical cyclones and storm surges (1991, 1997 and 2007 being significant recent disasters). Summer monsoonal flooding is beneficial for rural livelihoods and agrarian economies, enriching the floodplains, agriculture and fisheries. This is often referred to as *borsha* (Boyce, 1990), although the actual meaning of that word is 'rain' (see Spivak, 1994 for a critique). The term *borsha* has been widely used to denote regular flooding in order to contrast it with extreme flooding, which is referred to as *bonna*, as monsoonal rainfall and regular flooding do not necessarily lead to disasters. Seasonal flooding is needed to maintain the ecological and hydrological balance, and rural people perceive this to be essential to their livelihoods. Floodplain people have developed wide-ranging and ingenious strategies to live with (normal) floods. Extreme flooding can devastate crops, infrastructure and livelihoods and bring misery for prolonged periods of time, creating disasters that challenge the resilience of the population. In making this distinction between regular and extreme flooding, people relate to different types of floods in different ways. It is the extreme and prolonged floods that produce the disasters, disruptions and sufferings, often catapulting Bangladesh into international attention. Similarly, disasters emerge from tropical cyclones and storm surges that are more prominent in coastal areas, where water and wind destroy lives, livelihoods and infrastructure quickly and on a large scale. Linked to the suffering from floods and cyclone disasters is that from riverbank erosion, as the latter often displaces more people and causes severe hardship among those who have lost their land and belongings to the river. As the deltaic rivers shift their courses and land is eroded and deposited elsewhere, people eking out livelihoods close to river banks or on the newly formed silt islands (known as *char*) live with the constant hazard of the river taking away the ground beneath their feet. Overall, these different types of water-related disasters have gendered impacts in the ways that women's rights, resources, livelihood options and belongings are threatened and often worsened with each disaster event.

While disaster management and flood control studies have focused on the impacts of processes and events, and the differentiated outcomes in different arenas (e.g. fisheries and agriculture), there has been less focus on the gendered dynamics of flood control as well as flood coping. I make the distinction here as flood control generally emphasizes engineering and infrastructural interventions in managing floods, whereas flood coping focuses on the indigenous and socially mediated efforts of people to cope with floods and mitigate its impacts. During the Bangladesh FAP controversy in the 1990s, there was much debate about the appropriateness of large-scale structural interventions in an active delta and the lack of engagement between the local population and the people designing the FAP (for good overviews of the controversy, see Brammer, 1990; World Bank, 1990; Rasid, 1993; Leaf, 1997; Wood, 1999). Such debates did create space for greater focus on the vulnerabilities and coping mechanisms that rural Bangladeshis live with, as well as bring into greater relief the power relations in water management planning processes. The debates also poignantly highlighted the power dynamics and politics in development projects in general (e.g. Spivak, 1994). In the specific critiques and resistance to the FAP, the non-structural approach of 'living with floods' or flood coping emerged as a renewed discourse (see Rogers et al., 1989; Schmuck-Widmann, 1996; Paul, 1997; Islam, 1999). Due to the controversy, scholarship concerning coping strategies and non-structural approaches gained considerable audience (e.g. Rogers et al., 1989; Boyce, 1990; Brammer, 1990; Islam, 1990, 1999; Adnan, 1991, 1992; Hossain et al., 1992; Custers, 1993; Paul, 1997). In addition to these studies, some looked at specific economic and social aspects of hazards and coping in Bangladesh (e.g. Ahmed, 2001; Chadwick et al., 2001; Hutton and Haque, 2003), but not particularly engaging with gender. Only a handful of studies have looked at gendered implications of floods, flood control, riverbank erosion or cyclone disasters in Bangladesh, albeit from different perspectives (e.g. Hanchett and Begum,

1992; Khondker, 1996; Hanchett, 1997a; Wiest, 1998; Paul, 1999; Nasreen, 2000; Rashid, 2000; Cannon, 2002; Sultana, 2004; Sultana and Thompson, 2008; Ikeda, 2009). I turn to such analyses below.

3. Gender dimensions of floods and disasters

Gender inequalities can exacerbate vulnerabilities to hazards (Enarson and Fordham, 2001). This is linked to the overall lack of access to resources and decision making for women and girls – in information, healthcare services, education, finances/credit, transportation, legal apparatuses and rights that can compound poverty and vulnerability. However, not all women are affected equally or are vulnerable to the same extent, and there is a need to differentiate by factors such as class, caste, race and geographical location. It is important to appreciate the heterogeneity of the groups, and not to homogenize either women or men. However, certain patterns do exist and analyses demonstrate the ways in which women and men as a group are impacted differently through each disaster event, where gender comes to matter in significant ways.

In general, gender relations and social norms often reinforce women's vulnerabilities to floods and disasters. A range of social, cultural and religious practices across socio-economic classes reinforce such vulnerabilities. While vulnerabilities can change over time and space, creating new opportunities and new distresses, they can also follow certain patterns (Wisner et al., 2004). In this respect, gender and class are often the most pertinent factors in differentiated vulnerabilities that are exacerbated through disaster processes (Enarson and Morrow, 1998; Cannon, 2002). In the Bangladesh context, this is evident among women of most socio-economic groups, albeit with variations. Given that the bulk of the population is agrarian and poor, each disaster event often contributes to further impoverishment, displacement, marginalization and exploitation, which many people are not able to sufficiently recover from before the next disaster

event. Social processes interact with natural processes to produce the differentiated vulnerabilities and sufferings that ensue, which have gendered implications. While poverty and vulnerability are not always correlated (Few, 2003; Wisner et al., 2004), in much of rural Bangladesh they interact to reinforce gendered powerlessness and suffering (Cannon, 2002). The downward spiral that households face from recurring disasters in flood-prone areas worsens their vulnerabilities and poverty. Access to and control over resources are highly classed and gendered, and disasters can worsen people's access, entitlements and abilities across a range of livelihood issues. This is particularly poignant given the rise of *de facto* and *de jure* female-headed households in rural areas.

While women are often the victims, they are also resourceful agents who cope with disasters and play important roles in rebuilding, rehabilitation, caregiving and mitigation (Enarson and Morrow, 1998). Local knowledge and indigenous coping mechanisms are critical, enabling households to survive, albeit with uneven burdens and outcomes for different members of the households. The tasks and coping mechanisms that women engage in before, during and after natural disasters are what enable households to survive (Hossain et al., 1992; Nasreen, 2000). Coping strategies include making portable stoves, saving foodstock and fuel in dry places, tying possessions to trees and huts, lifting belongings to platforms created just under the roof and learning to live on the thatched roofs when the floods are too high. Huts are generally built on raised earth mounds or platforms, and this enables most households to deal with annual flooding (not catastrophic flooding). In households that have the means and manpower to fortify homes, raise plinths, purchase boats and stock up on food for the family and livestock, there are greater opportunities to endure the sufferings through flooding events. However, many female-headed households do not have such financial resources, labour power or socio-political clout. Not all households have the means to purchase boats to assist in getting around (or getting away), or to fortify their homes and roads.

Decision-making constraints in male-dominated households and society in general result in the management of assets, household repairs and purchases often being decided by the male members, reinforcing gender subordination in times of disasters. One of the key survival strategies of households in times of crises is the sale of personal assets, often those belonging to women such as livestock, jewellery, utensils and household goods. While these are important in averting starvation in many instances, they are undersold during crises and lead to greater impoverishment of women. For instance, land belonging to men is sold after land belonging to women in many cases (Nasreen, 2000). Loss of kitchen gardens places extra burdens on food security for households, especially for women who often maintain kitchen gardens and raise poultry as livelihood resources and sources of nutrition for the family. Scarcity of food and water, along with rising prices, results in considerable suffering and starvation. Sharing food with kin as well as eating less often has gendered implications, where women will eat last and least in order to ensure that men and children are fed.

Illnesses such as diarrhoea and dysentery are common during floods and storm surges, usually from the consumption of contaminated water and food. The need to provide water, food and care during floods and disasters generally remains with women of a household, where gendered divisions of labour and social norms construct the domestic duties to be borne by women and girls in the household. Women have to go through considerable difficulty in the provision of safe drinking water for their families during floods and disasters, and figure out how to ensure that polluted floodwaters do not contaminate any clean drinking water they may have been able to fetch. Treating water (by boiling it) when there is a scarcity of fuelwood poses a severe challenge. Water collection is particularly difficult during times of extreme floods, as tube-wells are often submerged, polluting the water. In instances of no nearby safe water options, women may wade through neck-deep water

over long distances to fetch water. When this is impossible and water has to be fetched by boat from further away, men will go to fetch water. In this way, while there is not a true reversal of gender roles, men participate in a gendered activity as it is temporary and constrained by the need of transport by boat into public spaces. Women may accompany men in such instances, but they often stay behind to look after the family and belongings. In such instances, entrenched gender norms and sensitivities of appropriate female behaviour can make it difficult for women to carry out tasks that could benefit their families (see Crow and Sultana, 2002; Sultana, 2006, 2007).

However, gender role reversals and changes are possible during disasters, where necessity often dictates what has to be done. For men, gender roles of childcare and provisioning of domestic water may increase. For women, having to go out into public spaces and violating *purdah* (gender-based segregation and seclusion) norms are necessary to seek food, shelter and relief/aid. Some of the challenges that both men and women face are the cultural and religious edicts that local religious heads (*imams*) or social heads (*matabbar*, *mondol*) may issue that reinforce gender roles rather than enable changes. Such concerns influence what each household will do in times of disasters, and are weighed against the needs for maintaining overall family honour, social connections and patron–client relationships for livelihood opportunities and assistance from power brokers in their areas.

The lack of medical services in general, and particularly during disasters, compounds the problem for women and girls. Health impacts are significant during and after floods, as it can affect long-term livelihood opportunities. Lack of medical attention due to the inability to go to medical facilities, scarcity of medical supplies, as well as financial resources to access medical needs, all exacerbate overall mortality and morbidity. Usage of polluted water during floods creates additional health risks, whereby women have the extra task of looking after ill family members. Living in and being surrounded by

polluted waters is known to cause various illnesses among the women, from skin problems to illnesses such as typhoid, cholera and reproductive health problems (Rashid, 2000). A particularly gendered crisis during times of floods is the lack of sanitation, where women will only relieve themselves early in the morning or after dusk to avoid being seen in order to maintain decorum. These issues often result in related health problems (such as urinary tract infections). Sharing limited dry spaces with cattle, poultry and uninvited rats and snakes further exposes families to illnesses and possible death.

In addition, emotional and psychological stresses from floods and disasters are gendered. The rise in incidence of domestic violence and conflicts during and after disasters increases the sense of powerlessness and marginalization among women (Hossain et al., 1992). Bodily security and well-being are compounded by emotional factors of stress, fear and frustration when homes, assets and meagre belongings are washed away or submerged. This is further compounded by abandonment and displacement, where men often migrate away or leave their families behind, or are forced to uproot the entire family in search of livelihoods in crowded city slums. Migration as a livelihood strategy is common in the aftermath of floods and disasters, especially among men who may move away in search of livelihood opportunities elsewhere. However, this can lead to the break-up of families and greater fragmentation, where issues of desertion, divorce and polygamy can reinforce gendered suffering. When women and children are left behind, enormous burdens are placed on women vis-à-vis domestic responsibilities and meeting household needs, as well as maintaining social security and protecting themselves and their families. The process of marginalization is simultaneously linked with processes of greater dependency and patronage with powerful families, reinforcing or increasing vulnerabilities of households that come to be under the influence or power of others.

If male household heads die during disasters, or are away for prolonged periods of time in search

of livelihoods, the women left behind effectively become the breadwinners for their children and elderly. These female-headed households often spiral into greater poverty. When men abandon their families and move away, the women are left in greater economically and socially vulnerable positions, facing greater social insecurities in not having a male household head or protector, often exposing them to greater social stigmatization, harassment and exclusions. Without the support of kin or neighbours, these households can be forced into leading lives of destitution and social marginalization (Wiest, 1998). Lack of entitlements to land and resources compound the social sufferings of women who are abandoned or widowed (Hossain et al., 1992; Nasreen, 2000). Illiteracy, landlessness and poverty interact to exacerbate gendered sufferings through disasters.

4. Gender dimensions of flood control and interventions: Aftermath of the FAP

Just as floods and disasters have gendered implications, so do flood control measures through engineering interventions. Considerable debates have focused on the pros and cons of taming the floods via interventions as opposed to living with floods, and the gendered dynamics in both flood control and flood-coping debates are important to analyse. Gender power relations and socio-ecological transformations in each case interact with the root causes of poverty, marginalization and inequities, but there are differences that can be highlighted. While the gender dimensions of extreme floods and disasters may seem to warrant solutions that could take away flood-related sufferings, flood control measures themselves create problems. Flood control measures alter the hydrology and geomorphology of a region, changing its ecology and socio-ecological systems. Lack of regular flooding (*borsha*) due to infrastructural interventions can result in loss of agricultural production, leading to livelihood collapses, lack of foodgrains and labour wages, increasing hunger/malnutrition and fuel male

outmigration (and the related problems noted above).

The FAP, the largest intervention envisioned and initiated in Bangladesh, generated numerous studies and pilot projects to address flood and water use issues in the 1990s. The structural aspects to flood control were not new to the country, but such a large-scale, technocratic and top-down one was. As such, there was much controversy regarding the appropriateness, desirability, effectiveness and impacts of such a plan. In light of the fact that Bangladesh is a highly resource-strained and densely populated deltaic country, it is important to address both the ecological and social sustainability of man-made endeavours to control nature. Although technical measures were deemed to be needed to control flooding by many, there was the emerging consensus that flood control and drainage (FCD) should fall under an integrated water resource management plan focusing on both structural and non-structural aspects of flooding and water-related issues. Nonetheless, several infrastructural interventions proceeded (World Bank, 1990; Paul, 1997).

The effect on fisheries and fishing grounds of FCD structures was a key point raised during debates over the FAP. Lack of flooding is thought to reduce the soil fertility levels in floodplains, and environmental impacts of FCD measures pointed to the degradation of common pool resources on which floodplain people rely for their livelihoods. This is particularly true of open-water fisheries and other aquatic resources on which the poor and landless depend. Fisher people as a community, as well as the general population, are affected by the reduction in floodplain fisheries and lack of fish migration and production. In general, FCD changes the hydrological balance of the area, as water bodies that are important fishing grounds and water storage areas disappear. Lack of water connecting the many waterways and replenishing ponds can result in declining fish stock and fisheries, which is an enormously important source of protein for the rural poor as well as a source of income. Flood control can result in changing breeding grounds, altering

ecosystems and types of species that are available for subsistence consumption and sale. Habitats for many species are destroyed (thereby reducing biodiversity); medicinal and food plants also disappear. These have direct and indirect effects on household income generation and consumption, especially for women who rely on collecting aquatic resources (e.g. snails) to sell to farmers and fishermen (Sultana and Thompson, 2008). Subsistence fishing is severely hindered as common property rights and customs are changed when fish culturing projects are promoted and common property resources (*khas*) land is leased out under FCD areas. The income generated from fishing also falls, as does that from boating. Very poor women often fish themselves, particularly from common pool resources of floodplains and flooded rice paddies, and depend on various aquatic weeds and plants that support their household's nutritional intake. Lack of regular water flows and annual flooding can disrupt such livelihood resources. As a result, the vulnerabilities of poor and landless people, especially women, are increased at the same time that their livelihood security from natural resources is decreased.

Flood control structures can also create a false sense of security, thereby increasing the vulnerabilities of people who may be exposed to more drastic and disastrous floods when structures collapse or are overtopped (due to excessive rainfall or rivers peaking). Similarly, altering the hydrology of landscapes has resulted in waterlogging in many areas, particularly in southwestern Bangladesh, where stagnant water over years has created misery for people who are caught in-between different structural interventions that fail to drain the water (Adnan, 1992). This is common in some polders that were created as part of flood control structures, where entire areas are cordoned off, but where water has come to stagnate due to lack of sufficient drainage, poor maintenance of infrastructure and geomorphological changes in the delta. In such waterscapes, women face the problems identified above (in the floods section), but on a more permanent basis.

Thompson and Sultana (1996, p. 1) point to the dual nature of flood control structures:

'Embankment failure (owing to erosion and deliberate embankment cuts associated with conflicts) is a serious hazard, although embankments also act as refuges in peak floods'. While flood control structures can provide spaces to seek refuge in floodscapes, the role of the infrastructure itself has to be questioned. Waterlogging and drainage are key problems associated with embankments with inadequate measures, where flooding inside flood control projects resulted in greater waterlogging and generated social conflicts whereby different groups of people suffered differentially (based on assets, landholdings, etc.). This has led to social friction between highland and lowland farmers, as well as impacted the local ecological balance and disease outbreaks (especially waterborne diseases in waterlogged areas). Flood control projects brought disproportionate benefits to wealthy farmers and those with landholdings in higher ground (Thompson and Sultana, 1996). Poor and landless farmers did not benefit as much, and lost more when embankments were breached. Fishermen have been in conflict with farmers, as the latter do not want sluice gates to be opened to flood agricultural fields, whereas the former do in order to increase the area available for fisheries. While boatmen benefit in floodscapes that allow them to move around on the water, flood control infrastructure can alter water flows and levels, thereby adversely impacting their livelihoods.

Similarly, tensions were exacerbated between those inside flood control projects with those outside of it, as the alterations in flooding patterns and movement of water resulted in differences in opinions on what should be done about infrastructure management (e.g. opening and closing of sluice gates, cutting of embankments) (Adnan, 1992; Paul, 1997). The 'public cuts' of embankments (i.e. the intentional breaching of embankments to enable water flow) resulted in conflicts between communities inside and outside of flood control structures and projects. Similarly, increasing riverbank erosion can also be exacerbated through river channelling via extensive embankment construction and hydrological changes, creating problems

elsewhere along the floodplains. With such water control interventions, the drying up of water bodies (*khals* and *beels*), the traditional rights of access to such resources for bathing, washing, procuring drinking water, subsistence irrigation and kitchen gardens are greatly reduced. Gendered hardship in accessing water for various purposes is thus increased. Large-scale flood control and water management schemes without adequate attention to social differences have considerable negative impacts on both social and ecological sustainability in rural Bangladesh. Protection from abnormal floods via embankments may have positive benefits, but their direct and indirect negative impacts cannot be overlooked.

In response to the critiques of structural interventions, flood forecasting and warning have become an important focus of flood management, so that people are informed of weather and river conditions and thus prepare accordingly. However, transmitting the information to all concerned, especially in ways that are understandable and meaningful, remains a challenge. The increases in media coverage, use of technology (radio, television and mobile telephones) and organized volunteer groups have improved warning and evacuation in many areas, especially in the coastal zone (during times of cyclones and storm surges). For riverine floods or rapid rainfall floods, this does not appear to be the case. Sufficient time is often not available for people to prevent loss of lives and property, messages are not understood or accepted, or people adopt a 'wait and see' approach with the hope that disasters will not strike again. While warning messages and awareness campaigns often do not reach women, even when they are received, there is discouragement in taking action. The gendered dynamics of this is evident from the fact that more women stay behind during impending disasters rather than seek shelter (Hossain et al., 1992).

There appear to be some improvements in incorporating women's views and concerns in flood control schemes and disaster management in general, in response to criticisms over the last few years. However, these come after many of

the infrastructural interventions have already been built and planning directives finalized. Participatory planning is often invoked in policy documents, but it comes across as lip service and remains unclear what it really would entail. Participatory management via embankment maintenance by women's labour contracting societies is often highlighted as a form of people's participation. While some of the FAP projects (e.g. the Compartmentalization Pilot Project in Tangail) portrayed an inclusion of poor women in water management, it was primarily as labourers to maintain the embankments and dig canals and operate the sluice gates. Such incorporation of women into the labour force did provide some training and income generation for the women, but it confined women to existing gender power relations and forces of domination. Women engaging in what is generally considered to be men's work (public spaces and manual labour) does not necessarily result in changes in gendered exploitation or subordination.

Lack of gender integration in planning and policy making, along with lip servicing of gender issues, remains in water resources and disaster management planning. While some recent policy documents appear to incorporate discourses of gender, mainstreaming of gender in policy input and implementation is limited. Ikeda (2009) posits that disaster management policy documents in Bangladesh have recently articulated sensitivity to gender concerns in planning, preparedness, coping, recovery and relief. However, implementing such goals remains difficult. Women are often categorized as one homogeneous entity (with categories such as 'farmers', 'fishermen' and 'women' being used, rather than seeing gender as a cross-cutting issue). Problems of involving women and girls in broader interventions are often overlooked or glossed over, such that trenchant patriarchal structures of marginalization continue in so-called gender-sensitive documents. While the politics of any 'participatory' or 'community' projects are often exclusionary and riddled with gendered silencing and co-options, it is still common

for policy-makers to invoke such notions as a way to address gender concerns even if the policies or projects remain somewhat unproblematicized (Hanchett, 1997b; Sultana, 2009b).

5. Conclusion

While the literatures on floods and disasters have paid attention to the multiple ways that societies are affected, there remain persistent gaps in undertaking gender analyses and addressing gendered concerns. Different groups of people are impacted by and respond differently to both floods and disasters, as well as to the interventions and policies pursued to mitigate the hazards. Gender analyses of such processes reveal both the sufferings and the coping mechanisms that affect households and societies, where gender is intersected by other axes such as social categories (e.g. class) and geographical location (e.g. floodplain). In the Bangladesh context, existing social norms and practices can marginalize the ways that hazards and disasters affect women and girls, albeit with variations in the resources and rights that each person enjoys in any given context. Given the annual nature of some hazards (such as floods) as well as the frequent nature of some extreme events (such as tropical cyclones and storm surges), the ways that gender comes to matter are important in configuring and addressing individual and collective misery and resilience. It is important to acknowledge and address the different and contested needs and roles of women and men, recognizing that perceived benefits do not include everyone and may reinforce marginalization and suffering.

Natural hazards and disasters have the potential to provide windows of opportunity to change gender power relations and inequalities, but they often end up reinforcing gender stereotypes and gender roles. As Fordham (2003) argues, integration of gender concerns into disasters and development are difficult challenges, but are important in addressing continual marginalization and suffering along gender lines. Past efforts in water-related disasters planning and

management approaches have lacked paying attention to gender issues, which needs continued critical attention and analyses. As such, understanding the gendered dynamics of both the hazards as well as the interventions that are envisioned to address the hazards is necessary for more comprehensive and robust policies and projects to be planned in hazardous waterscapes.

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