



Water Insecurity in Coastal Bangladesh: A Gender Equality and Social Inclusion (GESI) Perspective

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Overview

Bangladesh is the 7th most vulnerable country to climate change, exposed frequently to extreme weather events such as cyclones, storm surges and erratic rainfall (David et al. 2021). Multiple food systems - crops, livestock, forestry, fishery and aquaculture sectors face direct stress from climate-induced changes. Bangladesh is also home to large populations of smallholder and landless farmers. The Bangladesh Agricultural Census 2019 reports that approximately 90.7 percent of farmers are smallholders, owning between 0.05 and 2.49 acres, while 7.70 percent are medium-scale farmers with holdings of 2.50 to 7.49 acres (BBS 2022). Less than 1 percent of farmers owned more than 7.5 acres, i.e., were large-scale farmers. Further, 3.26 million people are landless in Bangladesh (Morsalin and Islam 2023). This makes Bangladesh one of the most challenging “climate-agriculture-inequality hotspots” in Asia (Koo et al. 2022).

The southern coastal deltas are the rice basket of Bangladesh, and yet have one of the lowest average per capita incomes - at around USD 0.90/day (Nishat & Rahman 2019). About 49 percent of the farmers in the area are landless (Islam & Chuenpagdee 2013) and rely on fish, livestock and forest resources for their subsistence (Rahman et al. 2018). While crop agriculture, particularly rice cultivation is still the dominant occupation of households in this region, there was a significant transition to brackish water shrimp farming in the 1990s. This shift is noted to have resulted in high rates of salinity in the region, and crop-based livelihoods are often no longer viable or sustainable due to the lack of freshwater (Hussain 2014; Shamsuzzaman et al. 2017).

Past policy decisions emphasizing rice intensification in the 1960s (aligning to the Green Revolution) and then later brackish water shrimp production for export (1980s Blue Revolution) have resulted in a severe freshwater crisis (Pokrant 2014, Nowreen et al. 2014) as they overlooked complex socio-ecological realities, other livelihoods supporting marginalized smallholders, and issues of equity and inclusion in water and land governance (Barbour et al. 2022).

Inequalities in Climate, agriculture, gender, and water

The climate crisis is especially pronounced in the country's regions. Agri-food systems are dependent on multiple water sources - rain, ponds, rivers and canals. All these sources of water are becoming increasingly unreliable due to the growing impacts of climate change, as well as other anthropogenic drivers, with outcomes of decreasing agri-food systems productivity and heightened vulnerability of smallholder farmers living in this region (Sarker et al. 2024a). Alongside floods and cyclones, tidal and storm surges, saline water intrusion, waterlogging, late and unpredictable monsoons resulting in prolonged droughts result have far-reaching consequences on the already precarious water situation, especially in the country's coastal regions, where access to freshwater is limited and heavily contested (Huq and Easher 2021).

Freshwater canals - the drainage peripheries of large rivers are the lifeline to water access and availability for crop, livestock, and fish production and processing for smallholder farmers who grapple with severe challenges of saline water intrusion in groundwater, given the rampant expansion of aquaculture starting in the 1990s (Joshi et al. in press). More than 50 percent of agricultural fields in southwest coastal Bangladesh have been transformed into brackish water shrimp farms, which are owned by the more elite and influential (Jamal 2024; DoF 2022). This export-oriented industry was widely supported and promoted at the national and local levels (Jamal 2024; Swapan and Gavin 2011). The fresh water in the canals is a highly contested resource, especially in the dry season.

It is also reported that income and economic challenges triggered mainly by food and income insecurity results in an increasing (seasonal and more permanent) out-migration of mostly landless and marginal smallholders from these areas to the capital Dhaka and other urban centers. Al-Maruf et al. (2022) identify that migrants are most likely to be men aged 20-50, often belonging to debt-prone smallholder households or amongst the landless - who have limited resources and assets, and poor capacity and resilience to deal with increasing levels of water, land and climate stress.

Income and economic challenges triggered mainly by food and income insecurity result in increasing (seasonal and more permanent) out-migration from climate vulnerable areas to the capital Dhaka and other urban centers. Al-Maruf et al. (2022) identify that

migrants are most likely to be men - in the age groups of 20-50, often belonging to debt-prone smallholder households or amongst the landless - who have limited resources and assets, and poor capacity and resilience to deal with increasing levels of water, land and climate stress. A large exodus of adult males in an agrarian society results in what is known as a *feminization of agriculture*. The term implies many things, but essentially a growing presence, visibility, and involvement of women in all agricultural activities both as wage workers and as unpaid family laborers (Najjar 2021). Various studies point out that, as men migrate, women become increasingly engaged in productive agricultural work, but in ways that are often not associated with positive outcomes (de Brauw, et al., 2021). In other words, women take on the burdens of unpaid family farm work or agricultural labor. In a patriarchal society where women's visibility in the public space is discouraged - agricultural work is often not a personal choice for women (Heintz et al. 2017).

Heintz et al. (2017) report a significant rise in unpaid family labor for Bangladeshi women, from 18.6 percent female labor force participation in 1995 to 48 percent in 2003 in Bangladesh. This study also points out that intersectional factors like age, class, levels of education, family status and identity (unmarried, married, divorced or abandoned) impact how different women experience these changes. Intersectional inequalities by gender, class, religion, ethnicity and age as well as by spatial determinants of geography and economy play shape diverse experiences of water insecurity. In sum, in climate-agriculture-poverty hot spots (Koo et al. 2022), marginalized women experience increases in time, labor and work burdens for domestic and productive work.

In Bangladesh as elsewhere, it is often assumed that women's water problems are domestic use-related, and that men are responsible for productive water (Mitra and Rao 2019). Given the increasing feminization of agriculture and increasing roles and responsibilities for women in agricultural labor, there is urgency to understand how women experience access to, use and control of productive water, which practice are shaped by class, gender and other intersectional inequalities relating to ownership of multiple assets and resources. In Bangladesh, a recent study (Enokenwa et al. 2022) notes that in 2010 - officially only 10 percent of land titles were held by women - although in practice, women, especially Muslim women tend to own land (34.26 percent) compared to women who are Hindus or other religions (11.64 percent). Women's ownership of land can be individual or joint (with sons, husbands) but such ownership of land is often informal - i.e. de jure. Water rights are linked to land ownership and smallholder farmers,

landless households and women often have limited decision-making power in formal and informal water resource management and governance (Crow and Sultana 2002).

This means that women generally have limited decision-making power in formal and informal water resource management and governance. Across Bangladesh, including in the southern coastal deltas, despite affirmative policies for equitable representation of all groups in Water Management Organizations (WMOs), decisions around water, including the control of water infrastructure such as sluice gates continue to be made by large (male) landholders (Dewan et al. 2014). The gendered implications of this agricultural water insecurity - including what it means in terms of household food security, nutrition, income and women's wellbeing is poorly understood, as most studies focus on women's domestic water access, use and control (Joshi et. al. in press). Research on gender and water primarily concentrates on domestic water, sanitation, and hygiene. Though growing, the available literature on gender (and less on social inclusion) and productive water use remains limited.

The AgWISE module addresses a key knowledge gap on gender, social inclusion and water for productive use. The IWISE (Individual Water Insecurity Experience) and HWISE (Household Water Insecurity) Scales are established methods measuring [experiences of water insecurity](#) relating to access, use, and reliability of water, as well as emotional and psychosocial stresses from disruptions in water insecurity (Young et al. 2021; Young et al. 2019). IWISE permits gender disaggregated data, as recognized by UNICEF WHO Emory report (UNICEF, JMP and WHO 2023). In this study, we use the IWISE items to create an AgWISE module to assess these same issues - but in relation to water for diverse productive activities (Sarker et al. 2024b).

Methodology

The IWISE scale developed in 2019 captured the individual experience with access, use and stability (reliability) of water for household use. The IWISE (Individual Water Insecurity Experience) and HWISE (Household Water Insecurity Scales Experience) measure [twelve experiences of water insecurity](#) of water relating to access, use, and reliability (stability) of water - including disruptions, disturbances and emotional, psychosocial stresses from water insecurity (Young et al 2021; Young et al 2019). All IWISE responses were scored 0 'never', 1 'rarely', 2 'sometimes', 3 'often/always' and summed (range 0-36) with a recall period from 4 weeks to 1 year (Young et al., 2024).

Following the IWISE scale module, to quantify the extent of issues with water for agriculture, we designed an [Agricultural Water Insecurity Experience](#) (AgWISE) module (Sarker et al. 2024b) drawing heavily from previous scales to measure experiences with household and individual water insecurity experiences (Young et al. 2021; Young et al. 2019). Taking the 12 items of the IWISE Scales as a start, the AgWISE Module is the first tool developed to measure the agricultural water insecurity. The AgWISE module uses a slightly different set of questions that have been adapted to assess adequacy, reliability, and accessibility of water for productive use (crop including kitchen gardens, livestock, and fisheries). This module's 11 items, outlined in Table 1 below, were developed through a series of field visits to assess experiences of water [in]security on production, livelihoods, food security.

Gendered dimensions of access to, and use of water for domestic and productive uses are often difficult to disassociate in the literature. Women, as well as men are engaged in, and responsible for both domestic and productive uses, although local context, water [in]security and multiple other factors can shape these engagements and responsibilities. Differences in social identities by caste, ethnicity, class, age, etc. can intersect with gender to shape experiences with water for production, livelihoods and work, health and nutrition for women and men (Mitra and Rao 2019; 170). We therefore applied the AgWISE module (Table 1) as well as the IWISE Scale (Table 2) amongst the same respondents to understand how (a) water (in)security experiences varied by sociodemographic characteristics, including age, education, marital status, religion, household size,

occupation, annual income, and landownership size, and (b) AgWISE scores, i.e., agricultural water insecurity, varied by IWISE Scores, i.e. domestic water insecurity.

Both the IWISE Scale and AgWISE Module were implemented in 800 randomly selected respondents in Polder 34/2 in Batiaghata Upazila and Polder 22 in Paikgacha Upazila in Khulna district in southern coastal Bangladesh. We interviewed one man and one woman from each household (when possible - husband and wife) to understand their water security experiences and collected sociodemographic data, including age, education, marital status, religion, household size, occupation, annual income, and farm size.

Prior to implementing both the AgWISE module and IWISE scales, we met with both women and men in their households to introduce ourselves (the research team), speak about water (in)security, introduce the survey and get their agreement to engage in the study. In presenting the survey data, we also present insights from these conversations, which serve to triangulate the survey analysis.

In analyzing the survey data, our focus was not just in generating binary (women vs men) data. We were particularly interested in unpacking the complexities of agricultural (productive) and domestic water insecurity through an intersectional lens to understand differences by gender as well as class, land ownership, age and social identity. Following this, the specific research questions addressed in this study are as follows:

1. Which group of people are most vulnerable to agricultural water insecurity?
2. What is the frequency and severity of agricultural water insecurity experiences in the study area?
3. How do agricultural water insecurity correlate with domestic water insecurity?
4. What are the key challenges of agricultural water insecurity, particularly in terms of physical, economic, diet and emotion?
5. How do agricultural water insecurity experiences differ by gender and other intersectional factors such as age, farm size, marital status, and gender of household head?

The IWISE module comprises 12 questions (Table 1) designed to assess how often domestic water-related problems were encountered over the past 12 months. Each question is formulated to reflect the experiences of anyone in the household in last 12

months. Responses to items are scored as: 0= never, 1= in 1 or 2 months, 2= in some but not every month), 3= in almost every month.

Table 1: Individual Water Insecurity Experiences Scale items

Label	Item
Worry	(1) How often did you worry that you would not have enough water for all of your needs?
Interruptions	(2) Please think about where you get most of your water, such as a tap, tube well, borehole, river or canal. How often was this water source interrupted or limited in any way during the last 12 months?
Clothes	(3) How often could your clothes not be washed because of problems with water?
Plans	(4) How often did you have to change schedules or plans because of problems with water?
Food	(5) Still thinking about the last 12 months, how often did you change what you ate because of problems with water?
Hands	(6) How often were you not able to wash your hands after dirty activities because of problems with water?
Body	(7) How often were you not able to wash your body because of problems with water?
Drink	(8) How often did you not have as much water to drink as you would have liked?
Anger	(9) Still thinking about the last 12 months, how often did you feel angry because of problems you were experiencing with water?
Sleep	(10) How often did you go to sleep thirsty because there was no water to drink?
No water	(11) How often did you have no useable or drinkable water whatsoever?
Shame	(12) How often did you feel shame because of problems you were experiencing with water during the last 12 months?

The AgWISE Module was designed to assess adequacy, reliability, and accessibility of water for productive use, including water used for agriculture (including kitchen gardens) livestock and fishing. This module's 11 items, outlined in Table 2 below, are based on

IWISE items and were developed after a series of field visits to understand experiences of water [in]security on food systems production, livelihoods and food security.

Table 2: Agricultural Water Insecurity Experiences items

Label	Item
Worry	(1) In the past 12 months, how often did you worry about problems with water (too much, too little, not clean, conflicts about water, other problems) for food production?
Interruptions	(2) Please think about your water sources, how often were there interruptions in accessing and using this water during the last 12 months?
Change	(3) In the past 12 months, how often did water problems related to agriculture, aquaculture and related food processing activities result in a change in your day-to-day life, livelihood activities or other plans?
Decision	(4) In the last 12 months, how often did decisions made by others about your key water sources affect the way you accessed and used water?
Food	(5) Still thinking about the last 12 months, how often did you have to change or reduce what you normally eat because of problems with water for food production/ processing?
Angry	(6) In the last 12 months, how often did you feel angry because of problems you were experiencing with water for food production/processing?
Sleep	(7) In the last 12 months, how often did you have difficulties sleeping because of issues with water for food production/processing?
Harassment	(8) In the past 12 months, how often did you experience harassment while collecting or using water for food production/processing?
Crop	(9) Now thinking specifically about crop production, in the last 12 months, how often did water-related problems harm crop production/processing?
Homestead garden	(10) Now thinking specifically about homestead gardens, in the last 12 months, how often did water-related problems cause issues for your homestead garden ?
Livestock	(11) Now thinking specifically about livestock, in the last 12 months, how often did water-related problems affect the livestock you look after?

The AgWISE items are scored similarly to the IWISE scales. The specified time frame of assessing various dimensions was the past one year. The scales included: 0=never; 1=in 1 or 2 months; 2=in some but not every month; 3=in almost every month. We used a cut-off point of 11 or higher on the AgWISE score, within a range of 0-33, to indicate water insecurity. Using the cut-point selection and evaluation criteria from IWISE Scale (Frongillo et al., 2024), agriculture water insecurity is categorized as follows: scores of 0-2 indicate no-to-marginal insecurity, 3-9 represent low insecurity, 10-21 correspond to moderate insecurity, and 22-33 signify high insecurity.

Results

Overview of discussions prior to the IWISE and AgWISE Surveys

Approximately 86 percent of households of the respondents said they were involved in rice farming and livestock rearing. Both men and women engage in crop production, while women are more responsible for homestead gardening than men. Climate and other drivers were resulting in wide-spread out-migration of men, leaving an increasing number of women being primarily responsible for productive agriculture work (Sarker et al., 2024a), in addition to their domestic responsibilities.

Also from the discussions, we learnt that cyclones occur frequently in the study area and there is an increasing intensity of floods which impact crop, livestock and fish livelihoods, as well as loss and damage to house and other assets. The implications of these impacts go beyond the disruption of water availability, use and access. Men from the research locations do migrate to the district headquarter city of Jessore or to the capital Dhaka during the dry season, and many others also try to find non-farming jobs nearby. Cross-border migration due to the water crisis was also reported in the study.

"At the start of the dry season (November) we have no choice (livelihoods), my husband must go away to sell [his] labor in [the district headquarters] Jessore, or else we will die without food. Only God knows how I survive with my children in those days." (39 years old female farmer in Paschim Halia, polder 34/2).

As outlined above, there is a serious crisis of access to and availability of freshwater resources especially in the dry season (November to May). These resources, it appears are increasingly controlled by the more elite and influential, and access to fresh water results in unequal conflicts and contestations.

"You will find a homestead garden in every house. Women grow eggplants, chilies, green and red spinach, and what not... but starting from December, the water turns saline, and there's hardly any water in the tube well. Most of the vegetables dry up." (38 years female respondent, Polder 22).

Communities along the coast have witnessed the appropriation of canals by a select few with financial and political power: influential local figures, party members, regional syndicates, even wealthy urban investors. Contrary to what is outlined in policy, in our discussions we heard of long-term leases of up to 99 years to local and external elite actors and individuals, and subleasing of canals (for fees) which are prohibited, and overall in contradiction of the *khas* system's intention to support those most in need. It is particularly difficult for those marginalized by gender, class and/or ethnicity to challenge these appropriations.

"When they started enclosing the canal, we tried to resist. They said they had the papers. They have money...connections. And we are women, no one will listen to us. If you say anything, you will be beaten up" (52 years female respondent, Polder 34/2).

In the southern coastal deltas, marginalized smallholder farmers can only grow rice during the monsoon period. At other times, the fields remain barren. Women reported fetching water from wherever possible to water household gardens, however, this also becomes increasingly difficult especially prior to the monsoon rains, when drought-like conditions prevail. The respondents we met prior to the survey expressed anxiety, worry and stress - and this is particularly amongst those who are poor, landless and unable to pay for water.

"I used to spend hours each day fetching water for the fields, but now, with the canal, and ponds drying up, it's becoming impossible to grow enough to feed my family" (40 years old female respondent, Polder 34/2).

The appropriation of freshwater canals impacts not only crop production, but also livestock and fishing.

"Before, we assumed that the canal was like our own pond. Whenever we needed fish, we would go with a net and catch some. Many times, my wife would start the stove for lunch, and I would go fetch fish. That is now just a distant memory" (68 years old male respondent, Polder 22).

"Our cattle are getting weaker every day because we can't find fresh water for them. The saltwater makes them sick; their milk production has dropped. I often walk miles to find water for them" (35 years old female respondent, Polder 22).

In the section below, we present data generated from the application of the IWISE scale and the AgWISE module to highlight three key findings.

Women and domestic water versus men and productive water

A first key finding in analyzing data generated by the WISE scale and AgWISE module is that assumptions made in distinguishing women's need for domestic water and men's use of productive water is problematic. The number of women reporting significant challenges with productive water access and use is relatively large - more than half of the 400 female respondents (57.50 percent), less than, but comparable to around $\frac{3}{4}$ of the male respondents (73.75 percent).

"Everyone thinks only men need water, how about us? We need water for both the house and field. I have cows and ducks too" (25 years old female, Polder 34/2).

Similarly, men are also impacted by domestic water shortages. While 42.50 percent of women report challenges with drinking water, 29 percent of men also reported these challenges. However, as climate stresses drive men away from agrarian livelihoods, women take on increasing responsibilities for accessing, using, and managing both domestic and productive water, and the combined impacts of these changes are much higher on women, also because the governance of water remains shaped by patriarchy and masculinity.

The AgWISE data (see Figure 1 below) indicates that both women and men are impacted as a result of productive water insecurity, with only slight variations.

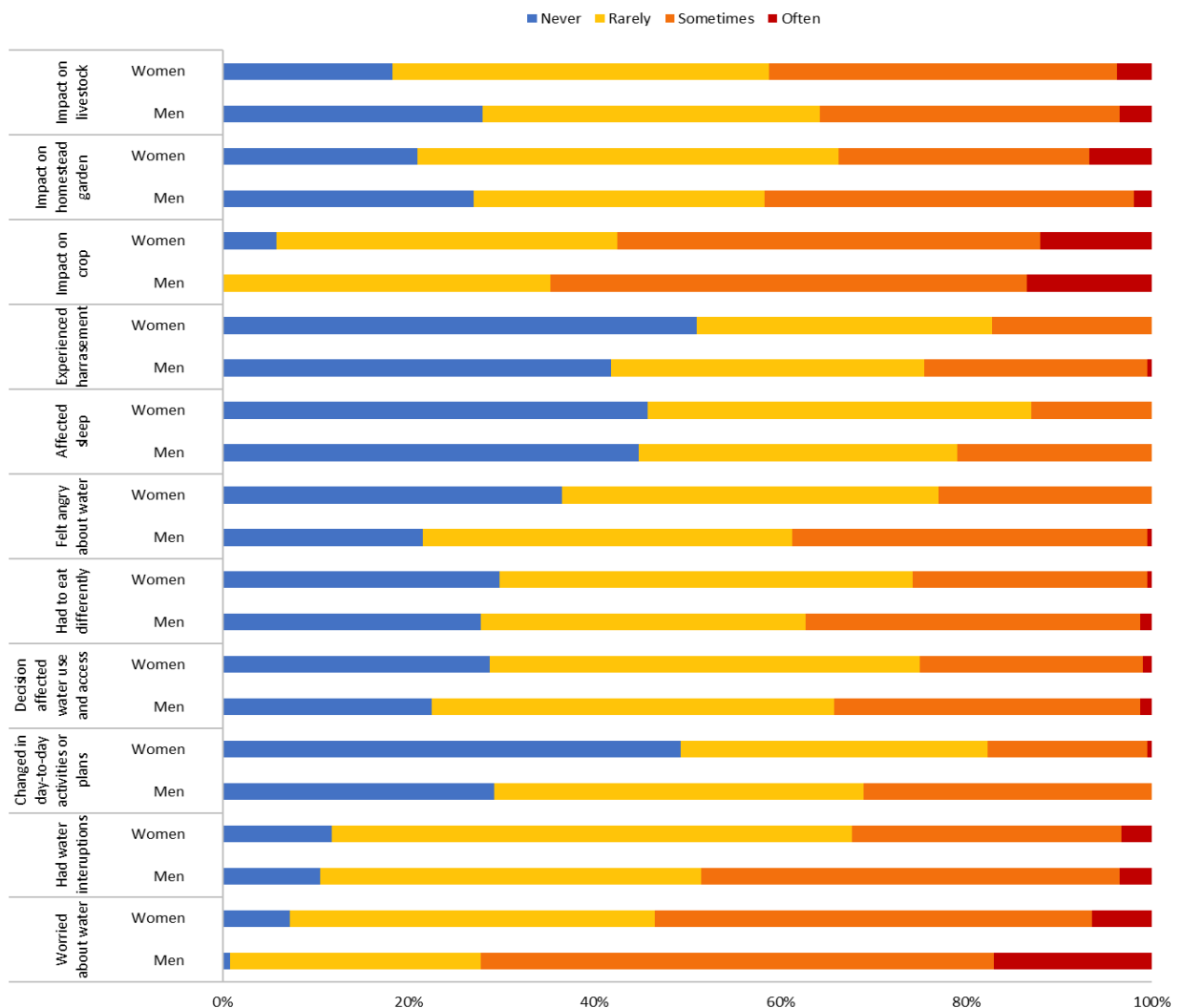


Figure 1: Item wise agricultural water insecurity experience by gender.

[Note: never=0; rarely=in 1 or 2 months; sometimes=in some but not every month; often=in almost every month]

Similarly, the application of the IWISE scale (see Figure 2 below) indicates that both men and women are impacted by domestic water insecurity. However, the variation and severity of these impacts are high higher for women. In sum, we can make the assessment here, that and the combined impacts of domestic and productive water insecurity does cause a much higher overall impact on women’s time, labor, energy and well-being.

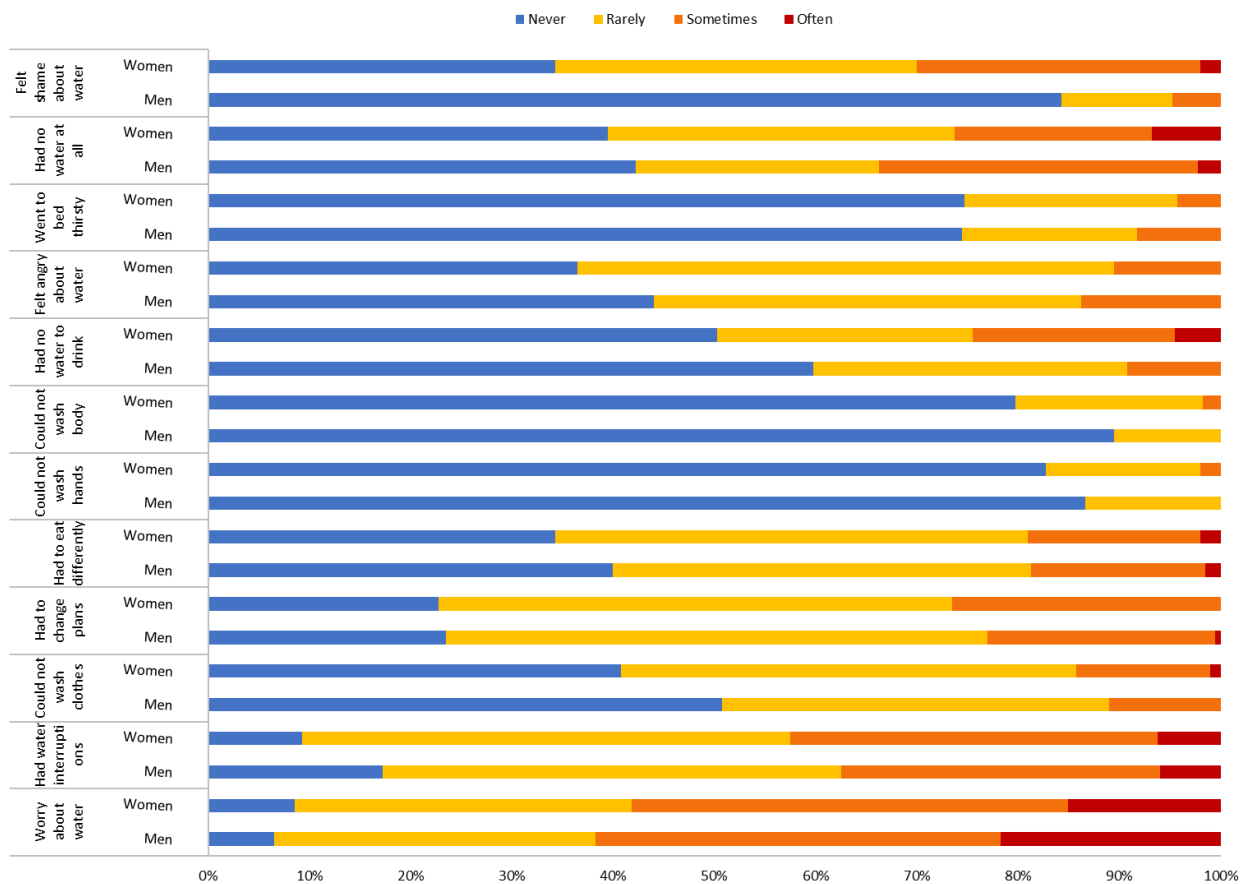


Figure 2. Item wise individual water (domestic) insecurity experience by gender

[Note: never=0; rarely=in 1 or 2 months; sometimes=in some but not every month; often=in almost every month]

Nuanced experiences of water insecurity

A nuanced analysis of both the AgWISE and IWISE data shows interesting insights on gender and intersectional disparities. First analysing the AgWISE data, both women and men report making dietary adjustments due to productive water shortages which impacts livelihood security, incomes including from daily wage labor, and purchasing power. Women as well as men experience negative emotions due to water insecurity, and report frustration on their inability to influence water decision-making. Men are more vocal about verbal and physical harassment when trying to access water and are more vocal with their anger and frustration. Social conditioning likely impact women’s behaviours to control their emotions.

"What will happen by showing anger... will I be able to secure water? No... who will care about my anger" (43 years old female respondent, Polder 22).

Sleep is disrupted as a result of productive water insecurity for both men (46 percent) and women (37 percent), however, as we show below, women have higher physical burdens as a result of combined responsibilities for domestic and productive water (see Figure 3 below). Also, while men tend to speak mostly about water (water logging, floods, prolonged droughts) impacting crop production, women tend to highlight livestock distress, the lack of food diversity, and the impact on household well-being and children's health and education.

"In Chaitra (March) to Jaistha (May), not a drop of water will be found in the canals or ponds. Until the rains come, our fields remain barren. In the last few years, it has rained late, so we harvest the dry season rice late, which means we cannot grow vegetables in time in the winter months. In any case, by Karthik (October), the groundwater turns saline" (51 years Male respondent, Polder 34/2).

"I had 2 cows and 7 goats. Last year, one of my cows became sick because of the water.

We further analyzed the data to examine economic, dietary and psychosocial challenges related to water access, use, control, and reliability (Figure 3). In general, men tend to report highest levels of economic loss (84 percent), followed by emotional stress (71 percent) and physical challenges (68 percent) because of water insecurity for productive use. Women seem to assign a lower value to economic loss (68 percent) but lower levels of physical challenges (57 percent) in accessing water, and emotional stress (56 percent). This is likely due to social norms that tends to normalize psychosocial including shame, anger, worry - even if they experience these challenges, women do not express these vocally. Similarly, women tend to normalize physical challenges more than men. Interestingly women experience and report higher levels of food insecurity (see below).

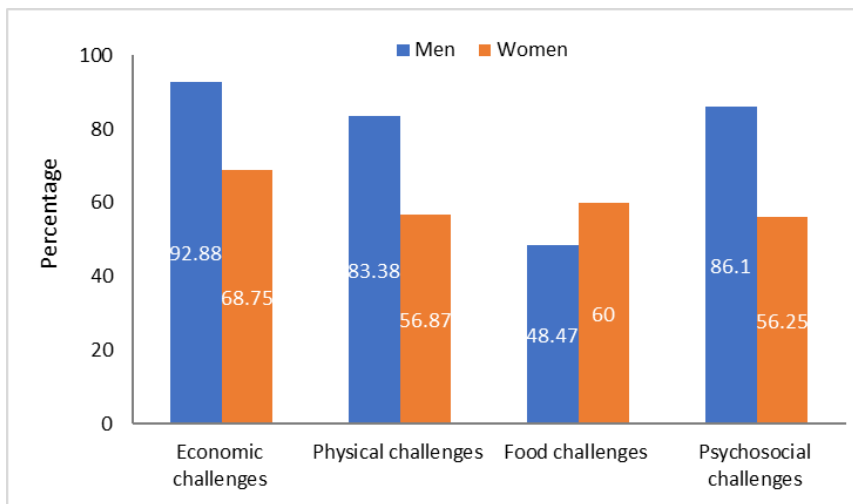


Figure 3: Distribution of challenges faced due to agricultural water insecurity by gender.

Agricultural water insecurity - intersectional inequalities

The third key finding of our study was that the experiences of productive water insecurity cannot be generalized for women or men. The AgWISE module data shows interesting insights when disaggregated by age group, landownership, age, and gender.

Firstly, men report more agricultural water experiences than women, across all age groups (see Figure 4). Amongst women, those above 60 years report the highest levels (67 percent) water insecurity, suggesting that they do the most field work. Ideally, younger women with more energy and strength would be engaged in challenging agricultural work. However, social norms of patriarchy in rural Bangladesh restricts younger women considered sexually active from being more mobile, being seen in public places like the agricultural fields where risks of interactions with men outside the family are prominent. In our discussions it was confirmed that mothers-in-law work in the fields, while younger daughters-in-law typically do housework.

"My daughter-in-law works inside the house. She does agricultural work once the crop is in the yard. I work in the beels (low land) with my son. I transplant, apply pesticides, make the channels, and weed the rice. When my son goes out, I keep a watch on the fields" (62 years old female, Polder 22).

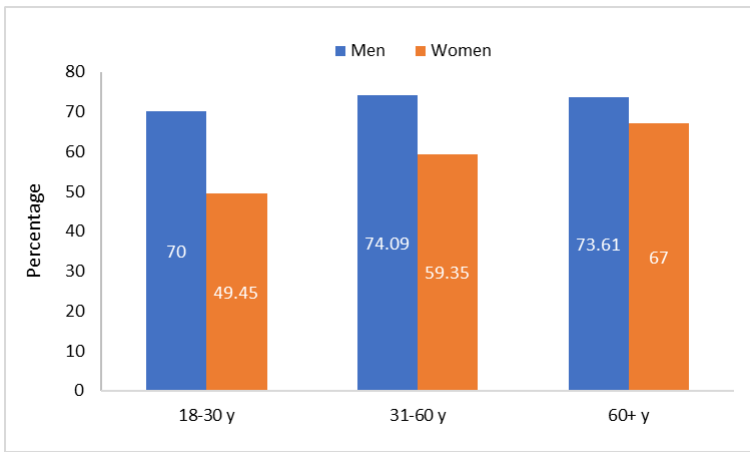


Figure 4: Agricultural water insecurity experience by gender and age groups.

Second, poverty determined by land ownership size or landlessness is a key determinant of water insecurity, which is most pronounced amongst marginalized smallholders and the landless (See Figure 5). Water decision making is determined by land ownership as well as social and political status in the community. This makes marginalized groups like women, smallholders, and landless, who lack social and political connections invisible or insignificant. Data from the AgWISE module indicates that male smallholder farmers with the smallest plots of land report the highest water insecurity (76.27 percent), followed by farmers with medium-sized plots (65.82 percent) and large landholding farmers (60 percent). Both men and women from large landholding families experience the least water insecurity. However, they are also least likely to work in agricultural fields, as social class strongly determines influences adherence to gender norms, particularly limiting women's mobility. Also, these households typically own deep tubewells, and/or are able to hire labor for water-related tasks. In comparison, almost more than 50 percent of women from medium and smallholder farmer households report experiences of productive water insecurity.

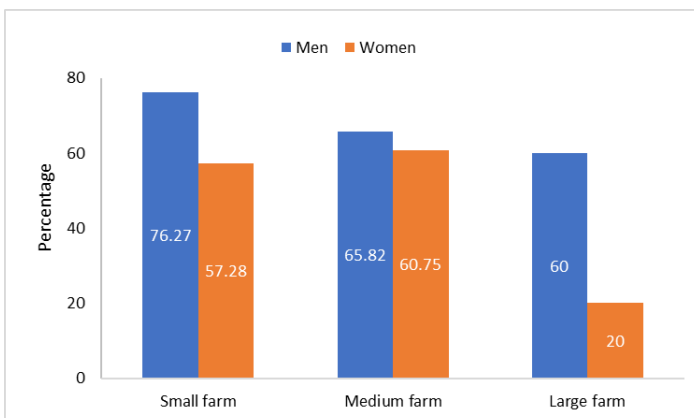


Figure 5: Agricultural water insecurity experience by gender and farm size.

Both women and men with no spouse (widowed or divorced) tend to face highest water insecurity (Figure 6), but these challenges are typically pronounced for such men. Additionally, respondents who were separated women (75 percent) reported high water insecurity followed by married women (56.99 percent).

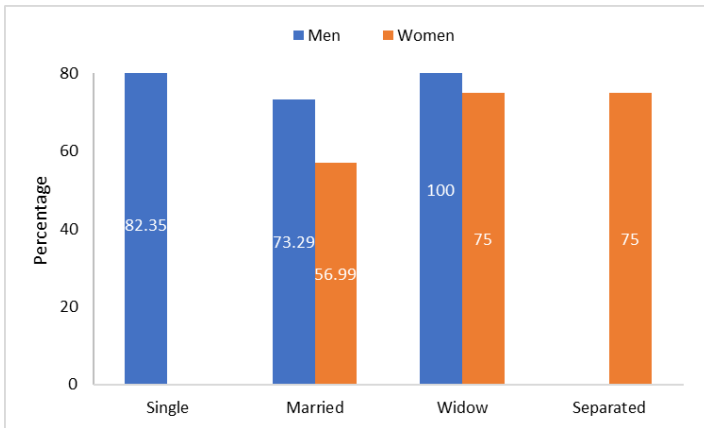


Figure 6: Agricultural water insecurity experience by gender and marital status.

Female-headed households (FHH) all (100 percent) reported significant challenges in accessing (Figure 7) and using water for productive purposes compared to such responses from only 75.86 percent of women from households with a male head of household (MHH).

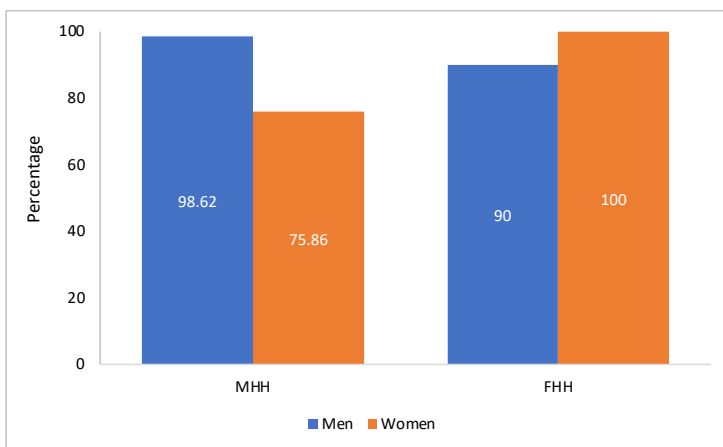


Figure 7: Agricultural water insecurity experience by gender of household head.

Conclusion

This study highlights the complex and intersectional nature of agricultural water insecurity in the southern coastal regions of Bangladesh. Water insecurity – both for domestic and productive use affects both men and women, but these impacts are shaped by gender, farm size, age and other social divides. The study also points out that without addressing the underlying power dynamics that govern water laws, regulations, and decision-making – water insecurity will continue to disproportionately impact the most vulnerable groups in coastal Bangladesh (Sarker et al. 2024a).

The findings of this study are likely a first of its kind analysis of how water insecurity, determined by access, use, and reliability (stability), shapes experiences of disruption and disturbances to lives and livelihoods, as well as emotional, psychosocial stresses at an individual level. The analysis of domestic and productive water insecurity as shaped by intersectional inequalities provides unique insights on the complexities of a deeply embodied water insecurity in the climate-impacted southern coastal regions of Bangladesh, where various anthropogenic drivers, including profit-seeking development agendas (aquaculture) have served to exacerbate elite capture and control of water resources.

According to a World Bank study river and groundwater salinity will continue to increase and by 2050 drinking water and irrigation in the southwest coastal areas of Bangladesh will adversely affecting the livelihoods of at least 2.9 million marginalized groups (Dasgupta et al. 2015).

Finally, the AgWISE module was an initial adaptation of the WISE scales – and much more piloting is required before it can be positioned as a WISE scale. Nonetheless, the module makes evident that the projected drinking and irrigation (plus other water-dependent) water crises will essentially be a gender and intersectional inequality crisis.

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