Food and Agriculture Organization of the United Nations

WorldFish

Women's empowerment in aquaculture

Two case studies from Bangladesh

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ABBREVIATIONS AND ACRONYMS

AIN	Aquaculture for Income and Nutrition project
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka
BFFEA	Bangladesh Frozen Foods Exporters Association
BLA	Bangladesh Labour Act
BRAC	Building Resources across Communities
BPFA	Beijing Platform for Action
CCTV	Close-circuit television
CEDAW	Convention on the Elimination of all Forms of Discrimination against Women
DOF	Department of Fisheries
EPZ	Export processing zone
FAO	Food and Agriculture Organization of the United Nations
FAO-GEF	Food and Agriculture Organization of the United Nations Global Environment Facility
FGD	Focus group discussion
FRSS	Fisheries Resources Survey System
GDP	Gross domestic product
GENNOVATE	Enabling gender equality in agricultural and environmental innovation
GNI	Gross national income
HH	Household
HSC	Higher secondary certificate
ILO	International Labour Organization
IQF	Individual quick freezing
LFPR	Labour force participation rates
MEFB	Ministry of Environment and Forests
MOWCA	Ministry of Women and Children's Affairs Bangladesh
NAEP	New Agricultural Extension Policy
NGO	Non-governmental organization
PL	Post larvae
PPP	Purchasing power parity
PRSP	Poverty Reduction Strategy Paper
SAFE	Social Activities for Environment
SFYP	Seventh Five-Year Plan
SSC	Secondary school certificate
UCEP	Underprivileged Children's Education Programme
USAID	United States Agency for International Development
USD	United States Dollar

EXECUTIVE SUMMARY

Bangladesh is a global leader in inland fish production and has been ranked as the fifth largest producer of aquaculture food fish in the world. Inland fish production is the pillar of aquaculture in Bangladesh, contributing 55.15 percent of the country's total production. Roughly 4.27 million households in Bangladesh (20 percent of rural inhabitants) run at least one homestead pond. *Ghers* (converted rice fields) cover a total area of 244 000 ha, and are the source of 75 percent of the shrimp and prawn production. The fisheries sector, including aquaculture, provides employment to 17.8 million people, out of which women constitute 1.4 million. The shrimp industry alone employs over one million people in its processing factories, out of which 88.64 percent are women.

While women play a significant role in aquaculture production in Bangladesh, their contributions remain under-reported. While there is some empirical information regarding women's roles in and outcomes from aquaculture in Bangladesh, much of it is project-based (regarding homestead aquaculture) or worker's rights-based (regarding shrimp factory employment). More fundamentally, there is a dearth of information regarding women's empowerment in relation to aquaculture, and the associated enabling and constraining factors. This study addresses this gap by exploring women's empowerment in aquaculture in Bangladesh, including positive outcomes and limitations.

The study addresses this through a two case study assessment and analysis. Together with a literature review, two very different qualitative empirical cases form the basis of the study: homestead pond aquaculture production systems (in a rural, majority Hindu population setting); and shrimp processing factories (in an urban, majority Muslim population setting). The definition of empowerment applied in the study is Kabeer's seminal framing of empowerment as: "the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them" (Kabeer, 1999, p.437). The cases have been analysed in relation to four basic areas: i) gendered roles played in that particular sector of the value chain; ii) the enabling and impeding factors behind participation; iii) the social and economic outcomes and costs of participation, including women's ability to make strategic life choices; and iv) enabling and constraining factors shaping the outcomes and success of women in achieving their own goals in relation to aquaculture. This small qualitative, exploratory study provides a glimpse into the scope of empowerment within aquaculture; further mixed methods studies are required for an in-depth look that spans the value chain. These limitations in scope notwithstanding, the study's insights contribute to a deeper understanding of how aquaculture interventions can better enable women's equitable and gainful participation, and ultimately empowerment.

Gendered participation, roles and influencing factors

Case study 1 looks at women's involvement in the homestead production sphere of the aquaculture value chain, focusing on poor rural women in a predominantly Hindu community. The case study found that women face – and make efforts to negotiate – barriers regarding access, ownership and control of the homestead pond in order to work towards meeting their household's consumption needs and the women's future goals. In this context, a woman's role as "housewife" is found to supersede any other role that women perform. Associated with this, women's roles in aquaculture production are largely framed as "supporting" roles (in contrast to men's "performing" roles) – and women take on aquaculture roles in addition to the extensive household responsibilities they are expected to perform. In conjunction with social stereotypes regarding "women's roles" and "men's roles", women's participation and outcomes are influenced by norms regarding appropriate spaces of engagement (household and beyond the household), and the various gender relations that reinforce these stereotypes and norms. Socially-acceptable exceptions (stepping out of accepted gender roles and spaces) are found to occur mostly in the case of necessity (poverty or absence of an able-bodied male household member); otherwise, women face reputational and social repercussions for failing to conform to these stereotypes.

Case study 2 explores women's involvement in the processing sphere of the aquaculture value chain. It does so in a poor, predominantly Muslim peri-urban context. In this sphere and context, the need for women to fulfill required hours and shifts in factories – in order to earn the income necessary for their families – supersedes typical gendered housework roles and spheres. In relation to this, the norms in Case study 2 were found to be somewhat more elastic than in Case study 1. However, while the case study uncovers a relative degree of understanding by male spouses regarding the inability of women to be solely responsible for household work and childcare, while also performing factory work, it also uncovered some conflict and tensions within households over the issue. The case study also revealed that women undertake multiple strategies to overcome these tensions and maintain peace within the household, while still managing to keep their factory employment so that they can work towards their own aspirations for their families. Within the factories, these same stereotypes and norms regarding gendered work and abilities are perceived by study participants to shape (and limit) the nature and quality of work in which women have the opportunity to engage, keeping them in lower paid or non-leadership positions.

In both cases, but particularly in Case study 2, women appear to see their aquaculture-based work as a means to an end. They understand the potential that aquaculture involvement has in helping to achieve desired outcomes, such as buying land or enabling other income-generating opportunities. At the same time, in both studies, respondents envision different livelihoods for their children than their own, i.e. non-smallholder farmer (Case study 1) and non-factory worker (Case study 2).

Outcomes for women and factors shaping outcomes

Overall, in both studies, positive and negative outcomes for women have emerged as a result of women engaging in aquaculture. For Case study 1, the main positive outcomes were more readily available access to fish for household consumption, increased access to and control over the pond as a result of negotiations and risk taking, and increases in awareness of gender equality (rights) as a result of involvement in trainings. In some households, engagement – including via training – in aquaculture appeared to have contributed to somewhat more equitable power relations, as some women are able to practice and prove their aquaculture abilities. Along with the expressed negative outcomes of some increases in work burdens and social risks/criticisms, Case study 1 found a critical limiting factor: the continued strong dependence of most women on their family and spouse for approval (permission). As a result of this dependence, women tended to lack control over the pond and its usage, and differing household priorities around the pond in the face of this limitation meant that women cannot pursue their interests or innovate. In relation to addressing this limitation, underlying factors contributing to constructive family support for women's engagement were identified as: involving men in trainings (together with women, with purposive discussion of women's engagement); strategic intra-household negotiation; and women's education and expanding knowledge.

In Case study 2, by engaging in shrimp factory work, women have gained income, purchasing power and more financial freedom. This is linked to an increase in women's expressed confidence, which connects synergistically with women's increased ability to contribute to family earnings and to plan and save for their desired futures for their family. The main negative outcomes were identified as: lack of sleep associated with long hours and women's double burdens; the physical pain and suffering associated with long hours in the factories; and the associated lack of time available for their children or to fulfill socially ascribed household "duties". Other negative outcomes identified were the women factory workers' reduced prospects of getting married to a "well-off" family, due to the stigma associated with factory work, and the reduction in the incentive to study as a result of limited career options. Constraining gender norms (within households and the factory) and factory hours and work conditions were identified as the underlying influences of negative outcomes. Conversely, outcomes appear to have been shaped positively: by interventions from organizations that have helped improve working conditions and salaries over time; through labour-saving technologies that help women fulfill household work in less time; and in relation to (some) supportive spouses that share in (some) household work burdens, and thus share in re-shaping gender norms.

Overall, the study suggests that women's involvement in aquaculture has been contributing to some important forms and aspects of empowerment. In particular, women's empowerment related-impacts were identified in terms of: expansion of economic decision-making and freedom, and some expanded control over resources; ability to invest in plans for the future (within the scope of their earnings); and making strategic choices around consumption. The study (Case study 2) underscores that women having a direct income can contribute to their economic empowerment. Moreover, this sharing of income burdens by women can help incentivize men to share household duty burdens.

At the same time, the study also found that there are currently limitations to women's empowerment in relation to aquaculture. In particular, engagement in aquaculture did not fundamentally change the strategic freedoms women have, such as mobility, on par with men or the freedom to work in roles other than those stereotypically associated with their gender. Thus the study underscores that while aquaculture holds substantive potential for women's empowerment, it should not be assumed that inclusion of women in the aquaculture sector in the current socio-cultural context – in and of itself – will *de facto* lead to empowerment. Empowerment is multifaceted and deeply shaped by social structures. As such, for aquaculture to contribute more potently and sustainably to women's empowerment, aquaculture initiatives will need to recognize and engage not only with technical innovations, but also policies and, more fundamentally, with gender norms. In line with this, the study identifies recommendations for government, donor and non-governmental organizations (NGOs).

As well as suggesting policy and policy implementation strengthening regarding gender in fisheries, agriculture and labour, the recommendations include: investing in media campaigns on gender awareness, benefits of women's empowerment and sharing work burdens; involvement of men and other powerful household members together with women in aquaculture training, specifically in awareness building around expanding the freedoms of women in aquaculture; promoting and recognizing positive deviants (women and men) in terms of gender role models; incentivizing youth and parents' involvement in aquaculture; and identifying the most promising, higher value entrepreneurial and employment entry points for women in aquaculture value chains, along with means to overcome barriers to these, including investing in gender-equitable work environments with viable pathways for women in leadership roles.

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INTRODUCTION

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1.1 Background and study objectives

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Gender inequalities in access to agricultural assets and resources have been identified as significantly undermining the performance of agriculture in developing countries (FAO, 2011). Closing these gender gaps would have positive outcomes not only for women, but also for global food security (CGIAR, 2016). In fact, the FAO has estimated that gender-equal access to these assets and resources has the potential to reduce global hunger by 12–15 percent (FAO, 2011). Further understanding of these gender inequalities, their underlying factors, and strategies for and factors contributing to women's empowerment, is needed in order to help design interventions and policies that are more conducive to engaging and empowering women and enabling better agricultural sector performance.

In response to this need, this study aims to qualitatively assess and analyse women's social and economic empowerment in aquaculture, which is the fastest growing food-production sector in the world (FAO, 2014). In particular, the study investigates women's empowerment in aquaculture in Bangladesh. This Bangladesh study dovetails with a parallel study in Indonesia (FAO, forthcoming). Together, these two studies form the small FAO-WorldFish collaborative project entitled *Women's Economic Empowerment in Aquaculture Production Systems in Asia: Comparative Case Studies and Synthesis from Bangladesh and Indonesia,* which will lead to a deeper understanding of how interventions can better enable women's equitable and gainful participation in, and ultimately empowerment through, aquaculture. In doing so, the study contributes to three of the FAO Organizational Strategic Objectives: 1) eradicate hunger, food insecurity and malnutrition; 2) increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner; and 3) reduce rural poverty. It also feeds into and informs the FAO Blue Growth Regional Initiative in South Asia.

The objective of this study is to enable a greater understanding of the ways in which women's engagement in aquaculture may contribute to women's social and economic empowerment. In particular, it aims to elucidate this with reference to two types and nodes of aquaculture: homestead fish production systems and commercial (factory-based) shrimp processing. In order to do so, the study takes a close look into engagement and roles of women in these types of aquaculture, and the factors that enable or constrain women in playing these roles and from achieving positive outcomes through this engagement. Specifically, the study uses two case studies to explore the following overarching question and its four sub-questions:

Primary research question: In what ways, to what extent and why are different women in Bangladesh empowered or disempowered by their engagement in aquaculture?

Sub-questions:

i) What are the gendered patterns of engagement and roles played by women in these types and nodes of aquaculture?

ii) What enabling and constraining factors shape these patterns and roles?

iii) What are the positive and negative outcomes for women in these different aquaculture roles and nodes?

iv) What factors shape these outcomes, including what enables or constrains women in successfully meeting their aspirations in or through aquaculture?

The study meets this objective though a combination of literature reviews (to provide context) and two empirical qualitative case studies in Bangladesh to investigate the specifics of the questions in depth. The study took place from January to March 2016.

This report is divided into five main sections. The introduction presents the research methodology, including case selection criteria, scope and limitations of the study, while Section 2 presents the relevant Bangladesh country context. The subsequent two sections present the case studies: first, the homestead fish production case study; then, the factory-based shrimp processing case study. Within both case studies, the report presents findings relating to each of the study's four sub-questions (engagement and roles; factors shaping engagement and roles; positive and negative outcomes; and enabling and constraining influences on outcomes). In the final section, the report synthesizes lessons learned and policy implications regarding the overarching question and focus: women's empowerment in aquaculture. As such, the study concludes with insights for a range of development actors regarding entry points and strategies by which aquaculture can contribute to women's empowerment.

1.2 Methodology

1.2.1 Scope of the study

Methodologically in line with the study objectives, the research was designed and carried out as an explorative qualitative study. It applies a qualitative case study methodology (Yin, 2009), drawing on and comparing two cases (homestead fish production and factory-based shrimp processing). The field work in each case site was undertaken over the course of ten days (i.e. five consecutive days in each site). The context section of the study (Section 2) was developed through a desk review of peer-reviewed and grey literature.

The two cases selected represent two specific types of aquaculture (fish and shrimp) and two specific nodes or parts of these aquaculture value chains (production and processing). In relation to the subject focus, the study (through the cases) focuses on three issues: i) the extent and types of women's engagement with aquaculture; ii) the differential outcomes for men and women, both social and economic as a result of this engagement; and iii) the factors that influence and shape this engagement and these outcomes.

1.2.2 Case study selection

Criteria

The criteria guiding case selection were developed in line with the objectives of the larger FAO initiative (*Economic Empowerment in Aquaculture Production Systems in Asia: Comparative Case Studies and Synthesis from Bangladesh and Indonesia*) of which this study forms one part. The cases were chosen from within an aquaculture value chain in which women are directly or indirectly involved and that is of current or potential significance in the country context. They were also selected to provide insights into two different parts of the value chain – production and processing – and with the aim of being able to provide some range of diversity of socio-cultural contexts (i.e. Muslim-Hindu and rural-urban backgrounds). Other selection criteria included the need for the aquaculture activity in the site to be in a mature enough stage so as to generate at least some income, willingness from men and women to participate in this study, and the accessibility of the sites considering the time and resource constrictions. Overlap with FAO project sites was considered a positive factor for selection, as the study could then inform future FAO initiatives directly.

Case types

Before specific sites were selected (based on the previously mentioned criteria) the two types of cases were purposively identified. Addressing both production and processing and fish and non-fish aquaculture, the following were selected: homestead pond aquaculture (Case study 1) and factory-based shrimp processing (Case study 2). The rationale for these two studies is presented in Box 1.

Box 1. Types of cases and rationale

Case study 1. Homestead aquaculture

Homestead aquaculture production was selected because engaging women in homestead systems (in both homestead gardening and ponds) has been a very popular gender accommodative approach amongst development organizations in Bangladesh such as WorldFish, BRAC, Care and others. Specifically, recognizing the gendered constraints of women's lack of mobility, time and labour burdens, and limited access to resources, development organizations have focused on interventions that accommodate these barriers by engaging and training women within the homestead sphere to improve production and profits, as well as household nutrition. A review of current literature for this study indicated that there is very limited empirical data and literature on women's involvement and the empowerment impacts of homestead aquaculture interventions in Bangladesh. As such, the selection of homestead aquaculture production as a case study enables a deeper look into the attitudes behind the roles that men and women play, the constraints they face in attempting to do and benefit more from it, and the access and decision-making aspects.

Case study 2. Factory-based shrimp processing

Shrimp processing was selected as the second case study because it is a part of the aquaculture value chain in which many women engage. Shrimp factories in Bangladesh employ large numbers of women (SAFE, 2013). As such, many women and families have migrated to the shrimp processing areas in hopes of jobs and income (SAFE, 2013). Additionally, factory-based shrimp processing offers a useful contrast to the first case study. Specifically, in factory work women earn their own salary (direct income), whereas in Case study 1, the women working in homestead ponds are contributing (unpaid) labour to a family endeavor in which income is generated through the activities of multiple household members. While there exists plentiful literature around workers' rights and benefits and regarding the feminization of the work force for exploitative purposes in Bangladesh (for example, see Islam, 2008; Halim, 2004), there is a dearth of literature elucidating the relational gender aspects of this work, including the perceptions of family members, the benefits and trade-offs for women, and the role factories play in relation to women's aspirations. As such, the selection of this case study helps to elucidate this relatively little understood area.

1.2.3 Case study methods

Data collection

Qualitative methods were used for both case studies (Table 1). The methods comprised: key informant interviews (Tool 1); focus group discussions (FGDs) using five different tools (Tools 2–6); in-depth interviews; and field observations. In-depth interviews were important to enable in-depth understanding of personal experience from a range of women and men, thereby adding depth and nuance to the data from the FGDs. A protocol and semi-structured interview guideline – common to both this study and its sister study in Indonesia – was developed for the interviews and FGDs. This was then adapted as needed for the specific cases and contexts. The fieldwork was conducted over a period of ten days in February 2016 (five days per study).

Table 1. Summary overview of tools

TOOL	THEMES	PURPOSE
Tool 1	Demographic and wealth ranking	A set of questions for key informants. This tool is to understand the village and its occupants, including characteristics and the distribution of wealth groups, so to enable participant selection.
Tool 2	Understanding gendered roles, benefits and costs	Roles matrix to understand the gendered division of labour and why it exists.
Tool 3	Enabling and constraining factors	A set of explorative questions to understand what is setting participants back and what is enabling them.
Tool 4	Who decides?	A matrix to understand decision-making processes in the household.
Tool 5	Access to resources and services	A set of explorative questions and a resource access matrix.
Tool 6	Aspirations and contributions of aquaculture to empowerment	A set of explorative questions and the Ladder of Power and Freedom tool, used to evaluate ones sense of control over one's life (see Figure 1).

The *Ladder of Power and Freedom* tool was applied in the study to enable better understanding of the contributions of aquaculture to empowerment, with empowerment in this study being understood in terms of the ability to make and act on strategic life choices (following Kabeer,[1] see Section 2.3). This tool (Figure 1) is used to measure perceptions of change in a participant's own perception of their power and freedom to make important life decisions – both ten years ago and today. Participants identify what they perceive to the most important kinds of power or freedoms and assess where they were and where they are now. Step 1 is the "lowest rung" on the ladder, indicating an absolute lack of power and freedom to make important life decisions, while Step 5 is the highest rung, indicating full power to decide about one's own life.

Figure 1. The Ladder of Power and Freedom

Source: GENNOVATE, 2014.

As presented in Table 2, in total the study involved 13 in-depth interviews and seven FGDs, separated by gender. Additionally, six key informant interviews were conducted to provide the background information provided at the beginning of both the cases and inform participant selection. The male and female FGD participants and in-depth interview respondents were purposively selected and separate FGDs formed, based on factors that would enable comparisons across different types of women, as well as across genders. Further detail is provided in Table 2 and Annex 7.1.

[1] For this study, Kabeer's definition of empowerment is used, which is "the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them" is being utilized (Kabeer, 1999, page 437).

Table 2. Methods and types of participants

	Method	Participants	Number
CASE STUDY 1	FGD (n=4)	Female (trained, with pond of size between 0.323 to 0.133 hectares)	1
		Male (husbands of trained female, with pond of size between 0.323 to 0.133 hectares)	1
		Female (untrained, with pond of size 0.024 hectares and below)	1
		Male (husbands of trained female, with pond of size 0.024 hectares and below)	1
	In-depth interviews (n=5)	Female (trained)	3
		Male (husbands of trained female)	2
	Key informant Interviews (n=4)	Informal village leaders	4
CASE STUDY 2	FGD (n=3)	Female (permanent workers)	1
		Female (contract workers)	1
		Male (permanent + contract + family members)	1
	In-depth interviews (n=8)	Female (contract workers)	3
		Female (permanent workers)	3
		Male (workers and family members)	2
	Key Informant interviews (n=2)	Organizations (SAFE and Solidarity)	2

Note: Participants in FGDs and interviews were selected to enable intersectional analysis through purposive comparison of different types of women. Specifically, based on analysis of key variables in each type of case, for Case study 1 this was exposure or non-exposure to aquaculture training and pond size; for Case study 2 this was permanent versus contract workers.

Data analysis

Interviews and FGDs were conducted, recorded (using both hand written notes and recording devices), translated (from Bengali to English) and transcribed by the lead researcher with the help of an assistant researcher. The findings were manually coded and analysed in relation to four themes: i) roles and engagement; ii) factors shaping roles and engagement; iii) outcomes and enabling; and iv) constraining factors, which were derived from the research questions.

Each case study was analysed individually, followed by a cross-case analysis to generate insights through comparing and contrasting the two studies in light of the overarching research question. A gendered lens was used to explore the possible intersectional mechanisms affecting women's empowerment. Specifically, factors such as exposure to training and religion (influence of religious norms) have been taken into consideration in the study. As far as possible and when applicable, information from individuals was triangulated through obtaining equivalent data from other household members (spouses, in particular), input of key informants, and observations.

Participants gave informed written consent for this study, with a signed copy provided to the participant and one kept on file by the lead researcher (see a sample of a consent form in Annex 2). The names of the sites are provided in this study report; names of respondents have been kept confidential for privacy and security concerns, especially for factory workers who fear losing their jobs.

1.2.4 Limitations of the study

Overall limitations

Corresponding to the very short time frame and resources of the study, the study has several limitations. First, the study represents a single point in time, rather than real-time longitudinal change data. The study does aim to accommodate that limitation through the two cases including participants' reflection of change over time in relation to empowerment (*Ladder of Power and Freedom* tool). Similarly, while the study represents two key types and nodes of aquaculture, these are only two of many possible types and nodes and only two cases in a large sector are not intended to represent the entire sector or all possible cases.

In line with the intent of the study, all data upon which this study draws is qualitative in nature. Findings and recommendations are to be interpreted as such, and are not for statistical extrapolation.

Case-specific limitations

Third, in relation to Case study 1, while the aim of the study is to allow for intersectional gendered insights in terms of socio-economic groups, the contextual realities of Case study 1 limit the ability to contrast wealth groups. Specifically, the wealth ranking (Tool 1) established that the site was relatively homogeneous in terms of wealth groups, consisting mainly of the extreme landless poor and the poor. Among the better off wealth categories, there were only one–two Muslim families who do not engage in aquaculture. Given that the landless poor do not have homestead ponds, the poor wealth group was the only viable choice for the study focus, as it was the only wealth group with access to and ownership of homestead ponds. The study was able to address this intersectional limitation through focusing instead on an unanticipated but highly relevant intersectional influence that emerged as being of particular relevance to this study: access to aquaculture training. Investigation revealed that the training aspect

overlaps with pond size (Aquaculture for Income and Nutrition project (AIN) targets those women who have larger ponds in their homestead area, thus the untrained women were automatically a pool of women with very small ponds), so this is also taken into account into the analysis.[2]

Additionally, the site was a majority Hindu village, which is significant to limitations because Hindu women engage more in aquaculture and face lesser social restrictions than Muslim women (Naved *et al.*, 2011; Balk, 1996). It would have been useful to select a mixed religion village to enable in-site comparisons, but the aspiration to choose a site that met the site criteria including overlapping with an FAO project precluded that. Adding a second site, which could have provided contrast across religions within this study, was prevented by the limited resources available. While contrasting religions were not possible within Case study 1, it was possible to mitigate this limitation somewhat by selecting a contrast through Case study 2, which provides a contrasting Muslim influence, albeit further along the value chain and in an urban and peri-urban setting.

In relation to Case study 2, the initial plan was to conduct interviews within the factories in order to access both factory management and with workers in the factory itself, but in order to do so, permission from the Bangladesh Frozen Foods Exporters Association (BFFEA) was required. After repeated calls with the BFFEA, it was determined that this was not possible in the given study window, due to on-going month-long factory inspections and audits in which management were fully occupied. Though the study would have benefitted from the management perspective, this did not limit the study in its primary need for workers' own perspectives in terms of roles played, constraints they face, the decisions they make and the ways in which their engagement benefits or harms their lives and those with which they are in relationships. Factory-management perspectives will be important to incorporate into future research, further refining and developing empowerment strategies in relation to this sector.

[2] This may seem to indicate that the trained women are wealthier because they have larger ponds than the untrained women. However, this was found not to be the case. Homestead ponds have been handed down by previous generations. Some ponds have been sub-divided as families have become nuclear and are hence smaller, while some others have been kept under joint ownership. Furthermore, some have enlarged their ponds by reducing their courtyard area while others have kept it small. Thus pond size is reflective of family history and interest in aquaculture, not necessarily wealth.


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THE BANGLADESH CONTEXT

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2.1 Socio-economic context

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Bangladesh is situated on the northern coast of the Bay of Bengal, surrounded on most sides by India with a small land and water border with Myanmar. The country is predominantly low-lying riverine plains, apart from hilly regions in the far southeast and northeast corners. Its tropical monsoon climate generates seasonal rainfall, extremes in temperature and humidity, as well as regular floods and cyclones. As of July 2012, the population stood at 152.7 million, with a growth rate of 1.36 percent, and is projected to rise to 167.4 million by July 2019 (BBS, 2015). The land area is about 130 170 sq. km. (of which about 91 250 sq. km. is used for agriculture), and there is about 13 800 sq. km. of water area (BBS, 2015).

Bangladesh has enjoyed moderately high economic growth, and weathered the 2008 global financial crisis fairly well (MEFB, 2012). It posted a gross domestic product (GDP) growth rate of over 6 percent from the years 2008 to 2013, in great part due to ready-made garment exports, which account for almost two-thirds of annual export earnings (MEFB, 2012). Yet, Bangladesh remains an economically poor country, ranking 171 out of 213 countries in per capita gross national income (GNI) (World Bank, 2014). Based on the 2005 international standard measure of 'extreme' poverty – less than USD 1.25 per day per capita (PPP) – Bangladesh's Poverty Headcount Ratio was 43.3 percent in 2010.

The population of Bangladesh is 70 percent rural, with almost 50 percent of the labour force in agriculture. Despite this, the main economic sector in terms of output is "services", generating 55 percent of GDP in 2010–11, with agriculture contributing only 18 percent (Hayes and Jones, 2015). Hayes and Jones (2015) indicate that poverty is particularly concentrated in rural areas. They note that the failure of post-independence policies to effectively redistribute land, combined with the rising population and no "land frontier" remaining, has meant that the area occupied by smallholders (<1.5 acres) has increased, while the area occupied by large farms (>2.5 acres) has decreased (Hayes and Jones, 2015). As families are inheriting smaller chunks of the same limited land, large numbers of people are also losing land due to climate change (e.g. flooding and salinity) (Hayes and Jones, 2015).

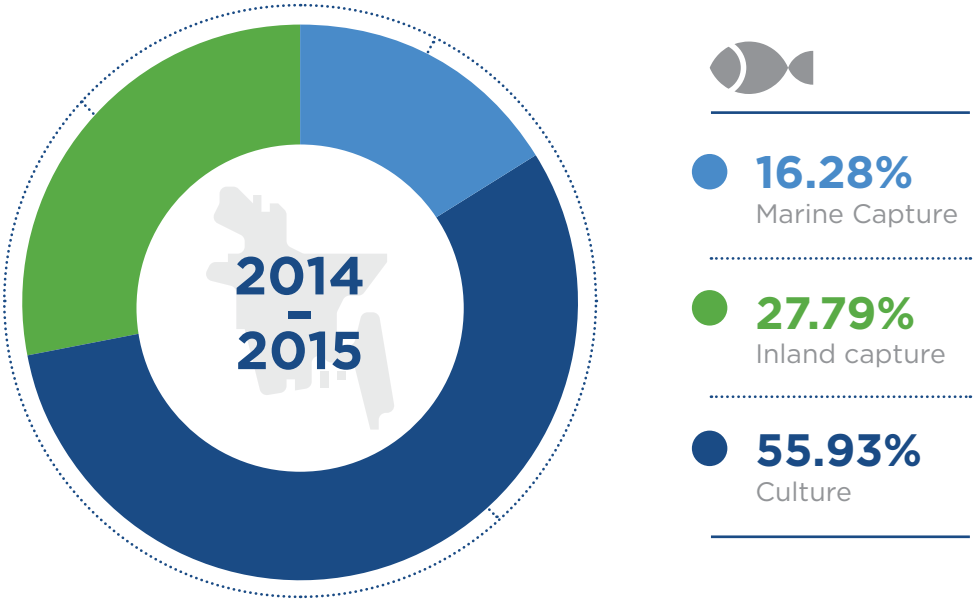
While trends are shifting, the benefits of development remain unevenly distributed among class and gender groups in Bangladesh. The rapid expansion of the ready-made garments industry has provided opportunities for women to find wage work in urban areas over the past 20 years, increasing their labour-force participation from 24 percent in 2000 to 36 percent in 2010 (Hayes and Jones, 2015). However, women are often paid significantly less than their male counterparts and are discriminated against in service sectors due to gender stereotyping (MEFB, 2012). In rural areas, women's economic participation has been advanced by micro-credit schemes, but these have done little to address broader inequalities (Hayes and Jones, 2015). Although Bangladesh has a 33 percent reservation quota for women in local government bodies and 20 percent women's participation in parliament (Begum, 2014), participation of women in public decision-making circles remains low (MEFB, 2012). Bangladesh was ranked 86th out of 135 countries in the Global Gender Gap Index 2012, and 111th out of 155 countries in the Gender Inequality

Index 2012 (Interactions, 2016). While both genders have relatively equal enrolment rates in primary and secondary school, the high female drop-out rate contributes to the poor representation of women in higher education and higher level employment positions. Gender discrimination persists in Bangladesh largely due to practices rooted in traditional social norms that favour boys over girls, including child marriage, abandonment, dowry, polygamy and tolerant views toward violence against women (Begum, 2014).

2.2 Aquaculture in Bangladesh

Bangladesh is a global leader in inland fish production. It has been ranked as the fifth largest inland water capture fisheries producer and the fifth largest producer of aquaculture food fish (2.6 percent of the world's total) in the world by FAO in 2012 (FAO, 2014). The total fish production in 2014–2015 was 3.68 million metric tonnes (FRSS, 2016). The average growth rate of the fisheries sub-sector for the past ten years has been 5.4 percent, with growth of the broader aquaculture sector being 8.2 percent (APCAS, 2016). The fisheries sector provides employment to 17.80 million (11 percent of total population) people out of which women constitute 1.40 million (APCAS, 2016). Moreover, fisheries' contribution to national GDP is 3.69 percent (FRSS, 2016). Aquaculture contribution from inland closed water bodies is 55.93 percent of the total production (FRSS, 2016), establishing it to be the pillar of aquaculture production in Bangladesh. Figure 2 shows the significant contribution of inland culture as compared to marine and inland capture.

Figure 2. Bangladesh fisheries production from three major sources 2014–2015



Source: FRSS, 2016.

Belton *et al.*'s (2011) study shows that the three most dominant species cultivated are carp, tilapia and pangasias, and the culture of these fish takes place in different kinds of systems, with homestead ponds covering an area of 265 000 ha, commercial semi-intensive carp culture covering 110 000 ha, intensive pond culture covering only 15 000 ha and *ghers* (i.e. converted rice fields) covering a total area of 244 000 ha. The study shows that the rest of the culture methods and areas, including floodplain aquaculture, cage aquaculture, rice-fish culture and the culture of fish in Oxbow lakes, constitute 2 percent of the total aquaculture production. The study further shows that it is in the *ghers*, located in south and southwest Bangladesh, that most (75 percent) of the shrimp and prawn are produced. Significant export earners are black tiger shrimp (*Penaeus monodon*) and giant freshwater prawn (*Macrobrachium rosenbergii*) which together with other shrimp and prawn generated USD 598 million in 2011–12, coming third in foreign exchange earnings, after ready-made garments and jute (Belton *et al.*, 2011). The shrimp industry provides direct employment to 1 million people, who in turn support about 3.5 million dependents. Out of 48 shore-based factories, 34 of current shrimp processing factories are located in the southwest. BFFEA estimates that 25 000 workers are employed in its processing factories (Belton *et al.*, 2011).

In a study of pond aquaculture in Bangladesh, Belton and Azad (2012) found that roughly 4.27 million households in Bangladesh (20 percent of rural inhabitants) run at least one homestead pond. The study further reveals that homestead ponds are typically small in size (with a mean area of approximately 0.08–0.1 ha) and that this small size is due in part to land being limited, the high costs of construction and the fact that these ponds have multiple domestic uses such as washing, bathing and cooking. Table 3, taken from the study results, displays the contribution of homestead pond aquaculture to household income and consumption, ranging between 2.8–15 percent and 26–47 percent, respectively. The contribution levels reflect the small pond sizes, under-production relative to potential, and the fact that pond-owning households often earn relatively higher total incomes compared to the wider rural population (Belton and Azad, 2012). The consequence of the latter is that "even where development interventions bring about significant improvements in the productivity of ponds such as these, the increase in pond income as a proportion of total household income is usually incremental" (Belton and Azad, 2012, p.3). The fish consumption rates are high as homestead ponds are usually utilized to fulfil consumption needs, though commercial production is increasing (Belton and Azad, 2012).

Table 3. Characteristics of homestead aquaculture in Bangladesh

Mean pond size (ha)	Aquaculture as percent of household income	Fish consumed at home (percent)	Location	Source
0.1	2.8	41	Gazipur	Thompson *et al.* (2006)
0.09	3	37	Northwest	Thompson *et al.* (2006)
0.08	13.2	n/a	Mymensingh	Winrock International
0.1	10	26	Whole country	Jahan *et al.* (2010)
0.1–0.2	15.5	47	Mymensingh	Karim (2006)
0.04	10	29	North and North west	Hossain *et al.* (2010)

Source: Belton *et al.*, 2011.

2.3 Gender and aquaculture in Bangladesh

Women play a significant role in aquaculture production in Bangladesh (Halim and Ahmed, 2006). In terms of production, 43 percent of rural women are estimated to contribute their time to agriculture and/or aquaculture and fisheries-related activities in addition to their household responsibilities (Ahmed *et al.*, 2012). Labour is a major requirement for intensified agricultural production systems and this cost is often saved by family labour (Jahan *et al.*, 2015), especially women's (Faruque, 2007). Moreover, Shirajee et al. (2010) found that average fish production increased by 10–20 percent in their study site as a result of women's involvement.

Despite this, women's contributions remain insufficiently recognized (Shelly and Costa, 2002) and underreported in national statistics (Ahmed *et al.*, 2012; Halim and Ahmed, 2006).[3] The existing literature provides an inconsistent picture regarding the specific extent[4] and nature of women's involvement in aquaculture. Of the existing studies on the nature of women's roles in aquaculture, several are post-project studies that show varying levels of involvement across contexts. For example, while studies conducted in the Gaibandha, Sherpur and Kishoreganj districts show very low levels of participation

[3] In Bangladesh, women's wide range of work is categorized under "household work" in the national census (Morgan et al., 2015).
[4] One of the few studies on the extent of involvement in fish aquaculture production, found women to be contributing approximately 22 percent of the total labour for homestead ponds and 6 to 17 percent in gher-based technologies (Jahan et al., 2015).

of women in aquaculture production (Hoque and Itohara, 2008; Rahman and Naoroze, 2007), a study in Mymensingh district (Shirajee *et al.*, 2010) and another in Norshinghdi, Tangail, Cox's Bazar, Netrokona and Panchagarh districts (Halim and Ahmed, 2006) found much higher involvement. Shirajee et al. (2010) noted women's engagement in activities such as pond stocking, feeding, managing the pond, fertilizing, liming, fish harvesting and marketing with some cases of fish net weaving, while Halim and Ahmed (2006) found that women in those districts engaged in other activities (making fish nets and gear, preparing fish feed, fish processing, digging ponds, sorting fingerlings and some were also catching and marketing fish), but not in harvesting, liming, stocking and fertilizing (Halim and Ahmed, 2006). This range may be attributed to the studies being conducted in different areas of Bangladesh and with participants from different demographic populations and associated variation in gender roles, norms and relations. The impact of factors such as social standing and religion on women's participation has not been taken into consideration by these studies.

Women also play diverse and significant roles in shrimp aquaculture in Bangladesh. As presented in Table 4, along the shrimp value chain, women's engagement is largely concentrated in fry collection from rivers (Halim, 2004; Islam, 2008), snail collection[5] and breaking (Islam, 2008) and in the shrimp processing factories (Shelly and Costa, 2002; Islam, 2008).

Table 4. Women in key nodes of shrimp aquaculture in Bangladesh

Roles	Percent of women
Casual jobs in processing factories (e.g. de-heading, counting, peeling)	80
Food processing, snail collection, snail breaking in freshwater shrimp	80
Collection of shrimp fry from the sea	70
Labour in shrimp ponds (e.g. embankment, weeding)	40
Shrimp business (e.g. trading, contractors, middlemen)	3–4
Shrimp pond owners/farmers	1–2
Management in processing centres	0–1

Source: Based on Islam (2008).

[5] Snails are collected from wetlands and canals to feed farmed shrimp. They have to be broken before being fed to shrimp.

The shrimp industry in Bangladesh consists of about 148 plants which provide employment to 1 million people, out of which 88.64 percent are women, according to SAFE (SAFE, 2013). Temporary contract workers constitute approximately 70 percent of total workers (SAFE, 2013). However, despite such a large number of women finding employment in this sector, women are rarely hired for higher administrative or managerial positions, and even when men and women are hired for similar positions, women tend to be paid less (Islam, 2008; Pokrant and Reeves 2003; Verite Report, 2009). Research in the shrimp industry suggests that this feminization of the sector has occurred because women are more readily exploited, cheaper, reliant on families and are less likely to demand their rights (Islam, 2008). This supports the argument that women view and accept employment in shrimp factories as their only choice in a situation where opportunities for productive engagements are scarce (Halim, 2004; The Solidarity Center, 2008).

In parallel to the gaps mentioned previously, there is also relatively little literature on the benefits (or costs) to women from their involvement in aquaculture in Bangladesh. The existing literature provides some evidence that women's involvement in aquaculture can contribute to some forms of social and economic empowerment, although with limitations (see Ahmed *et al.*, 2012). In particular, several studies have shown some positive empowerment-related impacts[6] associated with women's involvement in aquaculture projects within the homestead system. The most noted impact of involvement in aquaculture projects in the literature was in terms of household decision-making (Faruque, 2007; Sultana *et al.*, 2002; Williams and Khan, 2002; Rahman and Naoroze, 2007; Shirajee *et al.*, 2010) and intra-household bargaining, respect and voice in the community (Farnworth *et al.*, 2015; Shirajee *et al.*, 2010). Other studies have found, however, that though there was an increase in some decision-making power of women, it still did not extend to major decisions over large household purchases (Halim and Ahmed, 2006) and women were only able to influence decisions over expenditures where they had a labour contribution (Williams and Khan, 2002). Applying a framework of empowerment based on five measures,[7] Rahman and Naoroze (2007)'s assessment indicated some increase in empowerment after three years of a project intervention, although not as much as was hoped for by the project. Moreover, while there is a dearth of empirical information about women's work burdens, a review of the literature indicates that these may be exacerbated as they engage in aquaculture roles (see Box 2).

[6] These studies have mostly linked empowerment with decision-making, respect, voice, bargaining and income.

[7] These five measures were: 1) a woman's decision-making ability within the family; 2) spending ability; 3) cosmopolitan-ness; 4) social participation; and 5) access to assets and resources. A number of indicators were set for each of these five measures and the participants were asked to assess themselves about each indicator on a four point continuum.

Box 2. Women's work burdens in aquaculture

Within the limited literature available in relation to women's work burdens and homestead aquaculture in Bangladesh, in Shirajee *et al.*'s (2010) study, participants stated that their work burdens increased after involvement in pond aquaculture, but that economic returns made them willing to bear the additional burdens. They expressed household obligations to be a bigger burden as they still have to fulfil these roles which take up much of their time, thereby adding to their total work load (Shirajee *et al.*, 2010; Halim and Ahmed, 2006). Another study revealed that after women received training from an aquaculture project, the men expected the women to perform all the roles required to do aquaculture, even the roles men would generally perform, and no longer helped them out, resulting in further work burdens (Morgan *et al.*, 2015).

In literature on the shrimp sector, only Halim's (2004) study looked into the workload and burdens associated with women's involvement. She explains that women working in shrimp factories must also fulfil their domestic tasks, thereby increasing their amount of total work. Halim (2004, p.2) further explained that "the process of exploitation of women in global economy is perpetuated based on the assumption that women's time is infinite". Her study also uncovered cases of domestic violence when women are not able to fulfil their duties on time. Linking shrimp processing and rurally-based women, Halim (2004) also noted that environmental degradation as a result of shrimp culture and deforestation have also increased rural women's workload as now they have to spend longer hours gathering fuel and drinking water.

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Amongst the before-and-after project-based studies cited, some have addressed the factors shaping their identified outcomes. In particular, Rahman and Naoroze (2007) underscore the importance of the combined effects of involvement in aquaculture production on empowerment with education, access to media extension contact and exposure to training. They, however, did not find any noteworthy relationship between factors such as age, family size, family farm size and so forth with empowerment. As noted in Shirajee *et al.*'s (2010, p.13) study:

> **"women's empowerment depends on a range of factors including psychological, cognitive, economic, social and political dimensions. Women's empowerment may give them greater equity, mobility, more control over resources and political awareness, and thus, reduce incidents of domestic violence. The empowerment status of rural women in Bangladesh can be significantly improved by increasing their involvement in income generating activities including aquaculture. Nevertheless, the participation of women in different aspects of aquaculture activities is strongly affected by social, cultural and religious norms".**

Several recent studies have elucidated the significant influence of the nature of aquaculture extension on the sustainability of empowerment effects. Specifically, one study brought to light that conventional training does not address the underlying multidimensional gender relational constraints that women face and thus may not have lasting positive empowerment-related impacts on women (Morgan *et al.*, 2015). Farnworth *et al.* (2015) and Kantor *et al.* (2015) indicate that in order to address these constraints and enable women's benefits from aquaculture participation, more gender transformative approaches are needed, such as involving men and other family members, and using participatory action research and social messaging around gender.

While the literature is limited, gender norms, including the associated division of labour, have also been identified as a factor limiting women's mobility and their ability to participate in income generating activities beyond the homestead in Bangladesh (Jahan *et al.*, 2010; Shirajee et al., 2010; *Morgan et al.*, 2016; Shelly and Costa, 2002; Faruque, 2007). The ideals of purdah[8] further restrict women's movement into the public sphere, however this norm is relaxed for poor women due to economic needs (Belton *et al.*, 2011) and women from Hindu households (Morgan *et al.*, 2016), where *purdah* is not a religious requirement.[9] As documented in the World Bank's country-wide survey on gender norms, attitudes in Bangladesh relating to women's freedom of movement in general and to women working outside the home remain conservative (World Bank, 2008; see also HKI, 2011). One gender-related attitude harboured by men, reported by Shelly and Costa (2002), is that women are not allowed access to the outside world in fear that men will not be able to control them if they do. Marriage and family are "the boundaries within which women's lives are ordained" (World Bank, 2008, p.12), with the structure of women's marital family (e.g. nuclear or extended) linked with women's access to health care, opportunities for work, mobility, ability to act on nutrition information, and involvement in wider household decision-making (HKI, 2011).

[8] It literally translates as a 'veil' and is a mode of shielding women from men by covering oneself or by restricting movement.
[9] In some cases, purdah is practiced in Hindu households as a social custom, including showing modesty and class status.

Specifically in terms of factory work and empowerment, Halim (2004) generally points out how globalization and its ensuing employment opportunities for women can have both empowering and disempowering effects. Among the literature reviewed, Halim's study was the only one that looks at empowerment and women's involvement in the shrimp sector. She explains that with globalization, an increasing number of women are entering the new global labour markets, pointing out how the labour force participation rates (LFPR) for women relative to men in Bangladesh has been increasing at a faster rate in rural areas. She explains that this is mainly because the single male 'provider for the household' with a low paying job is unable to provide sufficiently for the family. Drawing on Marxist feminist theory, Halim further suggests how existing patriarchal structures are further marginalizing women: a high supply of willing women workers, lack of alterative options and the drive to reduce operating costs and increase profits are leading to the hiring of women under unfavourable conditions (Halim, 2004). This drive to reduce operational costs has further led to downsizing and outsourcing of labour to contractors who supply temporary, flexible labour – who once they join, find themselves under rigid regulations (Halim, 2004). Halim (2004) thus concludes that while globalization is enabling women's participation in the shrimp sector, it is also exploiting them.

2.4 Policy and legal context

The Constitution of Bangladesh provides equal rights to men and women in all aspects of the public sphere.[10] Provisions in the Constitution have further been complemented by the Dowry Prohibition Act of 1980, the Child Marriage Restraint Act (amended in 1984), the Family Courts Ordinance of 1985 (Shah and Raschen, 2006), and the Prevention of Cruelty to Women and Children Act and Acid Control Act (CEDAW Report, 2015).

The most recent Bangladesh policy efforts for gender equity are the Women Development Policy of 2011, which promotes the equal rights of men and women in both the public and the private sphere, and the National Action Plan for Women's Development of 2013. The policy created some conflict regarding its provision of equal rights to inherited property because that contradicts portions of widely followed Islamic (Sharia) law. In Bangladesh, personal laws – derived from religious and customary systems – govern women's rights in crucial private areas such as marriage, alimony, inheritance, divorce; this policy was an attempt to overcome the gap existing in laws around the private sphere (Weerantunge *et al.*, 2012).

[10] Articles 27, 28(1), 28(2), 28(3), 28(4), 29(1), 29(2) and 29(3).

Bangladesh has also endorsed many international human rights conventions and treaties relevant to gender equality, such as the Beijing Platform for Action (BPFA), the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Millennium Development Goals (MDGs) (CEDAW Report, 2015), and the more recent Sustainable Development Goals (SDGs). When Bangladesh ratified CEDAW in 1984, it kept reservations on Articles 2, 13.1[a], 16.1[c], and [f][11] as these articles did not comply with Islamic Sharia law. Since then, the reservations have been withdrawn on articles 13.1 [a] and 16.1 [f] as a result of advocacy efforts by leading women's rights activities and NGOs (AWORC, 2000).

Numerous policies also exist in Bangladesh that are intended to promote gender inclusion and equity across a range of aquaculture-relevant sectors. The National Agricultural Extension Policy (NAEP) of 2012 addresses gender equity issues through three paragraphs (NAEP, Page 7, 11 and 12). The original New Agricultural Extension Policy of 1996 was revised to include gender mainstreaming as per recommendations of an assessment report (see Karim *et al.*, 2009). In contrast, in the aquaculture and fisheries sector, the National Fisheries Policy of 1998 only states that "Females will be encouraged in fish culture and be trained accordingly" and this policy has not been assessed or revised to integrate gender (Ministry of Fisheries and Livestock Bangladesh, 1998).

Several other policies pertaining to the rural and agriculture sectors also have provisions to improve women's position. Key policies are the redrafted Poverty Reduction Strategy Paper (PRSP) 2005–2015, Sixth Five Year Plan (SFYP) 2011–2015, National Water Policy 1999, National Food Policy 2006, Bangladesh Labour Law 2006, National Livestock Policy 2007, National Agricultural Policy 2009 and the National Industrial Policy 2009. The vision for women's advancement in the SFYP is to create a society of equal opportunities for men and women with equal enjoyment of fundamental human rights. This vision is in line with the Government's 21 vision, which mentions ensuring gender equality (Begum, 2014). In the redrafted PRSP[12] 2005–2015, the Local Consultative Group on Women and Gender Equality (LCG WAGE) provided recommendations for gender mainstreaming after analyses of the Interim-PRSP. However, not all of the 19 PRSP policy matrices have thorough mainstreaming. Moreover, only a few matrices have resources allocated for implementing the PRSP gender aspects. While each ministry has Women in Development Gender Focal Points assigned to them by the Ministry of Women and Children's Affairs (MOWCA), they lack adequate terms of references to perform the responsibilities of gender integration in their respective ministries (Shah and Raschen, 2006).

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[11] Article 2. States Parties condemn discrimination against women in all its forms, agree to pursue by all appropriate means and without delay a policy of eliminating discrimination against women.
Article 13.1. States Parties shall take all appropriate measures to eliminate discrimination against women in other areas of economic and social life in order to ensure, on a basis of equality of men and women, the same rights, in particular:
[a] The right to family benefits.
Article 16.1. States Parties shall take all appropriate measures to eliminate discrimination against women in all matters relating to marriage and family relations and in particular shall ensure, on a basis of equality of men and women:
[c] The same rights and responsibilities during marriage and at its dissolution;
[f] The same rights and responsibilities with regard to guardianship, wardship, trusteeship and adoption of children, or similar institutions where these concepts exist in national legislation; in all cases the interests of the children shall be paramount.

[12] In 1999, the IMF and the World Bank decided that countries need to prepare and submit a participatory PRSP in order to be eligible for debt relief and concessional lending. Since many countries were not prepared to submit such a PRSP, The World Bank had allowed many countries to draft an interim PRSP (I-PRSP) so as to reduce delays in seeking debt relief. Therefore, Bangladesh who had submitted an interim PRSP had to redraft it at a later stage (Centre for Policy Dialogue [no date]).

Although gender is somewhat integrated in the Bangladesh Labour Law 2006, many factories within the shrimp industry fail to abide by its rules and regulations (The Solidarity Center and SAFE, 2012). Furthermore, the laws do not specify terms for workers hired on a temporary basis by contractors ("middle men") to whom the factories commonly outsource hiring (SAFE, 2012). The government has mostly focused on improving environment and market conditions in the shrimp sector, with little focus to date on labour rights. Exceptions have been the development of the National Child Labour Elimination Policy 2010, the National Shrimp Policy 2008, the "Code of Conduct for Selected Segments of the Aquaculture Industry in Bangladesh", and the establishment of the Shrimp Seal of Quality 2002 with USAID – although the latter has had little traction (Verite Report, 2009). In the last 10–15 years, organizations such as The Solidarity Center and SAFE (funded mostly by the Manusher Jonno Foundation) have begun working on establishing workers' rights in the shrimp industry; SAFE's noteworthy spearheading of the establishment of minimum wages in 2009 (SAFE, 2012).

Overall, despite Bangladesh having a relatively conducive gender and worker policy environment, the enforcement of these policies and laws remain problematic. Many men and women remain unaware of the laws and policies that protect them and even when they are aware, accessing justice (especially by women and the poor) is a lengthy and complex process often resulting in unfair outcomes (Begum, 2014). Despite the Women's Development Policy 2011 trying to bridge the gap between the private and public laws, discriminatory laws still prevail, especially those pertaining to personal matters (i.e. marriage and family relations). Various religious laws and belief systems still govern the enactment of rights and processes, as illustrated by Bangladesh not yet withdrawing its reservations on the two previously mentioned articles in the CEDAW (Begum, 2014).

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/03

CASE STUDY 1: HOMESTEAD POND AQUACULTURE PRODUCTION

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3.1 Case study background[13]

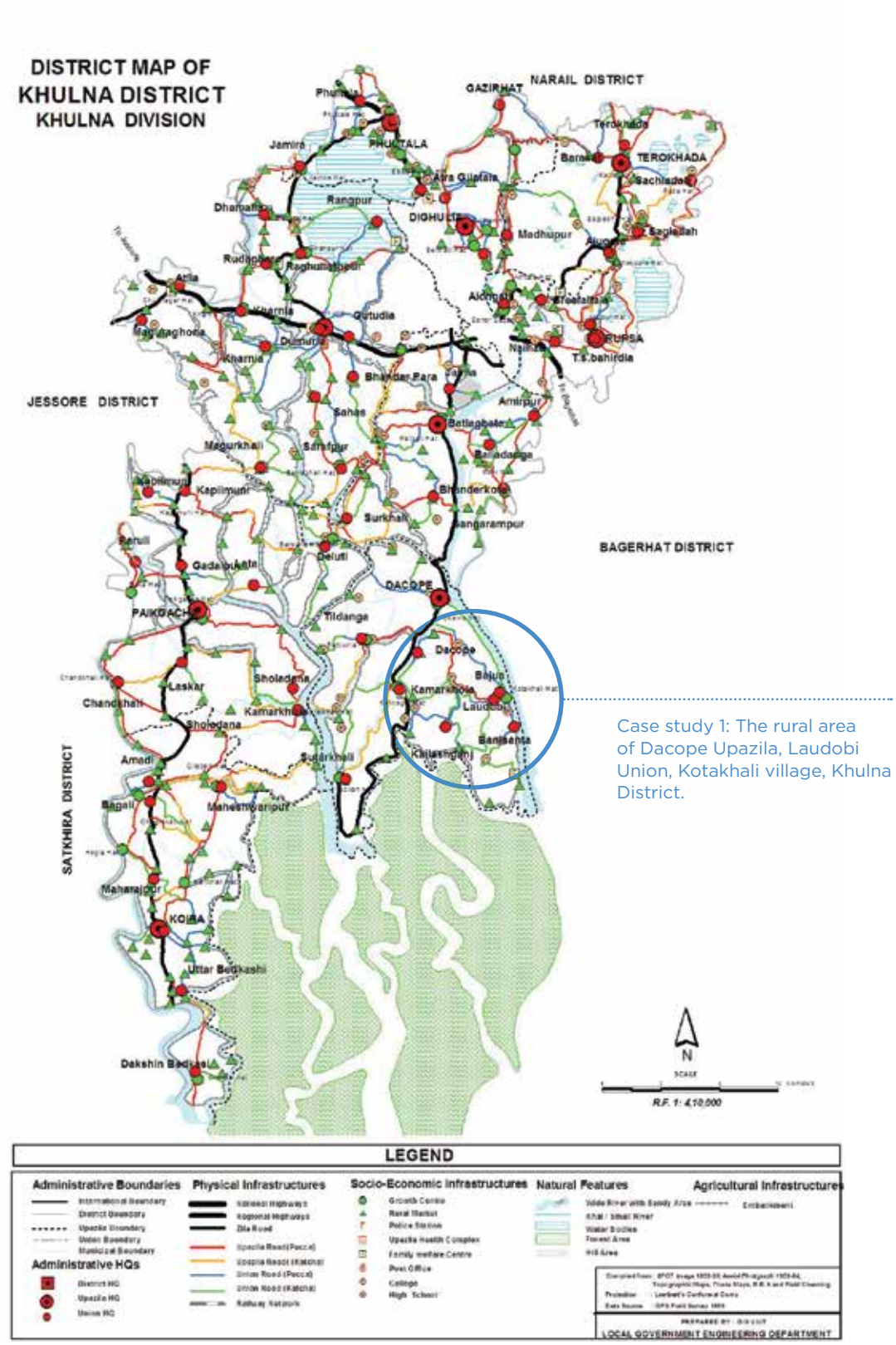
03

Sites

In Case study 1, the selected study site was Kutakhali village, under the Dacope Upazila, Laudobi Union, Khulna District (Map 1). The site was purposely chosen from the USAID-funded and WorldFish implemented Aquaculture for Income and Nutrition (AIN)[14] project working areas where a group of 25 women were trained in homestead-based pond aquaculture in 2015.[15] The majority of households currently have homestead ponds, and project data and key informants indicated that women were fairly active in managing these ponds. Moreover, as a result of the recent aquaculture initiative in the village, it was recognized that it would be relatively easy to access and engage respondents in the study and rapports could be readily built. The site for Case study 1 also coincides with the FAO-GEF project "Community-based Climate Resilient Fisheries and Aquaculture Development in Bangladesh"[16] which began in 2014.

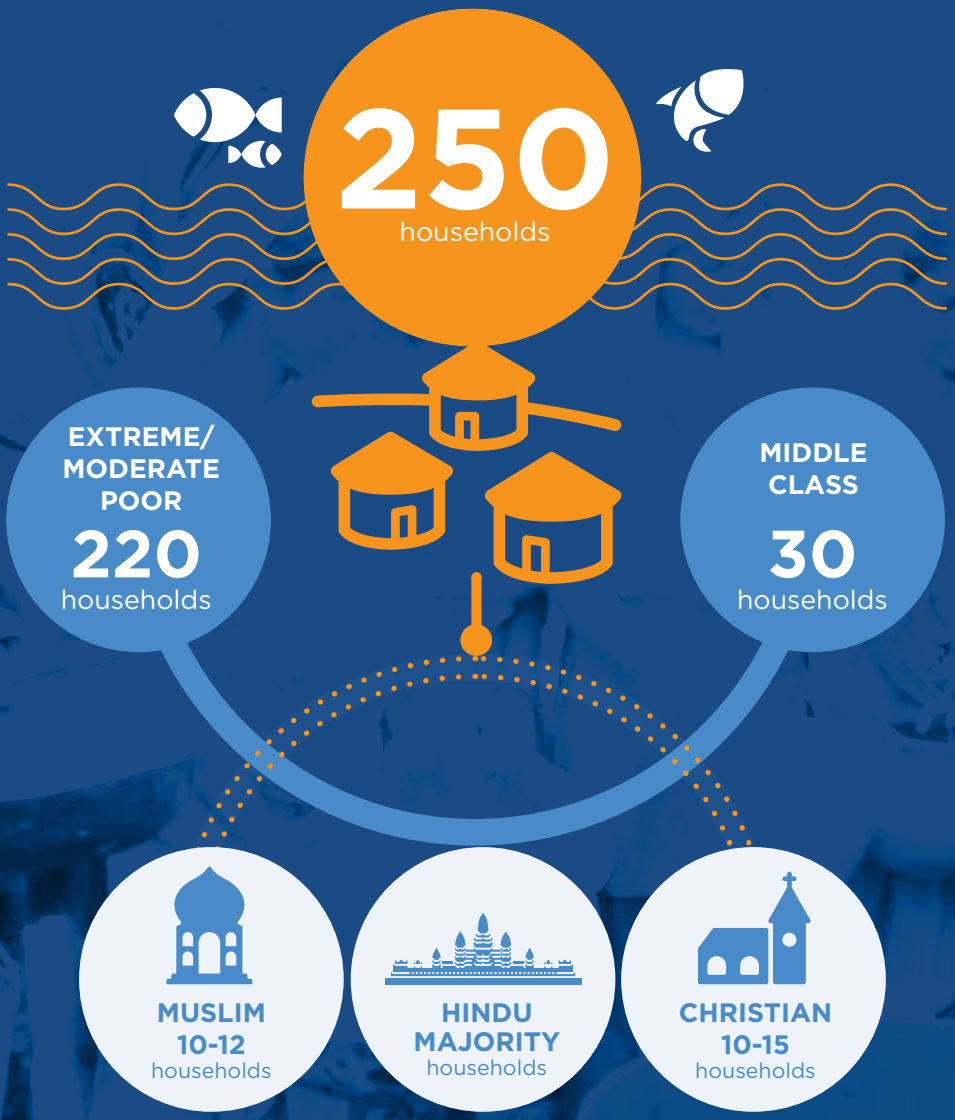
[13] The information in this section has been provided by key informants in the study.
[14] http://www.worldfishcenter.org/content/aquaculture-income-and-nutrition-ain
[15] Men were not trained in homestead aquaculture in this village. A selection of men from various villages were trained on nursery management.
[16] http://www.fao.org/Bangladesh/programmes-and-projects/project-list/en/

Map 1. Map of Khulna District showing study sites for Case study 1



Source: Local Government Engineering Department, Bangladesh (2016).

Kutakhali village (Laudobi Union, Barua Post Office, Dacope Upazila) is accessible by crossing the Passur River by boat from the Chalna port. Situated under Ward number 5, Kutakhali village consists of approximately 250 households. Based on wealth ranking, the vast majority of households (220) fall under the "extreme poor" and the "moderate poor", with 30 households in the middle class and no higher middle class or wealthy households. The existing wealth groups, incomes and occupations of the different groups are presented in Table 5. The majority of the population in this village are Hindu, with about 10–12 Muslim households and 10–15 Christian households. The majority of the Hindu population fall under the social caste Kshatriyas, with some from the Shudras group (with no Brahmins or Vaishyas residing in this village). Key informants and participants indicated that caste[17] discrimination was not a significant issue in the village, and this was supported by evidence of inter-caste marriage. However, there was no inter-religion marriage.



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[17] There is a pattern of caste system in Hinduism, which is believed to be assigned by birth. Brahmins are the highest caste followed by the Kshatriyas, Vaishyas and finally the Shudras.

Table 5. Kutakhali village occupant classification by class

Class	Key characteristics	Income (USD)[18]	Occupations	
			Men	Women
Extreme poor	Landless Live on *Khas* land	19–26 (husband and wife combined; additionally they receive government safety nets, such as VGD card, etc.)	Day labour, work in others' houses, catch fries to sell from rivers	Same as men
Moderate poor	Own land, small businesses	89 (husband and wife combined)	Tea stalls, small shops, drive vans, day labour in neighbouring areas (Export Processing Zone (EPZ): cement mill, etc.), fish selling, nurseries, fingerling selling, commercial vegetable, paddy cultivation	House work, catch fries from river for selling, some pond culture for sales and consumption, commercial vegetable gardening, poultry, support men in their occupation
Middle class	Own relatively plentiful land. Do not engage in agriculture themselves, but lease out their land. Do sometimes engage in commercial aquaculture through hired labour.	255–383 (husband and wife combined)	Lease out their land, hold government or non-government jobs, large scale businesses, commission agents for different companies	Housewives, some work as school teachers

Source: Key Informants derived from Wealth Ranking Exercise.

[18] 1USD=78.4 BDT.

As can be seen in Table 5, it is the moderately poor who mostly engage in homestead pond aquaculture in this village. Kutakhali village has the nickname "Day Labour Village" as a large number of men and women depend on day labour for a source of income. The surrounding areas, consisting of ports, different mills, Export Processing Zones (EPZ) and navy camps provide a large number of income earning opportunities, of which mostly men and some women from the extreme poor avail. Moderately poor women and men work locally as hired agricultural labour, but do not go outside the village to work. Women from this wealth group mostly engage in agricultural work alongside their husbands. Commercial vegetables and watermelon cultivation in the beels[19] has gained popularity over the last five to seven years, as a result of learning from a neighbouring village. There have also been new types of paddy introduction in the village over the past years, such as *BRRI 10*. Companies have also begun bringing commercial seeds and pesticides into the village, running demonstration plots with local farmers and testing new varieties.

The key informants revealed that homestead intensified fish culture was not very common in Kutakhali village until a 2015 AIN project created and trained several groups of 20–25 moderately poor women on better management techniques, both in this village and in several neighbouring small villages. Prior to this, fish culture was mostly done for subsistence purposes and intensified management techniques were not used. They further stated that 80 percent of households in the village currently contain a homestead pond. Out of these, most of the middle class do not engage in intensified aquaculture nor use their homestead ponds for income; they only stock fish for consumption. About 150 households, across all classes, are directly or indirectly[20] engaged in aquaculture production and businesses. Five to seven households out of these 150 are from the middle class and are undertaking commercial aquaculture (i.e. not for home consumption, not necessarily located in the homestead, not included in this homestead study); additionally, there are four nurseries and four *patilwalas*.[21] There are no hatcheries. The homestead pond sizes range between 0.016 to 0.202 hectares. The homestead ponds are mostly handed down from generations and are often jointly owned or individually dug up ponds in the courtyards/homesteads of the households.

The most cultivated fish are Rui (*Labeo rohita*), Catla (*Catla catla*), Mrigel (*Cirrhinus cirrhosus*) and Puti (*Puntius chola*) which can be kept in ponds all year round. This is in contrast to the commercial ponds that cultivate Golda shrimp, Rui and Catla, with Golda being the more expensive aquaculture product. Key informants reported new emerging practices around homestead aquaculture in the village including using commercial feeding, using lime and potash and selecting quality fingerlings. The main problems faced in aquaculture are around access to quality fingerlings and fries from hatcheries, timely access to other types of inputs and the seasonality of water. More people in the village have been engaging in aquaculture in recent years, because of better quality and the increased availability of fingerlings due to increased *patilwalas* and nurseries. Those not engaged in the sector typically lack adequate land or have other income-generating activities that fully occupy them.

[19] A wetland with static water. Beels are formed when low lying areas fill up with water during rains.
[20] Indirect involvement here refers to those who provide support to aquaculture producers in terms of labour.
[21] *Patilwalas* or *farias* are door-to-door fish seed sellers.

The key informants claimed that 100 percent primary education has been recently achieved in the village, with all children in school until the Grade 12. However, they also observed that there are many educated youth who have returned to their village homes after failing to attain jobs. The importance of education is widely understood. There is a government primary school and the LBK Government Women's College in the village. The surrounding villages also have high schools and colleges, although most are privately owned.

3.2 Gendered participation (roles) and factors shaping participation

3.2.1 Gendered participation and roles

Amongst the over one dozen roles identified by participants as being required for homestead aquaculture production (from pond preparation to feeding, to harvest and sale – see Annex 3 and Annex 4), participants differentiated between providing support for and performing the roles. Overall, both women and men respondents identified men as playing the lead in performing the majority of roles. Participants in all the FGDs (both male and female, trained and trained) indicated that women provide support in most of the activities around the pond that men take the lead in performing. For example, women may mix the lime in a bucket for the men and carry it to them. In this sense, women were indicated as having some degree of involvement in most or all the roles required in carrying out aquaculture.

Amongst the identified aquaculture roles, only weeding and feeding were identified by all groups as being performed by both men and women. Even then, there were some contradictory views between groups on who performs the roles more often. Most but not all groups deemed three other roles to be performed by women as well as men: applying fertilizers and cow dung, grading and sorting of fish and harvesting fish for consumption. Overall, men were identified as being involved in or performing all the activities. Market activities like selling the fish, buying fries from the nursery (women buy from *Patilwalas*) and buying commercial feed were identified as activities carried out exclusively by men. Men were also exclusively identified as performing the roles of applying lime, drying the pond and filling it with water. There were no aquaculture roles identified by all groups as being performed only by women, although the post-harvest preparation for household consumption was identified as being a 'woman's role'. One difference in the scope of purchasing and selling roles is that women in the trained group clarified that they carry out purchasing activities and selling activities only when middlemen and sellers come to their farm gate. They explained that some middlemen exist in the village with whom they can place orders for fish inputs; by contrast, men purchase and sell off the homestead. In terms of stocking fish in the pond, women from both groups (trained and untrained) claimed to undertake this role whereas men made the contrary claim. However, this may be explained by the fact that women from both groups elucidated that they tend to catch shrimp post larvae (PL) and other fish from the nearby river and add them to the pond, enabling free stocking and storing of fish and shrimp.

One additional point of note was that as FGD participants highlighted the different homestead pond aquaculture roles, there were differences noted between groups' abilities to list the tasks involved. Women from the trained group and men from both trained and untrained groups fluidly listed out the various activities that need to be carried out. In fact, the trained women efficiently listed the most number of activities, recalling and referring to their training knowledge during the discussions. However, women from the untrained group struggled in recalling activities required for homestead aquaculture.[22]

In terms of gendered roles in relation to homestead ponds as a source of income and livelihoods, women indicated being far more involved in household income generating activities through poultry, ducks and vegetables. Very few mentioned fish culture as a source of income, unless probed about it. When queried, most women's explanations were that the ponds were not their "main profession" as ponds did not require a lot of daily work – rather ponds were part of the homestead from which they drew subsistence and generated some income. (When asked about their professions, men and women in both trained and untrained groups responded that women are 'housewives'). Women from both trained and untrained groups perceived the income from the fish pond as belonging to the men; in contrast, men from both trained and untrained groups saw it as income as belonging to the family. This is in contrast to women from both groups seeing income from poultry and homestead vegetables as their own. Men and women from both groups mentioned that women can occasionally sell a few fish from the pond and earn their own income, but rarely do women have entire control over any of the pond-produced income – the husband has to be informed (and give consent) regarding the sale of fish from the pond.

3.2.2 Factors influencing women's participation and roles

Factors enabling involvement

Overall, the data from male and female FGDs and interviews indicates that the key enabling factors for women to participate in homestead aquaculture are: training and knowledge, enabling gender and power relations within the household, and location (vicinity of homestead). Each of these are further discussed here.

According to all four groups of men and women, training and knowledge enables women's participation as they better understand aquaculture and can make informed decisions about the pond. However, both women's groups asserted that for women to access training and knowledge, husband and family support (e.g. permission) is absolutely crucial. Because all or most of their decisions and actions require approval from family members, especially their husbands, women cannot attend meetings or trainings without permission. In one in-depth interview, a 45-year-old husband of a trainee, admitted that it was only when a training programme involved him directly (along with his wife) that he was truly convinced that his wife should get his support. It is for this reason that the trained women urged that men be involved in trainings or interact with the trainers, even in women-targeted programmes.

[22] Another noteworthy contrast from the discussions was that women from the trained and non-trained group reported women to be much more involved in a wide range of activities around the homestead pond compared to what the men in the trained group initially expressed. Men from the non-trained group reacted more similarly to the women respondents. However, during the middle of the discussion, as the specific roles were further scrutinized with the group, men from the trained group changed their statements about women's involvement, indicating a higher involvement level than they had initially suggested.

Both men and women alike (from both trained and untrained groups) identified the pond being in the homestead as the most convenient factor that allows women to be involved. For example, one woman in the trained group explained this by saying that:

> **"men are busy with multiple work outside the home and so we do household work and concurrently work on the pond when we get time" (trained, 45-year-old, Hindu respondent).**

A different woman from the trained group (in agreement with others) further mentioned that:

> **"the pond doesn't require much work behind it. We can do other work at the same time. Aquaculture is the most profitable compared to other livelihoods. We can get fish throughout the year. Since they are inside the water, we do not have to take them out and graze them, we just have to feed them from time to time. The returns are also much faster than livestock or paddy. It is costly to do aquaculture but since returns are faster, we can easily re-invest" (trained, 35-year-old Hindu respondent).**

Women from both groups said they catch fish from the homestead pond because it is within their home. Women work in whatever capacity they can and with the resources they have at hand in order to ease the men's responsibility of feeding their family while simultaneously ensuring that they don't fall short on their household duties. In line with this, many of the women do catch fish from the canal and river, although this is possible only because it is close to their home. One trained, 42-year-old Hindu woman (who did not adopt the training knowledge, and makes most or all of her decisions herself) saved enough to buy a piece of land – in her sons' name – right next to the river so that she can freely catch fries from the river without judgement from her community. She noted that "there is usually no shame or harm from working on one's own land, be it leased or bought".

Factors limiting involvement

The constraining factors identified by the male and female FGD participants include: gender and social norms regarding roles and the associated fear of reputation damage, the need for family (spouse) consent and financial support, lack of access to up-to-date knowledge and financing, and household responsibilities.

Social and gender norms prohibit women from engaging in non-typical roles. Women in the village do not generally take up certain roles that men usually perform, such as selling fish (which would involve mobility and interactions with non-household men). There is only a certain level up to, and certain conditions under which a woman's participation within the aquaculture value chain is socially acceptable. The views from men and women about women performing non-typical roles are provided in Table 6.

Table 6. Views about women playing non-typical roles

Respondents	For non-typical roles for women, what if a woman did this?	How does/would this affect a household's well-being?
Trained women with larger ponds	• People criticize when women perform the roles of men and vice versa • Social constraints • They will get praised if they do well	• If allowed, then it will positively affect the family, ultimately • There would be peace and harmony in household
Husbands of these trained women	• They will not need to hire labour • It would destroy men's honour • People would ridicule them	• Positively affects household's well-being in terms of more income • May create a tense situation in the family and disturb the peace
Untrained women with smaller ponds	• It would destroy men's honour • Women feel shy • Women do not have the courage to do it • People will criticize them	• It would destroy men's honour • Peace and progress will come eventually • If women did perform men's roles, their honour will increase • If men perform a woman's role, they will lose respect
Husbands of these untrained women	• There is a social barrier • As it is a male dominant society, they do not want women being seen in the market • Why should women go to the market or perform other roles if an able man can do this? • Wives can do atypical work only when the husband is not available at home	• Men can save time • Women get the experience • They will not need to hire labour from outside • Negative effects from society, as it will destroy the family's honour

Source: Focus group discussions.

Overall, both men and women indicated that men do all the work that requires more strength and physical labour and that woman do the less labour intensive work. If a woman does more physical work, people will say "the man is making his woman do the hard work rather than doing it himself". Men also do the more risky or dangerous work such as putting lime in the pond (the lime bursts in the water and can be dangerous) and work involving getting into the water (where leeches are present, and where men can enter topless and not have to worry about soaking all their clothes). Exceptions exist in cases where the man has migrated or passed away, and people are more accepting of a woman who has to make a living and therefore engages in non-typical roles. The untrained women, however, admitted the shame and "shyness" they would feel in trying to perform any out of the ordinary role, whereas the trained women expressed mostly confidence in their abilities to take on any kind of role.

When it came to the reverse scenario of men performing women's work, there was again a stark difference of opinion between the majority of the untrained and the trained women's groups. While the trained women expressed that it was unfair that society judges a man (poorly) for helping his wife, in the untrained women's group, the older women (between 50 to 65) and some very young newlywed women (early 20s) suggested that they would never let their husbands do their work, including household work. They expressed this in terms of it being a woman's job to take care of her husband, who does a lot of much harder work outside. In contrast, untrained young women (in their early 30s), said that husbands should help them with household work. Apart from these young women, the rest of the untrained women expressed that they would rather face hardship to make their husbands' lives comfortable and to avoid their husbands facing potential ridicule from others in the community for helping. For example, one (untrained) woman pointed out that "men need to take responsibility of women. We women can never reach above men. We have to keep up their respect" (untrained, 56-year-old, Hindu respondent). Many of them also agreed with one woman who said that "men have more respect. We have to give men priority and respect. We women have to be careful that people do not talk and their respect isn't destroyed" (untrained, 32-year-old, Hindu respondent).

The perceptions between the trained and most of the untrained women around expected roles and women stretching gender roles show a significant difference in attitudes and mindset. This can be attributed to the training of women, bringing about more awareness of their position and confidence in their potential to achieve things beyond societal expectations. Thus the majority of the untrained women displayed an acceptance of their position in society and a reluctance to change the norms of husbands and wives roles. On the other hand, the trained women were very vocal about the barriers they face in decision-making and how difficult it is to enact plans.

Similarly, men from both trained and untrained groups said people would ridicule them if they do women's work. They indicated that they would do it occasionally, in circumstances when their wife is away from home or is sick. They explained that it is about helping each other when the other is not available. Some men from the untrained group added that they do not help their wives because they see their wives as very capable of multi-tasking and their wives do not ask them for help. The untrained men's group also suggested that the division of labour exists due to differences in capabilities and knowledge levels. They also suggested that the main reason women perform many of the homestead pond aquaculture roles is because the man works away from home and only comes back at the end of the day. Overall, they mentioned that society is more accepting of women in different positions, but women need to maintain the respect of their husband by not taking up any role that will affect his reputation.

Women from both groups expressed various ideas or newly learned knowledge that they want to apply in relation to their engagement in aquaculture. For example, many of the women in the trained and untrained groups want to expand their ponds, as they believe they can grow more and bigger fish in more spacious ponds. However, many of the trained women expressed the feeling that their ideas are not taken seriously by men and are often turned down, and wished they could make decisions and execute ideas themselves. Due to their lack of exposure (access to trainings and information through informal channels), women lacked knowledge on current market prices and technological advancements, which in turn contributed to many of the men not believing in their capabilities and ideas. This is further complicated by the need for spousal permission to take on new activities or make spending decisions (see 3.3.2).

Difficulty in accessing the finance (either from their spouse, family or formal loans) required to adopt new technologies was identified as a further constraint by the trained women. Without access to credit, women usually do not have the means to utilize their training knowledge because applying the knowledge involves more investment. Women have to convince their spouses and family members to provide the money, which is required due to the fact that micro-credit loans to women are usually not sufficient to execute their ideas. Bigger loans were usually used to meet other family priorities.

Marriage and household responsibilities also constrain women and prevent them from "fulfilling their dreams". One trained woman linked education and marriage, pointing out that:

> **"women cannot study too far [too high a level], we are married off after HSC or SSC.[23] If only we could fulfil our education dreams and get a job like you. We have worries of household work so cannot do as we please. We have to manage everyone and work. We have to cook for the men and feed them and let them rest" (trained, 28-year-old, Hindu respondent).**

[23] HSC is Grade 12 and SSC is Grade 10.

3.3 Outcomes for women and factors shaping outcomes

3.3.1 Outcomes for women

Overall limitations

The findings highlight that engaging in aquaculture can have both positive and negative outcomes for women and men. These are presented in this section, with different perceptions of the different groups summarized in table form in Annex 6. Due to the central question of empowerment in this study, this section also presents participants aspirations, perceptions of power and freedoms and their views of how these have changed over time and with involvement in aquaculture.

The factors that shape these outcomes are presented in the next section (3.3.2 Factors Shaping Outcomes).

Positive outcomes

The FGDs findings suggest that pond aquaculture contributes to positive outcomes primarily in relation to four areas: ease of women's decision-making around consumption and provision of nutritious food; more equitable power relations within some households; increasing women's use and control of resource use and incomes and; enabling women's awareness of rights and confidence.

In terms of impact of aquaculture on decisions around consumption, both trained and untrained women respondents explained that homestead ponds enable them to feed guests, keep fish saved for their daughters' weddings, helps them make quick consumption decisions and catch the fish using the *Jhaki* (or cast) net without having to rely on their husbands to come home (to catch for them or bring fish from the market). This freedom also enables household consumption of nutritious fish more often without the financial cost of purchasing it. The trained women further added that since it is possible to grow different types of fish at the same time, they can fulfil the different fish preferences of their family members.

In terms of power relationships, men and women from both groups agreed that engagement in aquaculture has the potential to bring respect and popularity to women, if they succeed. This translates into more voice in household decision-making and the ability to control the pond resources. Trained women expressed that as a result of attaining knowledge, the men have more confidence in giving them responsibilities, listen to their views and are more willing to permit autonomy in pond management. However, failure can also hamper a woman's reputation and future chances for permission to innovate.

In terms of the impact of aquaculture on the use and control of resource and incomes, according to both male and female respondents, the pond allows them to earn an income from home, without having to venture out. Moreover, as explained previously, successful engagement in aquaculture enables women to prove their competency and gain more control over the inputs and outputs of production, as well as decisions around how to use the income generated. The same woman who started a nursery in her pond, in the example prior, used her 10 000 taka worth of savings to buy Golda shrimp and released them in the pond. She also decided to keep the fish saved in the pond until her daughter's wedding. She explained, "we will not be able to afford so much fish to feed the guests during my daughter's wedding and so I have decided not to harvest the fish this year" (trained, 35-year-old Hindu respondent). Similarly, another woman (trained, 28-year-old Hindu respondent) convinced her husband to use the fish selling profits to pay back all their debts. Another woman (trained, 45-year-old Hindu respondent) used the profits to invest in a betel leaf business for her son.

Finally, in terms of the impact of aquaculture on women's awareness levels and confidence, there was a clear difference in the confidence levels, demeanour and awareness of rights between the untrained and trained women during the FGD discussions. The trained women expressed more of a desire to exert decision-making power and influence and have their voices heard. They expressed awareness of gender discrimination and the constraints they face. For example, one trained woman (in agreement with the others) explained that "we women help men in their work, but men hardly help us. There is more criticism if men do women's work rather than other way around" (trained, 45-year-old, Hindu respondent). They also articulated that they long for recognition and value. As one woman (trained, 32-year-old, Hindu respondent) put it, "I am stuck sitting at home, I have enough knowledge and skills, but people do not ask for my opinion in big meetings. If only we women had more influence." The trained women also indicated that they are aware of the lack of control they have over the money that their husbands hand over to them for safekeeping. For example one woman said "what is the use keeping money with women if we cannot spend as we wish."

Negative outcomes

Women from both groups and the husbands of trained women raised that there were some negative outcomes from aquaculture. Specifically they noted: additional labour burdens and higher expectations on the trained women; and social consequences and risk (reputational damage in cases of loss (failure) and criticism for performing non-traditional roles such as women selling fish in the market.

In general, both trained and untrained women mentioned that engaging in fish culture has increased their work burden, but they do not mind the extra work because it yields results and contributes to the family's nutrition and income.[24] The trained women explained that after the training, they were also expected to do a lot more for the pond, and if they failed to do so they were called lazy by their spouses and household members. Furthermore, engaging in aquaculture can reduce women's honour and hurt their reputation if they perform any non-typical roles like selling fish in the market or if they experience failures in aquaculture. The trained women and men mentioned that when someone is successful, people tend to forget how they got there but once they fail, all their mistakes and non-conformity are highlighted with an "I told you so" attitude.

[24] The untrained women did not want to include labour burden as a negative outcome.

Outcomes of aquaculture in relation to empowerment and aspirations

In the Ladder of Power and Freedom discussion,[25] trained women expressed the belief that the most important achievement is in being able to make decisions freely. They believe that 10–20 years ago, women were at Step 1 or 2. But, through training and knowledge, and becoming more involved in different income-earning activities such as aquaculture, side by side with men, they have now gained more power and freedom. This engagement, in turn, helped them prove their trustworthiness and capabilities. When asked about which Step of the Ladder of Power and Freedom the trained women deem themselves to be on now: 17 percent said they are on Step 4, 50 percent on Step 3 and 33 percent said they are on Step 2. Their level of perceived freedom was directly correlated to their age groups, with the older (40s) women being on Step 4, relatively young women in their 30s were on Step 3, and the very young women (early 20s) claimed to be on Step 2. The men in the trained group responded that 56 percent felt they were on Step 4, and 22 percent said they were on Steps 3 and 5. In terms of men's perception of women's power and freedom, more than half (55 percent) of the men said women are on Step 4, 22 percent said women are on Step 3, and the remainder (two men) each said women are on Steps 2 and 1. In contrast to women's FGDs and interviews, these men explained that they ranked women and men as generally being on the same steps of the ladder because (they expressed that) husbands and wives work together, consult each other, and take all decisions together.

The untrained women also expressed that age, experience and knowledge helps women move up the Ladder of Power and Freedom. Amongst the untrained women, 40 percent said they are on Step 1, 50 percent said they are on Step 4 and one woman said she is on Step 5 (because she is a widow and makes all decisions herself). The 40 percent on Step 1 attributed their low levels of freedom and power to being young, newly married and not having been able to prove their abilities yet. In general, the untrained women expressed discomfort in gaining any position that is higher than men's. In the untrained men's group, 82 percent said they (men) are on Step 5 and 18 percent said they are on Step 3. In terms of men's perspectives of women, 73 percent of the untrained men expressed the opinion that women are on Step 4, and 9 percent said that women are on Steps 2, 3 and 5. The reason they provided for men being on a higher step in general, was that women work with men and so they consult their wives in decisions, but that men remain the ultimate decision-makers.

[25] The method, steps of the ladder and their significance are provided in the Methods section of this report.

Women from both groups said the village women in general are on Step 3, while ten years ago they were on Steps 1 or 2. As noted, this is because ten years ago women did not engage in income-earning activities, but now they help their family and spouse, and they have learned to use resources within their vicinity (such as the homestead ponds) to earn an income. The men from both groups said women were on Steps 1 and 2 in the past, but they have improved their situation as a result of government and NGO efforts to build their skills and involve them in work.

Women and men in both groups expressed their greatest aspiration was for their children to be educated and have successful careers. Women – as well as men – from both groups explained that aquaculture is something they will continue to do, as it does not require too much time or daily hard work, and is a convenient source of food and additional income. Yet, women from both groups suggested that they do not want their children to live lives dependent on farming and aquaculture. Rather, they want their children to live like *'babu'* (respected gentlemen). These women mentioned that the purpose of their agriculture work and fishing is to provide a better and different life for their children. The men expressed similar aspirations for their children, but added that they would like their children to have a pond as an additional source of income and that it is good to be skilled in multiple areas. However, some women mentioned that in spite of having been able to fulfil their dream of educating their children, their children are sitting at home idle and without jobs. The village seems to have a problem of unemployed college- and university-educated youth, who do not see agriculture or aquaculture as a prospect and whose parents do not encourage it as one. This is one of the reasons many of the women said they have saved up money to start businesses for their sons or to buy them land[26] for future security.

[26] Even though women mentioned children, the end goal for their daughters is to be married off to a good family who will take care of them. Under Hindu law, daughters do not inherit any property, therefore property accumulation for daughters is not practiced.

3.3.2 Factors shaping outcomes for women

While section 3.3.1 presented factors shaping women's involvement (participation in various roles) in homestead aquaculture, here the factors that enable or constrain women's success and positive outcomes are synthesized. In addition to pond space and stocking resources[27] as fundamental success factors, the key identified enabling factors were knowledge, education and family support. However, as the previous discussion of positive outcomes also illuminated, there are three major constraining factors: dependence on family, spouse approval and differing priorities around the pond; lack of control over the pond and; social and gender roles and stereotype-based mindsets. These findings on constraints are consolidated here, then how women address these constraints are presented, in terms of negotiating power relations and strategies to address the given constraints.

Constraints

The previous section highlighted that women from both groups qualified that putting learning into practice after the training requires family support. Framed differently, a key constraint identified by all women was dependence on family and spousal approval. As noted by one woman "we [women] need support from our family. We need to plan with the family. We cannot just go to a training out of our own free will. It needs their decision" (trained, 35-year-old Hindu respondent). Most of the women participants articulated various expressions of the constraint that they "cannot take a step in life without consulting their husbands and other family members". With specific reference to applying aquaculture knowledge, only five women out of 22 expressed that they fully took up the knowledge from their aquaculture training – and the main reason attributed to this adoption difference was the reluctance of men in listening to their wives. Specifically, women convincing husbands after coming back from training seems to have been problematic unless the household already had more pre-existing equitable relationships and was willing to accommodate the women's ideas.

Similarly, control over the pond and its income was identified as an obstacle to success. The pond is a household asset where women are providing their time and labour; and yet, as noted earlier, any income that is generated from the pond is seen as the family's or the man's (by the men or women respondents, respectively). This lack of control over the pond and its income makes it difficult for women to successfully implement new aquaculture ideas and knowledge. This is a part of what the trained women identified as the biggest hurdle to success: they are not able to make decisions freely. They expressed that they have to constantly negotiate with their husbands, and that the men do not easily agree to their plans. For example, one woman pointed out that "we cannot keep to our [pond] plans, we do not get input as we wish. We do not have money, we have to ask our husband, we have to borrow and pay interest" (trained, 30-year-old Hindu participant). They expressed that after aquaculture training, they still have to go back and explain their plans to their husbands. They expressed that they have little hope in achieving anything 'big'. As one such trained woman explained, "women are deprived in society, we have no freedom. Even if we want, we cannot do as we please" (trained, 28-year-old Hindu respondent).

[27] Most women said that their fish do not grow well in small ponds, as fish need space to grow; even women with larger ponds said the same thing. Success also depends on stocking and the density of stocking; participants suggested that the nearby river and attached canal makes it easy for women to add many types of fish to their pond.

In connection to the factors shaping roles (see 3.2.2 Factors shaping participation), the trained women's and the trained and untrained men's groups identified that gendered norms regarding the roles men and women play around aquaculture were a factor hindering success. As noted, the general norm is that women should not engage in any role that will bring shame to her husband or make him seem less capable. Trained women affirmed this is a factor limiting their success in that they find it difficult to break away from gendered role stereotypes even to pursuit success in aquaculture. Specifically, they expressed that they do not feel comfortable engaging in, or are not allowed to undertake, actions that contradict the norms limiting women's mobility. As such, actions such as going to the market to sell fish is not seen as appropriate for women – thus their success in terms of income generation is limited. Normative barriers also limit success, in that they prevent women from engaging in pond mending and preparation (because it requires physical labour).

Negotiating power relations and strategies to address constraints

In relation to addressing all the constraints to applying learning, innovating and success, women identified the significance of strategic negotiation in relation to risk and priorities. For example, some of the families in which the women (and spouses) did apply the learnings from the training used risk mitigation strategies to come to an agreement in doing so. For example, one man mentioned that when his wife wanted to start a nursery, he dug a small pond next to his existing one to ensure he has some of his big fish remaining to eat, and then allowed his wife to use their big pond. Another husband and wife jointly decided to give the wife's learnings a try by initially investing in 5 kg of fish to see if the newly learnt methods actually yield results. Similarly, women from both groups explained that even though the pond allows them to make consumption decisions freely, they need strategies to negotiate the fact that the priorities for men and women around the pond differ. For women, consumption and nutrition are most important, but for a man, income and money comes first. One woman (in agreement with others) explained that "the men go crazy when they do not have enough money. They do not listen to us when they do not have money" (trained, 32-year-old Hindu respondent). The women therefore strategically use the pond and try to retain some of the fish in the pond for selling. For example, Rui fish are slower in growth, so they refrain from consuming too much of them. They also keep fish saved for festivities, like marriage, which saves them a lot of money.

In relation to this, the FGDs and interviews highlighted that the power relations that shape women's decision-making within the household vary and have to be re-negotiated over time. In terms of the variation, for example, in contrast to other households, one woman expressed that she is more educated (finished Grade 12) than her husband (finished Grade 1) and is even running for upcoming local elections. As a result the husband values her input for every decision he makes. While this would need follow-up study, the FGDs indicated that trained women with relatively more power in household decision-making tended to more successfully adopt the new knowledge and practices. In terms of re-negotiation over time, the trained women explained that they gain more power within the household if they can prove their capabilities and success. Therefore, some of them take steps to innovate without approval in the hopes that success will lead

to permission for greater agency with aquaculture-related decision-making. On the other hand, in cases of failure, they are ready to face reprimands from their husband. The women further explained that women who have been married for a longer period of time have more power over decision-making in the household. One woman mentioned that at first she did not have the confidence to speak up and voice her ideas to her husband. But after observing his failures she decided to take initiative, and since then their relationship has evolved to a point where her husband defers to her on major pond-related decisions. The women thus explained that decision-making power comes with success, experience and confidence, which in turn can enable them to try out new learnings.

In terms of practical strategies that can be taken up by interventions, women and men identified that engaging men in trainings was a way to address the previously mentioned constraints, and would better enable women to use their new knowledge. For example, one 45-year-old Hindu male respondent in the study explained that his participation in a nursery[28] training (with his wife) convinced him to allow his wife to start a nursery in their homestead pond. She has proven the method to be successful and now has autonomy to use the pond as she wishes. She then used her profits to reinvest in shrimp this year. Similarly, another of the interviewed men (trained, 45-year-old respondent) suggested that men be included in these women-targeted trainings (with women) because he had observed first hand that it helps women better put the learning into practice. He evidenced this by relating that in his own household it took him a while to be convinced to support his wife's applying her knowledge; it was only after his being included in a nursery training for men that helped him agree with his wife.

Finally, as a practical strategy to address the identified constraint of physical work limitations, men from both groups mentioned that women can successfully engage in aquaculture if they have enough money to hire labour to perform these kinds of roles. Linking this to broader challenges, men from both groups suggested, however, that in the long term a shift in attitude and mindset (norms) would be required for women to be successful.

[28] The AIN project trained a number of men from various villages on nursery management. In this case the wife received the training first, but her husband wouldn't allow her to start a nursery until he received a similar training.

/04

CASE STUDY 2: SHRIMP PROCESSING FACTORY WORK

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4.1 Case study background[29]

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In Case study 2, which focuses on women working in shrimp processing factories, the selected study area is the vicinity of Khulna City, in Khulna District and Division (see Map 2). The study site straddles both sides of the Rupsha River, where the shrimp factories are located (see Map 3). This encompasses Kulsum Galli, Natun Bazar Char and Khulna City on the urban side of the river and Baghmara Village, Rupsha Thana and Khulna District on the peri-urban side. The case study consists of women who live in this catchment area and work in a range of factories located within the vicinity of these two specified areas. All the participants in Case study 1 are Hindu and reside in a rural village, whereas all the participants in Case study 2 are Muslim and reside in an urban or peri-urban area.

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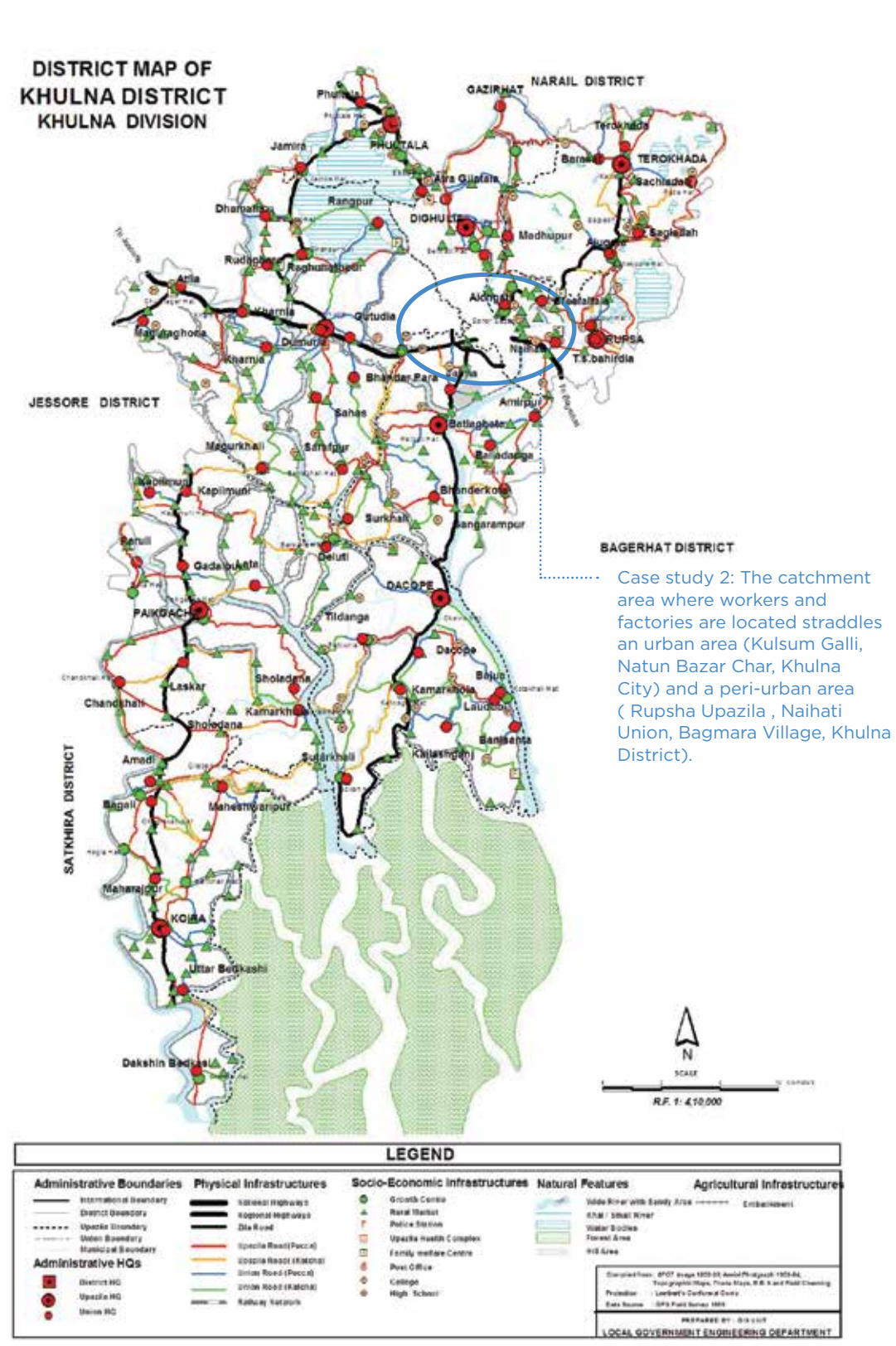
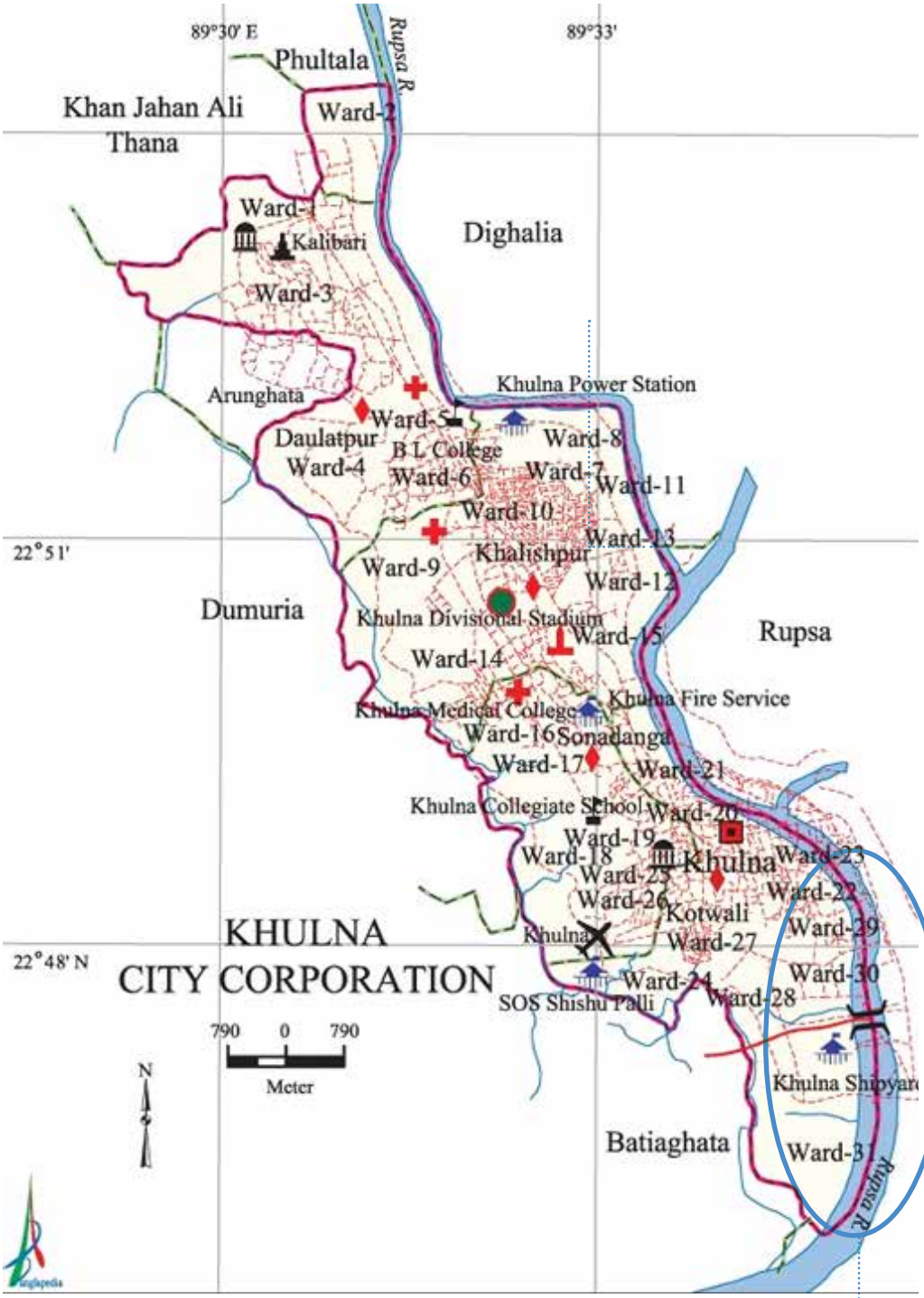
[29] The information in this section is provided by the key informants.

Map 2. Map of Khulna District showing study sites for Case study 2



Source: Local Government Engineering Department, Bangladesh (2016).

Map 3. Map of Khulna metropolitan city highlighting sites selected for Case study 2



Source: Banglapedia (no date).

The study site is a factory catchment area where women who work in shrimp factories live. The factories and the women's living arrangements, straddle both sides of the Rupsha River, and fall under two administrative areas: Kulsum Galli, Natun Bazar Char, Khulna City and Rupsha Upazila , Naihati Union, Bagmara Village, Khulna District.

There are 76 shrimp and fish processing factories located in southwest Bangladesh, out of which 53 are BFFEA registered. Only 36 are currently in operation, most of which are located in Khulna (SAFE Report 2012), and are concentrated on two sides of the Rupsha River. The workers live very close to the factories on both sides of the river and usually switch jobs from factory to factory. This catchment area is the focus of this case study.

In the catchment area, one side of the river is peri-urban while the other side is very urban (i.e. Khulna City itself).[30] The urban side is called a char (an extended part of Khulna City formed as a result of flood plain sediment). Here the living area is a congested slum, with an array of shelter types based on the occupants' abilities and resources. The rural side has more spacious and clean tin-roofed brick houses provided for rental by landlords (ranging from BDT 500 to 1 500 per month [USD 6–19 per month]). The slum on the urban side is on government land and is therefore free of rent. Families have lived there for generations and tend to marry their children to families living within the slum. The slum is fully occupied; no one new can live there, unless through marriage. The slum has burned down twice, but was rebuilt by the occupants.

The rural side consists mainly of married couples who moved to the area for work, separated and abandoned women and/or entire families who were forced to migrate there as a result of natural disasters destroying their rural homes. Most of the factories themselves exist on the peri-urban side with only around two to four[31] on the urban side. The peri-urban factories have 8-hour duty structures; on the urban side, the factories operate on 12-hour shifts. Some of the young women, who do not have family responsibilities or school,[32] come to the peri-urban side from the urban side (mainly crossing the Rupsha bridge) to work in the factories. Even though the urban side has fewer factories, the outskirts of the slum are lined with so-called "Fish Houses" (maacher ghar) – depots where shrimp are sorted before being taken to the factories. Many men and young boys take up employment in these depots, but not many women and girls. Women and girls work primarily in the factories.

4.2 Overview of shrimp factory workers

Worker types and benefits

There are two types of workers employed in the shrimp factories: contract and permanent workers. Contract workers work under the jurisdiction of contractors who are hired by the owners to supply workers during peak seasons (April to December, with April to September for Bagda shrimp and September to December for Golda shrimp). They are paid based on a piece-rate system. The permanent workers are hired by the company itself, and as regular employees they have to work throughout the year and are paid on a monthly basis. The permanent workers work on 8–12 hour shifts. The working hours were initially 16; this was slowly brought down to 12, with 8-hour shifts eventually enacted in some factories. A minimum wage of BDT 4 419 per month (USD 53) was been established in 50 percent of the companies. The first minimum wage change was

[30] As seen from the maps previously, Kulsum Galli and Natun Bazaar Char are on the urban side while Baghmara is on the rural side.
[31] The study participants stated this number.
[32] Some young girls also attend school alongside their factory work. After completing school hours, they go on to the factories to work.

brought about in 2009 at BDT 2 645 (approximately USD 34), this was later changed to the current amount in 2014.[33] Officially, permanent workers receive an appointment letter, ID card, four months maternity leave, a two-day per month holiday, as well as annual leave, rest breaks, festival bonuses, medical facility and masks and gloves for safety. Contract workers only receive some ointments for cuts and masks and gloves for safety. Their piece rates have increased from BDT 2 (USD 0.03) per basket token to BDT 5 (USD 0.06) and in some cases BDT 9 (USD 0.11) or 10 (USD 0.13).[34] Not all factories provide all the benefits listed here, but organizations like SAFE, Solidarity and the ILO are working to negotiate and ensure these and other laws specified within the Bangladesh Labour Act, 2006 are enforced.

Shrimp factories have five sections: receiving; cold storage; de-heading; individual quick freezing (IQF); and the production/panning sections.[35] Most of the contract workers work in the de-heading section where shrimp are also peeled, deveined, etc. (SAFE, 2012). Women are mostly absent in the receiving and cold storage sections, but are present in the three other sections. According to key informants, it is in the receiving and cold storage sections that the most corruption occurs, with men believed to be more adept at engaging in corrupt practices.

Factory worker demographics[36]

Female factory workers in this study represent women from several categories: single young women, married women, widows,[37] separated or abandoned women, or remarried women. In terms of migrant status, the workers are from families that migrated as a result of losing everything in natural disasters, or women who have lived in Khulna for generations. The workers are mostly from poor and moderate poor socio-economic backgrounds, and most of them follow Islam, with only a few Hindus. Most of the workers are aged between 20 to 40, but workers as young as 14 and as old as 50 can be found. Those in their 40s generally do not have an education, but the younger workers have had up to Grade 8 schooling, and there are even some cases of SSC and HSC (Grades 10 and 12). In the past seven to eight years, there have been changes in the roles that are taken up by women in the factories. Women now also work as graders, gateman, checkers, supervisors[38] and scale-men, along with their usual jobs of de-heading, skinning, washing, packaging, etc. Some of these roles are paid higher, like that of the scale-men, who get paid around BDT 6 000 (USD 77). Domestic violence is perceived to be relatively common by key informants and is understood to occur mainly because women are not able to perform their household responsibilities. Polygamy, extramarital affairs and abandonment are also common. Table 7 categorizes these workers and their community members by class.

[33] This change in minimum wage was brought about through the activities of SAFE.
[34] Gemini is the only company that provides all benefits, however it is hard to get a job in the company, as well as if being hard to leave it. It is likened to having a government job.
[35] Interestingly, most of the jobs in the factories have very gender-biased titles like de-heading man, scale-man.
[36] The information in this section is also provided by the key informants.
[37] Women do not mention they are separated in most cases. They mention they are married but only elaborate if asked whether they are part of their husband's household.
[38] Rupali factory is only factory reported to have a proper female supervisor. Other female supervisors are only supervisors in name, as is explained later in this paper.

Table 7. Factory worker classification by wealth group (class)

Wealth group	Key characteristics	Monthly income (USD)	Occupation	
			Men/Boys	Women/Girls
Poor	Widows with young children, abandoned or separated women with young children; only one or few income contributing members	38–64	Young boys tend to work in the depots	Work in factories as contract or permanent workers; being a contract worker gives them working hour flexibility; off season they tend to work for depots
Moderate poor	Many income-contributing members. Families with working older children and spouses	115–204 (family members combined)	Factory workers, rickshaw pullers, depot workers, fish sellers, house tutors, bus ticket sellers, shop keeper assistants, auto drivers	Work in factories as contract or permanent workers; sewing
Middle class	Own land and businesses, higher positions in factories. Live in better living quarters outside the slum	255–383 (family members combined)	Own businesses, hold administration positions in factories, e.g. managers, supervisors, accountants	Wife may still work in a factory

Source: Key informants from Wealth Ranking exercise.

4.3 Gendered participation (roles) and factors shaping participation

4.3.1 Gendered participation (roles)

The shrimp processing case began with a discussion on the roles performed in the factory (see Annex 4).[39] Overall, the women with temporary contracts perform the jobs of skinning, washing, deveining, de-heading and packaging, whereas the temporarily contracted men are responsible for loading and unloading packages from trucks and freezers. Permanent female workers mostly count, package, display on the belt and load[40] packages into cartons. Whereas permanent male workers wash, salt, weigh and load shrimp into cold storage. Permanent male workers also perform the roles of handing out tokens to female contract workers after weighing their baskets, for icing the shrimp, grading it and for soaking the shrimp in medication. Men in permanent positions are typically the main supervisors, managers, inventory keepers, store-in-charge and hold most of the administrative positions.

Participants from all groups generally agreed that men get better positions and salaries in the factories. Focus group participants communicated that there were some cases of women now being provided 'supervisory positions', because companies have realized that having a female supervisor to handle the large number of female workers is more effective. However, female workers explained that these women are usually just supervisors in name (with about BDT 500 [USD 6.4] extra salary), and only have the responsibility of dealing with "women's issues" and ensuring other women work according to the rules. As one 30-year-old permanent woman worker added, "suppose I get my period and I need to go home and change, I cannot go ask a man for leave and explain my problem. Men understand men and women understand a women's problems." In terms of salaries, an interview with a husband and wife, who both work in relatively high positions, highlighted that the man was paid approximately double the woman's salary (BDT 8 500 versus 4 300 per month). The main reason for that was found to be that the man has to work through multiple eight-hour shifts consecutively. However the husband (a 38-year-old, 10th Grade graduate), who works as a permanent store in charge now (and earlier worked as a supervisor) said "I hardly have anything to do all day, I go in the morning, check inventory and write my reports, then the rest of the day I can wander around, drinking tea and hanging around." However, he did also note that when new shipments arrive, he has to go to the factory, even in the middle of the night, at which times work volumes are high. His wife (29-year-old, 8th Grade graduate) said that even though she works only one eight-hour shift, it involves nonstop work, including supervising 15 other women. While acknowledging that she does not have to make herself available or work through all shifts, she thinks her pay should be higher.

[39] Since there are a wide range of activities being performed in different sections of the factory and since the women FGD groups were differentiated by worker type, the major activities identified were mostly applicable to the participants' particular section in the factory. For the same reason, the men mostly identified activities that men generally perform.

[40] Two women have to do the loading together as the tray is very heavy.

4.3.2 Factors shaping women's participation

The data indicates that the key factors contributing to women taking processing jobs to be the lack of alternative livelihoods and need for income and the relative security provided by these factories. The key factor identified as limiting women's participation in factory work was the reputational risk factor around women interacting with men outside the household. These points are discussed in detail below. The considerable double burden of women and the associated normative factors shaping the double burden and gendered division of labour (and opportunities) are discussed in section 4.1.1 Outcomes and 4.4.2 Factors shaping outcomes.

Factors contributing to women's participation in factory shrimp processing

Lack of alternative livelihood options and need for additional income

Women from both groups said that they join these factories because they accept female workers and because it is one of the few options available to them to earn extra income. A 40-year-old permanent female worker from the FGD added, "If there were other job openings for women, we would have chosen them. These factories want and need us, so we join."

The need for additional income to run the family and provide a better future for their children is one of the main drivers for people to join. Male respondents said they tolerate the fact that their wives, daughters and sisters have to interact with other men at work because they have no choice. When asked why they chose the factories as a livelihood, both contract and permanent female workers replied that it was a decision they took when they realized their husbands were not earning enough to support them. Several women dream of the day when their husbands earn enough, so they do not have to work in a factory anymore.

Women without spouses (widows, separated and/or abandoned women) joined the factories out of economic desperation and they admit that without the factories, their situations would have been dire. The ability to work without an education or a skillset gives them hope for their children's future. They were also motivated by the independence afforded to them to make decisions about their lives without having to rely on, or seek permission from, family members.

Security

Though wary of possible harassment from the men women meet and interact with, male respondents have faith that the factory premises are safe zones for women. One 55-year-old man in the FGD, who is the father of a permanent worker said, "We cannot care what society will say if we want to feed ourselves." Other job options for women are few; the only other alternatives available are sewing from home or working as a maid. Many women cannot take up sewing as a full-time job as there are not enough clients; as for being a maid,[41] both men and women think that it is not safe enough nor does it allow
the kind of independence the factory provides. One 59-year-old male respondent whose wife works in the factory elaborated by saying:

"There is security in the company, she is bound within the factory walls. It is more secure and respectful to work in the factory rather than anywhere else. I know where she is and that she is not out on the streets".

[41] There were recent incidents of maids getting raped and murdered in the locality, so they feel it's not safe.

The factories have CCTV cameras, guards and rest and tiffin rooms for long or night shifts. Both permanent and contract workers highlighted that there are a lot of women working together, so they feel safe as a group. In addition, any kind of harassment complaint is taken very seriously by the management.

Child employment and marriage

While in need of further study, women's histories suggested that a young start in factory work may play a role in continued factory work. Many of the women within the age range 30–40 in the urban area indicated that they had worked in factories since they were as young as 12–15 and continue to do so. They were married at the same young age, between 12 to 15 years old, and have two to three children by now. They believe they were married off at such young ages because their parents were not aware of the negative impacts of child marriage, and because the factories used to pay so little that the families could not afford to feed them much longer. However, currently parents tend to keep their daughters in the family longer. Various NGOs have also had meetings with the women to raise awareness against child marriage.

Male and female workers claimed that the factories do not hire younger children anymore,[42] but reported that many youth, mostly girls, take up contract work in the factories from as young as age 14 and study at the same time.

Factors limiting and shaping women's participation in factory shrimp processing

Here we highlight the perceived social risk that was identified as limiting women's participation and the choice between contract and permanent work. As noted, factors limiting positive outcomes are presented in Section 4.4.2.

Perceived social risks for women

The study found that in order to add extra income to the family, women and men had to be willing to take certain reputational risks. For example, one of the FGD respondents, a 35-year-old male rickshaw puller who also works at the bus stand every morning, asked his wife to leave her factory job because he did not like her working and interacting with men. He explained that he does not know what men are thinking about his wife and is concerned about the possibility of them physically molesting her. He noted:

"I did not like my wife working in the company, that she meets with so many men and has to talk to them."

As such, the household has to get by with what he earns.

Interestingly, it was only the men who raised the risks of extramarital affairs as a specific risk and disincentive for factory work, both from the man and the woman's side. Women did not appear comfortable talking about affairs, separation or abandonment and had to be probed about them, including when talking about their own situation. There was a general expression among the women's group that their husbands were "good human beings", as that is what will bring peace in the household. When probed about what they mean by good human beings, the women explained that "good men" are those

[42] Most of the factories had signs indicating "child labour not allowed" written at the gate. The young girls who do join reportedly show fake ID cards to join.

who stay loyal to their wife and family, do not engage in drinking and gambling and do not engage with other women.

Contract versus permanent work

The need to balance family and household responsibilities shaped some women's participation in factory work. Specifically, while not all women had the choice between contract and permanent work. However, when they did some women opted for contract work because it offers more flexibility in terms of work hours than permanent positions. While permanent workers have to remain at the factory until their allotted hours are over, contract workers work the hours needed to earn their required income. Thus, even though they do not receive the benefits a permanent worker receives, the female contract workers said they value the ability to get money more frequently in their hands, the chance to spend time at home, the ability to work the amount of hours they need. Many of them end up earning more than the permanent workers, as income is based on a piece rate system – although this is often at the cost of over-burdening themselves. Some permanent workers also opt to work a few hours extra, after an eight or 12-hour shift, as a contract worker so that they can earn a little extra money.

4.4 Outcomes for women and factors shaping outcomes

4.4.1 Outcomes for women

The key negative outcomes for women from shrimp factory work were identified by participants as physical pain and suffering from working in the factories, double burdens and lack of time for families and household work, reduced prospects of getting married to better-off families and the lack of time to engage in other income earning activities. The key positive outcomes for women identified by the participants are increases in purchasing power and economic independence, an ability to contribute to family income, an ability to save for future plans, increases in confidence, and contributions to power, freedom and aspirations. These are discussed in detail later. Annex 7 provides a summary in table form of the perspective of both men and women as provided during the FGDs.

Negative outcomes

Physical pain and suffering

Though the factories provide critical income for poor women and families, working in the factories can be physically challenging and stressful for both men and women in different ways,[43] based on the kind of role they play in the factory. As highlighted earlier, both contract and permanent female workers usually perform consistent, repetitive assembly line processing work.[44] In contrast, men are recruited for a wider range and more varied work from counting and handing out tokens to loading and unloading. Women workers thus have to stand for long 8–12 hour shifts in very low temperatures and sort through what participants described as "smelly and disgusting" shrimp. Their

[43] Even though both men and women face similar negative outcome of physical hardship, the participants expressed that the number of men hired are usually much lower and they perform different kinds of roles of supervising, measuring, loading, unloading, etc.

[44] In the literature review for this study, it emerged that women are usually routed into the low quality jobs under unpleasant conditions as they are more than willing to take these jobs due to lack of alternative options.

hands usually hurt from all the peeling and handling of ice and the sharp edges of the shrimp, so that even after their shift, the women cannot cook or eat properly. Lack of sleep keeps them constantly tired and their feet get numb from the cold and from standing for long hours. The men also carry heavy burdens with chances of injury and slipping on icy surfaces and their hands and feet also get numb from the ice but (depending on the job), they usually do not have to do this consistently for hours on end, but rather depend on when the packages are delivered or shipments arrive. Both women and men have to perform their eight-hour shift during the night every alternative week, disrupting their sleep routines.[45]

Double burdens and lack of time for families and household work

Even though both men and women face physical hardship from working in the factories, the work usually takes a larger toll on women because after the challenging day of factory work, they have to come home and perform their socially-ascribed household duties. Women expressed that these long hours, injuries and lack of sleep in turn affect their household work and well-being. After work, women often cannot eat with their hands, cook any dishes that requires sorting, are usually tired and short-tempered, and often lack enough time to fulfil household duties or look after their children.

In connection with before, a negative outcome that surfaced is the dissatisfaction expressed by men regarding women spending long hours in the factory. Men expressed in the FGDs and interviews that they perceive that men suffer as a result of not receiving the comforts of a freshly cooked or intricately prepared meal, a glass of water from their wives or daughter's hand, or a clean house that are usually expected for women to perform. As a result, disagreements occur between couples. For example, one 55-year-old male permanent worker respondent said:

"She cannot cook on time or cannot fulfil household responsibilities on time. We do not get food properly on time. Many women also leave our children behind who get neglected. Clothes remain dirty because she doesn't have time. When she comes home, she is in a bad mood. If I ask her for a glass of water, she says I also worked, go get your own water. We know that both husband and wife have to contribute to household responsibilities for the household to run properly but it is not always possible".

The same respondent described:

"There are other problems. Suppose the husband wants to eat fish and he buys it on the way home and waits for his wife to come home and cook. But she buys eggs on her way home and she would rather just cook eggs, which are easier to prepare. Her hands burn so she cannot sort through the fish".

Some men FGD participants added that they (men) have to bear the extra burden of household work by having to help out their wives, sisters, or mothers because they have no other choice. As one 59-year-old man, whose wife and daughters work in the factories, explained:

"We have to cook sometimes, we sometimes have to wash clothes, have to give a bath to kids or have to wait for the wife to come home and cook. But we wouldn't say it is a negative effect... It may be negative in the sense that we face some hardship in dealing with these responsibilities".

[45] Workers have night and day shifts which rotate every alternative week.

At the same time, some of the contract women FGD respondents shared that their husbands get angry and curse at them for not being able to fulfil their perceived domestic duties. This corroborates the information provided by the key informants regarding domestic violence amongst these workers.

Reduced prospects of getting married to better-off families

Both the permanent and contract women workers said that even though they do not face social problems while working in the factory, their status as factory workers means they are far less likely to marry a man from a higher social class. Women are stigmatized because they are deemed to be interacting with men in a factory setting. One 18-year-old, female contract worker elaborated:

> **"Men do not want to marry girls who work in a company and parents do not want to give their daughters to men who work in companies. They think company girls are bad. But she isn't bad, she works because of poverty. Its girls who go to school who do bad things, but we who work in companies are so busy in the factories, we do not have time to do bad things. We are safe working in the factories. We are scared of God. We are engrossed in work. But since they see us on the road, they talk about us".**

Lack of time to engage in other income earning activities

The FGDs suggested that the time demands of factory work may limit the possibility to have multiple livelihood options (income sources), in particular, for men who have the option of pursuing multiple jobs. For example, one couple, who both work in the factory indicated that they have not been able to purchase a fridge and other comforts that other worker families have. They indicated that this is because they both spend all their energy and time in the factory, and thus cannot earn income from elsewhere. They claimed that their aggregate income was less than other worker families earn because in other families, only the wife works in the factory while the husband opts for multiple jobs throughout the day, thereby adding more to the overall family income. In a related example, one male respondent indicated that he had left the factory and started driving a rickshaw and working in the bus counter in the mornings. He claimed that these multiple jobs allow him to earn more for his family than factory work. As noted in section 4.3.2 Enabling factors, this limitation is gendered in the sense that women generally do not have other livelihood options available as alternatives or supplements.

Disincentivizing education

Women expressed that youth in the area do not attempt to study further than Grade 8;[46] in fact, the income earning potential that the factory offers seems to disincentivize youth from continuing school beyond the free education they receive. As one 18-year-old female contract worker explained that "what is the use spending money and getting educated, we probably won't get better jobs than this. It is better we earn an income and help our families out." This was contextualized in terms of a common family strategy of aiming to have the youngest child educated, as explained by one 18-year-old permanent worker, "we can all work hard to get one member educated so that he or she can help us in the future. We cannot all be uneducated". The female workers explained how, generally, they get into the cycle of earning to help their families and this continues even after they are married. The idea is that the more members that earn, the better. While understanding the importance of education, since they do not see hope of better jobs in the area nor readily afford education, women did not see immediate hope for returns from it — especially not relative to the option to generate income.

[46] An NGO called UCEP provides vocational and general education to the children on the urban side, but it is only free up to Grade 8.

Positive outcomes

Increasing purchasing power and economic freedom

Both types of female workers said they have gained more decision-making power and freedom as a result of working in the factories and earning their own income. For example, one 22-year-old female contract worker respondent explained:

> **"We can afford to indulge in fashion items like new *salwar* suits, and even purchase clothes for our family members. Before we would have to rely on men for something as simple as a set of bangles, but now we can easily purchase these ourselves. We can decorate our homes with better furniture and even buy refrigerators, ceiling fans, stoves, irons and other items that can make our lives more comfortable. The men do not really interfere with our salary".**

Men also noted that it takes a burden off of them in not having to provide for women's specific needs. Some women indicated some limits to this freedom, however. For example, some of the women have to provide a certain amount of their money to their husbands.

Increasing ability to contribute to family income

Women working in factories are able to contribute directly to the family income and as a result are seen as less of a burden on their families. One young girl from a family of seven sisters, whose father migrated from Barisal after a cyclone destroyed their home and assets, said no one saw any hope for a family with so many daughters when they first moved there. People were unwilling to help them, but the factories helped their family pull through and now people see these girls as assets rather than a burden. Many of the sisters have gotten married and the sister who did have to return to her family, as a result of losing her husband, is still able to bear her own expenses and not be a burden on their father. Women contract workers also contribute their weekly piece rate-based salary to pay for the everyday expenses while the husband's monthly salary may be used to pay monthly utilities or pay the local grocery store, which allows them to freely purchase groceries throughout the month and only pay on a monthly basis.

Increasing ability to save and plan for the future

Male focus group members indicated that they prefer giving their own salaries to women, as the women spend much less than the men and are better at saving. According to the men, whenever a woman spends, she spends on her family, whereas the men make unnecessary purchases. Women also echoed that they do not have to tell the men before they buy anything for the household, because the men know they will only buy things that are necessary and beneficial.

Women expressed significant pleasure in playing a large role in improving their lives through various means related to having an income. For example it is common among working women to use their income to purchase life insurance that gives them access to a large sum of money after a certain amount of time. Many of the women, especially on the peri-urban side, indicated that they dream of purchasing land and building a house. Some of the women have come closer to this dream by saving through different NGOs and cashing in their life insurance. Some of the women have also purchased rickshaws for their husbands or helped their sons start new businesses.

Enhanced confidence and perceptions of equality

Women from both groups suggested that working in the factory and "seeing the outside world" (outside the home) has given them more confidence and knowledge. They now know how to talk to people, and they are exposed to what is going on outside their homes and know how to manoeuvre difficult situations. They indicate that this would not have been possible if they stayed at home.

As noted previously, men expressed dislike of, and discomfort with, women in their families being exposed to other men. Men also concurred, however, that factory work has had an impact on gender equality. Some men suggested that women and men are "equal now" and that women have become "empowered". Specifically, they pointed out that the market place, which is public and thus usually a socially restricted space for women, has transformed and come to be referred to as "*Bou*" (wife) bazaar, because it is now full of women doing grocery shopping.

Some expanded power and freedoms; relation to aspirations

In the discussions regarding power and freedoms, using the Ladder of Power and Freedom tool, women from both groups expressed that the most significant freedom is the husband, wife and family living well ("in peace") as a result of both husband and wife earning money and contributing enough income to run the family. All the younger (ages 15–23) male and female workers mentioned that no matter how much they earn or contribute money, they do not wish to have a bigger say about their lives than their elderly family members. They expressed that they believe their parents and others know what is best for them and so they do not wish to overly exert their decisions and desires about their own lives.

Both female and male participants identified income earning from shrimp factories as one of the key factors that has provided them with more power and freedom over time. Age and experience were also indicated as two other major contributing factors to this increase. The women in the permanent and temporary workers groups placed themselves in Step 3, whereas ten years ago they believe they were in Step 1 and 2. They further explained that older women, and women who have spent many years working in the factory, have a longer time span of contributing to their family's well-being and thus have more power and freedom within their household. However, even these women do not have complete freedom as they still need to consult their husbands and family members for many decisions. According to men, women are in either Step 3 or 4, this is mainly because of their earnings from the factories. They also added that over the years, more and more women participate in factory work, earned an income and invested in assets and businesses for their families, and this has increased women's general level of power and freedom.

Male and female workers alike stated that if their working conditions could be improved, they could do the factory work with more ease. The increase in wages, reduction in working hours and monthly leave have eased up their lives a great deal. Now their main desire is weekly leave and better salaries.

The women in both groups expressed the desire for the presence of garment factories in their area, perhaps as a replacement for shrimp factories, because they perceive the shrimp work to be harder, more "disgusting" and more stressful. They have also heard about better working conditions and worker rights for garments workers. Mothers of girls in the group expressed that they would never send their daughters to work in garment factories in Dhaka, even if their daughters wanted to. They like having their daughters join the same factories as them, so they can keep an eye on them.

In terms of aspirations, women clearly articulated that they have different aspirations for their children than shrimp factory work. They expressed that they do not want their children to work in these factories – they want them to have a better life than their own. In particular, they did not wish their future generations to work in these factories, both because of the physical stresses and discomforts of the work, and its impacts on the household and family. Participants highlighted that they were aware that a number of ex-factory workers had left the slum and bought their own land or started their own businesses. In line with this, women expressed that their factory work was a means to an end: their hope is that the work can allow them to save enough money to move their families out of factory life. Both men and women suggested that if they could save and sacrifice some luxuries now, factory work might help achieve these aspirations.

4.4.2 Factors shaping outcomes for women

Labour organization interventions to improve salaries and working conditons appeared as a factor contributing to positive outcomes for women. Given the significance of income to the workers, and the negative impacts of poor factory conditions, labour interventions from organizations like SAFE and Solidarity Center can be identified as enabling factors in making work in the factories more beneficial for women (and men). Salary levels have increased, providing women with more economic independence, and female workers are provided with safety gear and work one shift at a time. The increase in the minimum wage was emphasized by all focus groups as something for which they are particularly grateful. Given the perceived link between wages and changing notions of female children as a burden on the family, such labour interventions may be considered be factors in positive social impacts, not only economic impacts.

At the same time, however, continuing difficult conditions, combined with gendered stereotypes and bias emerged as significant factors limiting positive outcomes for women. These are presented here, followed by findings regarding strategies women apply to navigate these constraints.

Constraining factors for positive outcomes for women

Continuing poor working conditions (hours)

Notwithstanding the previously mentioned contributions of labour interventions, poor factory working conditions continue to be a key factor that impact negatively on women (and men). Both female and male workers expressed that key limitations of the working conditions are the long working hours per shift and the absence of a two day weekend holiday. Some of the workers mentioned that factories try to induce them to work even further than the long 8–12 hour shifts that already exist and are reluctant to grant them one day of holiday per month. Many factories have not reduced the shift hours from 12 to 8.

Gendered norms, stereotypes, division of labour and bias

Similar to Case study 1, gender norms and intra-household relations emerge as key factors shaping women's perceived household and family responsibilities – and thus clearly play a strong role in creating the double burdens facing women in Case study 2. In Case study 2, however, gendered norms and stereotypes also shape and limit the roles women play in factories in multiple ways – and thus the outcomes of the engagement in paid aquaculture work for women. For example, many FGD participants expressed their perception that men are able to access higher positions such as managers, store in charge or supervisors because (they believe) men can take on harder physical labour, are better inventory keepers, better at calculations and are better educated than women. Participants were also in agreement that male factory workers would not listen to a woman. Similarly, respondents generally agreed with gender stereotypes of women as soft-spoken, with some expressing the perception that a woman would not be able to direct an older person or a man with the required authority. Connecting with gendered divisions of labour, men and women respondents both indicated the normalcy that the companies have separated the jobs for men and women based on their (stereotyped) abilities and gender roles. For example, a 26-year-male permanent worker respondent explained "Men cannot cut shrimp heads, we do not have that norm. Women are used to using *botis*[47] for cutting fish, it is not a man's work."

[47] A cutting instrument popular in Bangladesh and used by women to cut fish and other food items.

Similarly, a 27-year-old male contract worker further emphasized:

"Women cannot carry big loads on their head for shipment, we need men for that. We men also hand out tokens based on weight to women and have to write them down, which a woman cannot do. Men are stronger and smarter than women."

These stereotypes and the resultant division of labour also factored into how women and men workers accepted the differences in wage levels between genders. The participants explained that men earn more because they have to work longer hours (such as staying through three shifts)[48] or carry out harder physical labour. Women were seen as not being able (or eligible to work multiple shifts) because women have to return to their families and household obligations. In terms of labour, one 18-year-old female permanent worker expressed:

"The men's work is hard. The storage where men get in, women cannot get in because it is so cold. Also, in each carton, there are six packets. Each carton is quite heavy. They have to carry it. It's not possible for us to do the men's job. It is cold, they have to carry three to four cartons on their head. The men of course get more salary than us, around BDT 6 000 (USD 77). Of course they will get a higher salary than us. They work harder. During shipment they have to toil very hard".

Factory bias in promotions was identified as a key factor limiting positive outcomes. While women felt they would have the skills and confidence to take up supervisory roles,[49] they have heard stories and seen some anomalous examples of women supervisors (such as in Rupali factory) – they also perceive their prospects of 'rising up' and attaining better positions in the factory as very poor. Women identified the over-riding constraint as factories not being willing to promote them even if they are capable. This appeared to interact with deincentivization of education for women, as women perceived that factories would rather hire a man with a higher education; education is not a sufficient enabling factor to overcome factory preference for men in higher status roles. As one 27-year-old, female permanent worker elaborated:

"They [the factory owners] will never make us women supervisors. We understand, have the skills but they will not make us. If we can do this work and understand, doing supervisors work is no big deal. Even if we show the skills, they will not take us. They think, I cannot lose a skilled worker, rather I'll bring someone educated to be a supervisor. Men are usually supervisors. We do good work, they praise us but they will not praise us too much because then they will have to promote us".

Table 8 shows the participants' insights regarding women working in non-typical roles, such as women in supervisor positions.

[48] A shift consists of eight to 12 hours.
[49] This belief in women's ability to be supervisors may stem from the fact that there have been cases of factories hiring and/or promoting women to supervisory positions.

Table 8. Views about women playing non-typical roles

Respondents	For non-typical roles for women (such as supervisors), what if a woman did this?	How does/would this affect a household's well-being?
Contract female	• Factories will not allow • Women have household responsibilities	• More income
Permanent Female	• Do not have aspirations for better roles in a factory • Society will readily accept them if they take up better non-typical roles but the factories will not give them those roles	• Better income • Better life for their children
Male (contract, perm and family members)	• If a non-typical role is better with a higher salary then they can do it • If it doesn't affect family honour and is safe • If she has the confidence she can do it • Women have family responsibilities, therefore they cannot take up roles that take up too much time • She has to consult with family first and the decision will be based on her arguments • Society will accept this; the two running our country are women, women can do more than men now	• Increase income • Their honour will increase if they do a good job and benefit the family

Source: Focus group discussions.

Negotiating power relations and strategies to address negative outcomes

While women largely expressed distress and resignation regarding the factory-based constraints, at the household scale, women from both groups indicated that they have developed several strategies to help deal with the negative outcomes.

Time-saving strategies

To reduce time burdens and accommodate gendered household burdens, most of the women seek time-saving technologies or strategies. For example, most have purchased curry cookers and rice cookers, which they buy from door-to-door sellers who allow payment in instalments. This helps them come home and cook easily while resting or even allows quick preparation of their tiffin in the early morning before they go to work. They also purchase the readymade masalas so that they do not have to grind them themselves. Many women also prepare their family meals in the early morning with these labour-saving technologies. While these are useful, women expressed that these are insufficient and that household-scale negative outcomes, including fear their husbands will leave them for other women since they cannot properly manage the household, remain significant.

Negotiating childcare

Additionally, women reported various strategies to enable them to negotiate childcare so they could engage in factory work while also ensure their children were cared for. Some brought in their mother-in-laws to stay with them and look after their children. Others who have their parents or sisters nearby, leave their children with these relatives. Those whose husbands have left them indicated that they leave their children with neighbours, send them to the village relatives for a few months, and/or they work as contract workers when their children are small. During peak season, many factories and depots deliver the shrimp that need to be sorted to the doorstep of women who cannot go out to work because they have small children and collect the load when the women are done. This also helps the women earn an income from their home, however this is very seasonal.

Intra-household negotiations

Some women indicated that some re-negotiation of household work and expectations had taken place out of necessity in some families, and that this family support and sharing of the work was important to reducing women's burdens and keeping household "harmony". One 23-year-old woman in the permanent group corroborated for her family, saying:

"We all share the workload. We face no family problems. Suppose I leave at 8 a.m. and will come back at 8 p.m., I will cook early in the morning to take with me leave some for my family. Our family understands we work hard. If we cannot cook on time, some of our husbands will make mashed potatoes and eat it with rice. We wash our clothes once a week so that is fine. The husbands help out with the work, we poor people have a lot of love amongst ourselves".

In line with this some male focus group and interview participants indicated that while they perceived their own (men's) lives to be hard as a result of women having less time for caring and cooking for them, but that they understand how much their wives are contributing to the family so they bear the hardship and do the best they can. One 38-year-old male respondent, who is a store in charge and earns on a much higher scale than other workers (BDT 8 500) readily admitted that: "If my wife didn't work, I wouldn't have been able to feed my family and would have probably fled."

As well as necessity being a driver in this re-negotiation, some women identified specific strategies they were using to maintain positive outcomes, and/or compromise and keep the peace in the household. Several women noted that they do not 'make the mistake' of saving their income in joint accounts as their husbands might spend it all. Others emphasized compromise and providing direct benefits to their husbands. For example, one 28-year-old female permanent worker who is married to a house tutor, said during an in-depth interview: "My husband couldn't take my long hours and absence anymore so he got frustrated and left the household but came back after two weeks. I now work my designated time and come home to him". She added:

"I also bought him an auto rickshaw so that keeps him busy now. As a house tutor, he had free time in his hands." Another women – a 30-year-old female contract worker – delivers part of her salary to her husband to keep his support for her working: "otherwise my husband will say I am letting her work by sacrificing my comfort and she doesn't even give me anything".

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LESSONS LEARNED AND IMPLICATIONS

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5.1 Synthesis of key findings

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The study provides insights into two very different sets of experiences of economically poor women in two very different nodes of aquaculture value chains. The production versus processing experiences, set in rural and peri-urban/urban contexts, offer contrasting forms of engagement in different socio-cultural settings. Within the cases, we see identified differences between trained and untrained women in the production setting and between contract and permanent workers in the processing setting. The study also offers insights into men's perceptions and contrasting gender roles, as well as the dynamics of gendered negotiations and relations. In this concluding section, we first briefly synthesize key findings in relation to the research questions of roles, factors shaping involvement, outcomes and influences on outcomes. Next, we present three key issues that emerged as significant through cross-case analysis – gender norms, workload and valuation of gendered work – together with lessons regarding the overarching question. Finally, we conclude with recommendations for better inclusion of gender in aquaculture-related programmes and interventions.

Overall, both cases indicated significant, albeit different, levels of involvement of poor women in the two types of aquaculture nodes (homestead pond production and shrimp processing). The cases indicate that women play a range of roles, from sharing feeding and other tasks, such as weeding and pond repairing (Case study 1) to full time de-heading or packing shrimp (Case study 2). This involvement and the roles that women and men play are highly gendered, with women performing the tasks that are perceived as less physically demanding. The roles are also gendered in terms of their contexts, i.e. taking place in what are socially considered socially 'secure' environments, such as the privacy of the home or the enclosed factory with other women. This was in contrast to the roles performed by men, which included public sphere engagement and more physically challenging activities. One case distinction was that the factory roles were relatively rigid and structured, whereas the gendered roles around the pond were rather flexible with women being able to take on many of tasks side by side or filling in for men (so long as they stay within the homestead). However there are certain tasks, within both pond aquaculture and shrimp processing, where men were socially considered to be 'preferred' and deemed 'more capable'. In both cases, these were tasks and roles leading to greater economic returns. The key driver underlying women's initial engagement in aquaculture in both cases was financial and family well-being: women are motivated by the expressed desire to contribute to their families' well-being through a socially-acceptable income earning activities. This is slightly differentiated by location: in the rural area, as well as providing a direct source of (non-purchased) food, the women think that helping the man with earnings (through fish) can "bring peace" in the household; in peri-urban/urban areas, women decide to work to earn extra income as they realized their husbands and households would struggle unless they did.

The key positive outcome from women's aquaculture involvement was an income source, which they could use for their goals, including investing in their children.

Increased technical skills (through training) and increased social confidence and capacity (through training and through the factory enabling exposure to environments beyond the home) were also identified as positive outcomes. Additions to women's work burdens were identified as a key negative outcome (although less for homestead ponds than factory workers); for women factory workers, the poor conditions and long hours, and associated physical stresses and fatigue were also negative outcomes. The cross-cutting key factor that emerged as positively shaping these outcomes was a supportive family environment, including good spousal relations and negotiations. Training emerged as significant to enabling and empowering women in the homestead pond case, and improvements in wages in the factory case. While there are variations across cases, key cross-cutting constraining factors were household and factory-level gendered constraints on roles and opportunities, and household and factory-level environments that enable women to act on or take advantage of these – with these, in turn, being underpinned by gender norms and expectations, and associated social concerns regarding risks from nonconformity.

In looking at these issues across both cases, three issues emerge as especially significant: 1) financial need and gendered norms as key factors shaping women's involvement and gendered roles in aquaculture; 2) impacts of aquaculture on women's workloads; and 3) the dialectical interplay between women's involvement in aquaculture, men's valuing of women's work, and outcomes. These are each addressed later, followed by discussion of the overarching question: to what extent and in what ways does aquaculture empower (or disempower) women?

Gender perceptions and norms as a key force shaping involvement

The study highlighted that the key driving factors shaping women's involvement in aquaculture were all normative: hierarchical perceptions of gender; gendered concerns around risks and reputation; and gendered norms regarding work flexibility and expectations. The first point refers to the underlying finding from both cases that men are perceived to do the most difficult and risky tasks take on leadership roles and be central and essential to both these nodes of aquaculture. In relation to this, both cases evidenced notions of men as superior either in an implicit hierarchy and/or in terms of having innately superior capabilities (e.g. "we women can never reach above men" (Case study 1); "men are stronger and smarter than women" (Case study 2).

Second, gendered concerns around risks and reputation also emerged as a key force shaping aquaculture roles and engagement in both cases. Specifically, perceptions from rural and urban men regarding women's safety emerged as a reason that men prevent women from engaging in activities that are assumed to require physical exertion, exposure to risks from sexual harassment, or risks from physical harm. In Case study 1, FGD participants felt that women (and men) need to protect men from ridicule, loss of honour, or any form of emasculation. For example, a common theme was women trying not to engage in non-typical work which a man is supposed to do – for example, a woman selling fish in the market was perceived as harming a man's reputation, hence the woman would avoid doing that as long as she has an able man within the household. Similarly, the risk to men's reputation through engaging in household work reinforced women's household roles. Case study 2 highlighted the perceived importance of a safe working environment, the factory being seen as a 'safe' environment for women even though it is away from the home. However, safety overrides reputation risks in the factory case, as they were willing to forsake the risks to their reputation from women engaging in factory work. Overall, while this factory work physically extended the acceptable sphere of mobility, in both cases some form of gendered confinement appeared to be prevalent, in particular from the perspective of the men in the study. While visibility of women in the market in the peri-urban/urban market (i.e. the "*Bou*

market") had become less of a social concern to men, women's presence on the streets – even going to work – was still socially problematic. This may suggest not only differential social mobility for working peri-urban and urban women from rural farming women, but also that the shifts even for the former have been limited to date.

The aforementioned notion of protection and seclusion of women can be understood in relation to the common socio-religious practice of *purdah*. In the urban Muslim setting, norms around women's seclusion were associated with men's worry about protecting women from sexual desires or advances of other men. For the rural Hindu men, the concern was about reputation, including the associated risk to men's honour. The cases thus suggest that the concept of *purdah* can thus be seen implemented in socially-differentiated ways. This aligns with Chowdhury's (1992) research that pointed out the different underlying motivation for purdah in Hindu and Muslim households: for Muslims, it is mostly about protecting women, whereas in the Hindu religion, *purdah* (more strictly observed after marriage) focuses on upholding the integrity of the family. Linking to the focus of this study, norms reflective of *purdah* constrained women's success in aquaculture. Interestingly, men in the rural Hindu context recognized this as a barrier to women's success.

Gendered norms and expectations around household responsibilities also emerged as shaping women's engagement in aquaculture. Case study 2 indicated that such responsibilities constrain women from taking permanent jobs with fixed schedules and minimum time requirements, as illustrated by many women in the shrimp sector purposely opting for contract work as it allows them more flexibility to spend more time taking care of their families. This supports the arguments provided in the World Development Report 2012 which states that fixed schedules and minimum hour requirements, as is provided by the permanent jobs in the factory, make it difficult for women to balance and adjust their household responsibilities, and this in turn results in barriers to market work for women. Norms and expectations around the role of women in the household underpin these trade-offs. As a result, women are more liable to opt for flexible work arrangements and to supply fewer hours of work on average than men, putting them at risk of being routed into lower-quality jobs (World Bank 2012). Case study 1 illustrates how these same gendered norms in a rural context manifest in homestead pond aquaculture being an attractive option to women as it allows them flexible time use while working on the pond (so they can juggle gendered domestic and family responsibilities). In both cases, as further discussed later, women felt the burden of household and other work.

In terms of factors shaping how elastic the previously mentioned norms are, the factors of fear of repercussions and fear of injuring ideals of femininity and masculinity were identified as contributing to gender role (norm) conformity. In contrast, the drive to fulfil basic necessities were found to stretch normative boundaries. This is illustrated by men in Case study 2 noting that they have ignored what society has to say if they want to feed themselves. In Case study 1, in the relative livelihood security of a homestead with a pond and garden, men did not want to help women nor permit women to perform men's roles because men would be ridiculed about their capabilities as men.

Implications of aquaculture on women's workload and time use

While domestic gendered responsibilities shaped women's involvement in aquaculture, the converse was also found: involvement in aquaculture influenced women's workloads and women's coping strategies. Factory work, in particular, significantly increased demands on women – while also adding physical stresses, such as sleep deprivation, fatigue and sore hands, that make care and household work more difficult. Even when the urban men participated in some household tasks, women still experienced double

burdens of their factory job and household work, and expressed that they felt badly about not spending enough time with their children. Homestead ponds offered more flexibility and fewer demands on women's time although this advantage is offset by the fact that it generally did not provide a direct source of income to women.

In response to workload demands, both rural and peri-urban/urban women developed coping strategies. As illustrated by Case study 2, the urban women actively value services and investments that reduces their workload. Market actors have responded to these factory workers' needs with pressure cookers and curry cookers that can be bought and paid for in instalments. In contrast, rural women cannot avail of these labour reducing options, and instead rely on the homestead nature of the aquaculture itself, and take advantage of the ability to access fish for quick consumption (cooking) without having to wait for the husband to bring her fish or vegetables from the market. While this and the proximity helps, rural participants underscored that the pond being within the household did not excuse women from falling short in their 'household duties'.

The cases also highlighted the significance of gendered negotiations within married couples. Women adopted different strategies to manage their dual responsibilities, and in some cases, leverage support from their spouses. As presented in Case study 1, the trained rural women would even push the boundaries and implement an idea because they knew that once they were successful, their spouse would agree to it. As well as some negotiation of household responsibilities, such as men cooking for themselves, the urban women utilized their income, for example, giving a certain amount of money to their husband as a sort of compensation for enduring perceived "flaws" in their household work. Illustrating a different income-based strategy, one woman bought her husband a rickshaw so that he had less idle time on his hands and stopped nagging her about staying home. While some utilized their own income for furniture and decorations for their home so they would not have to ask their husband, others invested in their husbands or sons by planning to buy land or businesses. Still others pursue risk mitigation strategies, as another woman negotiated her own security by buying land in her son's name so that she does not have to divide the land between her relatives, in case something happens to her husband.

Women's engagement in aquaculture and men's valuation of women's work

The study elucidates the differentiated and dialectical nature of the interplay between women's engagement in aquaculture, men's valuation of women's work, and outcomes. Mobility and exposure through aquaculture seem to have played important roles in establishing men's (spouse's) faith in women's knowledge and capabilities – as well as women's faith in themselves. For example, urban women's factory work has immersed them in a world beyond their home on a daily basis, and thus exposed them to new ideas, and contributed to their learning on how to negotiate and speak up. The urban men expressed their relative faith in women's decision-making, their ideas and their prudency in spending money, as well as their ability to navigate settings such as the market. In the rural setting, however, where the women continued to operate within the homestead, they did not have such exposure. In turn, this lack of experience appeared to factor into men not expressing faith in women's capacities to deal with different actors, to negotiate or have or implement ideas. The trained-untrained women contrasts highlighted this, with illustrations of trained women gaining confidence in themselves and from their spouses in a way that the untrained women did not. At the same time, there were limitations to the effect of this exposure: several trained women still expressed the desire to expand their engagement in aquaculture or other arenas, but were frustrated and limited by their spouses' not being willing to trust or invest in them.

The cases suggest that women's income contributions to the household increase men's valuing women's work[50] and women's voice in financial decision-making. This is illustrated in Case study 2, in which men accepted women working, operating outside the home, and even undertook some household work themselves – stretching gender boundaries because they saw the significance of the women's contribution to the household. As previously noted, this was tied into the fulfilment of basic needs. In contrast, in the homestead case, women's work was unpaid and within the homestead and men did not express a similar sense of importance of women's contributions. (There were some exceptions to this in the rural area, in outlier examples of women starting to make headway, when they were able to implement their ideas successfully). Overall, this pattern was also reflected in the control over aquaculture income. In the rural homestead context, the men took the fish to the market to sell and controlled the income. As noted, even if women were responsible for keeping the money, the women have little control over it. In contrast, for the income earned through women's own paid work, women had a larger say in how the money was spent.

Does aquaculture contribute to empowerment?

In this study, empowerment has been analysed in light of Kabeer's (1999, p.437) seminal definition, which is "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them." The study indicates that aquaculture is already contributing to women's empowerment in several substantive ways. In particular, it indicated that aquaculture contributes to women's empowerment both in the form of and through providing direct income. In terms of the former, in Case study 2, while imperfect, the factories offer an economic lifeline for separated or abandoned women, as well as provide married women with a direct source of income to contribute to their family well-being. This is particularly important for families without other options. In terms of the latter – empowerment through income – the case study indicates that women's direct income plays a significant (non-economic) role in that it reduces women's dependence on their husbands and other family members. Case study 2 also highlights that women having a direct income can incentivize men to empower women by sharing in household responsibilities. Similarly, the study found direct income from aquaculture to be a key factor in increasing the respect accorded to women. This income and respect, in turn, contributed to women's life choices being increasingly recognized, as well as to women having some increased economic freedom to work towards realizing their life choices. Additionally, women's involvement in the aquaculture contributed to some expanded control over resources (ponds), to increased ability to make choices and plan around food consumption, and to build women's confidence to speak up and, in some cases, act independently on these choices. In relation to this, the study suggests that training and interventions that involve women being exposed to new ideas, skills and experiences are important factors (see also Farnworth *et al.*, 2015). Building on before, aquaculture income and exposure contributed to empowerment in the sense of women being able to identify and work towards their aspirations or strategic life choices. To some degree, both aquaculture training and factory work helped rural and urban women plan for the future and their life choices, including key aspirations of bringing up children to be educated and successful, buying land, paying off debt and investing in new businesses.

[50] This valuing of women's work is reflected in the way the urban men expressed that they 'endured' women's inability to fulfil all their household duties on time or even helped out in household work because they knew the women were working hard (in the factory) as well. On the other hand, women on the rural side had no such recognition of their workload, with and work on the pond was not 'an excuse' for not doing their household work on time. The absence (or illness) of women was the only time men were willing to help out—but, as noted, gender norms minimalize that circumstance.

At the same time, the study also uncovered multiple significant limitations to women's empowerment in relation to aquaculture to date. First, in terms of limitations to economic empowerment, while generating income, factory conditions remain difficult and women factory workers experience reduced well-being in relation to work burdens. While factories have allowed women more economic freedom to execute life choices, the women are provided with low pay, low quality and relatively undesirable jobs.

Second, in terms of social empowerment, both cases highlight that the outcomes for women through aquaculture has been somewhat limited. While trained women in Case study 1 have expanded confidence and capacities, and some women had some expanded opportunities, overall these women continued to face gender barriers in their households and communities that prevented them from being able to act on these. In Case study 2, women similarly expressed some expanded confidence and capacities; moreover, their sphere of mobility had physically expanded (to the factories) and there was arguably more sharing of domestic tasks and greater economic freedom. At the same time, women's understanding that they could never progress beyond the lower roles at work, the continued double burdens and some risk of retribution at home, and continued overall perceptions of gender hierarchies in the household and factory contexts suggest significant limitations to social empowerment to date.

Overall, bringing the previous points together, the study suggests that while aquaculture has been contributing to women's empowerment in some important ways, engagement in aquaculture has not yet fundamentally changed women's strategic freedoms, such mobility on par with men or the freedom to work in roles other than those associated with their gender. This relates to the finding that, in both cases, aquaculture engagement has not yet widely contributed to shifting the gendered norms and practices that limit greater economic, aspirational, or status returns for women and the expansion of women's ability to act on strategic life choices in pursuit of these. Linking to before, this includes limited impacts to date on intra-household relations, gender roles and responsibilities, as well as on women's mobility, and on the overall lack of opportunities for women to engage in leadership and higher remunerated roles in these nodes of aquaculture.

Thus, the study underscores that it should not be assumed that inclusion in aquaculture – in and of itself – will lead de facto to women's empowerment. Rather, the study suggests that empowerment, in Kabeer's (1999) sense of expansion of strategic freedoms, is multifaceted and deeply shaped by structures, including informal ones such as gender norms. As such, for aquaculture to contribute more widely and sustainably to women's empowerment, policy and aquaculture initiatives and investments will need to recognize and engage not only with technical innovations and scaling, but also with gender norms and practices.

5.2 Recommendations

In response to the previous findings, the study identifies several recommendations for government, donors and NGOs on how policy and aquaculture interventions and investments can more effectively contribute to women's empowerment.

Strengthening gender through labour law enforcement and fisheries policy

Government agencies, supported by donor agencies, can lay the foundation for women's empowerment in, and through, aquaculture through investments policy and policy implementation in relation to factory work. In particular, provisions can be added to labour policy regarding rights of contract workers who are not directly hired by the factories. Additionally, collaboration with agencies such as the ILO and non-profit labour NGOs can help to direct government attention to other areas of policy in need of strengthening. Additional political will and resources are needed to ensure shrimp factories comply with existing labour laws.

Furthermore, these actors can contribute to empowerment outcomes by strengthening the gender aspects of the National Fisheries Policy, as well as activation (and articulation of roles) of Gender Focal Points in each ministry. While the National Fisheries Policy mentions training women, this can be usefully re-examined and expanded in light of the Voluntary Small Scale Fisheries Guidelines[51] and associated forthcoming gender materials. The training aspects in the policy – and in related agricultural policies that intersect with aquaculture – and their implementation can be usefully re-worked to include linkages between technical trainings and gender awareness-raising and the involvement of men and other relations as means of reducing barriers facing women in the aquaculture.

Investing in capacity building and awareness raising that promotes gender equity

While training and exposure to new learning and opportunities can have a positive impact on women's abilities and their confidence, women putting their learnings into action has proven difficult because of household dynamics that require permission to be given by spouses and family members. Recent efforts to address these limitations have highlighted the value of involving men strategically in initiatives that require shifts in such gender dynamics to succeed.[52] Interventions such as "Equality through Dignity"[53] are involving men as a means of allowing men to more readily value women's contributions in the household. Similarly, special targeting of older powerful women in households may play a constructive role in awareness and training programmes. Building on this, the recommendation emerges that agencies that provide aquaculture training, including the Departments of Fisheries, research organizations and NGOs, can contribute to women's empowerment by strategically involving men and other powerful household members in trainings. Specifically, they can leverage positive effects of this involvement by incorporating gender awareness-raising exercises with technical trainings in relation to multi-layered barriers women face inside and outside the household.[54]

Investing in campaigns to shift mindsets (norms)

The study has illuminated the significance of an underlying social fear in the Bangladesh context: harming ideals of masculinity and, to a lesser extent, femininity, as illustrated by the fear of ridicule of a man who engages in household work. There have been several successful campaigns to support shifts in mindsets and behaviours in the education and the health sectors in Bangladesh. For example, the Meena cartoon aimed to inspire education of the girl child and the Orsaline campaign targeted behaviour change

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[51] See http://www.fao.org/fishery/ssf/guidelines/en.
[52] For example, http://www.bridge.ids.ac.uk/news/explore-evidence-engaging-men-and-boys-gender-equality.
[53] Manusher Jonno Foundation and SAFE have started a training program plus campaign called "Equality Through Dignity" to enable husbands to understand the amount of work their wives do and to value them more.
[54] See http://www.worldfishcenter.org/content/promoting-gender-transformative-change-men-and-boys-manual-spark-critical-reflection-harmful.

around intake of oral rehydration salts and saved thousands of lives. Government and development agencies, together with NGOs, can now play an important role in creating gender awareness of the benefits of women's empowerment,[55] and contribute to shifts in mindsets around sharing work burdens. These agencies may also benefit from using strategies of gender role models (positive deviance approaches) to influence norms away from harmful notions of masculinity and femininity. Within the aquaculture sector specifically, while rare, there are examples of women in supervisory and entrepreneurial roles upon which government, development agencies and NGOs could draw to concretize ideas of what is possible and further inspire and motivate positive change.

Investing in educational and aquaculture incentives for youth

The study revealed that working adults' (parents) dreams of "higher education leading to a better future" may be waning. This is reinforced by present scenarios of educated but unemployed youth in rural areas, and by education having little impact on employment prospects for women in factories. This may be problematic in terms of commitments of parents and young women and men to higher education. Moreover, the study also found that adults do not aspire for an aquaculture-related future for their children. As such, the pool of potentially educated young women and men may be lost as a potential resource for developing the rapidly growing aquaculture sector, for poverty reduction, food security and empowerment. The recommendation emerges that aquaculture-related research organizations and donors can usefully investigate young women and men's own aspirations, and relatedly, assess the opportunities and barriers for meaningful youth employment and entrepreneurship in aquaculture, in particular for young women. As a part of this, these actors can usefully investigate the tensions, synergies and trade-offs between youth employment and education, including understanding of similarities and differences between young women and men. Donor and implementing agencies – from the FAO, through bilateral donors and government agencies – are recommended to draw on these findings to invest accordingly in options and ways to address gendered barriers that can offer young women and men remunerative and dignified aquaculture-related futures that align with their aspirations, both in rural and urban areas.

Building viable and desirable livelihoods for women of aquaculture value chains

The findings indicate that women – and many men – do not see factory work as desirable or satisfying. For women in particular, there are currently no career pathways beyond low-level labour. As such, without prospects of advancement, better salaries, or recognition of the capacities that they have recognized in themselves, women see factory work as a means to an end in a circumstance with few other viable options. Similarly, many rural women view their ponds as household assets to which they provide their time and labour for household benefit. Yet they have little control over its usage or outcomes, and most of those that have aquaculture ambitions face challenges in putting aspirations or innovations into action. Donor agencies, the FAO, NGOs and research organizations can address these limiting circumstances by both identifying the most promising, higher value entrepreneurial and employment entry points for women in aquaculture value chains, and identifying means to overcome barriers to these including asset access and control and normative barriers. At the same time, these agents can support on-going work by the ILO and organizations such as SAFE and Solidarity around 'breaking the glass ceiling' for women in factory contexts. From a gender accommodative perspective, the introduction of labour-saving technologies in relation to these opportunities can open up time for women to engage more easily in income generating activities and support negotiations with their families regarding family life and work balance.

[55] Many men in Bangladesh believe women are already empowered, and they do not see this very positively.

Creating enabling environments and infrastructures

While the study confirmed that the need to fulfil basic necessities helps stretch boundaries of what is socially gender-acceptable, it also uncovered the significance of security against potential workplace harm or harassment of women (such as CCTV cameras, security during night shifts, tiffin rooms for women, and non-tolerance of any kinds of sexual harassment). Government, donor agencies and the private sector can work on applying these lessons in creative ways to contribute to such enabling environments elsewhere to further enable women's involvement as both consumers and retailers in other aquaculture spheres, such as market places.

Within factory work, it was seen that improving salaries, working hours and benefits have had a positive effect on women and their households. In connection to this and the previously mentioned recommendations, governments, donor agencies and labour-related organizations can continue to work to improve working hours as a means of women (and men) protecting their health through getting sufficient rest and sleep, being able to spend more time with their children, and having more time to be able to balance household responsibilities. Additionally, these actors supporting initiatives that make linkages between workers' rights, gender and gender-based violence could be important along with protection of both women's and men's ability to speak up for their own rights as workers and individuals. This can include drawing attention to linkages between investments in worker benefits and work environment with positive outcomes in terms of safety, work quality and worker retention.


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ANNEXES

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7.1 Annex 1. Selection criteria for study participants, by case and method

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The key selection factors for participants in the FGDs in Case study 1 were two overlapping factors of: pond size ('large' and 'small') and aquaculture training (trained and untrained). The separate groups of trained and un-trained women were selected so as to enable understanding of the influence of training on empowerment. The AIN project only trained farmers who owned ponds equal to and beyond a certain size (i.e. 0.0323 hectares) and thus the untrained farmer group de facto also had smaller ponds. As described in Limitations, the village was homogeneous in terms of wealth groups involved in aquaculture (all poor), so was not a group determinant. Husbands of both groups of women were involved in FGDs and interviews to allow for relational perspectives.

The key group factor for Case study 2 was: types of workers (permanent and contract). This was selected in order to enable understanding of empowerment outcomes across two main employment arrangements for women. A separate FGD was also formed with male workers (including one who had left factory work), approximately half of whom were family members (fathers, husbands and/or sons) of existing female workers. These attributes are presented in Table 2 in the main text and outlined in Annex Table 1A and 1B.

Annex Table 1A.
Case study 1. Homestead pond aquaculture: Selection criteria and participant type in relation to methods

SELECTION CRITERIA	PARTICIPANTS	METHOD USED
Pond size ranging from 0.323 to 0.133 hectares	Women trained in intensive pond polyculture	FGD
Pond size ranging from 0.323 to 0.133 hectares	Husbands of the above women trained in intensive pond polyculture	FGD
Pond size 0.024 hectares and below	Untrained Women	FGD
Pond size 0.024 hectares and below	Husbands of the above untrained women	FGD
Adopted the training knowledge	Trained women	In-depth interview
Husband enabled adoption	Husband of above trained woman	In-depth interview
Hasn't adopted the training knowledge	Trained woman	In-depth interview
Husband who hasn't enabled adoption	Husband of a trained woman	In-depth interview
Adopted the training knowledge	Trained woman who has adopted the technology and is also a woman leader running for member	In-depth interview
Informal Village leader who is knowledgeable	Locally trained village doctor	Key Informant interview
Informal leader knowledgeable about village	Village Social worker	Key Informant interview
Knowledgeable about village	Ex-staff at NGO CODEC	Key Informant interview
Knowledgeable about village	Ex-staff at NGO CODEC	Key Informant interview

Annex Table 1B.
Case study 2. Shrimp processing: Selection criteria and participant type in relation to methods

SELECTION CRITERIA	PARTICIPANTS	METHOD USED
Women working with permanent contracts	Permanent Workers	FGD
Women working temporarily	Contract Workers	FGD
Male family members and men who also work in factories	Family members, contract and permanent workers	FGD
Woman working temporarily	Contract worker: de-header	In-depth interview
Woman working temporarily	Contract worker: de-header	In-depth interview
Male family members	Fathers and/or husbands of factory workers	In-depth interview
Woman working with permanent contract	Permanent worker: de-heading checker	In-depth interview
Woman working temporarily	Contract worker: de-header	In-depth interview
Higher position in factory	Permanent worker: women supervisor and worker in production	In-depth interview
Higher position in factory	Permanent worker: cold storage in charge	In-depth interview
Different section	Permanent worker: IQF section	In-depth interview
Knowledgeable about these workers	Solidarity staff	Key Informant Interview
Knowledgeable about these workers	SAFE staff	Key Informant Interview

7.2 Annex 2. Consent form

Name of participant/participants:

Consent of respondents

Good morning/afternoon. Our names are Afrina Choudhury and Mezbah Uddin and we are conducting a study for WorldFish and FAO to help us to better understand the fish-related activities men and women engage in the area as well as their well-being. The questions cover topics such as your family background, roles in aquaculture, the costs and benefits, decision-making access to resources and enabling and constraining factors among other topics. We will be conducting group discussions about these topics as well as some interviews with some of you. This information will help us understand your aquaculture livelihoods better so that we can inform a larger audience who can improve aquaculture related programmes in the future. You have been chosen because of your engagement with aquaculture.

We are inviting you to be participants in this study. We value your opinions and there are no wrong answers to the questions we are asking. The study will take approximately 4 days to complete and we will need to speak with the women and men separately. Your participation in this study is completely voluntary, you are free to withdraw your consent, to skip any questions you do not want to answer and discontinue participation in the study at any time.

Any information we obtain from you during the study will be kept confidential and your responses will not affect your access to any services that we or others provide. When we analyse data we will only not use your names. We will leave one copy of this form for you so that you will have record of this contact information and about the study.

Do you agree to participate in this study? --

The researcher read to me orally the consent form and explained to me its meaning. I agree to take part in the research. I understand that I am free to discontinue participation at any time if I so choose and that the investigator will gladly answer any questions that arise during the course of the research.

Consent Given? [ ] Yes [ ] No

Signature of interviewer: _____ Date_____/_____/_____/

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7.3 Annex 3. Gendered division of labour in Case study 1: Homestead pond aquaculture

Annex Table 2.
Gendered division of labour in Case study 1: Homestead pond aquaculture, by respondent groups

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?		WHY DO THESE PEOPLE DO THESE ROLES?	WHAT KINDS OF ABILITIES ARE REQUIRED TO PERFORM THIS ROLE?	RISKS INVOLVED
		WOMEN	MEN			
FEMALE RESPONDENTS: Trained women (pond size equal to or above 10 decimals)						
1. Repair dike & pond bottom	12 hours per year	√	√	• Men do the harder work • Women do not feel comfortable getting in the water • Men do the riskier work • Need more energy/ strength • Social tradition	• Physical energy • Awareness • Some education • Time • Capital/ Money • Interest • Family decision • Planning	• Fish can die • Enemy can apply poison to pond • Fish can escape when pond water overflows • Theft • Lime bursts when applying • Leech in water
2. Weeding of pond dike	6 hours, once or twice a year	√ √	√			
3. Liming during pond preparation	2 hours per year		√			
4. Water filling	5 hours (by pump machine) per year		√			
5. Drying of pond	5 hours (by pump machine) per year		√			
6. Selecting good fingerling/ species	1 hour, once or twice a year (depending on seasonal or perennial pond)[59]	√	√ √[60]			
7. Acclimatization of fingerlings	0.5 hour, once or twice a year (depending on seasonal or perennial pond)	√	√ √			
8. Fingerling purchase (hours vary depending on whether purchased from patilwala or fry trader)	1 hour, once or twice a year (depending on seasonal or perennial pond)[59]	√ Patilwala	√ √ Nursery			
9. Fingerling Transport (same as above)	1 hour, once or twice a year (depending on seasonal or perennial pond)	√ Patilwala	√ √ Nursery			

[56] Fish harvests and stocking depends on the type of pond, i.e. whether it is seasonal or perennial. Seasonal ponds dry up during winter and so fish can only be harvested once a year whereas perennial ponds retain water throughout the year.

[57] The double ticks signify that that particular sex performs the role more than the other. Many of the ticks for women indicate a supporting role.

10. Stocking of fingerlings	0.5 hour, once or twice a year (depending on seasonal or perennial pond)	√	√√			
11. Purchase of fish feed	2 hours, once per month	√	√√			
12. Applying cow dung & fertilizer	1 hour, twice a month	√√	√			
13. Feeding/Apply supplementary feed	1 hour per day	√√	√			
14. Sampling of fish	1 hour, once a month	√	√√			
15. Horra pulling	2 hours, once or twice a year depending on gas in the pond	√	√			
16. Applying potash & lime for disease management/ treatment of disease	1 hour, once a year		√			
17. Fish harvest for consumption	0.5 hours, twice or thrice a week	√√	√			
18. Fish harvest for sale	4 hours, once or twice a year (depending on type of pond)		√			
19. Sorting/Grading of fish	2 hours, once or twice a year	√	√			
20. Weighing of fish	0.5 hour, once or twice a year		√			
21. Cutting & washing of fish	15 minutes, twice or thrice a week	√				
22. Cooking fish	45 minutes, twice or thrice a week	√				
23. Selling of fish/Marketing of fish	1 hour, once or twice a year		√			
24. Fish transport to market	1 hour, once or twice a year		√			
25. Take out predatory fish	2–3 hours, once a year	√	√			
26. Cost-benefit calculation	1 hour, once or twice a year	√	√			

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?		WHY DO THEY DO IT?	WHAT KINDS OF ABILITIES ARE REQUIRED TO PERFORM THIS ROLE?	RISKS INVOLVED
		WOMEN	MEN			
MALE RESPONDENTS: Husbands of trained women (10 decimal ponds or above)						
1. Weeding of pond	4 hours, once or twice a year	√	√√	• Women do not understand all this • Liming is risky • Women are engaged in household work • Physical energy of women are less e.g. using a spade, carrying heavy weight on head • Less under-standing of women about how & where to sell fish in the market	• Some education • Experience • Physical energy • Practice • Time (Less time needed compared to other IGAs)	• Need to guard fish at night • Theft • Fish can die • Poisoning by enemies • Loss • Liming is risky
2. Applying lime & potash for water quality control	2 hours, once a year		√			
3. Repair pond dike	6 hours, once a year		√			
4. Feeding/Apply supplementary feed for fish	0.5 hour per day everyday	√	√√			
5. Fertilizing/Applying fertilizer	0.5 hour, twice every four months		√			
6. Stocking of fingerlings	0.5 hour, once or twice a year (depending on pond type)		√			
7. Applying medicines	2 hours, once or twice a year		√			
8. Partial harvesting of fish	4 hours, once or twice a year		√			
9. Restocking fingerling	0.5 hour, once a year (depending on pond type)		√			
10. Fingerling purchase	1 hour (if purchase at home from fry traders), 4 hours (if purchase from outside), once or twice a year		√			
11. Purchase of fish feed	1 hour per week		√			
12. Pond preparation	4 days (8 hours per day), once a year		√			
13. Fish harvest for sale	3 hours, once or twice a year (depending on pond type)		√			

14. Selling of fish/Marketing of fish	1 hour, once or twice a year		√			
15. Fish transport to market (up and down)	3 hours, once or twice a year		√			
16. Sorting and grading of fish	1 hour, once or twice a year	√	√√			

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?		WHY DO THEY DO IT?	WHAT KINDS OF ABILITIES ARE REQUIRED TO DO THIS ROLE?	RISKS INVOLVED
		WOMEN	MEN			
FEMALE RESPONDENTS: Trained women (pond size equal to or above 10 decimals)						
1. Pond preparation	9 hours, once a year	√	√√	**Men:** • Men know well that what amount of lime and potash to apply • Able to handle money , know well about calculations • More physical energy • Have more rights • Men have the responsibility of caring for women • Feel shy to do women's work • Women have less time after doing household work so the men do	• Capital/money • Energy/ power • Interest/ desire • Training • Some education	• Fish can die • Theft
2. Feeding/applying supplementary feed	0.5 hour per day, every day	√√	√			
3. Removing the sludge from bottom of the pond	6 hours, once a year	√	√√			
4. Weeding	1 hour, once or twice a year	√√	√			
5. Liming	0.5 hour, twice a year		√			
6. Applying potash	0.5 hour, once a year		√			
7. Stocking of fingerlings	0.5 hour, once or twice a year (depending on pond type)	√	√			
8. Netting around the pond	2–3 hours, once a year	√	√			
9. Sampling of fish	1 hour, once a month	√	√			
10. Fish harvest for consumption	1 hour, twice or thrice a week	√√	√			
11. Fish harvest for sale	3 hours, once or twice a year		√			
12. Fish transport to market	0.5 hour, once or twice a year		√			
13. Selling fish/Marketing of fish	1 hour, once or twice a year		√			

14. Purchase of fish feed	2 hours, once every week		√	**Women:** • Women stay at home, so they get time for some of the work • People criticize • Men go outside more often so women can do		
15. Fingerling purchase	0.5 hour, once or twice a year	√	√√			
16. Applying cow dung and fertilizer	0.5 hour, once every month	√	√			

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?		WHY DO THEY DO IT?	WHAT KINDS OF ABILITIES ARE REQUIRED TO DO THIS ROLE?	RISKS INVOLVED
		WOMEN	MEN			
MALE RESPONDENTS: Husbands of untrained women (pond size 6 decimals and below)						
1. Repair pond dike	8 hours, once a year	√	√√	**Men**: • Experience • Energy and knowledge • Self-honor • Men do a women's role only when women not available **Women**: • Men stay outside for other work • All works are not possible to done by all	• Knowledge • Energy/labour • Experience • Capital • Resources • Suitable pond for aquaculture	• Theft
2. Weeding of pond dike	3–4 hours, once a year	√	√			
3. Netting around the pond	8 hours, once a year		√			
4. Liming before stocking	1 hour, once a year		√			
5. Watering pond/water filling	2–3 hours (by pump machine), once a year		√			
6. Removing the sludge from bottom of the pond	16 hours, once a year	√	√√			
7. Feeding/apply supplementary feed	20 minutes per day, everyday	√√	√			
8. Purchase of fish feed	1 hour per week		√			
9. Applying medicines for disease management of fish/treatment of fish disease	20 minutes (if necessary)		√			
10. Sampling of fish for observe growth of fish	1 hour per month	√	√√			
11. Stocking of fingerlings	1–1.5 hours, once or twice a year		√			
12. Purchase of fingerling	1 hour, once or twice a year (depending on pond type)		√			
13. Selling of fish/Marketing of fish	1 hour, once or twice a year (depending on pond type)	√	√√			

14. Fish harvest for consumption	0.5 hour, twice or thrice a week	√	√			
15. Fish harvest for sale	2–3 hours, once or twice a year (depending on pond type)	√	√			
16. Fish transport to market for sale	1–1.5 hours; once or twice a year (depending on pond type)		√			
17. Cleaning and washing of Fish	1 hour, twice or thrice a week	√ √	√			
18. Weighing of fish	1 hour, once or twice a year		√			
19. Cutting and washing of fish	20 minutes, twice or thrice a week	√				
20. Cooking fish	0.5 hour, twice or thrice a week	√				

Source: Focus group discussions and interviews.

7.4 Annex 4. A comparative look at who performs key roles in pond aquaculture (Case study 1): Perceptions of women and their husbands (trained and untrained)

Annex Table 3.
A comparative look at perceptions of key roles in pond aquaculture by men and women

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO PERFORMS THIS ROLE?		ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO PERFORMS THIS ROLE?	
		WOMEN	MEN			WOMEN	MEN
WOMEN RESPONDENTS: Trained (10 decimal ponds)				MEN RESPONDENTS: Husbands of trained women (10 decimal ponds)			
1. Repair dike and pond bottom	12 hours, once a year	√	√	**1. Pond preparation**	4 days (8 hours per day)		√
2. Applying potash and lime for disease management/ treatment of disease	1 hour, once a year		√	**2. Applying lime and potash for water quality control**	2 hours, once a year		√
3. Weeding of pond dike	6 hours, once or twice a year	√ √[61]	√	**3. Weeding**	4 hours, once or twice a year	√	√ √
4. Feeding/apply supplementary feed	1 hour per day everyday	√ √	√	**4. Feeding/apply supplementary feed for fish**	0.5 hour per day everyday	√	√ √
5. Applying of cow dung and fertilizer	1 hour, twice a month	√ √	√	**5. Fertilizing/applying fertilizer**	0.5 hour, twice every 4 months		√
6. Stocking of fingerlings	0.5 hour, once or twice a year (depending on pond type)	√	√√	**6. Stocking of fingerlings**	0.5 hour, once or twice a year (depending on pond type)		√
7. Fingerling purchase (times vary depending on whether purchased from patilwala or fry trader)	1 hour, once or twice a year	√ Patil-wala	√	**7. Fingerling purchase**	1 hour (if purchase at home from fry traders), 4 hours (if purchase from outside); once or twice times a year		√

[58] The double ticks indicates who mostly performs this role.

8. Purchase of fish feed	2 hours, once every month	√ (middle-men)[62]	√√	**8. Purchase of fish feed**	1 hour		√
9. Fish harvest for sale	4 hours, once or twice a year		√	**9. Fish harvest for sale**	3 hours, once or twice a year		√
10. Selling of fish/ Marketing of fish	1 hour, once or twice a year		√√	**10. Selling of fish/ Marketing of fish**	1 hour, once or twice a year		√
11. Fish transport to market	1 hour, once or twice a year		√	**11. Fish transport to market (Up and down)**	3 hours, once or twice a year		√
12. Sorting/grading of fish	2 hours, once or twice a year	√	√	**12. Sorting and grading of Fish**	3 hours, once or twice a year	√	√√

Source: Focus group discussions and interviews.

[59] Women place orders with middlemen who bring fish feed to the village.

ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?		ROLES PERFORMED	HOW LONG DOES IT TAKE?	WHO DOES THIS ROLE?	
		WOMEN	MEN			MEN	WOMEN
WOMEN RESPONDENTS: Untrained (6 decimal pond)				MEN RESPONDENTS: Husbands of untrained women			
1. Pond preparation	9 hours, once a year	√	√√	**1. Repair pond dike**	8 hours, once a year	√	√√
2. Feeding/Apply supplementary feed	0.5 hour per day everyday	√√	√	**2. Feeding/Apply supplementary feed**	20 minutes per day everyday	√√	√
3. Weeding	1 hour, once or twice a year	√√	√	**3. Weeding**	3–4 hours, once a year	√	√
4. Removing the sludge from bottom of the pond	6 hours, once a year	√	√√	**4. Removing the sludge from bottom of the pond**	16 hours, once a year	√	√√
5. Liming	0.5 hour, once a year		√	**5. Liming before stocking**	1 hour, once a year		√
6. Netting around the pond	2–3 hours, once a year	√	√	**6. Netting around the pond**	8 hours, once a year		√
7. Purchase of Fish feed	2 hours per week		√	**7. Purchase of Fish feed**	1 hour per week		√
8. Applying potash	0.5 hour, once a year		√	**8. Applying medicines for disease management of fish/ treatment of fish disease**	20 minutes (if necessary)		√
9. Stocking of fingerlings	0.5 hour, once or twice a year (depending on type of pond)	√	√	**9. Stocking of fingerlings**	1–1.5 hours, once or twice a year (depending on type of pond)		√
10. Sampling of fish	1 hour per month	√	√	**10. Sampling of fish for observe growth of fish**	1 hour per month	√	√√

11. Fish harvest for consumption	1 hour, twice or thrice a week	√√	√	**11. Fish harvest for consumption**	0.5 hour, twice or thrice a week	√	√
12. Fish harvest for sale	3 hours, once or twice a year		√	**12. Fish harvest for sale**	2–3 hours, once or twice a year	√	√
13. Fingerling purchase	0.5 hour, once or twice a year	√	√√	**13. Purchase of fingerlings**	1 hour, once or twice a year		√
14. Fish transport to market	0.5 hour, once or twice a year		√	**14. Fish transport to market for sale**	1–1.5 hours, once or twice a year		√
15. Selling fish/Marketing of fish	1 hour, once or twice a year		√	**15. Selling of fish/ Marketing of fish**	1 hour, once or twice a year	√	√√

Source: Focus group discussions and interviews.

7.5 Annex 5. Gendered division of labour in shrimp processing factories

Annex Table 4.
Gendered division of labour in shrimp processing factories, by respondent groups

ROLES PERFORMED	HOW LONG DOES IT TAKE TO COMPLETE THIS ROLE?	WHO DOES THIS ROLE?		WHY IS THE ROLE PERFORMED BY THIS SEX?	WHAT KINDS OF ABILITIES ARE REQUIRED TO DO THESE ROLES?	WHAT ARE THE RISKS OF THESE ROLES?
		WOMEN	MEN			
WOMEN RESPONDNETS: Contract workers						
1. De-heading[63]	12 hours shifts for 6–9 months	√		• Men cannot do all this • A man cannot perform a woman's job • A women cannot carry heavy loads on her head • Roles have been decided by the factory	• The contractors have to teach women • Women have to learn • To do the men's job one needs to be in the habit and have the strength	• Slipping • Cuts, bruises
2. Skinning	12 hours shifts for 6–9 months	√				
3. Washing	Doesn't take long to wash, perform it within the 12 hours shift	√				
4. Deveining	12 hours shifts for 6–9 months	√				
5. Packaging	As above	√				
6. Shipment	Till the vehicle fills up		√			
7. Load fish into freezer after scale/weight	12 hours shifts for 6–9 months		√			
8. Unloading fish from freezer	12 hours shifts for 6–9 months		√			

[60] The contract workers de-head, deveins and peel the headless shrimp, then weigh and put in a basket. The work involves a lot of water and/or ice. These contract workers are paid according to the quantity of shrimp they de-head/devein/peel.

ROLES PERFORMED	HOW LONG DOES IT TAKE TO COMPLETE THIS ROLE?	WHO DOES THIS ROLE?		WHY IS THE ROLE PERFORMED BY THIS SEX?	WHAT KINDS OF ABILITIES ARE REQUIRED TO DO THESE ROLES?	WHAT ARE THE RISKS OF THESE ROLES?
		WOMEN	MEN			
MEN RESPONDENTS: Permanent, contract and family members						
1. Handing out tokens to contract workers/basket (after measuring basket)	8–12 hours[64]		√	• Men's work requires more energy and strength • Men better calculators • Men are smarter • It's a system decided by factory • A man is not habituated to using the cutting instruments that women use • It is not the norm for a man to do women's work and vice versa; the norm was set based on abilities • Women ordering elders around will not be taken well	• Age (at least 18 years) • Physical energy • Know calculation • Experience • Education in some cases	• Have risks of mental illness • Injuries from carrying loads • Fear of slipping • Numbness from cold • Fish bones cut into the women's hands • Risks of extra marital affairs
2. Taking the basket to the wash room	8–12 hours		√			
3. Putting ice on the shrimp	8–12 hours		√			
4. Cleaning fish (shrimp)	8–12 hours		√			
5. Cleaning fish (shrimp) processing room	8–12 hours		√			
6. Loading shrimp into vehicle for shipment	8–12 hours		√			
7. Preserve fish into freeze after scaling/weighing	8–12 hours		√			
8. Unloading fish from freeze and packing into cartons	8–12 hours		√			
9. Weighing/scaling shrimp	8–12 hours		√			
10. Grading shrimp	8–12 hours		√			
11. Soaking shrimp with medicine (called "stupit", used for hardening and increasing shrimp weight)	8–12 hours		√			

[61] This is based on the shift the men and women work in (morning or night) and the allocated number of hours that varies between 8 to 12, depending on the factory. Organizations are working to establish eight hours as the standard hours across factories.

ROLES PERFORMED	HOW LONG DOES IT TAKE TO COMPLETE THIS ROLE?	WHO DOES THIS ROLE?		WHY IS THE ROLE PERFORMED BY THIS SEX?	WHAT KINDS OF ABILITIES ARE REQUIRED TO DO THESE ROLES?	WHAT ARE THE RISKS OF THESE ROLES?
		WOMEN	MEN			
WOMEN RESPONDENTS: Permanent workers						
1. Washing	5–6 minutes per batch		√	• Men's work is harder • The employed men usually have a higher education • The factories have decided on this division of roles	• Have to learn (usually learn from each other) • Education required (e.g. to be supervisor, cold storage in charge, etc.)	Gas bursts or leaks (they do not let them get out during gas leaks) slipping[65]
2. Salting	0.5 hour per batch		√			
3. Counting	12 hours[66]	√				
4. Weighing	12 hours		√			
5. Packaging	12 hours	√				
6. Loading	12 hours (requires two women as tray is heavy)	√				
7. Cold storage	12 hours		√			
IQF section:						
8. Displaying on belt	12 hours	√				
9. Putting into the glaze machine	12 hours	√				
10. Managing the display on second belt	12 hours	√				
11. Weighing	12 hours		√			
12. Cartoning	12 hours		√			
13. Storage	12 hours		√			

Source: Focus group discussions and interviews.

[62] CCTV cameras have reduced the risk of sexual harassment. Supervisors take such complaints very seriously.
[63] 12 hours is the number of hours that the FGD participants spend in the factory in a shift. They have to perform all these roles repeatedly based on the section they are appointed to.

7.6 Annex 6. Positive and negative outcomes from engagement in homestead pond aquaculture

Annex Table 5.
Positive and negative outcomes from engagement in homestead pond aquaculture

RESPONDENTS	POSITIVE OUTCOMES		NEGATIVE OUTCOMES	
	For women	For men	For women	For men
Trained women (larger ponds)	• Nutrition • Women get an income source that they can spend for children's education and for purchasing household items • Savings - Financial help for husband - Furniture purchase - Education of child • Preparedness for facing natural disasters, such as storms • Gain respect • They motivate other women	• Use for family expenditure • Repay loans • Invest in business • Fulfill nutritional needs • Save	• Men can spend money when he desires, so it can effect negatively on the family • Increased work load of women • Women are called lazy if they don't do the work after the training • People criticize women if they go to the market to sell fish • Water quality is compromised from input use	Nil
Husbands of trained women	• Can shop for clothes and ornaments • Increased popularity/ acceptance • Can save money from selling produce • Can consume fish • Can doing future plan	• Profitable • Improve family life • Can save • Can spend on family • Can bear education cost of child • Consume fish • Increased popularity	• Bad reputation if loss occurs • Fish killed from poisoning	• Bad reputation if loss occurs

Untrained women (smaller ponds)	• Generates income • Betterment of household • Family expenses born • Need not buy fish • Profitable • Increase acceptance and honor if they can profit • Need not receive loan	• Need not work outside home	• Bad impression if loss is incurred • Fish are stolen • Need to guard fish at night that hamper sleep	• Fish are stolen • Need to guard fish at night that hamper sleep
Husbands of untrained women	• Generates extra income • Fulfills nutritional needs • Progress of household • Financial solvency • Women herself can be independent • Increases social acceptance	• Generates extra income • Fulfills nutritional needs • Progress of household • Can bear the cost of children's education • Need no extra time as they do it during leisure time • Do not feel its hard work as it generates income	• Nil	• Nil

Source: Focus group discussions and interviews.

7.7 Annex 7. Positive and negative outcomes from engagement in shrimp processing factories

Annex Table 6.
Positive and negative outcomes from engaging in shrimp processing factories

RESPONDENTS	POSITIVE OUTCOMES FOR WOMEN	NEGATIVE OUTCOMES	
		For women	For men
Contract female worker	• Treated well when they do a good job • Family is benefitted • Seen in a good light when they work hard and are able to benefit their family • Can bear own expenses • Decrease in child marriage • Higher confidence • Not a burden to family	• Lack of sleep • Cuts and injuries on hands • Accidents • Cannot get married into a good or better off family • Cannot give time to children • Smelly and disgusting	• Parents do not want to give their daughters hand in marriage to a factory worker
Permanent female worker	• Can spend the money and give some to husband • Are praised for doing a good job compared to other shift of women (but only in words) • Men help with work • Salary has increased so they can eat better • Do not have to work much during off peak 3–4 months, receive salary without much work • Can save much more in own account, buy life insurance • Can save for daughters marriage and for dowry • Men can save for marriage or help out family • Decrease in child marriage • Higher confidence • Not a burden to family	• Do not really have a life after working so hard • Heads hurt from the cold (AC is on very low temperature) • Feet swell up from standing • Do not get enough sleep, feel overworked, have household work when they come home • Are not promoted even if they do very well • Supervisors lie to inspectors and foreigners about salaries • Get sick at an early age • Hands hurt, have to eat with spoon • 12 hours duty is too long • Salary is not enough to meet family needs • Cannot give time to children • Smelly and disgusting	• Men have the same negative effects • Parents do not want to give their daughters hand in marriage to a factory worker • Not enough family time together

Male (contract, permanent and family members)	• Generates income • Can bear family expenses • Employment opportunity • Increased experience, scope for better jobs	• Have contact and conversations with men outside their family • Cannot allocate time for household work • Cannot finish cooking on time • Abandon children at home • Cannot give time to children • Have a short temper when they return home from the factory • Cannot eat food with hands, not able to cook because of painful hands	• Low salary • Men have to perform the roles of women[67] • Cooking is late • Disagreements happen • Cannot sleep fully due to night shift habit • Get injured from the pressure of the tray • Get suspended if they get to work late (salary is deducted) • Negative effects on health • Hand and feet numb from ice • Get tired with long hours, have no time to engage in other livelihood activities

Source: Focus group discussions and interviews.

[64] The men mentioned that they do not see helping their wives as entirely negative, but the hardship they have to go through as a result of coming home from a long day and doing household work, is negative.


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