



Food and Agriculture  
Organization of the  
United Nations

# Women and men in small-scale fisheries and aquaculture in Asia

Barriers, constraints and opportunities  
towards equality and secure livelihoods





# **WOMEN AND MEN IN SMALL-SCALE FISHERIES AND AQUACULTURE IN ASIA**

Barriers, constraints and opportunities towards  
equality and secure livelihoods

Kyoko Kusakabe  
Sirayuth Thongprasert  
Asian Institute of Technology, Thailand

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Woman selling her husband's catch in front of her house in Trat province, Thailand.

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## Abbreviations and acronyms

<b>ASEAN</b>	Association of Southeast Asian Nations
<b>BDT</b>	Bangladeshi taka
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FiA</b>	Fisheries Administration
<b>FRP</b>	fibre-reinforced plastic
<b>GAF</b>	Gender in Aquaculture and Fisheries
<b>GBV</b>	gender-based violence
<b>ICAR</b>	Indian Council of Agricultural Research
<b>MAFF</b>	Ministry of Agriculture, Forestry and Fisheries
<b>MARE</b>	Centre for Maritime Research
<b>MPA</b>	marine protected area
<b>MYSAP</b>	Myanmar Sustainable Aquaculture Programme
<b>NGO</b>	non-governmental organization
<b>SEAFDEC</b>	Southeast Asian Fisheries Development Center
<b>SHG</b>	self-help group
<b>SSF</b>	small-scale fisheries
<b>SSF Guidelines</b>	The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication
<b>UNIDO</b>	United Nations Industrial Development Organization



## Executive summary

Fisheries and aquaculture contribute to food security and livelihoods of millions of people in Asia. Both women and men are engaged in fisheries and aquaculture. In the past ten years, many actors have worked on raising awareness on women's contribution as well as promoting gender equality in fisheries and aquaculture. This study aims to consolidate the efforts to date to provide recommendations for action and future studies. Its objective is to answer the following questions for small-scale fisheries and aquaculture in Asia:

- What is the division of labour between women and men in specific fisheries and aquaculture practices and what are the differences with respect to their access to assets, resources and entitlements?
- What are the drivers of such differences?
- What could be critical entry points and opportunities for addressing inequalities and discriminatory practices?

To answer these questions, the study conducted an online literature search on gender and fisheries and aquaculture in Asia, selecting articles published between 2011 and 2021. This period was selected to understand the contemporary condition and state of knowledge, and since we aimed for an exhaustive list of literature, some limits in the time period was necessary. The review included both published peer-reviewed papers in journals as well as other research and project reports that are available online. In total, it reviewed 253 publications on fisheries and 210 publications on aquaculture. The top four countries where studies were conducted are India (44.3 percent of fisheries and 24.3 percent of aquaculture articles), the Philippines (35.6 percent of fisheries and 17.6 percent of aquaculture articles), Bangladesh (27.7 percent of fisheries and 32.9 percent of aquaculture articles) and Indonesia (30.8 percent of fisheries and 20.5 percent of aquaculture articles). The findings based on each research question are summarized below.

## **What is the division of labour between women and men in specific fisheries and aquaculture practices and what are the differences with respect to their access to assets, resources and entitlements?**

**FISHERIES:** Gender-disaggregated fisheries data do not exist for most countries. This lack of data together with the deep-seated assumption that men are the ones who fish makes women's contribution to fisheries invisible. Women's contributions tend to be ignored especially where fisheries data do not often cover activities in which they are concentrated, such as gleaning, part-time fishing, and post-harvest activities. This results in few initiatives to support women throughout the fisheries value chain.

The gender division of labour in fisheries differ across commodities and locations. Such division of labour are defined mainly by gender norms and cultural practices. Men tend to fish higher-value species while women collect smaller fish along the shore as well as shells, invertebrates and seaweed. In some places, women do shark fishing and go out on boats, while in other places they do not fish on boats. Fishing, especially marine fishing, is considered to be a masculine activity, and fishing activities that women do are not considered as "real" fishing. Both women and men fish, but they often do so in different ways so that the gear and places that women use are different from those used by men. Women are active in post-harvest activities such as processing and trade and tend to own small businesses themselves. Women's small businesses can be vulnerable to shocks such as policy changes and disasters (including pandemics such as COVID-19). Economic difficulties, including those from declining fisheries resources, can push women to engage in fishing activities that they were not doing before, since fishing households need to strengthen their efforts for fishing to make up for the declining stocks of fish and women's labour is needed as extra labour for family fishing operations. Women also support men's ability to continue fishing by earning income through non-fishing activities.

In terms of access to assets, resources and entitlements, women are more disadvantaged than men in terms of information, knowledge, financial resources, access to infrastructure as well as social capital. Women's lower education levels compared to men can deprive them of opportunities and advantages from training. Fisheries extension activities are often targeted at men. When information and knowledge are extended to women, however, they can benefit greatly, for example, through reducing product spoilage and meeting the demands of higher niche markets. Lack of capital limits women especially in their means to take up or expand post-harvest businesses, and also to implement the knowledge gained through training. Although women have weaker access to financial resources compared to men, they are expected to be able to manage the household finances, and are held responsible when household finances are not sufficient or well managed. Women's post-harvest activities are further disadvantaged since they often do not have access to infrastructure that helps their activities such as cold storage, freshwater, electricity and transport for trade and processing.

Women are often not registered as members of fisher organizations, since men are considered as fishers and not women. This excludes women from accessing the services that fisher organizations offer, including emergency and life insurance as well as financial services such as credit and savings. When women do get organized, such as under self-help groups, they are able to gain access to resources (such as credit and technology) and fight for access to aquatic resources and recognition.

All these constraints are exacerbated by women's lack of time because of their heavy responsibility to manage household work. Women's time constraints of having to juggle household work with fisheries work results in their being involved part-time in fisheries work. Female-headed households tend to be more disadvantaged since they often do not own fishing businesses or gear; women need to balance reproductive work, and the need to continue fishing without husbands, fathers or brothers, since they often do not have any other choice of livelihood.

Both women and men experience violence in fisheries but in different ways. Men experience violence on boats and rafts. Their experience of violence as well as financial stresses from declining fish stocks may lead to alcoholism and domestic violence. Alcoholism among men is not only a risk for women because it tends to lead to domestic violence, but also increases women's care workload through deterioration of men's health and increase in women's workloads when they need to cover up for men when they are not able to work.

**AQUACULTURE:** Like fisheries, involvement of women in small-scale aquaculture differs across countries and regions and under different aquaculture systems, shaped by cultural norms and economic situations. In general, aquaculture is male-dominated. The most physically strenuous work such as pond preparation is mainly done by men. Both women and men are engaged in feeding, harvesting and selling fish. Mariculture is often considered as men's occupation, but women are heavily involved in certain aquaculture types such as seaweed and crab culture, and often are involved as workers in shrimp farms. Women are involved more in extensive aquaculture especially in homestead culture and less in commercial and intensive aquaculture. This is not only because homestead ponds are near the house, so it is easy for a woman to juggle with her reproductive work, but also because extensive aquaculture does not require much investment, and does not provide high yield. Hence, it does not attract much interest from other members of the family. Higher yielding products such as koi carp and some cage culture, which is done mainly by men, need to be guarded.

In terms of access to assets, resources and entitlements, aquaculture can provide benefits including income and food, but whether women receive these benefits equally with men depends on the power relations in the household. Cultured fish might be sold and not contribute to household food security. Women might be mobilized for their labour and time for aquaculture without earning direct income or food; furthermore, their involvement might deprive them of the time needed to produce other foods. Women might have less say in household ponds than men since they do not have land ownership. Introduction of cage culture and gher aquaculture is one way to overcome women's lack of access to land, but still,

they need access to waterbodies, which might be difficult in some locations. Compared to men, women have less access to credit that they can invest in aquaculture. Not only may women have less access to aquaculture technology, but they may also need other support to implement what they have learned, including approvals and recognition from their family members, support to manage reproductive work so that they can spend more time for aquaculture, market information and connections. Even as aquaculture workers, women tend to benefit less because of their lower wages compared to men. Women self-help groups and similar collectives do help women gain much-needed resources.

### **What are the drivers of such differences?**

**FISHERIES:** The findings from the literature highlight five important aspects that drive gender disparities. First is the importance of the specific location, context and activities in understanding the involvement of women and men in fisheries. Gender roles as well as gender differences in access to resources are different across locations and types of fisheries because of the gender norms, practices and network connections as well as other employment opportunities in the particular location. Hence, we need to conduct gender analysis for each location to assess the gender issues for each context. Second, terminology of “fishing” tends to exclude women. Inclusive terminology that would recognize women’s activities as “fishing” and work in “fisheries” to make their contributions visible is important. Boat fishing that is dominated by men is usually considered as “fishing”, while women’s gleaning and post-harvest activities are not considered as “real” fishing or fisheries activity. It is necessary to highlight women’s activities as mainstream fisheries activity so that fisheries projects and policies will more seriously consider addressing concerns faced by women in fisheries. Third, and in connection with this, the perception that men are fishers and women are helpers undervalues women’s contribution. Perceptions should be changed so that both women and men are considered main players in fisheries. The fourth aspect is women-specific barriers and challenges. Barriers for women to participate in fisheries such as restrictions on mobility, access to skills, technology and information need to be addressed. Time constraints of women because of their household work and other reproductive activities create disadvantages for them to be involved in fisheries. The fifth is women’s decision-making power. Women’s decision-making power is often weak inside the household as well as in the community, as can be seen in the absence of women in fisher organizations. Such lower status of women in the household and community also leads to gender-based violence.

**AQUACULTURE:** In aquaculture, five key aspects drive gender inequalities. One is women’s lack of access to land and pond ownership. Without access to ponds, women cannot initiate aquaculture and assert control over the benefits from pond aquaculture. Second is access to technology. Because of women’s lower education levels compared with men and because aquaculture is considered to be a male-dominated activity, women tend to lose out in training and other means of accessing information. Direct participation in technology development will allow poor women to develop the type of technology



that they think will suit their needs. Third is women's lack of control over their income. Even when women are large contributors to aquaculture activities, their contributions tend to be taken for granted and do not lead to them having a better say in the household. In some cases, women's status improved because of aquaculture, but without additional support to improve the visibility of their work, benefits such as income and some control over the use of the harvest do not happen. Fourth, and in connection with this, gender norms that keep women's contributions and needs unrecognized are a barrier to gender equality. Last, lack of gender-focused policy in aquaculture serves to perpetuate gender inequality. Aquaculture is often discussed as part of fisheries or as part of agriculture. Since aquaculture itself has particular gender issues as we have seen in this review, gender integration policy needs to be developed for aquaculture specifically.

### **What could be critical entry points and opportunities for addressing inequalities and discriminatory practices?**

Entry points for addressing gender inequalities in fisheries and aquaculture are recommended below:

- (1) Collect more gender-disaggregated data  
Gender-disaggregated data are the basis of any understanding and identification of gender issues.
- (2) Conduct gender analysis  
As was seen in the review, gender practices and relations differ across location and fishing and aquaculture systems. Location or context-specific gender analysis needs to be conducted so that gender issues can be understood in the particular context where action is being considered.
- (3) Raise awareness on women's role and capacity to strengthen their entitlements  
It is important not only to improve women's knowledge and capacity, but also to raise awareness of their roles so that their roles in fisheries and aquaculture will be recognized by the family and community members. Communication tools need to be developed for this purpose.
- (4) Address women's time and other resource constraints  
Livelihood of fishers is not only composed of fishing activities, but also other productive work both related and not related to fishing, as well as household work and care work. Such reproductive and other productive work is mostly carried out by women, and limits their time available for fisheries and aquaculture. Women's time

constraints can be addressed through the introduction of time-saving technologies, introduction of public support for childcare and other reproductive work, promoting involvement of men in household and care work so as to share the load, as well as consulting with women themselves to design project approaches to enable them to better manage their time.

- (5) Women's participation in developing technologies and projects suitable for women  
A bottom-up approach to ensure women's experience and knowledge are reflected in project design is important. Women's participation in technology development will ensure technology that would meet their needs.
- (6) Mainstream gender in fisheries budgets and policy  
In order to ensure that gender equality initiatives are put into place, a clearly dedicated budget for gender-equality activities is essential. Gender focal points need to be designated in government offices at all levels, and sector-specific gender policy needs to be developed and implemented for fisheries as well as for aquaculture.
- (7) Organize women's groups  
Organizing women's groups will support women to gain their voices and visibility as well as facilitate their access to resources.
- (8) Address gender-based violence  
Gender-based violence needs to be addressed both on boats, in fish farms, in communities, in factories and markets, and in households. Alcoholism is pointed out as one of the potential triggers for violence. As clearly stated in the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, "all parties should take steps to institute measures that aim to eliminate violence and to protect women exposed to such violence in small-scale fishing communities" (Section 6.9).
- (9) Pay special attention to the needs of female-headed households and women left behind  
Women in female-headed households as well as other poor and marginalized women have fewer resources than others in the communities – financial, land, labour and time. Special attention is needed to assist these women so that they will be able to live a decent life through fishing and aquaculture.

(10) Conduct more research

The present review highlighted that research on gender in fisheries and aquaculture is skewed to certain countries, and to certain species and aquaculture systems. It is noted that most studies are limited in geography and across time. Most of the studies are done in a limited location and there is little work that brings in the national context. Long-term studies that follow up on certain aquaculture initiatives introduced are lacking. Few studies have been conducted on the impact of fisheries and aquaculture on gender relations and women's empowerment. Below are some of the knowledge gaps the present review identified:

- women's use of gear and infrastructure in fisheries;
- aquaculture system specific gender analysis, including time-series studies;
- gender-sensitive technology development and its adoption;
- time use of women in fishing communities;
- women's participation in fisheries and aquaculture activities and its impact on gender relations;
- effectiveness of women's groups in fishing and aquaculture;
- issues of violence in fishing communities;
- gender analysis of fishers' associations; and
- adaptation of women and men to climate change in fishing communities.

**Additionally, the following two recommendations are made for small-scale fisheries:**

(1) Review definition of "small-scale fisheries"

Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries noted that "Small-scale and artisanal fisheries, encompassing all activities along the value chain – pre-harvest, harvest and post-harvest – undertaken by men and women, play an important role in food security and nutrition, poverty eradication, equitable development and sustainable resource utilization" (p. ix). This definition of fisheries needs to be reviewed and recognized by various stakeholders in fisheries to ensure that understanding of fisheries include the whole small-scale fisheries value chain (pre-harvest, harvest and post-harvest) and activities such as gleaning, fishing without gear, and part-time fishing, which are carried out more by women. This will help women's activities to be more visible and statistics on fisheries more inclusive of women's contribution.

- (2) Revisit objective of fisheries management using a gender-sensitive value chain approach

A value chain approach will cover areas where women are concentrated but invisible including fish trade, fish processing and part-time or seasonal fishing activities for home consumption. A gender-sensitive value chain approach will also reveal the unpaid work and reproductive work that women spend considerable time doing. Fisheries management frameworks and programmes that encompass all these activities will lead to changes in public investment priorities for small-scale fisheries and help remove the structural bottlenecks of women's activities.

**For small-scale aquaculture, the following additional recommendation is made:**

- (1) Raise awareness on women's sense of entitlements

Women's land rights need to be strengthened for women to have access to ponds for aquaculture. There is a need to strengthen women's rights and their sense of entitlements to land through training and awareness raising not only to women themselves but also to family and community members. Women's rights advocates in aquaculture can learn from struggles of women in agriculture on land rights, rights to common access resources, rights to water and waterbodies, as well as wetlands.



# 1. Background and introduction

In 2018, 59.51 million people were engaged in the primary sector of capture fisheries (39 million) and aquaculture (20.5 million) in the world (FAO, 2020); 85 percent of them were in Asia. Women comprised 14 percent of the global total; there were more women engaged in aquaculture (19 percent) compared with capture fisheries (12 percent). In addition, for every person employed in fishing or aquaculture, about three are employed in secondary activities (FAO, 2012), and women dominate the post-harvest and marketing activities. One out of two seafood workers (including both primary and secondary sector) are women (FAO, 2020).

Small-scale fisheries and aquaculture contribute significantly to food security, nutrition, employment and trade in the areas where they are located and beyond. By 2018, global fish production was an estimated 179 million tonnes (USD 401 billion in value), of which 82 million tonnes (USD 205 billion in value) came from aquaculture production. Asia (excluding China) accounts for 34 percent of global fish production. Asia (including China) produced 89 percent of total global volume in fish farming in the last 20 years (FAO, 2020). However, many countries do not collect sector-specific data for small-scale fisheries and small-scale aquaculture, so it is difficult to estimate their contribution. For this reason, their contribution is often underestimated and undervalued. This has contributed to their low priority in social and economic development policy, programmes and initiatives.

Much of the work undertaken by men and women in small-scale fisheries and aquaculture is informal work, which is seasonal, not covered by social security and suffers from a severe lack of social protection. Women tend to undertake such informal work as contributing family workers and home-based workers, in addition to taking on a disproportionate share in caring for family members and carrying out domestic work. Women also tend to be relegated to work that provides low income and low wages. As informal workers, they are very vulnerable to economic, social, health and environmental shocks.

The last ten years have seen increased engagement by academics and practitioners in raising the issue of how critical and necessary gender equality is to the sustainability of fisheries and aquaculture. The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), endorsed by the FAO Committee on Fisheries in 2014, are being used by a wide range of stakeholders for working towards positive change and gender equality. However, according to Brugere and Williams (2017, p.2), “women in small-scale fisheries are slightly better recognized in policy than is the case in aquaculture because fisheries research has provided more

evidence of women's contributions, and non-governmental organizations (NGO) and gender equality is now included in influential internationally-recognized documents, such as the 2014 Voluntary Guidelines on Small-Scale Fisheries." Still, owing to the lack of sex-disaggregated statistics, the contribution of women to fisheries and aquaculture is not adequately measured and accounted for.

Obtaining gender-disaggregated data is of utmost importance to conduct gender analysis in fisheries (World Bank, 2012). An earlier work by Weeratunge *et al.* (2012) described the gender division of labour as well as access to resources by women using five country cases. These efforts are raising awareness of the important role that women play in fisheries and aquaculture. It is crucial to delve into the details and specifics for such awareness to be translated and incorporated into fisheries and aquaculture practices. However, knowledge and information about gender in specific fisheries and aquaculture practices and specific fish supply chains are incomplete. Although statistics on secondary sector employment are not collected regularly, there are efforts by the Food and Agriculture Organization of the United Nations (FAO) and the Organisation for Economic Co-operation and Development (OECD) to improve such data (FAO, 2020), and the global Illuminating Hidden Harvest initiative attempts to consolidate data on small-scale fisheries including gender-disaggregated data.<sup>1</sup>

Understanding the division of labour between women and men in small-scale fisheries and aquaculture, in addition to the distribution of assets, resources and entitlements within households, is a key element for addressing poverty and gender inequality (United Nations General Assembly, 2019). A starting point for measuring the contribution of men and women would be to understand where they are in a specific fish supply chain (Gopal *et al.*, 2020). This includes, among others, what they do and the number of hours they devote to the activity; whether they are paid or not for doing it; what inputs, implements, facilities and technology they are able to use; the information they are able to acquire; and resources and services they are able to access.

The next step would be to understand the differences, similarities and inequalities faced by men and women, as well as the intersection of gender, age and social status with respect to the division of labour and distribution of assets, resources and entitlements for different fishing practices and aquaculture commodities. This could pave the way for identifying critical entry points and interventions that could challenge discriminatory and unequal practices and norms as well as bottlenecks for livelihood security and diversification.

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<sup>1</sup> More information at [www.fao.org/voluntary-guidelines-small-scale-fisheries/ihh/en](http://www.fao.org/voluntary-guidelines-small-scale-fisheries/ihh/en)

Numerous studies have been conducted in Asia to understand fisheries and aquaculture from a gender perspective and answer some of the questions above. This study aims to consolidate the efforts to date to provide recommendations for future studies and actions. Hence, the study on which this report is based seeks to answer the following questions:

- What is the division of labour between women and men in specific fisheries and aquaculture practices and what are the differences with respect to their access to assets, resources and entitlements?
- What are the drivers of such differences?
- What could be critical entry points and opportunities for addressing inequalities and discriminatory practices?





Crab fisher showing his catch  
in Koh Kong, Cambodia.

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## 2. Methodology and profile of literature reviewed

Searches were conducted through online search engines for literature published between 2011 and 2021, covering all papers available online, such as published academic journal papers, reports, working papers, and conference papers. There are increasingly more events that discuss gender in fisheries and aquaculture, and increasingly more publications in the past decade (see Table 1). Therefore, this study has focused on studies in the past decade, but has also referred to earlier studies when they are referred to in the papers published in the years covered in this paper. Google Scholar and Science Direct were used to find academic literature related to the topic. Google was used to identify grey literature. Further, websites of specific journals and organizations, including FAO and WorldFish, were searched. High impact journals for fisheries and aquaculture were identified, and these journals were again searched for gender-related articles.

The keywords used for the search were “gender, fisheries”, “women, fisheries”, “gender, aquaculture”, “women, aquaculture” in any part of the paper. The focus of this review is Asia, therefore, from this list, studies that referred to Asia (South and Southeast Asia) were further selected. This considerably narrowed down the relevant articles to be reviewed. The search did not find any literature that discussed non-binary individuals in the context of fisheries and aquaculture in Asia. The geographical focus was on South and Southeast Asia, but some literature with a regional/global perspective containing references to the Asian region was also included. In total, 239 publications were reviewed for fisheries and 190 for aquaculture.

Gender equality is an important concept throughout this report. As is defined by UN Women,

gender equality refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not mean that women and men will become the same but that women’s and men’s rights, responsibilities and opportunities will not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. Gender equality is not a women’s issue but should concern and fully engage men as well as women. Equality between women and men is seen both as a human rights issue and as a precondition for, and indicator of, sustainable people-centered development. (UN Women, undated a)

**Table 1.** Chronology of events related to gender and fisheries or aquaculture

Year	Event, project, regional programme	Details
1987	First Global Workshop on Women in Aquaculture organized by FAO Rome	<ul style="list-style-type: none"> <li>Identified needs for women's education, to raise awareness on various issues in fisheries, provision of credit facilities and women-friendly technologies.</li> </ul>
1994	National Symposium on Women in Fisheries in Cambodia	<ul style="list-style-type: none"> <li>Country resource paper on women in Cambodia developed, covering agriculture and fisheries.</li> <li>Recommended to organize a regional seminar on women in fisheries in the Indo-China countries.</li> </ul>
1995	Regional workshop on the role of women in fisheries development (organized by UNDP)	<ul style="list-style-type: none"> <li>Background paper on women in Asian fisheries developed for presentation at the 4th World Conference on Women in Beijing.</li> <li>The magazine, Aquaculture Asia, of NACA featured articles on women in fisheries.</li> </ul>
1996	Regional Seminar on Women in Fisheries in the Indo-China Countries	<ul style="list-style-type: none"> <li>Called for urgent attention to gender issues in the fisheries sector.</li> <li>Suggested to form national networks in the region.</li> <li>Recommended to organize an international seminar on women in Asian fisheries in the upcoming Asian Fisheries Forum (AFF).</li> </ul>
1998	International Symposium on Women in Asian Fisheries	<ul style="list-style-type: none"> <li>Recognized the role of women in aquaculture.</li> <li>Highlighted the need to sustain production from capture fisheries and women's roles in fisheries and aquaculture.</li> </ul>
2001	Global Symposium on Women in Fisheries	<ul style="list-style-type: none"> <li>Resolution made to shift the focus from women in fisheries to gender and fisheries.</li> <li>Recommended to undertake more research to understand fisheries regulations, policies, and plans.</li> </ul>
2003–2009	Integrated Coastal Resource Management Project (ICRM)	<ul style="list-style-type: none"> <li>Supported women's groups to create alternative livelihoods to increase income, achieve food security, and to reduce overfishing by diversifying the occupation in Southeast Asian countries.</li> </ul>
2004	Global Forum on Gender and Fisheries	<ul style="list-style-type: none"> <li>Recommended to enhance the fisheries regulations, policies, and plans to embed gender and human dimensions in all fisheries activities.</li> </ul>
2007–2010	Fund on the Promotion of One Village, One Fisheries Product (FOVOP)	<ul style="list-style-type: none"> <li>Involved women's groups and the youth in the institutional set-up of fishers' groups in the ASEAN countries (Cambodia, Indonesia, Lao People's Democratic Republic, Myanmar, the Philippines, and Viet Nam).</li> </ul>
2009–2013	Regional Fisheries Livelihoods Programme (RFLP) for South and Southeast Asia	<ul style="list-style-type: none"> <li>Developed gender mainstreaming strategy for the RFLP.</li> </ul>
2010	Workshop on Best Practices for Gender Mainstreaming in the Fisheries Sector	<ul style="list-style-type: none"> <li>Developed tools for gender analysis in fisheries development projects and a field handbook on how to integrate gender aspects at various stages in the project cycle.</li> </ul>
2010	Women in Fisheries Workshop – Recasting the Net: Defining a Gender Agenda for Sustaining Life and Livelihoods in Fishing Communities	<ul style="list-style-type: none"> <li>Convened by the International Collective in Support of Fishworkers (ICSF).</li> <li>Analysed the impact of current developments in fisheries on the livelihood of fishing communities with a focus on women's experiences.</li> <li>Defined an agenda and strategies for sustaining life and livelihood in fisheries into the future.</li> </ul>

Year	Event, project, regional programme	Details
2010	Global Conference on Aquaculture	<ul style="list-style-type: none"> <li>• Addressed human capital development (HCD) and gender issues in aquaculture.</li> </ul>
2011	Third Global Symposium on Gender in Aquaculture and Fisheries (GAF3)	<ul style="list-style-type: none"> <li>• 48 papers were presented to shine a light on the gender gap in the fish sector.</li> <li>• Women are still invisible and often marginal in the fish sector, trade and in natural resource management, with a few exceptions.</li> </ul>
2011	FAO Workshop on Future Directions for Gender in Aquaculture and Fisheries Action, Research and Development	<ul style="list-style-type: none"> <li>• Shanghai Statement was drafted as a starting point to guide actions on the path to understanding the implications of the roles, experiences and contributions of women and men in aquaculture and fisheries.</li> </ul>
2011	ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security for the ASEAN Region towards 2010	<ul style="list-style-type: none"> <li>• Adopted the ASEAN-SEAFDEC Resolution on Sustainable Fisheries for Food Security for the ASEAN Region towards 2020. The resolution asserted to strengthen the capacity of relevant stakeholders and harmonize the initiatives that support fisheries communities and governments, with a special focus on women and youth.</li> </ul>
2014	Thirty-first Session of the FAO Committee on Fisheries (COFI)	<ul style="list-style-type: none"> <li>• Endorsed the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines).</li> <li>• Sought attention towards the need to secure rights and access to resources within the broader framework of human rights-based and gender equality approaches to small-scale fisheries development.</li> </ul>
2014	5th Global Symposium on Gender in Aquaculture and Fisheries	<ul style="list-style-type: none"> <li>• Greater commitments to gender equality in policies and by aquaculture and fisheries agencies are heartening developments.</li> <li>• Erosion of women's positions in mainstream aquaculture and fisheries value chains and increasing difficulties in vanishing traditional resource systems is alarming.</li> </ul>
2015	Southeast Asia Regional Consultation Workshop on the Implementation of SSF Guidelines	<ul style="list-style-type: none"> <li>• Emphasized the implementation of SSF Guidelines and identification of implementation challenges.</li> </ul>
2016	Engendering security in fisheries and aquaculture (GAF 6)	<ul style="list-style-type: none"> <li>• The first GAF-101 Training Workshop: Theorizing Gender in Aquaculture and Fisheries Research.</li> <li>• 68 presentations on the topic of gender in aquaculture and fisheries.</li> <li>• Sessions on "Implementation of the Gender Elements of the Small Scale Fisheries Guidelines", "The Fish Industry, Gender and Social Development", "Gender in Fish Trade and Value Chains," "Fisheries Resources, Aquaculture and Gender" "Fishing Communities and Wellbeing, Including Violence Against Women," "Thinking Beyond the Framework of Gender and Fisheries," and others.</li> </ul>
2016	International Institute for Fisheries Economics and Trade Conference	<ul style="list-style-type: none"> <li>• IIFET Gender Special Session had 14 presentations and discussions on gender.</li> <li>• Highlighted that sex-disaggregated data and indicators must be improved.</li> </ul>



Year	Event, project, regional programme	Details
2017	Expert Workshop on Regional Approach for the Implementation of SSF Guidelines	<ul style="list-style-type: none"> <li>• Clarified the application of human rights-based and gender equality approaches and some concepts of SSF Guidelines and their implication in the context of small-scale fisheries governance and development in Southeast Asia.</li> </ul>
2017	Special Meeting of the SEAFDEC Council	<ul style="list-style-type: none"> <li>• Recognized the importance of small-scale fisheries, welfare of labour in fisheries, safety at sea, and gender equality in fisheries and aquaculture by adopting Resolution on the Future of SEAFDEC: Vision, Mission, and Strategies Towards 2030.</li> </ul>
2017	Panel discussion on Gender Issues in Giant Freshwater Prawn (GFP) Value Chain	<ul style="list-style-type: none"> <li>• Provided a platform for development of a community of people committed to equitable and effective cooperation among researchers, academics, technicians, fisheries officers and NGOs.</li> <li>• Explored the ways to promote gender equitable and sustainable livelihood opportunities in GFP value chains.</li> </ul>
2017	Special Symposium at the 11th Indian Fisheries and Aquaculture Forum, Kochi, Kerala, India	<ul style="list-style-type: none"> <li>• International workshop on Challenges in the Implementation of the Voluntary Guidelines on Small-Scale Fisheries (SSF Guidelines) of FAO in South Asia.</li> </ul>
2017	International Workshop on Challenges in the Implementation of the Voluntary Guidelines on Small Scale Fisheries (SSF Guidelines) of FAO in South Asia	<ul style="list-style-type: none"> <li>• The first stand-alone event of the Gender in Aquaculture &amp; Fisheries Section (GAF Section) of the Asian Fisheries Society (AFS)</li> <li>• Session on “Exploring Gender Equity and Equality in the SSF Guidelines”.</li> <li>• 95 research papers and nine special workshops on gender in fisheries and aquaculture.</li> </ul>
2018	Conference of the International Institute of Fisheries Economics and Trade (IIFET)	<ul style="list-style-type: none"> <li>• Special session on “Bringing Gender Discourse in Fisheries Economics and Trade”.</li> <li>• The first Rosemary Firth Prize for Best Paper on the Economics of Gender in Fisheries and Aquaculture.</li> <li>• Making the case for why gender matters in fisheries economics and trade.</li> </ul>
2018	Gender in Aquaculture and Fisheries 2018: Expanding the Horizons conference	<ul style="list-style-type: none"> <li>• 95 papers were presented and 140 experts attended.</li> <li>• Generated greater attention and funding for gender work in fisheries and aquaculture.</li> <li>• Emphasized the need to expand gender inclusiveness and equality in the fish sector.</li> </ul>
2019	Consultation on Strengthening Governance of Aquaculture for Sustainable Development in Asia-Pacific	<ul style="list-style-type: none"> <li>• Identified gaps, issues and challenges in aquaculture governance.</li> <li>• Recommended strategies and actions to improve and strengthen aquaculture governance.</li> </ul>
2019	Consultation on Demographic Changes in Fishing Communities in Asia	<ul style="list-style-type: none"> <li>• Identified opportunities and threats in fishing communities under rapid demographic changes.</li> <li>• Recommended strategies and actions to prepare fishing communities to adjust to the demographic changes.</li> </ul>
2021	Global Conference on Aquaculture Millennium +20	<ul style="list-style-type: none"> <li>• Highlighted women’s needs for full access to equal opportunities.</li> <li>• Stressed the need for a gender-transformative approach in the sector.</li> </ul>

**Source:** Modified by updating the table originally made by **Upadhyay, B.** 2018. Paving the path to gender equality in fisheries policies and practices in Southeast Asia. *Fish for the people*, 16(2): 2–8.

A term that is often used alongside equality is the term equity. Equity has a stronger justice connotation and is used when referring to actions to correct inequality. The FAO Handbook for Gender Focal Points (FAO, 2021) defines gender equity as “fairness and impartiality in the treatment of men and women in terms of rights, benefits, obligations, and opportunities”. According to UN Women (undated b):

Gender equity denotes an element of interpretation of social justice, usually based on tradition, custom, religion or culture, which is most often to the detriment to women. Such use of equity in relation to the advancement of women has been determined to be unacceptable (UN Women, undated b).

The United Nations prefers the term equality rather than equity, and in the Beijing Platform for Action as well as in CEDAW (Convention on the Elimination of All Forms of Discrimination Against Women), the term equality is used. In this report, we will use the term equality to focus on equal rights, responsibilities and opportunities. When we discuss equality, the focus will be on the disadvantaged rather than the advantaged, since the purpose of equality is to make sure that the disadvantaged are able to enjoy equal rights and opportunities. In the case of fisheries and aquaculture, women tend in general to be disadvantaged in comparison to men in terms of their roles and their access to resources. Therefore, there will be greater focus on women and the challenges they face. “Gender equality is not a women’s issue”, as in the definition above, does not mean that we should just talk about women and men, but that both women and men need to be engaged in order to achieve gender equality. In the following chapters, gender equality will be the basis of our discussion and recommendations.

The articles identified in the searches were classified into gender-focused and gender-related. Gender-focused literature had the words “gender” or “women” in the title. Some papers were included in the gender-focused category when the title did not include “women” or “gender”, but included the following words: “reproductive care”, “masculinity” and “child or childcare”. Gender-related literature had the words “gender” and/or “women” not in the title but elsewhere in the text. There were 124 gender-focused and 129 gender-related articles for fisheries, and 90 gender-focused and 120 gender-related ones for aquaculture.

All the literature was reviewed and an annotated bibliography was created; some keywords were also identified. Keywords were identified around fisheries and aquaculture value chain, systems, gear, species, as well as the social security dimensions in fishing communities. Keywords were further categorized, as shown in Table 2 and 3, in order to give a rough overview of the topics that the reviewed literature discussed. Several topics are discussed in one paper. Table 2 shows that most studies in fisheries referred to small-scale fisheries and marine or inland fisheries in general. There was less discussion on specific species or fishing techniques or gear. Gleaning is an important work done by women, but the total number of studies on gleaning is low.

**Table 2.** Major topics covered in fisheries articles (published between 2011 and 2021)

Topics	Number of papers (gender-focused) (n= 124)	Number of papers (gender-related) (n= 129)
<b>MARINE OR BRACKISH-WATER SPECIES</b>		
Marine or brackish-water fish species (total)	60	80
Anchovy ( <i>Engraulidae</i> )	5	17
Grouper	5	13
Mackerel	6	21
Milkfish ( <i>Chanos chanos</i> )	3	4
Sea bass	4	1
Shark	6	15
Skipjack ( <i>Katsuwonus pelamis</i> )	3	12
Tuna	19	21
Marine or brackish-water shellfish (total)	56	61
Marine and brackish-water shrimp (total)	38	43
Unspecified shrimp	35	44
Sergestid shrimp	3	1
Prawn		
Marine and brackish-water prawn	20	19
Lobster		
Lobster	4	12
Marine and brackish-water crab (total)	32	34
Blue crab	2	3
Mud crab ( <i>Scylla serrata</i> )	2	8
Unspecified crab	30	24
Marine or brackish-water molluscs (total)	24	26
Abalone	4	4
Bivalve	6	12
Clams	13	4
Oysters	7	4
Unspecified molluscs	17	15
Other marine species		
Octopus	12	12
Sea urchin	4	2
Seaweed		
Seaweed	22	16

Topics	Number of papers (gender-focused) (n= 124)	Number of papers (gender-related) (n= 129)
<b>FRESHWATER SPECIES</b>		
Freshwater fishes (total)	14	36
Barbs	0	6
Carp	3	11
Freshwater catfish	3	19
Rohu ( <i>Labeo rohita</i> )	1	7
Tilapia	8	16
Unspecified freshwater fish	1	8
<b>FISHING GEAR AND METHODS</b>		
<b>Marine fishing gear and method</b>		
Marine net fishing	22	26
Marine and brackish-water gleaning	29	23
Marine gillnet fishing	19	31
Marine seine fishing	10	19
Marine purse seine fishing	5	18
Marine hook-and-line fishing	7	13
Marine spear gun fishing	1	5
Mangrove related activities	10	11
<b>Freshwater fishing gear and methods</b>		
Freshwater fisheries	26	36
Freshwater net fishing	11	14
Freshwater seine fishing	5	9
Freshwater hook-and-line fishing	5	9
Freshwater spear gun fishing	1	1
Rice field fishing	0	4
<b>Marine, brackish-water and freshwater related activities (total)</b>		
Small-scale fisheries (SSF)	107	107
Resource management	97	110
Fish processing	85	62
Fisheries organizations and networks	87	105
Fish retailing	33	29
Protection and safety	38	45
Food security	52	72
<b>Boat related</b>		
Large boat	14	31
Small boat	27	41

**Note:** One paper could be placed in multiple topics and can be included in both Table 2 and 3.

**Source:** Authors' own elaboration

**Table 3.** Major topics covered in aquaculture articles (published between 2011 and 2021)

Topics	Number of papers (gender-focused) (n= 90)	Number of papers (gender-related) (n= 120)
<b>FRESHWATER</b>		
Freshwater fishes (total)	30	28
Barbs	1	3
Carp (Species unspecified)	14	11
Catfish	5	4
Catla ( <i>Catla Catla</i> )	0	7
Mrigal ( <i>Cirrhinus mrigala</i> )	2	5
Pangasius spp.	3	7
Rohu ( <i>Labeo rohita</i> )	4	7
Small indigenous fish species (freshwater)	7	3
Tilapias	13	14
Unspecified freshwater fish	7	2
Freshwater prawn		
Giant freshwater prawn aka. Golda shrimp aka ( <i>Macrobrachium rosenbergii</i> )	5	7
<b>Freshwater aquaculture systems</b>		
Freshwater farming, all systems (total)	40	35
Pond farming	37	26
Cage freshwater farming	18	8
Freshwater homestead farming	16	7
Freshwater prawn farming	5	8
Ornamental fish farming	8	1
<b>MARINE OR BRACKISH-WATER</b>		
Marine or brackish-water fish (total)	14	6
Milkfish ( <i>Chanos chanos</i> )	6	4
Pearl spot aka. Green chromide ( <i>Etroplus suratensis</i> )	2	1
Seabass	5	0



Topics	Number of papers (gender-focused) (n= 90)	Number of papers (gender-related) (n= 120)
Unspecified marine or brackish-water fish	2	1
Marine or brackish-water shellfish (total)	33	25
Marine or brackish-water shrimp and prawn	26	29
Tiger shrimp aka. Giant tiger prawn ( <i>Penaeus monodon</i> )	5	10
Unspecified marine or brackish-water, shrimp and prawn	22	18
Marine or brackish-water crab	11	2
Mud crab ( <i>Scylla serrata</i> )	5	1
Unspecified crab	8	1
Marine or brackish-water molluscs	9	0
Mussel	5	0
Oysters	6	0
Seaweed	21	28
Elkhorn sea moss ( <i>Kappaphycus alvarezii</i> )	6	10
Eucheuma spp.	1	2
Gusô ( <i>Eucheuma cottonii</i> )	2	3
Kappaphycus Striatum	2	0
Unspecified seaweed	12	13
Marine or brackish-water aquaculture systems		
Total marine and brackish-water aquaculture systems	50	59
Marine or brackish-water shrimp and prawn farming	23	25
Crab farming	9	2
Seaweed farming	20	27
Marine or brackish-water cage farming	20	6
Marine or brackish-water pond farming	30	23
Mollusc farming	8	0
Homestead marine or brackish-water farming	6	4
Marine, brackish-water and freshwater systems		
Pond farming	49	38
Cage farming	27	13
Homestead farming	18	7

Topics	Number of papers (gender-focused) (n= 90)	Number of papers (gender-related) (n= 120)
<b>AQUACULTURE-RELATED ACTIVITIES</b>		
Resource management	64	90
Aquaculture organizations and networks	55	75
Aquaculture policies	47	69
Fish processing	40	35
Food security	36	58
Aquaculture feed related	32	22
Fish retailing	21	30
Protection and safety	18	35
Seaweed processing	12	23
Shrimp and prawn processing	8	21

**Note:** One article can be classified into multiple categories.

**Source:** Authors' own elaboration.

**Table 4.** Countries covered in fisheries articles (published between 2011 and 2021)

Countries	Number of papers (gender-focused papers) (Total = 124)	Number of papers (gender-related papers) (Total = 129)
India	64	48
Philippines	49	41
Bangladesh	25	45
Indonesia	27	51
Thailand	26	30
Cambodia	22	29
Viet Nam	20	33
Malaysia	14	31
Sri Lanka	15	14
Timor-Leste	8	10
Nepal	4	6
Myanmar	5	26
Lao People's Democratic Republic	4	10
Pakistan	3	14
Maldives	3	9
Singapore	2	14
Brunei Darussalam	1	4

**Note:** One article can be classified into multiple countries.

**Source:** Authors' own elaboration.

**Table 5.** Countries covered in aquaculture articles (published between 2011 and 2021)

Countries	Number of papers (gender-focused papers) (Total = 90)	Number of papers (gender-related papers) (Total = 120)
India	30	21
Bangladesh	28	41
Indonesia	20	23
Philippines	20	17
Cambodia	10	12
Viet Nam	11	19
Thailand	9	17
Malaysia	8	13
Nepal	8	5
Sri Lanka	5	5
Myanmar	2	14
Lao People's Democratic Republic	2	3
Brunei Darussalam	1	2
Maldives	0	2
Singapore	0	2

**Note:** One article can be classified into multiple countries.

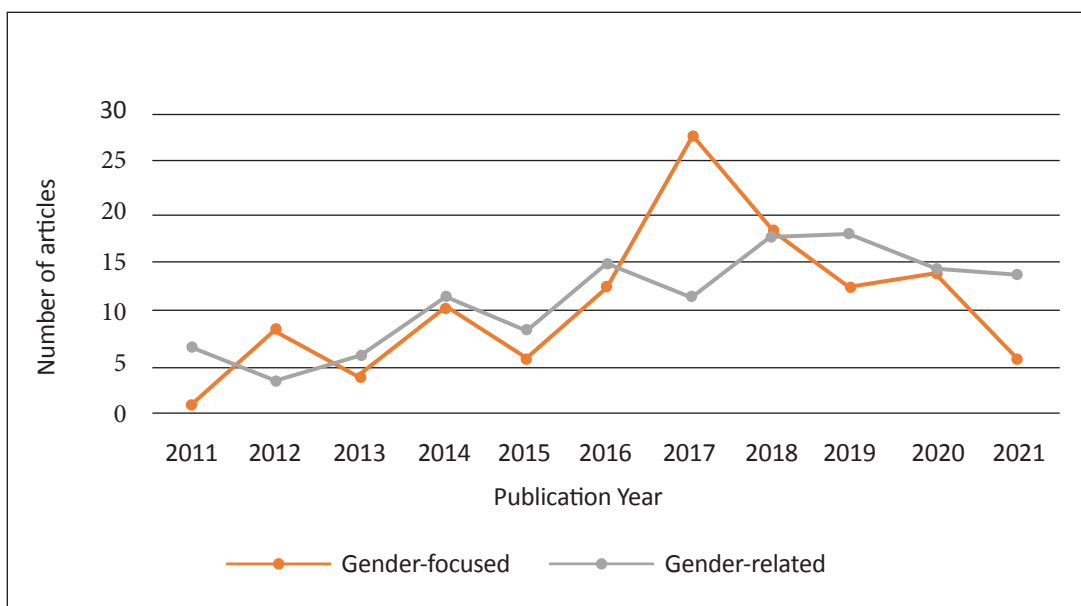
**Source:** Authors' own elaboration.

Tables 4 and 5 show the country case studies being covered by articles reviewed for this study for fisheries and aquaculture respectively. Most of the articles, both for fisheries and aquaculture, are in India, the Philippines and Bangladesh. Hence, this report will also refer to these countries more than others.

Figures 1 and 2 show the number of articles published by year for fisheries and aquaculture respectively. In both cases, there is an increase in the number of articles from around 2013 and 2014 till around 2017.

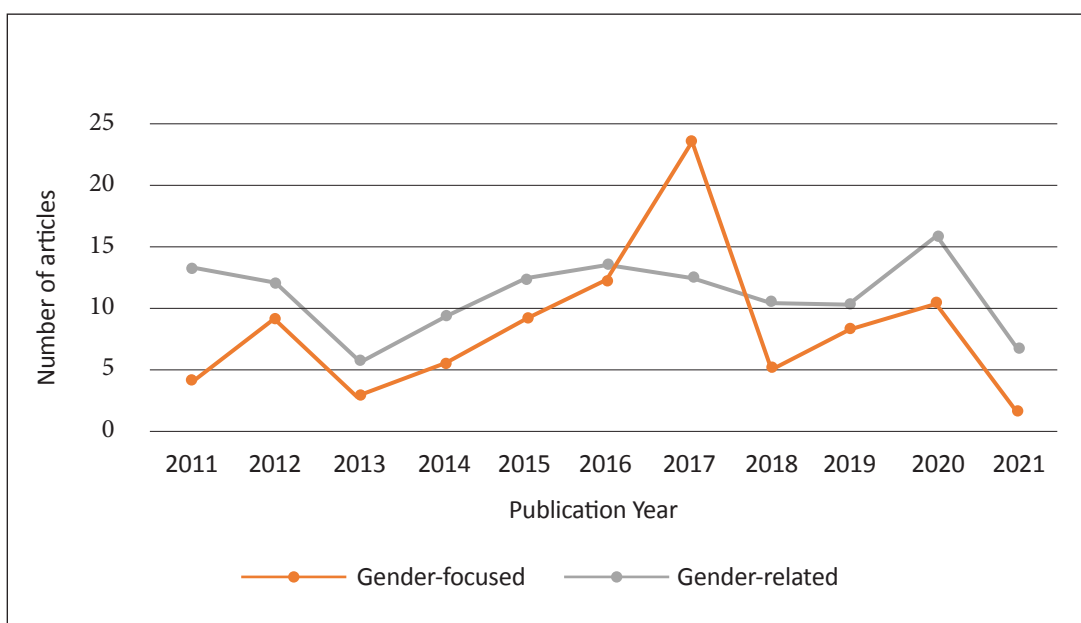
The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) was published in 2014. In 2017, there were a number of important events. These might have influenced the number of publications on gender and fisheries or aquaculture. Tables 6 and 7 show major journals that carried the articles reviewed in this report.

**Figure 1.** Number of publications on gender and fisheries by year of publication



Source: Authors' own elaboration.

**Figure 2.** Number of publications on gender and aquaculture by year of publication



Source: Authors' own elaboration.

**Table 6.** Reviewed gender and fisheries papers by journal

Name of journal	Number of papers (gender-focused)	Number of papers (gender-related)
AACL Bioflux	1	1
Asian Fisheries Science	25	3
Coastal Management	1	1
Environmental Science and Policy	0	3
Fish and Fisheries	3	2
Fish for the people	2	1
Gender, Technology and Development	3	0
Global Environmental Change	0	5
Global Food Security	0	4
Journal of Rural Studies	0	2
Marine Policy	1	34
Maritime Studies	4	0
Ocean and Coastal Management	3	23
World Development	1	1

**Note:** Journals listed have more than one publication used in the report.

**Source:** Authors' own elaboration.

**Table 7.** Reviewed gender and aquaculture papers by journal

Name of journal	Number of papers (gender-focused)	Number of papers (gender-related)
Asian Fisheries Science	27	5
Aquaculture	3	9
Environmental Science and Policy	0	3
Gender, Technology and Development	4	0
Global Food Security	0	3
Indian Journal of Fisheries	1	1
Journal of Applied Phycology	1	6
Journal of Rural Studies	0	3
Marine Policy	1	13
Ocean and Coastal Management	0	13
Reviews in Aquaculture	2	1

**Note:** Journals listed have more than one publication used in the report.

**Source:** Authors' own elaboration.





Statue of woman fisher in  
Koh Kong, Cambodia.

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### 3. Structure of the publication

Excerpts and summaries from each paper that related to gender analysis were extracted, then further organized into themes. These were further analysed to respond to the objectives of this report. In the following chapters, the content of these papers is reviewed, with focus on (i) gender division of labour, (ii) access to resources, and (iii) drivers of change and entry points of change. In the end, we identify some literature gaps and recommend directions for future research.

The publication is largely divided into two sections. One is on small-scale fisheries and the other is on small-scale aquaculture. Chapter 4 will discuss women and men in small-scale fisheries in Asia, looking at barriers and constraints and identifying drivers of change for gender equality. It discusses the gender division of labour in direct fishing-related activities as well as post-harvest activities. It then discusses access to resources including fish, education, technology, finance and infrastructure as well as decision-making power and network support. Discussion on various dimensions on well-being follows. These include nutrition, demographic change and vulnerable groups, time burden, violence against women, vulnerability under disaster and COVID-19. Drivers of change section summarizes insights from these three sub-sections followed by entry point recommendations for a more gender-responsive fisheries project, governance and management.

Chapter 5 discusses women and men in small-scale aquaculture in Asia. Similar to Chapter 4, it discusses gender division of labour in different systems of aquaculture, including pond and cage culture, mariculture, seaweed, shrimp, prawn and crab. It then discusses access to resources including finance, income, technology, land, post-harvest activities as well as social network. The third sub-section covers well-being including food, economic and social security as well as climate change and impact of COVID-19. Drivers of change section summarizes insights from these three sub-sections, followed by entry point for research and action.





Boats and nets in Koh Kong, Cambodia.

©Sam Ath Boramey



## 4. Women and men in small-scale fisheries in Asia: Barriers, constraints and opportunities towards equality and secure livelihoods

### 4.1. GENDER DIVISION OF LABOUR

#### 4.1.1. Invisibility of women's role in fishing

There is a growing recognition that women do engage in fishing activity itself and not only in post-harvest activities (Kwok *et al.*, 2019; Amparo *et al.*, 2017). Research on gender relations in small-scale fisheries has increasingly illuminated women's involvement in fishing and pointed out that women spend considerable time on marine fishing activities (Kleiber, Harris and Vincent, 2015). The majority of the activities that women fishers are engaged in are not recognized in official fisheries statistics, including gleaning, nearshore fishing, and activities in the post-harvest sectors (Anna *et al.*, 2019; Asir Ramesh, Bindu and Karthi, 2019; Belton, Hossain and Thilsted, 2018; Iguban, Andres and Ferrer, 2017; Lokuge and Hilhorst, 2017; Ogden, 2017; Stacey *et al.*, 2019; UNIDO, 2021).

The following examples illustrate the lack of recognition of women's role in fisheries. In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines, statistics by the Philippine Department of Labour show that men account for 90 percent of fisheries employment (Torell *et al.*, 2021). This is due to the department's narrow definition of fisheries, where only boat fishing counts as fishing, while activities such as gleaning, which are carried out by women (and men), are not counted (Torell *et al.*, 2021). In the Talaud Islands district in North Sulawesi Province, Indonesia, fisherwomen who perform activities such as fish processing, fish marketing, collecting shells on the beach, and local fish selling are not included in fisheries data, which exclude processing activities (Alami and Raharjo, 2017). The government development policy is focused on fishing in capture fisheries, which are male dominated. This exclusion of women from fisheries sector support not only impacts women but also men, since women's low income from fisheries because of lack of support affects total household income. For example, without any support for transporting fish, women traders are not able to sell all their fish before it spoils (Alami and Raharjo, 2017). Additionally, a multiple country research project on engendering statistics for fisheries and aquaculture, which included Indonesia, Myanmar and India, found that none of the reported figures represent the reality of the participation by women and men. Gender-disaggregated data are not available because (i) it is not collected in the national data reporting programme, (ii) in places only partial data are collected, and (iii) national reporting systems lack synchronization (Gee and Bacher, 2017).

One of the reasons women are often excluded from leadership in fishing communities is because their work

is invisible. Using a case from the Bolinao municipality in the province of Pangasinan in the Philippines, Dasig (2020) argued that one barrier keeping women from leadership roles in fisheries is their invisibility due to lack of gender-disaggregated data, lack of education, low literacy rate, poverty, gender role stereotypes, lack of confidence, and physical mobility. Box 1 shows that the invisibility of women's work is integrated with the contract system in fishing.

The practice of *purdah* also contributes to women's invisibility. In Tamil Nadu, India, *purdah* prevents some women from leaving home. Also, in caste fishing areas, only men have access to fishing, while some caste rules allow only non-caste members to perform the jobs of boat stocking, supply transportation and boat maintenance (Novak Colwell and Axelrod, 2017).

Fishermen might see women only as a substitute for themselves in fishing and other related activities, which again, makes them invisible. In Baybay City in the Province of Leyte, in the Eastern Visayas region, the Philippines, women attend coastal resources management programme meetings on behalf of their male fisherfolk and as a substitute for them.<sup>2</sup> That is, women's attendance does not imply gender inclusion (Mudge, 2018).

Women's role in fisheries is invisible not only in official statistics, but in fishers' perceptions as well. A study in Pursat Cambodia (Kwok *et al.*, 2019) showed that fisherwomen identified fishing as part of their work, while few men acknowledged that women play a role in fishing. The authors explained that this is because men have a lower opinion of women's contribution to fishing

<sup>2</sup> The study did not mention the quality of participation of these women when they attend as a substitute of men.

### **Box 1. Invisibility of women's work: contract system in Myanmar**

In Northern Tanintharyi, Myanmar, the out-migration caused by displacement through pipeline construction as well as the collapse of community cohesion with the influx of in-migration led to a breakdown in trust. Fish boat owners began to bind men workers and childless women aged between 16 and 35 through advance payments to ensure that they would work for them and not be free to work for other boats.

Other young girls and women with children may be involved in sorting shrimp from the catch. Instead of a fixed monthly wage through the contract system, they are paid by the amount of shrimp they collect from the catch. However, even at the maximum amount collected, they would only make half the money that the childless women working under the contract system earn. This amount is meagre because even women working under the contract system only earn half of what men receive.

**Source:** Barbesgaard, M. 2019. Ocean and land control-grabbing: The political economy of landscape transformation in Northern Tanintharyi, Myanmar. *Journal of Rural Studies*, 69: 195–203.



due to social attitudes that do not recognize women fishing, or because women and men have different perceptions of what constitutes “real” fishing. Men fish at the open lake, while women are engaged in shallow water fishing and gleaning (searching for shellfish in intertidal areas). It is noted that open lake fishing is more lucrative (Leisher *et al.* 2016). It also might be the case that women’s fishing is invisible to men, since women fish near their homes and consider their fishing as an extension of their household work, whereas men have to go far to fish.

The lack of recognition of women’s role in fisheries may have resulted in government policies missing out on women. For example, in Indonesia, fishery initiatives focus on helping men’s capture fishery by providing ice and equipment such as boats, with only a few programmes focusing on women, including improving women’s ability to participate in mangrove management (Stacey *et al.*, 2019). The gender division of labour has not been recognized in fishery policies and programmes in the Talaud Islands district in North Sulawesi Province, Indonesia; the government has only focused on fishing or harvesting activities and not the other activities that women are engaged in (Alami and Raharjo, 2017).

The important first step for change is to recognize women’s role in fisheries and collect gender-disaggregated data (Andriati and Anridho, 2018). Research on engendering statistics on fisheries and aquaculture by Gee and Bacher (2017) showed that gender-disaggregated data on fisheries employment are slowly improving but by 2017, only 27 percent of all countries reported to the FAO on women’s participation in the fisheries and aquaculture sector.

The definition of fishing activities is also problematic as some countries define fishing as fish that are caught for sale. This excludes subsistence fishing, gleaning and shell fishing, in all of which women are frequently engaged. Additionally, women in fishing are often not formally registered, making them harder to identify and quantify than male fishers while fishers in general also work in isolated locations in which their fishing is hard to track (Gee and Bacher, 2017).

Kleiber, Harris, and Vincent (2014) also argue for a broader definition of fishers to include part-time fishers and gleaners, and a broader definition of the harvested species that takes into account benthic macro-invertebrates to ensure that women’s roles are visible. Their study in the Danajon Bank region of the Central Philippines has shown that women, part-time fishers, and gleaners represented 35–55 percent of fishers and account for 25–35 percent of the total weekly catch weight. However, the current assessments focus mainly on male-centric, gear-driven methods, full-time fishers, and finfish, which skews the representation of small-scale fishery by overlooking important social and ecological interactions, missing out women’s contributions as well as a portion of men’s catch.

In some cases, the invisibility helps to create space for women to work. In Sri Lanka, a study showed that women fishers working in lagoons perform informal fishing work. Because this is informal work, they are

not under any strict controls and have the freedom to select the pace and location of their work. Fisheries are normally not considered women's work, but these informal workers are able to make a space for themselves and engage in fisheries independently for their daily subsistence (Lokuge and Hilhorst, 2017).

#### **4.1.2. Gender roles in fishing**

Even though women's roles are invisible officially, women play a large role in fisheries. In the states of Gujarat, Kerala, Andhra Pradesh, Odisha and Tamil Nadu, India, women are often excluded from fishing operations, and they come into the picture only after the catch is landed (Asir Ramesh, Bindu and Karthi, 2019). A study on the consumption patterns of low-income households in the Tonle Sap lake in Siem Reap and Kampot provinces and in the Kampong Thom province, Cambodia, found that women take on the tasks of net mending, bait preparation, and financial account management (UNIDO, 2021). Asir Ramesh, Bindu and Karthi's (2019) study from the states of Gujarat, Kerala, Andhra Pradesh, Odisha and Tamil Nadu, India, argued that a fisherwoman in India spends more than 90 percent of her working hours in fishing and allied activities in a year; hence, fisheries is a full-time employment for them. They estimated that most spend 225–250 days (7.5–8 months) in dried fish production. In lean periods, they work as labourers in processing companies, peeling factories, net weaving, or agriculture. Many are involved in fish seed collection on a part-time basis. About 20 percent of the fisherwomen at the coastal area are involved in fish marketing, making or repairing nets, curing or processing, peeling, and other fishing-related labour. In the floodplain of southwest Bangladesh in Nariāl district, during the monsoon, many villagers get open access to fish in flooded fields, opening up an unusual opportunity for women from 90 percent of the households to fish alongside the men. Women also often fish for home consumption using gear such as gillnets, traps, cast nets, and hooks (Sultana and Thompson, 2017).

Women and men fish for different commodities. In the Philippines, women collect shells, invertebrates, and seaweed in intertidal and inshore areas (Parcon, 2016), while evidence from the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas shows that men are more interested in high-value species such as lobster, octopus, squid, abalone and tuna for export (Torell *et al.*, 2021). In Viet Nam, women glean limpets and snails in intertidal areas (Khuu, Jones and Ekins, 2021). Climate change may have different effects on the species targeted by women and men. Thus, women might need different diversification strategies than men to cope with climate change (Williams *et al.*, 2019).

Women's role in fisheries differs by location. We see examples of this from different regions in India. In West Bengal, the participation of women is negligible and limited to retail marketing and net mending (Salim and Geetha, 2013). In Odisha, along with net making and fish marketing, fisherwomen engage in shrimp processing. In Andhra Pradesh and Tamil Nadu, women's role in fish capture is limited to seed collection, clam collection, and catching fish with their bare hands; however, they have a strong presence

in allied activities such as sorting, grading, fish salting and drying, fish loading and unloading, net mending, retail marketing and fish processing (Jadhav, 2018). In Cambodia, despite the belief that men dominate the fishing industry, women constitute 57 percent of the fishery workforce (Kusakabe, 2016).

In the Philippines, seaweed collection is done by women (Williams *et al.*, 2019), but in Bangladesh (Rani *et al.*, 2020), it is done mostly by men, although women also participate. In Palawan, the Philippines, women reduced their involvement in sea cucumber gleaning and moved to seaweed farming because of a decrease in sea cucumber resources (Jontila *et al.*, 2018). For women in Tanjung Luar of Indonesia, shark fishing is a crucial source of income (Eriksson, Johansson and Blicharska, 2019). In India, men catch fish and crustaceans while women collect bivalves (Apine *et al.*, 2019). In Cambodia (Sornkliang *et al.*, 2018), men prepare fishing gear before going to fish, while women sort the fish, clean and prepare crabs for sale, clean the fishing materials, and dry the fish and shrimp.

In Krabi, Thailand women successfully engage in marine fishing on their own small boats, defying the notion that women do not participate in direct marine fishing and do not own boats (Chuenpagdee and Juntarashote, 2011). In Halong Bay, Viet Nam, some women harvest crabs with men (Harper *et al.*, 2017).

Women's involvement in fisheries can also change with their life stages. In the Vembanad estuarine system, India, women start getting into fishery work after marriage and after moving to their marital home (Sruthi, Jayalal and Gopal, 2016). In contrast, girls of the Bangladeshi floodplains only engage in fishery activities before puberty, doing the work of sorting fish, salting, drying, and limited-level fish retailing in the markets alongside their parents or reliable relatives or neighbours (Deb, Haque and Thompson, 2014). After puberty, they are rarely allowed independent mobility and have to work near the village for fear of sexual harassment, because of the belief that becoming a victim of harassment will see her chances of marriage shrink (Deb, Haque and Thompson, 2014). Conversely, a study in Mindanao, the Philippines, showed that older women, mostly working in tuna value-added processing, have more economic power than their male counterparts and have more decision-making power over family and business (Prieto-Carolino *et al.*, 2021).

The decline in the household economy can lead to women being pulled into fishing activities (Paulus *et al.*, 2019; Torell *et al.*, 2021). During the season when the fish catch is low and the income of fishermen decreases, women and children are pushed into fisheries as well as non-fisheries work to sustain the household economy (Paulus *et al.*, 2019). In a study of women from fishery families in Indonesia, over 83 percent of the respondents in Wonogiri regency and 87 percent in Tegal regency said that they are not satisfied with their current family income and are, thus, motivated to help their husbands in fishing activities (Fitrianggraeni, 2019). A study of six small-scale fishing communities in Cambodia, the Philippines, and Solomon Islands found that women are now more involved in productive activities because life is more difficult than before. In the Visayas Region, the Philippines, the economic situation has caused men

to encourage women to expand their fisheries activity to marketing and processing within the home (Locke *et al.*, 2017).

Women and men divide the work to sustain fishery livelihoods. It is often the case that while men fish, women are engaged in non-fish activities to support the household (Kusakabe and Sereyvath, 2021; Paulus *et al.* 2019). Paulus *et al.* (2019) reported that in the border areas of Indonesia and Timor-Leste, family members (wives and children) engage in alternative businesses as a source of additional income as part of the diversification strategies of fishing households. Fishing is the main occupation, while producing grilled fish, shredded fish, and sea salt are secondary businesses. Shredded fish provides a relatively higher income among the side businesses and is produced by women. Gibson *et al.* (2021) reported that in Indonesia, while men were involved in ten different capture fishery activities, women were involved in non-fish income generating activities such as making and selling traditional cakes, or working as health volunteers for a small honorarium.

Anna (2012) reported that in the North Coast of Java, during low fishing season, women may need to take on additional productive work to support their families, such as working as domestic workers, sometimes changing from one job to another according to what is available in the season. Some families send either their daughters or other family members to work as domestic workers in Malaysia, China, Singapore, Hong Kong SAR and Taiwan Province of China with the expectation that they will send back remittances.

Policy changes can affect how women and men are involved in fisheries. In India, the creation of the Gulf of Mannar Marine Reserve in 1989 resulted in a ban on seaweed collection. This affected women's seaweed harvesting activities. Some women defy the ban and harvest seaweed by going on a boat together with their husbands. Not all husbands allow women to do so, and without the husbands' cooperation, women's livelihood options are limited. They may need to pay others to hire a boat. They may also choose to row out on their husband's boat alone, which increases the risk of accidents including drowning (Coulthard *et al.*, 2019).

#### **4.1.3. Gender norms and cultural practices**

Gender power relations occur virtually in every situation in fisheries, shaping the roles and recognition of women in fisheries (Kawarazuka *et al.*, 2017; Deb, Haque and Thompson, 2014). Gender division of labour is guided by gender norms that reflect cultural and religious observances (Gibson *et al.* 2021; Funge-Smith and Bennett, 2017). Men go to sea and women perform pre- and post-harvest activities, while most of the work women do is unpaid or paid in kind (fish).

The gender division of labour is a product of gendered social construction. In Phan Thai Norasing, Thailand, fishing activities are tied to the idea of masculinity and femininity, with certain activities like marine

fishery considered masculine, and supportive and processing work considered feminine (Kheuntha, 2017). In Trincomalee, Sri Lanka, Sinhalese men control women's fishing activities because they perceive it as guarding women's virtue, which is important to the family's reputation (Lokuge and Hilhorst, 2017). In the Philippines, gleaning is an activity dominated by women fishers and not considered real fishery work (Kleiber, Harris and Vincent, 2014). In Bangladesh, women are constrained from working outside their village, because of fear of harassment and losing their purity, which can affect their chances of marriage (Deb, Haque and Thompson, 2014). In the Tonle Sap lake in Siem Reap and Kampot provinces and in the Kampong Thom province, Cambodia, the designation of women as supporters or secondary contributors limited their access to resources, decision-making, and services (UNIDO, 2021). The division of labour based on these gender norms restricts women to supportive and low-value fishery work (Belton, Marschke and Vandergeest, 2019; Salim and Geetha, 2013; Siles *et al.*, 2019; Sornkliang *et al.*, 2018).

Loneragan *et al.* (2018) noted that in Sama Bajo, Indonesia, fishers are Muslim, but follow protective mantras and sailing techniques related to their ancestral religion. The gender division of labour is strict, with men going to sea and women focusing on land-based activities. In Ca Mau province, Viet Nam, women were forbidden from going fishing, entering boats, and even from greeting and saying farewell to their relatives at landing sites (Ha and van Dijk, 2013). These were considered taboo, especially for offshore fishing.

Deb (2018) noted that in Hindu culture, sea fishing has been culturally constructed to be associated with masculine heroism and courage, and Hindu women are expected to perform productive and reproductive tasks when their husband is at sea fishing for 7–8 months a year. Fish itself has cultural significance to the Hindu religion, being part of marriage ceremonies and customs, with their parts used as adornment on apparel. In times of eclipse, women, especially those who are pregnant, do not cut or process fish. Women themselves have a religious role in the fishing community. For example, if a fishing net is perceived to be influenced by evil spirits after men return from the sea, both women and men will exorcize the evil spirit by singing and beating the net with religiously sanctified wooden rods and branches.

Local religious practices also shape gender norms and the gender division of labour. In the caste-based villages of the Bangladeshi floodplains, Hindu women are found to have a higher degree of freedom than Muslim fisherwomen, who could not engage in fish marketing (Deb, Haque and Thompson, 2014). This is similar to a finding in Kerala, India, where Muslim women do not engage in fish marketing (Hapke, 2012).

Women's lower status in fisheries can be linked to fisheries being associated with masculinity (Drury O'Neill *et al.*, 2019). In the Philippines, social status is linked to the gesture of giving away fish, which is a masculine gesture and seen by community members as an act of generosity (Dumont 1992 in Fabinyi, Dressler and Pido 2018). Hence, social status in the fishing community is also gendered. The concept of

leadership in fisherfolk organizations, with evidence from the Bolinao municipality in the province of Pangasinan in the Philippines, is linked to men and masculinity (Dasig, 2020).

In Tonle Sap, Cambodia, men have informal networking circles such as alcohol drinking gatherings that exclude women. This affects the composition of community leadership. Although there is a policy that commune councils should have a female member, they are still dominated by men (Joffre and de Silva, 2015).

Decline in fish catch and the resultant decrease in household income can also change the masculine identity of fishers and change the gender division of labour. In the Philippines, fishing is identified with hegemonic masculinity, but a decline in fish stocks has forced fishers to start working as fish mongers to supplement their income (Turgo, 2014). The work of fish mongering is considered feminine, and men fishers have to adjust their identity with this new occupation by learning how to negotiate with customers, learning to be empathetic, and providing cooking advice – all considered feminine traits. However, these changes do not indicate a shift in gender equality because men would find a way to retain their perceived superior masculine status in the process of adapting and negotiating gender roles (Turgo, 2014).

Awareness that gender norms affect the gender division of labour and women's status in the family is important, especially noting that fisheries projects can strengthen existing gender norms. Stacey *et al.* (2021) analysed 20 small-scale fisheries projects in Indonesia and found that 40 percent of them used a gender-reinforcing approach that hindered gender equality.

#### 4.1.4. Fishing gears and practices

**MAINTENANCE OF GEAR:** There seems to be no strict gender-related division of labour for maintenance of gear, and researchers observed varying patterns. In the Pursat province of Tonle Sap lake and Kep province, Cambodia, and in the Mai Root Sub-district in Klong Yia district of Trat province, Thailand, both women and men engage in the care of gear, such as untangling the nets, and cleaning the nets and other gear (Kwok *et al.*, 2019; Sornkliang *et al.*, 2018). In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines women mend nets and sort fish (Torell *et al.*, 2021). In Bangladesh, women mend nets, while in Southeast Asia, it is the men's job (Rajaratnam, Ahern and McDougall, 2020). Alam and Rahman (2014) also noted that in Patharghata Upazila of Barguna district, Barisal division, Bangladesh, women repair fishing nets.

In Kaw Thauang province, Myanmar, when men go fishing for weeks and months, they do all the activities at sea, including fixing fishing gear, repair of engines and boats, fish sorting, fish processing, transport and sale of fish, and cooking food (Sornkliang *et al.*, 2018).



**USE OF FISHING GEAR:** In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines, it is generally accepted wisdom that men are the ones who carry out physically strenuous work such as pulling in the nets from boats. Fishers explain that women do not go on boats because they do not have the physical strength needed to pull in the nets (Torell *et al.*, 2021). However, studies show women using fishing gear.

Islam *et al.*'s (2017) study showed that 70 percent of coastal and marine fishers in the districts of Barisal, Bhola, Chandpur, Chittagong and Cox's Bazar, Bangladesh, were women and children, who collect shrimp and prawn fry using estuarine set bag nets, dragnets, and push nets. In Timor-Leste, some women catch octopus, crabs and shellfish using gillnets on boats, and do spear fishing (Alonso, Palazon and Topu, 2013 in Mills *et al.*, 2017). In the Vembanad estuarine system across the districts of Alappuzha, Ernakulam and Kottayam in India, men and women fish together; men operate the cast net and transfer the catch to the scoop net, which the women hold (Sruthi, Jayalal and Gopal, 2016). In lake Taal, the Philippines, women and men operate fish traps or pots placed at the bottom of the lake, via diving; however, women are only able to use them at the shallow part of the lake (Mutia *et al.*, 2020).

In the eastern district of Trincomalee, Sri Lanka, Lokuge and Hilhorst (2017) documented a group of 25 women pulling beach seine nets and performing a range of tasks, from setting up the net to landing the catch. In other areas, women are only involved in pulling the last part of the beach seine. However, only men row the canoe, so without the men, women cannot operate the beach seine. Beach seine owners that employ women are not formally licenced and the owner gets an exception from local fishing authorities to operate under the condition that they do not use a motorized boat to set up the nets. These women are indigenous women, who do not identify with the local caste hierarchy. Hence, they are not concerned with the notion of "pollution" that restricts Tamil or Hindu women from engaging in fisheries, which allows them a much freer involvement in fishing.

In the state of Manipur, Northeast India, there are many traditional equipment operated by women, such as bamboo baskets for keeping fish, bamboo fish traps, rice field fish traps, floating mats made of weeds, macrophytes and other organic matter made to attract fish (Inaotombi and Mahanta, 2016). However, the use of fishing gear by women may be invisible. It is estimated officially that 90 percent of fishers in the Philippines are men (Torell *et al.*, 2021), but this figure excludes gleaning and other fishery-related activities that do not use boats. Hence, gear used by women may not be documented as fishing gear. Women may even be excluded from research studies, as in the example of a study in Sabah Malaysia, which only interviewed men, because women do not participate in finfish fishing, although they occasionally gleaned on the reef (Teh, Teh and Rashid Sumaila, 2014). Women not only use gear but are also involved in gear and craft making (Munir, 2020; Rajaratnam, Ahern and McDougall, 2020; Ha and van Dijk, 2013).

The introduction of new gear can change the involvement of women and men in fisheries. For example, United States Agency for International Development (USAID)'s Aquaculture for Income and Nutrition (AIN) project in Bangladesh introduced a gillnet that women wearing sarees can use to catch mola without getting their clothes wet or exerting great physical force. In addition to the tool, men and women were given training so that women could use the gillnet without hindrance (Kruijssen *et al.*, 2016).

**FISHING PRACTICES:** As discussed in section 4.1.2, gender division of labour in fisheries differs by location, commodities as well as the life stage of women and men. Men's strong identity as fishers shapes fishing activity. In Tamil Nadu, India, fishermen's identity shapes the decision of where to fish, especially those engaged in shark hunting in the deep sea where they are able to display skills in confronting and overcoming risks (Rao and Pratheepa, 2021).

Dagaraga *et al.* (2018) studied the gender roles in fishing for tuna and other pelagic fish in Palawan, the Philippines, and found the division of labour was as indicated in Table 8, where women are assigned assisting roles in each step of tuna fishing.

Women are involved in nearshore fishing. In the Philippines, research on coral reefs showed that women account for a quarter of fishing effort and catches (Cabral and Geronimo, 2018). In Bangladesh, women of Mathurapur fish for shrimp post-larvae and dry fish, while women of Batayan are not involved in any form of fishing activity (Islam *et al.*, 2021). In Indonesia, both men and women as well as children are engaged in reef gleaning and seaweed culture along the coastline (Halim *et al.*, 2019).

**Table 8.** Roles of women and men in fishing for tuna and other pelagic fish in Palawan, the Philippines

Men	Women
Cleaning, repair and maintenance of fishing boats and engine	Assist in boat cleaning
Installation, repair or mending and maintenance of fishing gear or paraphernalia (including hook and line, fishing nets, and so on)	Assist in fishing net repair and maintenance
Preparation of fishing gear prior to fishing operation	Assist in the preparation of baits for hook and line
Catching of fish (for example tuna, flying fish and other pelagic fish)	

Source: Dagaraga, R.S., Subang, Jr., B.P., Juan, R.G.S., Ventura, G.F.C., Sumandal, J.H. & Nalzar, O.G. 2018. Gender roles on the capture of tuna and processing of flying fish in Langogan, Puerto Princesa City, Palawan, Philippines. Paper presented at 9th National Conference on Gender and Fisheries, 7-8 November 2018, Bacolod City.

When women perform fish harvesting activities they frequently operate nearshore for convenience (Sornkliang *et al.*, 2018). In the Tonle Sap lake of Cambodia, women fish nearshore and consequentially can only access smaller fish species compared with men who can go to the deeper part of the lake and harvest larger fish (Kwok *et al.*, 2019). The smaller fish earn less income for women, reinforcing the belief

that women's contribution to the household is insignificant despite them taking up twice the amount of household work that men do (Brickell 2011 in Kwok *et al.*, 2019). In the west coast of Gujarat, women participate in shallow water artisanal fishing (Joshi, 2016). In the coastal areas of Bangladesh, women do not participate in deep-sea marine fishing but are considered to be responsible for the safety of their husbands through their religious behaviour and regular prayers (Deb, Haque and Thompson, 2014). In the Sekong River, the Lao People's Democratic Republic, men frequently travel long distances to seek productive fishing grounds, while women have to find ones closer to the villages so that they can attend to domestic work at the same time (Moser, 2015).

Gleaning activities tend to be invisible (Rajaratnam, Ahern and McDougall, 2020). In the Philippines, women are engaged in gleaning, nearshore fishing, spearfishing in rivers, and reef fishing with scoop nets, traps and fish baskets (Kleiber, Harris and Vincent, 2018; Yap *et al.*, 2017; Siason, 2000 in Torell *et al.*, 2021). In Myanmar, women and children perform gleaning and trapping with unmotorized dugout canoes, while men perform nearshore and reef fishing daily or join fishing crews for fishing trips out at sea (Tezzo *et al.*, 2018).

According to Rani *et al.*'s (2020) study in Saint Martin's coral island, Bangladesh, both women and men glean, but most of the gleaners are girls aged 12 to 19, who collect large molluscs such as gastropods and bivalves to sell in the local market. A study of 120 gleaners showed that they earned USD 144 per day during the peak months or USD 17 308 annually. They glean by hand using knives and plastic containers, which are then sold in the local market. In Cordova and Calatagan, the Philippines, women glean for gastropods, bivalves, seaweeds, and sometimes sea cucumbers, although in small amounts (Quiros *et al.*, 2018).

Women and men use mangroves in different ways. In Sri Lanka, women collect edible plants in mangroves whereas men use mangroves for fishing. However, these roles can be interchangeable (Satyanarayana *et al.*, 2013). In the Philippines, women use mangroves for gathering fuelwood and building materials, while men use it as nurseries for fish (Graziano, Pollnac and Christie, 2018). Women are more active users of mangrove areas because the water is shallow and there is no need for boats. In Tonle Sap region, Cambodia, women from water-based communities are more involved in fishery activities, especially during the dry season when the water level is low and risks are lower (Joffre and de Silva, 2015). In the Philippines, women are more knowledgeable about resources in intertidal zones and men about coral reefs (Halim *et al.*, 2019).

#### **4.1.5. Boats and infrastructure**

There is very little mention of the use of boats and infrastructure by women and men in the reviewed literature. It is often noted that men are the ones who use boats. However, in the municipality of

Conception in Iloilo province, the Philippines, Drury O'Neill *et al.* (2019) found that women are likely to estimate less fuel needs even though women and men use boats with similar engine sizes, boat length, and fishing gear because women are averse to going for longer fishing trips.

Generally, when women fish using boats, they do not travel into the deep ocean and typically harvest from the reef areas (Máñez and Pauwelussen, 2016). Women are likely to use smaller boats, often using two-person boats with their husbands or other relatives (Máñez and Pauwelussen, 2016; Coulthard *et al.*, 2019). A study in the Philippines found that women fishers of the Danajon Bank region of the Central Philippines almost always fish with a husband or a female relative (Kleiber, Harris and Vincent, 2014).

Infrastructure and facilities in landing sites are important for women. Women fish vendors in Chennai district of Tamil Nadu, India, have to travel long distances from the place where they buy fish to the selling point, and lack of toilet facilities and shelters make women's lives difficult at the landing sites (Mukthar, Raju and Sivasubramanian, 2021).

#### **4.1.6. Post-harvest activities**

The United Nations Industrial Development Organization's (UNIDO, 2021) research on the consumption patterns of low-income households in the Tonle Sap lake in Siem Reap and Kampot provinces and in the Kampong Thom province, Cambodia, suggested normalizing the inclusion of women in post-harvest fishery sector data collection and disaggregation to reduce women's invisibility in the sector, and for the improvement of gender-specific intervention programmes. Prieto-Carolino *et al.* (2021) and Iguban, Angres and Ferrer (2017) also argued the importance of gender-disaggregated data to make women's roles in fisheries more visible.

**FISH PROCESSING:** Women are more often engaged in fish processing than fishing in Southeast Asia (Harper *et al.*, 2013; Kwok *et al.*, 2020). In Myanmar, women dominate post-harvest activities such as fish processing (for example fish drying) and retail and wholesale trade (Tezzo *et al.*, 2018). In Indonesia, women are mainly involved in post-harvesting activities such as fish processing to make dried fish, fish crackers and fish meatballs as well as in fish marketing (Halim *et al.*, 2019). A study on COVID-19's impact in Indonesia showed that in Southeast Sulawesi, women are involved in trading salted, dried and smoked fish for the local markets, and depend on processing fish as a coping strategy four times more than men do (Campbell *et al.*, 2021).

Fish processing activities are dominated by women but there is also a gender division of labour. Barbesgaard (2019) observed in Northern Tanintharyi, Myanmar, that men catch the fish, which are then given to women for sorting and processing. In the Tonle Sap lake in Siem Reap and Kampong Thom provinces and in Kampot province, Cambodia, women take the lead in the purchase and selection of raw

material, processing the raw material, transactions and financial management, while men perform tasks that require physical strength (UNIDO, 2021). In Indonesia, women take up most of the processing work (Table 9).

**Table 9.** Percentage of fish<sup>a</sup> processing work carried out by women, men and children<sup>b</sup> in Indonesia

	Women [alone]	Women and children	Women, children and men
Grilled fish	71.85	12.09	16.06
Shredded fish business	82.61	10.2	7.19
Sea salt making	60.72	9.4	29.88

**Notes:** <sup>a</sup> Skipjack tuna (*Katsuwonus pelamis*) and unspecified tuna species.

<sup>b</sup> The study noted that children, especially in summer and school holidays, play an active role in post-harvest activities. Children help their parents to make sea salt, sell and process fish.

**Source:** Paulus, C.A., Pellokila, M.R., Sobang, Y.U.L. & Azmanajaya, E. 2019. The alternative livelihood development strategy in order to improve local fishermen revenue in the border region of Indonesia and Timor Leste. *Aquaculture, Aquarium, Conservation & Legislation - International Journal of the Bioflux Society*, 12(1): 269–279.

Table 10 shows the gender roles in tuna and flying fish in Palawan, the Philippines, which suggests that in contrast to fishing activities (as seen in Table 8), men only assist in fish processing. Dagaraga *et al.* (2018) argued that while fishing was considered men's livelihood, fish processing was women's main livelihood and, thus, women dominate in this sector.

**Table 10.** Roles of women and men in fish<sup>a</sup> processing in Palawan, the Philippines

Men	Women
Assist in the hauling of brined fish to the drying area	Cleaning of the fish (including washing, gutting and splitting)
Assist in the collection and hauling of dried fish	Soaking of the cleaned fish into the tank with brine solution
	Setting of drying racks and placing the brine-soaked fish on the racks
	Removing the dried fish from the dryer and delivering to the packaging area

**Note:** <sup>a</sup> Flying fish (*Exocoetidae*) and unspecified tuna species.

**Source:** Dagaraga, R.S., Subang, Jr., B.P., Juan, R.G.S., Ventura, G.F.C., Sumandal, J.H. & Nalzano, O.G. 2018. Gender roles on the capture of tuna and processing of flying fish in Langogan, Puerto Princesa City, Palawan, Philippines. Paper presented at 9th National Conference on Gender and Fisheries, 7-8 November 2018, Bacolod City.

Women's fish processing activities are important for many fishing households. In South Sulawesi, Indonesia, women's fish smoking and marketing activities are crucial to the household income and contribute to alleviating poverty in coastal villages (Nurbayani, Nursini and Zamhuri, 2021). Similarly, in the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, in the Philippines, women's participation in fish processing and marketing activities have helped them contribute to their household's resilience (Pedrajas *et al.*, 2018). In the north coast of Java, Indonesia, processing fermented shrimp is women's method of coping with economic declines and situations when their husbands cannot go out to fish (Anna, 2012).

Not all processing businesses are owned by women, even though women are the main persons involved in processing fish. A UNIDO (2021) study in the Tonle Sap lake in Siem Reap and Kampong Thom province and in Kampot province, Cambodia showed that more than half of the fish processing businesses in Cambodia are owned by women. Women-owned enterprises account for 54 percent of total fermented products (prahok and paork), 67 percent of marinated fish and fish ball products, 75 percent of fish sauce production, and half of dried shrimp production. Dried fish and smoked fish were mainly processed by joint ownership businesses at 67 percent and 73 percent, respectively. A majority of women-owned businesses in the post-harvest sector are seasonal or microbusinesses.

UNIDO's (2021) study further noted that there are health risks for women in small-scale fish, crab and shrimp processing work. The study in the Tonle Sap lake in Siem Reap and Kampot provinces and in the Kampong Thom province, Cambodia, found such health risks include eye and lung irritation from smoking fish, back pain from sitting for long hours, and risk of lacerations when cleaning fish. Certain processes such as fish smoking cannot be stopped because fish perish quickly, which forces women to endure long shifts without lunch or sleep.

Women's micro fish processing businesses normally do not have modern facilities. In India's Sunderbans area, women dry and process fish and prawns from mid-October to end of January by using traditional salt curing methods (Roy *et al.*, 2017). They do not have access to modern methods such as mechanical driers, hygienic handling processes, and use of chemicals to delay fish decay. In lake Taal, the Philippines, fish processors, who are mostly women, claim that fish drying is the easiest method of fish processing, which is why it is done in the area (Mutia *et al.*, 2020).

**FISH PROCESSING COMPANIES OR FACTORIES:** Women dominate small-scale fish processing, but men dominate executive positions in fish processing companies and associations because of their superior access to capital (Prieto-Carolino *et al.*, 2021). Women wash, grade, and pack while men supervise, manage office workers, and perform labour-intensive work such as loading and unloading of containers



(Joshi, 2016). In Mindanao, the Philippines, frozen product processing companies are owned by men (Prieto-Carolino *et al.* 2021). In Thai Union Group, a major seafood company in Thailand, women occupy only 18 percent of senior-level management positions and are completely absent in board positions (Siles *et al.*, 2019). However, this differs by country and company. In tuna value-added processing plants in the Philippines, there are cases of women serving as presidents, vice presidents, department or division heads, and their husbands may have other work or assist them in their tasks. Additionally, women also work as supervisors and managers responsible for production schedules, production volumes, hiring, training, finance and pricing of products (Prieto-Carolino *et al.*, 2021).

The top management of fish processing companies may be dominated by men, but the workers are usually dominated by women. The canning and prawn processing factories are dominated by women workers in the Philippines, Bangladesh, India, and Malaysia (Prieto-Carolino *et al.*, 2021). Women are generally paid less than men, even for the same work. In addition, their jobs typically fall into the seasonal, short-term, and casual category, with contractual arrangements sans occupational protection or social benefits (FAO, 2013).

The study by Prieto-Carolina *et al.* (2021) on the tuna processing sector in General Santos City, the Philippines, is revealing in the context of gender dynamics and power relations. The study found that women are more likely to experience sexual harassment in the workplace. But the male seasonal workers are the most marginalized. They are young, single, less educated from ethnic minority groups, have the least social protection, and receive the lowest salary. Moreover, women workers tend to have a higher education level and a better employment position compared to men in the sector at the same level. However, even with this, women in the tuna processing sector still take care of all the household work, and husbands have authority over their wives' autonomy on getting a job.

Women and men are under bonded labour to boat owners in different ways – men through fishing and women through onshore processing. Belton, Marschke and Vandergeest (2019) studied a case where internal migrant men in the Mon State in Southeast Myanmar are employed mainly on offshore boats while internal migrant women work onshore in dried fish processing, often for the same large-scale fishing operations as their husbands. It is common for men working in the inshore bagnet fishery to be advanced three months' worth of wages (USD 200-290). Women involved in onshore processing in the same fishery are advanced even larger amounts, averaging USD 370-445. The advances allow the boat owners to keep the workers during the rainy season when fishing work is scarce, and ensure sufficient labour for the following season. Because of labour scarcity, and since women's work is onshore, there seems to be some level of freedom in how women work, but employers create various barriers, such as providing them advances, to prevent women workers from leaving.

**FISH TRADING AND MARKETING:** Women dominate fish trade in terms of numbers, but they tend to be concentrated in small-scale trade. The gender division of labour in trade differs across locations. In

Bangladesh, men dominate both retail and wholesale trade; in Cambodia, women dominate both, and in the Philippines, women dominate retail trade and men dominate wholesale trade, and in all these three countries, exports are dominated by men (Weeratunge *et al.*, 2012). In Palawan, the Philippines, men are involved in packaging and transporting, while women are involved in actual selling and assisting in packaging (Dagaraga *et al.*, 2018).

In some places, women traders are absent, such as in Bangalore, India (Jyotishi *et al.*, 2021). In the city of Trincomalee, Sri Lanka, Muslim women are engaged in clam and mussel retailing in the market (Lokuge and Hilhorst, 2017). In the floodplains of Cox's Bazar district along the Bay of Bengal and in the northeastern region of Bangladesh, the fish market is viewed as a masculine space and fish retailing is considered masculine work and, consequently, women are barred from participating in it (Deb, Haque and Thompson, 2014).

Even when a woman is the main person engaged in trade, the business could be run under the name of a man. In Oton and Tigbauan, Iloilo province, the Philippines, Sergestid shrimp trading is done through commission houses called *komisyonista*. These houses bear the name of the husbands while the actual operations are done by women and children (Iguban, Andres and Ferrer, 2017).

In Tamil Nadu, India, women fish traders have a significantly lower mean income than male fishers because women generally trade locally, while men are intermediaries or exporters and work for companies, having wider geographical range in fish sourcing (Novak Colwell and Axelrod, 2017). Such large geographical coverage allows men traders to have a more stable income than women traders. In Mindanao, the Philippines, women had more difficulty in bargaining on price when marketing processed tuna compared to men, who were able to close deals faster (Prieto-Carolino *et al.*, 2021). In Cambodia, women engage in small-scale cross border fish trade, but this has been threatened by large-scale fish exporters who are predominantly male (Kusakabe and Sereyvath, 2014).

Women traders lack access to convenient and affordable transportation that would bring them to their destinations, which are usually far from their homes. This makes it difficult for them to participate in trade activities. Women fish mongers in Kerala, India, had to vend fish in the market at night because of the gendered constraints they faced during the day. They faced difficulties in transport, being harassed or barred from buses because of the fish they were carrying, which produces a strong smell (Aswathy and Kalpana, 2019). Women fishmongers have to hire rickshaws driven by men because there is no alternative transport back to the village by the time they finish, at around 11pm to midnight. They have been accused of seducing drunken men to buy their fish, and their attire criticized as being designed to attract men. Waiting for rickshaws driven by men in the middle of the night adds to the accusation that they are seducing men (Aswathy and Kalpana, 2019). On the West coast, Gujarat, India, women can only sell fish in small quantities because they have no access to fast transportation (Joshi, 2016). In the Vembanad

estuarine system, Kerala, India, owing to lack of transportation, women have to leave home as early as three in the morning to go to the fish harvesting site to procure fish to sell (Sruthi, Jayalal and Gopal, 2016).

In India's Sunderbans region, women carry fish on their heads to sell door-to-door or at the local market, while men use mechanized bicycles, Three-wheelers, and lorries to transport their goods (Roy *et al.*, 2017). In lake Taal, the Philippines, male fish traders have access to motorized boats, which facilitate convenient and faster travel to the market. However, female fish traders rely on public boats and also pay for transportation to go to the market, forcing them to sell their products to intermediaries who control the price of the fish (Mutia *et al.*, 2020).

Deteriorating infrastructure can push women out of the market. As a reaction, women create spaces for themselves, which allows them to carry on with their fisheries-related activities. For example, in Patna, Bihar, India, women traders, who had been trading for over 20 years, were driven out of the marketplace due to the deteriorating infrastructure, worsening safety and security, poor hygiene, and harassment from men (Kumari, 2016). Men ignored women's needs, saying that women were unable to handle fluctuating prices. In response, the women resorted to selling in unauthorized spaces in roadsides and pavements in residential areas (Kumari, 2016).

In General Santos City, the Philippines, women traders have a limited but relatively stable foothold in the male-dominated General Santos City Fish Port Tumbler complex (Pavo and Digal, 2017). The port's male domination prevents women from establishing any formal business. Women were able to circumvent the port's rule prohibiting micro-businesses by making sure their business of bread vending, fish vending, and cell phone loading benefits denizens of the port without causing any trouble. The port has a system of trust and honesty that is more valued than economic gains, as a violation of the trust can mean exclusion from the space. Women respondents were able to secure this trust by cultivating a good relationship with others at the port.

## **4.2. GENDERED ACCESS TO RESOURCES**

Gender inequality in access to resources exacerbates women's weak position in fisheries and prevents them from contributing to and benefiting from fisheries activities. The term "resources" here covers not only tangible resources such as infrastructure and finance, but also intangible resources such as connections and leadership. This chapter reviewed gender differences in access to resources in fisheries: fish, education, technology, finance, boats and infrastructure, resources for post-harvest activities, leadership and participation, networks and collective action.

#### 4.2.1. Gendered access to fish or aquatic resources

A multi-country (Cambodia, Thailand, Viet Nam, Bangladesh, India, Sri Lanka) study on value chains and markets categorized access to fishing resources into three levels – primary, secondary, and tertiary. These levels are gendered and influenced by power dynamics (Rajaratnam, Ahern and McDougall, 2020). In the Pursat province of Tonle Sap lake, Cambodia, most women in the fisheries sector have secondary or tertiary access to value chains and markets. Primary users have access to their own catch, secondary users receive fish or have to negotiate with their husbands or family members to process fish in exchange for a share of the profit, and tertiary users must purchase fish from market for resale with usually a lower profit margin (Kwok *et al.*, 2019).

Access to fish is crucial for women fish vendors. In lake Taal, the Philippines, women with husbands who fish can acquire fish directly from their husbands to process instead of having to buy it from other sources (Mutia *et al.*, 2020). Also in the Philippines, in the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, for women fish processors, the seasonal availability of fish species can cause shortages in product deliveries from their market partners (Pedrajas *et al.*, 2018). Hence diversifying their access to fish is a necessity for women carrying on the business the whole year. In Kerala, India, women keep their business going for 300 days a year, whereas men only work for a seasonal 100 days per year. Women traders need to buy from different fishers and women's ability to diversify their fish access gives them a more stable income (Rajaratnam, Ahern and McDougall, 2020).

Women vendors and processors, in an effort to secure their access to fish, have turned to using fish that is more readily available. In the Philippines, a partnership between the Filipino women's conservation enterprise group and a local women's fish processing enterprise succeeded in testing less exploited species such as flying fish as potential new products (Pedrajas *et al.*, 2018). Again, in the Philippines, research on tilapia-malunggay patties showed that women can process and sell this product to earn additional income, and the patties were positively received (Frayco *et al.*, 2018).

Women's access to aquatic resources can be restricted by policies, but women fishers fight for their access. Frangoudes and Gerrard (2019) showed a case in India, where the establishment of marine protected areas (MPAs) affected women's seaweed harvesting activities. In the Gulf of Mannar, India, the establishment of a marine national park in 1986 and the restriction on harvesting of seaweed in year 2000 had officially forbidden seaweed harvesting. Authorities perceived that women's seaweed harvesting destroyed coral. They were allowed to harvest only 12 nights a month and later, authorities imposed an additional 45-day ban period. This has disrupted women's livelihood because they were dependent on seaweed harvesting. Women resisted the ban by not using modern equipment such as gloves and goggles

but their efforts were still prohibited and met with harassment from the state. In response, in 2014, after receiving training from the International Collective in Support of Fishworkers, the women demanded that they get access to compensation for the additional 45-day ban, which was given only to the male head of households since women were not recognized as fishers. These battles led to higher recognition of women in fisheries, and women received identity cards as fishers and equipment for seaweed harvesting.

Recognition of women in fisheries is important to ensure their access to aquatic resources. Seagrass is often not included in marine protected areas, but this is a habitat that women gleaners use as a source of food security and income. Hence, Quiros *et al.* (2018) argued that seagrass be included in the MPA so that it can be protected.

#### **4.2.2. Access to education**

A large majority of the population in fishing communities worldwide have low education or are uneducated, with women being less formally educated than men (Asir Ramesh, Bindu and Karthi, 2019; Biswas and Rao, 2014; Chapsos, Koning and Noortmann, 2019; Febri *et al.*, 2017; Fitrianggraeni, 2019; Kwok *et al.*, 2019). Lack of education can limit women's choices in work (Joshi, 2016). A study on the role of women in small-scale fisheries of Langsa City, Indonesia, found that women have lower education levels than men as well as compared to the national average for women, which limits their job choices. In Tamil Nadu, India, the majority of women fish traders are uneducated, which made it difficult for them to diversify their income during periods when fishing is banned, and also to have their voices heard in development policies affecting them (Febri *et al.*, 2017). Munir (2020) noted that women and girls in the fishing communities in coastal Bangladeshi districts lag in general education performance compared to those in other districts.

In Karachi, Pakistan, there are girls who started working in fisheries when they were as young as 15 years. The majority of women in the fishery sector of Karachi are illiterate, because they quit their education to work in order to support their families (Manzoor *et al.*, 2015). In Bangladesh, there are children who work in shrimp processing plants for nine hours without a break, preventing them from going to school. These factories have such a bad name for security that it mars the reputation of unmarried girls working there, potentially affecting their marriage prospects (FAO, 2013).

In Indonesia, a study found that some illegal fishing activities are a result of the fishers' lack of knowledge on the legality of fishing (Chapsos, Koning and Noortmann, 2019). Another research study in the Komodo district found that incomplete primary education is strongly associated with severe food insecurity (Gibson *et al.*, 2021). The same research also points out that maternal education gives women the knowledge to delay having children and instead focus their efforts first on productive activities and self-improvement.

Education can bring empowerment as it can give the person the knowledge and awareness to critically assess and understand their situation as well as the opportunities for them to improve their situation (Kwok *et al.*, 2019). Education and training are not only through formal channels, but also through indigenous knowledge transfer. In the city of Trincomalee, Sri Lanka, Muslim women gleaners received the skills and knowledge of their trade (including the skills of rowing and diving to harvest prawn, crab, and seaweed) from their families as it is traditionally passed on (Lokuge and Hilhorst, 2017). In the Pantar Island, Indonesia, education, along with family businesses, gives women an advantage in entrepreneurship (Fitriana and Stacey, 2012).

In the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, the Philippines, a social marketing campaign named C3 (Cool, Clean, Care) provided women with training and equipment to enhance their post-harvest practices with ice, clean water and equipment (Pedrajas *et al.*, 2018). Additionally, women processors and traders were taught to improve quality and reduce damage. The results are higher demand for fish products and reduced fish product spoilage. Higher-value products for niche markets, and food safety were also promoted to the local communities.

#### **4.2.3. Access to technology and training**

Technology can provide advantages as well as disadvantages to men and women in the fisheries sector. The introduction of machinery in fishing has benefited fisherwomen in some areas in India, but had an adverse effect in other parts of the country (Biswas and Rao 2014). Mechanization increases the fish catch, which can benefit women processors and traders. But the introduction of mechanized fishing in Vypeen Island in Kochi has changed the flow of fish and led to less fish coming to the Island, affecting women's employment from fish processing (Srinath, 1986 in Biswas and Rao, 2014). The introduction of automation in net making (Vivekanandan, 1988 in Biswas and Rao, 2014) also deprived women of earnings from net making.

Extension services are dominated by males, and in many South Asian countries, male-female contact is not allowed socially (Biswas and Rao, 2014). Women have more difficulty than men in obtaining new technologies because of their restricted mobility. For example, in the Talaud Islands district in North Sulawesi Province, Indonesia, the government provided training on making fish balls but women had difficulty attending because they did not live on the islands where the training was conducted and lacked convenient transportation to go there (Alami and Raharjo, 2017). In the Tonle Sap lake in Siem Reap and Kampong Thom provinces and in the Kampong Thom province, Cambodia, fishers were interested in the training, but they missed the training programme because they were not aware that it existed (UNIDO, 2021).



Training can be an important driver of change, but women often miss out on it because of their low education and lack of information about the availability of training. In India's Sunderbans region, fisherwomen could not participate in training and extension programmes because of their low literacy and very little information awareness on the training. Even if the women could attend, the training programmes are reported to be not gender sensitive (Roy *et al.*, 2017). In Palawan, Iloilo, Leyte, Eastern Samar, Western Samar, Northern Samar and Tawi-Tawi, the Philippines, both women and men fishers were uninformed about scientific knowledge that is important for sustainable fishing. Very few men and women could distinguish between male and female abalone, they did not know spawning behaviour, and they did not know how to avoid the spawning season, which is problematic because it does not give time for the abalone to mature, and causes a repopulation problem (Prieto-Carolino *et al.*, 2018).

#### **4.2.4. Access to finance**

Access to finance is important to increase household income and for women to start, grow their businesses or both. Based on a study in West Bengal, India, Gopal *et al.* (2012) pointed out that even though the income effect through microcredit for women was less than that of men, women felt that access to microcredit improved their social status within the community and allowed them to travel outside the village more frequently. In the coastal area of the Philippines, Pomeroy *et al.* (2020) found that women with access to financial services, such as bank accounts and savings mechanisms, may have better control over their earnings and be able to take on more personal and productive expenditures. Also in the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, the Philippines, Pedrajas *et al.*'s (2018) study found that saving clubs can be used as shock absorbers for women, which can encourage them to change their financial management style from day-to-day survival to longer-term financial savings.

In the states of West Bengal, Odisha, Andhra Pradesh, and Tamil Nadu, India, women in general have less access to financial resources than men because of socio-cultural restrictions, their low literacy, and lack of assets (Biswas and Rao, 2014). Evidence from livelihood projects and programmes for fishing communities across the Philippines showed that constraints preventing access to loans include lack of collateral, lack of experience with formal credit, inflexible repayment schedules and fishers' irregular or seasonal cash flow, as well as existing loans (Pomeroy, Ferrer and Pedrajas, 2017). Although these constraints apply to both women and men, evidence from the Tonle Sap lake area, Cambodia, shows that women's lack of resources places women at a bigger disadvantage than men. Women with abusive husbands experience even more difficulties in borrowing money, since the money can be taken away by the husband and women are left with repayment responsibilities (Locke *et al.*, 2017).

In the two coastal cities of Semarang and Pekalongan, in the north coast of Java, Indonesia, women are the ones who manage the household finance (Anna, 2012), so they get loans not only for business but also for household expenditure when household income is insufficient. Evidence from General Santos City in

South Cotabato province, the Philippines, shows that even though women get access to loans, they often lose control over the borrowed money to men in the household (Prieto-Carolino *et al.*, 2021). In lake Taal, the Philippines, and evidence across livelihood projects and programmes for fishing communities in the Philippines, women are the ones who go to borrow money, but the money is largely used for purchase of fishing gear and boats (Mutia *et al.*, 2020; Pomeroy, Ferrer and Pedrajas, 2017).

Lack of access to financial resources is also an issue faced by men. In Tamil Nadu, Rao and Manimohan (2021) demonstrated how poor men migrate to earn money so they can move from being labourers to gain status as fishers, and save money to buy boats and gear (see Boxes 2 and 3 for different ways of accessing credit).

### **Box 2. Savings groups in West Sumatra, Indonesia**

In Sungai Nipah, Pasisir, small-scale fishers of the village started a credit group between 2008 and 2009, but it failed due to disagreements among members and leaders. The group revived in 2010 under a new leader with fishing experience and encouraged group unity. Prior to receiving financial aid from the government, the group made weekly savings of “social funds”. The group, consisting of 45 members, borrowed money from the social funds to buy boats, machines, and fishing gear. Many fishers borrowed multiple times from 2011 onwards and the repayment rate was reported to be 100 percent. Fishers who were unable to save earlier, reported that they now have a personal bank account and savings for the future. The group’s success was owing to the flexible repayment method, which accommodated the fluctuating financial needs of fishers based on weather conditions as well as their health. The repayment was calculated as 10 percent of the amount that the wives earn by selling the husbands’ catch. In this way, when there is no catch, or the price is low, they do not need to make a high repayment. The group has high mutual trust and cohesion, with daily interactions and monthly meetings, which was vital for its success. The area also is rich in natural resources, and fishing and aquaculture activities brought enough income to fishers.

Another case in Air Manis Beach, Padang, was unsuccessful due to mismanagement and mistrust among members. This savings group, which started in 2003, initially planned to save funds to purchase a banana boat for tourists to provide supplementary income for their fishery activities. However, not all members agreed with the decision, and felt that the leaders were privatizing group resources. Some members stopped making repayments, but they were not penalized. Power relations in the group were skewed, and poorer members were unable to speak up. Some did not speak up, to avoid conflict. There were rarely any group meetings. Members started to default despite efforts by group leaders to encourage repayment, since they did not believe that the group was helping them. In the end, the group disbanded in 2011.

**Source:** Stanford, R.J., Wiryawan, B., Bengen, D.G., Febriamansyah, R. & Haluan, J. 2014. Improving livelihoods in fishing communities of West Sumatra: More than just boats and machines. *Marine Policy*, 45: 16–25.

UNIDO's (2021) study in the Tonle Sap lake in Siem Reap and Kampong Thom provinces and in Kampot province, Cambodia, argued women need capital, but refrain from borrowing since they are more worried about being indebted. Their responsibilities to cover household emergencies such as health issues make them more likely to borrow from relatives rather than from microfinance institutions. Locke *et al.*'s (2017) study in Tonle Sap lake area, Cambodia and Visayas, the Philippines, also showed that women have negative perceptions on loans (believing that taking loans brings unhappiness and insecurity), while men have a more positive perception (brings opportunity).

### Box 3. Access to credit through patron-client relationships

In Iloilo, the Philippines, there is a patron-client relationship called *suki*. In the “*suki*” arrangement, clients, after taking loans and repaying them, in many cases enter into an inflexible and long-term agreement with their patrons, based on a feeling of indebtedness and gratitude. Most clients (both women and men) do not change their patron even when other patrons pay a better price, and prefer borrowing money through *suki* arrangements rather than from other sources, such as microfinance.

The loan size and frequency are decided according to the fishers' catch, their needs and requests, the patron's available capital, and the fisher's loyalty to the patron. The financing is commonly done daily or weekly for fuel, gear and equipment as well as family-related expenses. The patrons are often buyers of the fish, and fishers have to sell the fish to the patron. Therefore, the repayment of *suki* loans depends on the catch. Patron brokers set the price of fish and take a percentage in repayment (Drury O'Neill *et al.*, 2019).

Similar patron-client relations are seen in Cambodia. In Tonle Sap, Cambodia, poor fishers who are unable to borrow money from financial institutions will borrow money or buy gear and groceries on credit from a *moy* (patron). In repayment, fishers sell their fish to the *moy*, even when the price offered is lower than the market price. At the same time, the repayment schedule is negotiable (Locke *et al.*, 2017).

Anna (2012) argued, citing examples from the north coast of Java, Indonesia, that most government programmes provided direct subsidies and targeted fishers. However, the programmes often end in failure because the funds are mismanaged, and do not go to women who actually manage the household finance.

**Sources:** Anna, Z. 2012. The role of fisherwomen in the face of fishing uncertainties on the north coast of Java, Indonesia. *Asian Fisheries Science Special Issue*, 25S: 145–158.

Drury O'Neill, E., Lindahl, T., Daw, T., Crona, B., Ferrer, A.J.G. & Pomeroy, R. 2019. An experimental approach to exploring market responses in small-scale fishing communities. *Frontiers in Marine Science*, 6: 1–16.

Locke, C., Muljono, P., McDougall, C. & Morgan, M. 2017. Innovation and gendered negotiations: Insights from six small-scale fishing communities. *Fish and Fisheries*, 18(5): 943–957.

#### 4.2.5. Access to insurance

Fishers in general do not have access to health and social security or insurance but women have even less access than men. In the province of Iloilo, the Philippines, low-income women have reported fewer prenatal visits, and their small income and assets limit their access to maternal health services (Parcon, Baliao and Balinas, 2016).

Women's absence from fisher organizations deprives them of access to insurance. Women are largely involved in post-harvest activities, but because fish processors are not considered fishers, they are often not registered in fishers' organizations. For example, in Southeast Sulawesi province, Indonesia, men are registered in the national fisher registration system more than women, giving them access to emergency and life insurance as well as to credit. Women work in the informal sector and are not covered by social protection for health, employment and other emergencies (Campbell *et al.*, 2021). In Malaysia, women fishers experience the worst poverty outcomes from being deprived of insurance, followed by inadequacies in monthly income, health, and education (Solaymani and Kari, 2014).

#### 4.2.6. Access to boats and infrastructure

In coastal areas in Cambodia, women comprise only 3 percent of vessel owners (UNIDO-FiA-MAFF, 2015). Poor infrastructure and equipment lead to large post-harvest quality losses, resulting in lower incomes throughout the value chain. This affects both genders, but more so women due to family responsibilities and poor access to transport facilities to reach distant markets (FAO, 2013). Infrastructure includes landing centres, ice factories, roads, public health facilities, electricity, cold storage, freshwater, and net mending sheds. Lack of such facilities is a great challenge for women (UNIDO-FiA-MAFF, 2015). UNIDO's study (2021) in the Tonle Sap lake in Siem Reap and Kampong Thom provinces and in Kampot province, Cambodia pointed out that the micro-enterprise sector suffers from low purchasing power, lack of infrastructure, lack of access to clean water, limited and expensive electricity access, competition from imports, lack of domestic technology, low education, and lack of technical training and extension services. Both female and male operators of the post-harvest fishery industry said they were uninterested in expanding their business because of the constraints.

In some cases, there are additional local expenses to transport fish to the market. For example, in South Sulawesi, Indonesia, there are fees for market access, fees for motorbike parking, and tribute for passing certain areas, like a village, which must be paid in fish or diesel. Such additional expenses place a heavier financial burden on fish traders, who are dominantly women (Nurbayani, Nursini and Zamhuri, 2021).

New innovations can help fisherwomen. Modified rickshaws have improved the quality and workload of mobile fish vendors in India. Each vehicle is equipped with a fish storage chamber, insulated ice box, water

tank, fish dressing deck with washbasin, cutting tools, waste collection chamber, toolbox, and working space. The vehicle itself is made of fibre-reinforced plastic (FRP), which reduces its weight and improves its ergonomics (Kruijssen *et al.*, 2020) (also see Box 4).

In Thailand (Kusakabe, Serey and Phoomivas, 2020), fishers have claimed that the government's fishery regulation, implemented in 2015 in response to the European Union's yellow card warning on claims of human trafficking and lack of monitoring in the Thai fisheries' supply chain, is draconian and has negatively affected them. Both male and female fishers have said the ban has forced Cambodian migrants to return to their country, which drastically reduced the population of the fishing community in Thailand and the economic activities there. Male marine fishers claimed the ban did not take into consideration that following the new regulations would entail installing a vessel monitoring system (VMS) and other equipment and facilities on the boats, at their own expense, with no government aid. Many large boat owners, all men, had to either dismantle or permanently beach their fishing vessels because they could not afford the change. Some fishers changed to small-scale fishing with smaller traditional boats or moved to alternative jobs such as farming if they had the land. Female fishers who worked in post processing or directly participated in marine fishing claimed they were affected by the ban in the same way, since with little or no fish harvested, they could not perform their post-harvest work. Non-fishery activities in the community were severely affected as shops and lodgings were dependent on the patronage of the departed Cambodian migrant workers.

Similarly, in Phan Thai Norasing, Thailand, the government's illegal, unreported and unregulated (IUU) fisheries regulation had a detrimental effect on fishing activities as fishers were unable to use boats and nets for fishing anymore (Kheuntha, 2017). Before the regulation was introduced, women did not go fishing but worked on shrimp processing. But after the ban, some men demanded their wives join them in their marine fishing activities. This is a significant change since certain communities in the area had a taboo that prohibited women from boarding boats. Women ended up losing sleep time as they had to not only attend to their day jobs but also need to be on the lookout at night for patrol boats to warn their husbands and sons engaged in illegal night fishing.

#### **4.2.7. Access to post-harvest activities**

UNIDO (2021) noted that women in low-income fishing households in the Tonle Sap lake in Siem Reap and Kampong Thom provinces and Kampot province, Cambodia, manage their household expenses through post-harvest work. However, they suffer from lack of access to capital and modern technology, especially because of dearth of resources, mobility, bargaining power, and time. This lack of resources leads to their being less compliant with standards – such as reporting the origin of their products, specifying



#### Box 4. Improving sales with well-designed fish vending vehicles in India

Transport has been identified as one of the weak links in the supply chain, partly responsible for the 30 percent loss in fish during transportation. Small fish vendors find it difficult to sell their produce in hygienic conditions due to lack of affordable fish vending carriages and structures. Work in the fisheries industry is segregated by gender, with men catching fish and women selling fish, especially at the small and micro levels. Door-to-door vendors carry the fish on a bicycle in a plastic container filled with ice. However, they can only travel smaller distances, which has restricted the quantities of fish as well as the income and profit they can earn.

To address these problems, the National Fisheries Development Board (NFDB) of India has experimented with four-wheeled and two-wheeled mobile fish vending vehicles. The mobile fish vending trolley was developed to improve the livelihood of marginal fish vendors by increasing their daily sales as well as improve the consumer experience by promoting hygienic methods of fish marketing. With the potential to increase income generation by selling up to 100 kg fish per day, 100 000 vehicles are planned to be sold to fishermen and fisherwomen across India.

The rickshaws come equipped with a single fish vending carriage that is fitted with a fish ice storage unit, a cutting deck, a wash basin, and a waste collection box. The base weight of the rickshaw is 150 kg and at maximum carrying capacity it weighs 333.42 kg. Its design principle is that it can be operated by any fisherwoman and fisherman across the country. The material used is fibre-reinforced plastic (FRP) which has seen successful usage as portable fish hatchery and fish feeders because it can act as a good insulator with a thermal conductivity of 0.04 w per mK at a normal room temperature of 25 degrees Celsius. The FRP also has high strength compared to other plastics and is easy to fabricate and maintain.

Additionally, the Indian Council of Agricultural Research (ICAR) has signed a Memorandum of Understanding (MoU) with the Society for Assistance to Fisherwomen in Kerala as part of the Theeramaithri project. The MoU includes the fabrication and installation of 20 mobile fish vending units for women self-help groups (SHGs) to assist in their vending and marketing efforts. This variation of the vending unit has a containment unit made of food grade stainless steel that can keep the fish stored at a temperature of 2-3 degree Celsius, can carry about 20-30 kg of fish, and under ideal conditions, it can extend the shelf life of fish by 4 to 5 days. It costs around Rs 55 000 plus taxes.

However, there is a need to support individual women vendors with financial, technical, and social services to purchase mobile rickshaws and increase their sales. In the absence of such a concerted gender-specific support, women will remain marginal fish sellers at markets, while men's mobile fish businesses grow.

**Sources:** ICAR-Central Institute of Fisheries Technology. 2019. ICAR-CIFT signs MoU with SAF, Department of Fisheries, Government of Kerala. Indian Council of Agricultural Research [online].

Mohapatra, B.C., Sahoo, P., Majhi, D., Anantharaja, K. & Jayasankar, P. 2017. Design and development of FRP mobile fish vending trolley for hygienic fish marketing. *Journal of Applied and Natural Science*, 9(1): 19–23.

the manufacturing and expiry dates, or other safety standards.

A number of women's groups have been successful in pooling their resources for successful businesses (see Box 5). However, since women have weak influence in the value chain, such joint businesses do not always work; small enterprises need to prioritize vertical linkages with suppliers and buyers rather than horizontal linkages with other producers (Kusakabe, 2016).

Women vendors have less access to capital and suffer from high expenditure on transport and ice. M-commerce introduced in coastal Karnataka, India, aimed to alleviate this expenditure pressure (Box 6).

Women are reported to have less access to information and technology. Prieto-Carolino *et al.* (2021) noted that in Bolinao, the Philippines, women have limited access to commercial processing technology although they expressed a desire to know more about them. Some policies such as those on catch documentation and traceability are also not known to these women.

A study of fisherwomen in Kerala found that value-added fish producers felt empowered (46.78 percent), followed by retailers (45.09 percent), vendors (43.92 percent) and dried fish makers (43.42 percent) (Salim and Geetha, 2013). Interestingly, the sense of empowerment was more in the realm of politics rather than socio-economic or legal. Fisherwomen, especially the fish processors and marketers, showed strong interest in politics and participation in the political process. Fisherwomen felt discriminated against in handling bulk quantities of fish and fishery products, transportation, storage, access to credit from institutional agencies and difficulties during auction. Women had more freedom in the social aspects such as attending religious events, caring for the family's health, purchasing assets for the home, choice of guests and entertainment at social functions and buying gifts for social functions. However, the fisherwomen had very little freedom to decide on their husbands' habits and business.

### **Box 5. Group enterprises of women**

In a study of women's leadership and household resiliency and sustainable fisheries in the Philippines, the conservation enterprise group found that women processors can improve the quality of their product and processing by improving fish handling to meet higher demand and passing safety standards to earn high-value labels for their products. The labels state that the consumer is buying responsible seafood products and their purchase supports sustainable fisheries. All of this has allowed them to access premium markets. These efforts resulted in total sales of PHP 500 000 of responsibly sourced seafood product over a period of nine months. These activities have also improved women's confidence in marketing.

**Source:** Pedrajas, J., Belinario, Ma.F.M., Lomboy, C. & Blanco, M. 2018. Enabling women to be leaders of change in building household resilience and sustainable fisheries. Paper presented at 9th National Conference on Gender and Fisheries, 7-8 November 2018, Bacolod City.

### **Box 6. Factors influencing m-commerce adoption among women fish vendors in Karnataka, India**

Though coastal Karnataka, India, is famous for its marine fishery trade and commerce, lack of infrastructure and technology causes fisherwomen to be marginalized and exploited by large traders in the highly competitive markets and results in a decline in their livelihood. An issue that fish retailers experience is not being able to quickly reach the customer on the same day; this decline of freshness forces retailers to sell the fish quickly at a lower price. Mobile commerce or 'm-commerce' has the potential to increase women vendors' income and quality of life because it would enable the user to make direct transactions with the customers.

A study was done on the adoption of mobile commerce or 'm-commerce' among women fish retailers in Karnataka through a survey conducted among 383 women fish retailers across 26 fish markets, in 191 marine fishing villages in the three districts of Udupi, Uttara Kannada and Dakshina Kannada. The aim was to study the factors affecting degree of acceptance, zeal to learn and willingness to experiment on technology change and shift in trade practices with a digital platform. The survey found that 63.4 percent of the respondents (243 women) expressed interest in digital literacy training and 59.8 percent (229 women) expressed their willingness to apply m-commerce in their day-to-day business.

Younger vendors with higher education, having a debit card and awareness about cashless payments are more willing to use m-commerce. However, there were variations across the districts in terms of what had more significant value – in Udupi this was awareness about cashless payments, in Dakshina Kannada it was SMS use, and in Uttara Kannada it was education and having a debit card. Local factors play a major role in influencing women vendors, making it important to conduct a survey at each location to identify the relevant determinants at each location.

**Source:** Prabhu, R. & Joshi, H.G. 2018. Determinants of willingness to adopt m-commerce among fisher women retailers in Karnataka, India. *Agris on-line Papers in Economics and Informatics*, 10(4): 59–64.

When it comes to fish processing factories, the majority of women occupy the lower tiers of post-harvest fishery jobs, often classified as 'unskilled' or 'semiskilled' and thus are not entitled to benefits and social security (Alami and Raharjo, 2017; Salim and Geetha, 2013). Women get significantly lower wages than men for doing the same jobs, averaging around 80 percent of the male wage in shrimp factories in southern Bangladesh (Allison, 2011). Nevertheless, competition among women for such jobs is high, because there are few options in rural Bangladesh. On the Surma River, Bangladesh, women sun dryers earn half of their male counterparts despite performing exactly the same job (Siles *et al.*, 2019). Again, in Bangladesh, women earn about a dollar a day and work in poor conditions with no benefits and face harassment

and risk of arbitrary dismissal; however, they still have to work because of high job competition and few alternatives (The WorldFish Center, 2011; Hossain, Belton and Thilsted, 2015). The same study found that the amount of work the women do entirely depends on the fish supply available and they are not paid when there is no fish available for processing (Hossain, Belton and Thilsted, 2015). In Bolinao, the Philippines, protective clothing is supposed to be provided but only a few received such gear (Prieto-Carolino *et al.*, 2021).

#### **4.2.8. Women's leadership in fisheries management**

Women are underrepresented in environmental management processes and decision-making (Leslie *et al.*, 2018). In Kerala, India, a study found that: (i) women do not have access to knowledge on legal establishments; and (ii) fisherwomen of Kerala also have less awareness on the women's reservation bill, elected representatives, and have less influence in elections and low membership in political organizations (Salim and Geetha, 2013). In Viet Nam, research into social and cultural considerations affecting environmental management for vulnerable coastal communities found that women are underrepresented in environmental management processes and decision-making (Leslie *et al.*, 2018). A governance analysis of Nha Trang Bay and Cu Lao Chan Marine Protected Area shows that the Women's Union in Viet Nam is involved with MPAs but only in terms of connecting the authorities with local communities. This limitation is because of the vertical function of the government, which does not allow Women's Union to be part of the central action of the MPA (Khuu, Jones and Ekins, 2021).

The situation is no better in the corporate sector. A 2018 global study of the top 67 seafood companies found that: (i) women received only 20 percent of 820 speaking opportunities at 20 seafood-related conferences; (ii) men hold 90 percent of all directorships; and (iii) 54 percent of the sample companies are run by men, without a single woman director or board member (Briceño-Lagos and Monfort, 2018). A 2016 analysis of 71 major seafood companies from all over the world confirmed that women are rarely CEOs, with only one woman among them (Undercurrent News, 2016).

Women are visible as owners of small businesses. In Cambodia, the retail and wholesale sector has the largest proportion of women-owned businesses. A UNIDO (2021) study in the Tonle Sap lake in Siem Reap and Kampong Thom provinces and Kampot province, Cambodia, showed that women comprise 80 percent of fish retail and 50 percent of fish wholesale business. Among processing businesses, women own 42 percent, while joint ownership is most common at 55 percent. In fish collecting activities (middle traders), women-owned businesses accounted for only 32 percent, with joint ownership at 53 percent, although the sample size is too small to draw broader conclusions. Wholesale has a largely equal share of women and joint-owned businesses.

Women are poorly represented in fishery associations. The same UNIDO (2021) study of fisheries

processing units in Cambodia (around Tonle Sap lake and at the coastal Kampot province) found that only 10 out of 88 processors are members of associations; six women-owned and four joint-owned. Women-owned processors are more likely to be an association member, but women are not among the executive ranks of these associations.

In areas of Cox's Bazar, Dublar Char, and northern Bangladesh, all fishing boat crews and captains are part of professional associations that can represent them when there is a dispute with employers, but fish processors, who are mostly women, do not have such a benefit (Belton, Hossain and Thilsted, 2018). In General Santos City, the Philippines, the all-male fishery leadership of tuna processing companies and associations did not introduce childcare and pregnancy care that could benefit women workers (Prieto-Carolino *et al.*, 2021). A case in Bangladesh suggested that to navigate a male-dominated association, women must develop good relationships with other women and men with similar goals of improving their business opportunities (Deb, Haque and Thompson, 2014).

#### **4.2.9. Women's participation in decision-making in the community**

Women's leadership is critical to fisheries management. Dasig's (2020) research on women's leadership in fisherfolk organizations from the Bolinao municipality in the province of Pangasinan in the Philippines found that alleviating women's domestic responsibilities enabled them to participate in stronger leadership and management roles, both within their families and in their communities. A once male-dominated fishery organization was made more efficient when it was replaced by female leadership because the woman leader abolished the male leaders' practice of post-work drinking that was draining the organization's resources.

In conservation efforts, groups with women's involvement have a higher degree of success than exclusively male groups (Siles *et al.*, 2019). However, despite evidence that proves the effectiveness of women's involvement, oftentimes women are not involved in conservation projects and their needs are not met. Fishery communities, organizations and networks are a male-dominated space that generally misses out the needs of women fishers in the communities' decision-making processes, resource allocation and activities (Kwok *et al.*, 2019; Siles *et al.*, 2019). Kwok *et al.* (2019) noted in a Cambodian study at the Pursat province of Tonle Sap lake that although women and men participated in community meetings, women's opinions were valued less, they were not included as committee members, and there was a general perception that women are less capable of holding leadership positions. Such marginalization of women can lead to less knowledge on the consequences of environmental damage among women, and might show that women value environmental conservation less than men. Kwok *et al.* (2019) highlighted the importance of quality of participation among women and not just getting women to community meetings.



### **Box 7. Women's participation in fisheries management in the Philippines**

In the Philippines, Oslob Whale Sharks is a community-based tourism site where collective management of sustainable integrated coastal management is implemented. Women participate in the fisherfolk association. They also participate in coastal management and tourism activities including working as vendors, selling meals, and transporting tourists. Women fisherfolk were often unable to earn enough or earn a stable income from their gleaning and fisheries work. These tourism activities have given women fisherfolk new opportunities to learn new skills and diversify their income. As a result, women from Tan-awan and Oslob are able to decrease the time spent in gleaning and fishing activities, and at the same time have better income.

**Source:** Lowe, J. & Tejada, J.F.C. 2019. The role of livelihoods in collective engagement in sustainable integrated coastal management: Oslob Whale Sharks. *Ocean & Coastal Management*, 170: 80–92.

There is mixed evidence in terms of women's leadership and decision-making power in fisheries. Even though women play a major role in gleaning and post-harvest activities, they are ignored in the decision-making process, as shown by case studies from Indonesia and the Philippines (Anna *et al.*, 2019). In Bangladesh, women are excluded from fishery management decision-making both at home and in the society, especially because they are not directly involved in fishing (Munir, 2020). In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines, women are underrepresented in coastal communities' fishery leadership and management because of lack of time and interest: they only take up fishing when men are overloaded or disabled because of accidents (Torell *et al.*, 2021). Especially if there are no small children at home, gender roles are not fixed. However, it is

the men who decide whether women should be involved in fishing or not.

Other studies have shown that women have equal decision-making power with men. In Indonesia, Halim *et al.* (2019) found that women and men make joint decisions on social and domestic affairs. In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippine women perform fisheries management tasks such as finance, coastal clean-up, raising awareness of marine conservation while men focus on being park rangers guarding the marine protected areas. Women are considered to be better negotiators and conflict managers than men (Torell *et al.*, 2021). Women's participation in leadership can increase women's confidence or overburden them with responsibilities (Dasig, 2020). Women's participation in fisheries management has led to positive results for women, as can be seen in Boxes 7 and 8.

In coastal communities in the Philippines, men and women were equally likely to attend public outreach activities; however, women were more likely to be aware of community and municipal climate change

adaptation plans, reflecting their greater involvement in land-based or nearshore activities such as gleaning and seaweed farming, different from men's offshore fishing and fish farming (Graziano, Pollnac and Christie, 2018). A study on marine tenure and small-scale fisheries claims that fisherwomen appreciate the government's effort to foster capacities and knowledge in fisheries management and community development, which enable fisherfolk to have the confidence to voice their visions and issues in their communities (Pomeroy and Courtney, 2018). A study on responses to climate change in water management in Bangladesh found that women were a part of village conservation groups and NGOs (Sultana and Thompson, 2017).

Men are more likely to participate in the management process in subtidal marine protected areas in Danajon Bank, the Philippines (Kleiber, Harris and Vincent, 2018). The same study showed gender differences among the reasons for people not participating, for example, women cited that it is because they are not male or fishermen, while male respondents never cited their gender as a reason for not attending.

Community fishing organizations are diverse and dynamic, varying in formality, membership, and goals. Women are increasingly creating spaces for themselves by founding their own organizations and associations to advocate for their rights, share knowledge with one another, and design savings and credit facilities. Siles *et al.* (2019) noted that in 2010, the Women's Network for the Defence of Fisherfolk Rights was formed in Thailand to protect women's rights to access, use, and manage natural resources, and the Pakistan FisherFolk Forum (PFFF) achieved a high participation of women (approximately 50 percent). PFFF is a large network of 70 000 fishers working together to create a gender friendly and democratic environment that advocates for fishing rights, fish marketing, fish conservation, the rehabilitation of the Indus Delta, and community-based disaster risk management. The Forum's leadership recognizes the importance of women's roles and livelihoods within the community and, therefore, designs activities available and beneficial to them.

### **Box 8. Women's participation in marine resources management in Indonesia**

In Indonesia, a traditional style of management method called papadak or hohlok was introduced for marine resources management. Women participate in drafting and determining the rules of papadak or hohlok. This allows women's voices to be heard in an otherwise patriarchal culture. Women were included in the process because they were engaged in seaweed farming as an important income source. Women's involvement in papadak started to change the idea that women are only responsible for reproductive activities. All of this is an improvement because the Rote Ndao community in general used to consider women's position as complementary and that women cannot make any decisions at all.

**Source:** Oktavia, P., Salim, W. & Perdanahardja, G. 2018. Reinventing papadak/hohlok as a traditional management system of marine resources in Rote Ndao, Indonesia. *Ocean & Coastal Management*, 161: 37–49.

In the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, the Philippines, six conservation enterprise groups (CEGs) were created with more than 120 fisher households, with almost 90 percent led by women (Pedrajas *et al.*, 2018). Box 9 shows the benefit women get through participation in fishery organizations.

That said, women face barriers when it comes to leading community-based organizations. Despite the opportunities for women to be part of these organizations, women are often underrepresented, both as members and as leaders, due to social norms and a lack of recognition of women's roles in the industry. For example, in Cambodia's coastal Province, women's candidacy for elected leadership positions is not welcome, as patriarchal beliefs dictate that women are inferior to men in leading and decision-making (Sornkliang, *et al.*, 2018; Lund *et al.*, 2020). In a study in Cambodia, fishers reported that women's opinions were valued less than those of men (Kusakabe *et al.*, 2021). These reports suggest that while women's participation in fishery meetings may be high, their ability to influence decisions is limited. These factors can impede the extent to which women can meaningfully participate. Planning and governance in fisheries can more meaningfully address gender inequalities and allow women to be adequately represented (Kwok *et al.*, 2019).

In the Javanese culture, women's decisions on cooperative institutions are inseparable from their roles as housewives because of the patriarchal culture of the region, which dictates that men are the head of the household and are generally superior to women. Hence, support from husbands, emotional support included, is important for women to take part in the cooperative (Fitriangraeni, 2019).

### **Box 9. Case of Fisherfolk Organizations in Bolinao, the Philippines**

A study of fisherfolk organizations in Bolinao municipality in the province of Pangasinan in the Philippines showed that women's participation in fishery organizations gives them access to skills, training and seminars, which develop both their organization's and their own capabilities (Dasig, 2020).

Women of a savings club from the Philippines formed a conservation enterprise group to be both a business enterprise and an advocacy organization for fisheries' sustainability. In the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol women comprised 90 percent of the Conservation Enterprise Group.

**Source:** Pedrajas, J., Belinario, Ma.F.M., Lomboy, C. & Blanco, M. 2018. Enabling women to be leaders of change in building household resilience and sustainable fisheries. Paper presented at 9th National Conference on Gender and Fisheries, 7-8 November 2018, Bacolod City.

#### 4.2.10. Network and support

The family is an institution that is able to dictate to actors, especially women, on their freedom, contribution, and mobility in fishery activities, which affects their contribution to the household livelihood and income (Biswas and Rao, 2014; Hapke, 2012). Filipino fisherwomen in the Visayas Region said that their hard work and motivation are critical for them to innovate but they also want support and understanding from their family (Locke *et al.*, 2017). In Sama Bajo, poor Indonesian women have to rely on their immediate families, close relatives and neighbours for assistance, in the absence of alternatives (McWilliam, Wianti and Taufik, 2021).

In Trincomalee, Sri Lanka, women operate their fish selling businesses through their kinship network, wherein they receive fish from male relatives to sell, and receive a commission of 10 percent in return (Lokuge and Hilhorst, 2017). Through such close community and familial networks, women are enabled to participate in beach seine pulling activities alongside men (Lokuge and Hilhorst, 2017). However, because of the familial ties, their domestic responsibilities extend to the whole group, and women have to cook, collect water, and gather firewood for the whole extended family network. They also cannot venture far from the community because they are constrained by their care work (Lokuge and Hilhorst, 2017).

Support from husbands is critical to women's fishery participation as they can determine their wives' degree of participation in fishery activities as well as their assets and entitlements within the household (Biswas and Rao, 2014; Fitrianggraeni, 2019; Locke *et al.*, 2017). Males often have higher social credit and status in the patriarchal fishing communities so the man can use his own entitlements to the benefit of his female family members (Kawarazuka *et al.*, 2017). He can provide emotional support to encourage women to succeed in their endeavours and activities (Fitrianggraeni, 2019; Iguban, Andres and Ferrer, 2017).

On the other hand, evidence from the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines, shows that the husband can be unsupportive, or worse be a source of grief for women through physical and emotional abuse (Torell *et al.*, 2021). Women might feel intimidated, fearing men's withdrawal of support. In the Philippines, women who rely on the influence of a male relative in management positions sustain male dominance because while the woman can legitimize her position, it does not come from the woman herself but from the male relative's influence (Kawarazuka *et al.*, 2017). The lack of support from men can lead to women not being able to express their needs and opinions. In the Sekong River, the Lao People's Democratic Republic, women have expert knowledge from their fishing activities but they lack confidence to speak up in front of men. The women may agree with men's decisions without voicing their own concerns, and the local village could claim that women fishers did not serve on fishery committees because they do not understand fishery law (Moser, 2015).

#### 4.2.11. Women's groups and self-help groups

Women's self-help groups (SHGs) and networks have supported and enabled women's fishery activities (Siles *et al.*, 2019). Fishery SHGs run and operated by women are critical for the sustainability and expansion of women's fishery activities because they allow women to bypass male gatekeeping to conduct their businesses (Novak Colwell *et al.*, 2017). Women's SHGs also provide the necessary network that will allow them to be independent from intermediaries who can be exploitative (Pushp, Vala and Verma, 2017). In Maharashtra, India, women's SHGs were able to raise money to upgrade the amenities of the market, and issued identity cards to members, with which they can claim exclusive rights over sales of products without going through intermediaries (Salim and Geetha, 2013). In Pookaitha Island, India, women formed SHGs that worked together to collect clams, process the flesh and market it, which brought income to their families (Vipinkumar *et al.*, 2017).

In India, women's SHGs provide much-needed financial support. Women are able to access large group loans through SHGs (Novak Colwell *et al.*, 2017). In the municipalities of Ayungon and Bindoy in province of Negros Oriental, municipalities of Cantilan and Cortes in province of Surigao del Sur, municipalities of Looc and Lubang in province of Occidental Mindoro and municipality of Tinambac in province of Bicol, the Philippines, female-dominated fishery savings clubs helped mothers better manage their household budgeting. Women were able to afford education for their children, own physical assets, have access to networks and participate in fisheries-related projects (Pedrajas *et al.*, 2018). In the Pantar Island, Indonesia, women's SHGs pooled funds to process fish meal jointly and shared the profit among the members (Fitriana and Stacey, 2012). In Tamil Nadu, India, women's SHGs supported members during the seasonal fishing ban period, although some changes in saving schemes rules during the ban made it difficult for women to continue with the savings (Novak Colwell and Axelrod., 2017). In South Sulawesi, a women fishery SHG had a system of community savings called an *arisan*; using this, the SHG assisted women with their fishery needs and their household finances (Anna, 2012).

Women's groups and networks worked to enable access to knowledge, information and technologies. In Kumbalangi village, India, women were able to use the Chinese dip net, a gear mainly used by men, because of assistance from a fishery SHG (Vipinkumar *et al.*, 2017). In Pantar Island, Indonesia a women's SHG taught women clam collection techniques, including the need to wear very light apparel, not to eat food before going harvesting, and the areas in which clams grow (Fitriana and Stacey, 2012). In Andhra Pradesh, India, the Traditional Fishworkers' Union helped women access a programme that provides women with battery-operated bicycles that ease women's work in transporting fish (FAO, 2013). Nayak and Berkes (2019) described the social enterprise Samudram Women's Federation at Chilika Lagoon, India, which has 6 000 women fish workers and their families as members. The social enterprise works on the conservation of olive ridley turtle nesting sites. They also provide microfinance and skills training to their members. They hire people to monitor the turtles during nesting season, facilitate access to the



wholesale fish market by bypassing intermediaries, and train them to produce value-added products such as pickled prawn. The members' experience in the turtle conservation effort has given them a say in conservation policies, and provided women the skills to understand the policies and how they affect their livelihoods.

Women's groups have been able to develop new businesses by working together. The Thai Fishery Development Division supported the programme of One Tambon One Product by promoting 82 fish processing groups in 45 provinces in coastal and upland areas (Frangoudes and Gerrard, 2019). Through this campaign, fisherwomen were able to develop freshwater and marine products such as roasted shrimp paste and mackerel crackers.

However, women's social networks can be limited, which could make them reluctant to let go of what they have in exchange for a wider network. In Cambodia, successful women traders of processed fish pass on their businesses to their daughters, along with the crucial connections and market routes that were developed over the years. This social capital is more important than land or property (Kusakabe, 2016).

### **4.3. WELL-BEING**

There is a growing realization of the value of using the social wellbeing approach to understand the gendered nature of decision-making in fishing households and the consequence of these decisions. The social wellbeing approach allows us to holistically analyse the decisions of the fishing households, from both tangible and intangible (e.g. perceptions, identity) perspectives (Lund *et al.*, 2020).

#### **4.3.1. Nutrition in fishing communities**

Nutritious food is vital for good health. Fisherwomen in India generally suffer from malnutrition and dietary imbalances, which affect their health and contribute to their lower life expectancy (Biswas and Rao, 2014). Poor awareness and knowledge in the areas of health, nutrition and childcare heighten their problems (Salim and Geetha, 2013).

In rural Cambodia women and children are more vulnerable to macro- and micro-nutritional deficiencies due to lack of access to nutritious food sources, diversity in diet, and certain Cambodian cultural beliefs that result in poor nutrition. Fish consumption can provide the needed nutrition to prevent diseases, including ones that severely affect pregnant women and infants (Kruijssen *et al.*, 2016). Dasgupta *et al.* (2021) studied the Bangladesh Demographic and Health Survey data and found that nutrients from fish consumption provide resistance to disease for children. However, fish consumption in Bangladesh varies between people of different classes (Dasgupta *et al.*, 2021). Fish has seasonal availability, which affects its

accessibility; in the dry season, low-income households can afford less of it. Education level also matters, as mothers with better education will know the importance of giving fish to their children. Small fish are often consumed with their bones and viscera, which provides calcium and reduces the prevalence of rickets (Funge-Smith and Bennett, 2019). During the fishing ban in Bangladesh, fish consumption fell to zero in many fisher households, affecting pregnant women and children who were deprived of the nutritious intake provided by fish consumption (Islam, Mohammed and Ali, 2016).

Gibson *et al.* (2021) found that women served food to other members of their household before themselves and relied upon the advice of women elders and traditional midwives rather than community health personnel on food consumption. Such practices can lead to women getting less nutritious food, which might not appear in studies at the household level (Deb, Haque and Thompson, 2014). Girls are often not considered permanent family members (so not taken good care of) because they need to leave their household after marriage (Deb, Haque and Thompson, 2014). Foale *et al.*'s (2013) multiple country study on food security and the Coral Triangle Initiative found that women have control over income and food at the household level. However, they are also “shock absorbers” in times of food scarcity and have to sacrifice their own consumption needs for the family.

In the Philippines, the consumption of freshwater fish correlates with increase in the eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) content of breast milk, which surpasses the recommended level in infant formulas (Funge-Smith and Bennett, 2019). It also reduces expenditure for costly breast milk substitutes (Porter 2018).

The above-mentioned literature shows how important fish is for the nutritional status of women, men and children in fishing communities. However, Sandilyan and Kathiresan (2014) cautioned that heavy metal poisoning in Asia's mangroves can contaminate fish and affect the health of women, especially pregnant women, because lead can cross the placenta barrier and accumulate in breast milk; high lead content in the blood can also cause spontaneous abortions and chromosome aberrations.

#### **4.3.2. Demographic change in fishing communities**

Siar and Kusakabe (2020) noted that demographic changes in fishing communities in Asia are changing the fisheries landscape. Ageing fishers as well as young fishers migrating out for non-fisheries jobs decrease the number of fishers, at the same time leading to feminization of fisheries. In Myanmar, there is a labour shortage in Mon fishing villages, and they rely on internal migrant workers – men work on large scale fishing operations, while women work on fish processing (Belton, Marschke and Vandergeest, 2019).

Many fishers discourage their children from taking up fishing because of the risk and hardship involved and low returns for the effort as can be seen in cases in Kerala, India, and in Thailand (Hapke and Ayyankaril, 2018; Kusakabe, Sok and Phoovatis, 2020). Fishing costs are getting higher and the catch is

decreasing. In Christian fishing communities of Kerala, India, parents want their children to get educated and find alternative livelihoods so that the family will be able to leave their fishing trade behind (Hapke and Ayyanketil, 2018). In the Vembanad estuarine system, India, the younger generation expresses no desire to continue their parents' fishing work. The young women that still work in the fishery sector opt to work peeling prawns for private businesses instead because they perceive fish harvesting work as having a lower social status (Sruthi, Jayalal and Gopal, 2016).

That being said, elder fishers are willing to continue fishing as long as they can as is seen in coastal fishing village in Thailand (Kusakabe, Sok and Phoovatis, 2020). In the Vembanad estuarine system, India, the fishers in the community are middle aged or old but they still insist on continuing the activity because it brings them and their family additional income (Sruthi, Jayalal and Gopal, 2016).

#### **4.3.3. Female-headed fishing households as a vulnerable group**

Several studies identified female-headed households in fishing communities as some of the most vulnerable in the communities (Lund and Azmi, 2021). An Indonesian study (McWilliam, Wianti and Taufik, 2021) looked at the comparative patterns of poverty and prosperity in two Sama Bajo fishing settlements in coastal Southeast Sulawesi, Indonesia. In both villages, while the majority of respondents agreed that their economic conditions were better than 20 years ago, the two categories of village households were identified to be much more likely to be poor and at risk of falling into poverty: (i) female-headed households and (ii) household heads who work as crew (*sabi*) on the fishing boats of others or who do not own motorized fishing boats (*bodi-motor*). Thus, female-headed households without assets are doubly disadvantaged and can be considered the poorest in the fishing community. In the study, female-headed households (widowed or divorced women) were disproportionately represented among households that were poor 20 years ago and remain poor, as well as those households that were not poor 20 years ago, but are now considered to be poor. When women lose their husbands, the burden they bear is greater because they lose direct access to their principal and vital source of cash income, namely fishing. Such a loss frequently means a rapid decline into poverty as the assets of the household need to be sold off progressively to pay for consumption and living costs. There are few viable alternatives. Reef gleaning and subsistence level foraging provide very basic sustenance. Some women engage in small-scale trading and marketing of fish and basic meals (*nasi kuning*, *kue*) from roadside stalls, taking marginal profits from informal micro loans. Others offer labour to other households (washing and laundry, child minding) but the returns from these activities tend to be meagre. Their capacity to initiate new work opportunities is limited by intervening factors such as having young dependent children, little or no capital or capacity for taking on debt, poor levels of formal education, a lack of work experience beyond the village or a combination or all of the mentioned.

Balinas, Parcon and Baliao (2016) found that in fishing households in Carles, Iloilo, the Philippines,

women not only participate in fishing but can become head of a household especially when men are absent temporarily for migration. However, they do not own the fishing business and must rent gear and equipment or be employed by others. When their husbands come back, they can quickly return to reproductive work. Their study showed that women heads in fishing households are younger than farming households, requiring more income and time to meet their children's needs and growth, which puts additional burden on women.

In cases where a husband's absence may be permanent, owing to death or abandonment, women will experience livelihood losses especially if the husband was the primary breadwinner of the house (Deb, Haque and Thompson, 2014; McWilliam, Wianti and Taufik, 2021). However, a husband's absence can enable women to have more freedom and a greater role in household decision-making, which brings new responsibilities and issues (Balinas, Parcon and Baliao, 2016). A case in point is that of Jogoti Bala Jaladas in Tharkurtala village, India, whose husband passed away due to an accident at sea; she established her own fishing operation and business, and gained significant recognition in the area (Deb, Haque and Thompson, 2014).

Female-headed households in fishing communities face great challenges because patriarchal norms discriminate against female leadership (Joffe and de Silva, 2015). Women's role is intertwined with the "mother myth" present in many cultures, in which women are expected to serve reproductive and supportive roles, constraining their identity to those roles (Deb, Haque and Thompson, 2014).

Women heads of households have additional burdens due to reproductive care. In Patna, Bihar, India, women with small children and no relatives to assist in care work could not bring their children to market because it is unsafe and unhygienic, and thus cannot participate in fish marketing (Kumari, 2016).

#### **4.3.4. Women's time burden**

Women have a heavier time burden compared with men because of their household workload (Kwok *et al.*, 2020). A study of the consumption patterns of low-income households in the Tonle Sap lake (Siem Reap and Kampong Thom provinces) and the coastal area (Kampot province) of Cambodia revealed that women suffer from chronic time poverty and heavy workloads of unpaid domestic labour, which limits their mobility (UNIDO, 2021). This discourages them from pursuing business ventures.

Women fishers bear multiple burdens from their domestic responsibilities including child rearing, reproductive care, household maintenance, and food preparation. This limits the amount of time that they can participate in any productive activities, which also affects the income and assets that they could earn for themselves and their family (Fitrianggraeni, 2019; Kusakabe, 2016). In lake Taal, the Philippines, women claim they could not participate as beach seine operators because it is time consuming and limits

the time for reproductive tasks (Mutia *et al.*, 2020). In the states of Gujarat, Kerala, Andhra Pradesh, Odisha and Tamil Nadu, India, it is difficult for women to engage in full time productive activities and they often have to work in seasonal and short-term jobs with low remuneration and often lack any employment protection or social benefits (Asir Ramesh, Bindu and Karthi, 2019). Research that includes Indonesia, Myanmar and India found that men are full time employees in the fishery sector while women work part-time or on an occasional basis, mostly in small-scale subsistence fishing, while performing their domestic activities (Gee and Bacher, 2017). In the North-Western province of Sri Lanka, 98 percent of fisherwomen did not work full time in any productive activity (Sandaruwan *et al.*, 2016). Women experiencing time poverty are constrained in their ability to find market channels and, thus, face limitations in negotiation power (Kusakabe, 2016).

There is mixed evidence on time burden owing to the long working hours. Prieto-Carolino *et al.*'s (2021) study of frozen fish processing plants in the Philippines showed no statistically meaningful difference between women and men in their time spent at the factory and for reproductive work.

#### **4.3.5. Decision-making in the household**

Women have more decision-making power if they are engaged in productive work. Women's decision-making power differs as well based on the type of decisions being made. Both husband and wife are involved in decisions for children's education, health, savings, productive activities, purchasing of household appliances. Women make decisions on family food purchase and social community relations while men make decisions more on the livelihood-related matters (Febri *et al.*, 2017).

Husbands often have control over household resources and income (Siles *et al.*, 2019). The husband's mindset in resource allocation is often influenced by his own needs, missing the needs of female family members. In Kerala, India, fisherwomen have limited freedom in influencing their husband's personal behaviour and business decisions; they are allowed the freedom to attend religious events, manage family health, purchase household assets, and other socializing functions (Salim and Geetha, 2013). A study on coastal district Bangladeshi women's visibility found that nearly a third of the respondents took no part in decisions with regard to the assets of the family, especially in buying or disposal. Only 40 percent participated in decisions related to the marriage of anyone in the family (Munir, 2020).

Despite husbands consolidating the resource allocation power, wives are frequently assigned financial management tasks including taking loans to fund the family's fishing activities (Alami and Raharjo, 2017; Moser, 2015; Mutia *et al.*, 2020; Torell *et al.*, 2021). Contributing to this trend is the belief that women are better at managing finances than men (Locke *et al.*, 2017). Women in fishing communities of central coastal areas of Viet Nam are responsible for the household finances; they make decisions on expenditures, but any major financial decisions must be made in consultation with their husbands,



which they find to be a burden (Hao, 2012). In the Calamianes Island Group in the province of Palawan, Southern Negros of Negros Occidental, and the Visayan Sea areas, the Philippines, when a household experiences financial losses, women are blamed because they were given the responsibilities to manage the household finances and may experience physical abuse, mental abuse, or both from the husband (Torell *et al.*, 2021).

#### **4.3.6. Violence against women**

Gender-based discrimination and violence are not unique to fishing communities; however, studies point to vulnerabilities that fishing-related livelihoods bring to women and girls (Bennett, 2005; Weeratunge *et al.*, 2010 in Siles *et al.*, 2019). Domestic and sexual violence can be socially accepted means of enforcing subordination according to local cultural norms, such as seen in South India (Busby, 1999 in Ratner, Åsgård and Allison, 2014).

Limited opportunities for income diversification, decline of fish stocks, food insecurity, poverty, and migration for work are factors that increase the vulnerability of both genders to violence and abuse (Ratner, Åsgård and Allison, 2014). In Pakistan, field workers found that gender-based violence (GBV) on women and girls in coastal communities reduces their self-esteem, potentially affecting their ability to advocate for their needs or participate in activities (MFF, 2018).

In the coastal districts of Bangladesh, GBV in the fisheries sector persists (Munir, 2020) due to social and structural inequalities that create vulnerable conditions, including: (i) a lack of access to fisheries resources; (ii) shifting social and power dynamics regarding fisheries roles; and (iii) increased risks of HIV/AIDS in fishing communities.

When fishery catch is low, women are more likely to be subjected to domestic violence. In the Philippines, Torell *et al.* (2021) reported that women are responsible for financial management and household budgets are under pressure when fish catch and, therefore, income is low. Women are forced to take loans to make ends meet as well as to fund their husband's fishing activities. Women may experience abuse (mental and physical) by men because women are blamed for the loss. The lower catch causes men to resort to illegal fishing methods and alcoholism to cope with their situation, which fuels further violence.

Men are also victims of violence in the fishing industry. Many men experience extreme violence on boats and rafts. Belton, Marschke and Vandergeest (2019) argue that such violence is "in part an expression of a masculinity that becomes distorted by long months of captivity and isolation" (p. 8).

Alcoholism is a common issue in fishing communities and households. The consumption of alcohol is tied with the fisherman's identity, symbolizing and expressing masculinity interrelated with the risk-taking activities of fishermen. Drinking alcohol is also a means of relief from the strain and isolation during

long periods at sea (Belton, Marschke and Vandergeest, 2019; Coulthard *et al.*, 2019; Kawarazuka *et al.*, 2017). In India, alcoholism amongst seaweed harvesters has not only resulted in abuse, violence, and physical and mental pain inflicted by alcoholic husbands on their spouses, but also affected their seaweed harvesting activities. Coulthard *et al.* (2019) reported that the husband's alcoholism affects his own health, resulting in his being unable to participate in seaweed harvesting activities. The wife would face difficulties in continuing to harvest seaweed alone. Women then have only two options. One is to pay for collective boat travel, which costs them Rs 100.<sup>3</sup> This is inconvenient because the boat would not depart at low tide, which is when the seaweed is more exposed for harvesting. The boat would leave during high tide, when women risk drowning. The other option is for the woman to use her husband's boat and face the risks of sea travel, including drowning, alone.

The toxic masculine culture of the fishery sector that values male domination of women enables GBV (Siles *et al.*, 2019). Conversely, evidence from the Tonle Sap lake area, Cambodia showed that a reduction of domestic violence improved income and the women credit this change to better law enforcement and awareness-raising campaigns (Locke *et al.*, 2017). Deb, Haque and Thompson (2014) noted that Bengali fisherwomen express masculine traits such as being foul-mouthed and aggressive as a defence mechanism when operating in isolated rural conditions with the risk of rape and abduction.

#### **4.3.7. Vulnerability to disaster in fishing communities**

Women's vulnerability to disasters is different from that of men. In the Philippines, women collect shells, invertebrates, and seaweed in intertidal and inshore areas. Hence, they are more vulnerable to the effects of climate change (Williams *et al.*, 2019). In general, women are more vulnerable to food and income shortages because they lack alternative employment opportunities and power within the household (Funge-Smith and Bennett, 2019; Leslie *et al.*, 2018). A gender analysis of fishers' livelihoods in Bhadra reservoir, India, showed that women fishers experienced worse effects of climate change than male fishers (Sharma, Nandini and Sharma, 2019). Several studies have shown that when fishing communities are faced with disaster, men migrate out, leaving women to fend for themselves (Penning-Rowsell, Sultana and Thompson, 2013; Williams *et al.*, 2019).

Sustento (2018) showed that women in the Philippines are better prepared for disaster than men, because women work only part time in fisheries and do various other jobs in order to make ends meet. Education levels, wealth, and status are proportional to disaster preparedness level: the higher the levels, the more prepared they are. This indicates that women who have a lower education than men would lag behind men in terms of disaster preparedness.

Women tend to be invisible in decision-making to cope with disasters. Badayos-Jover (2017) noted that in

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<sup>3</sup> Rs 100 = 1.32USD

the Philippines, the community (represented by men) identified fishing boats as one of their needs after Typhoon Haiyan, but this did not reflect the needs of women. After the typhoon, men left the village for labour migration, and what the women, who were left in the village, needed were health insurance and retirement benefits. Women's work as gleaners was not visible and their needs were ignored (Williams *et al.*, 2019).

A study (Badayos-Jover, 2017) on women's agency and efforts to organize after Typhoon Haiyan in Iloilo, the Philippines, revealed that the disaster created an opportunity for women to take on roles outside gender norms. Typhoon Haiyan destroyed fishing boats, forcing fishing households to find alternative means of livelihood. Before the typhoon, the women of Bayas were not organized, but post-Haiyan women came together to protest the relief efforts that focused only on men's needs such as donations of fishing boats. Before the typhoon, men mostly performed offshore fishing while women gathered shells and dried fish. The relief efforts carried out by the government and international organizations were done without gender consideration and women's needs were not met. Women reported that officials only engaged with men who likely spoke on behalf of the village. This affected female heads of household. Additionally, pregnant women had to go to town to give birth because the local facilities were destroyed, and the relief efforts did not provide a substitute. Some groups failed due to lack of funding and a clear objective. However, the Bayas Women's Association grew to buy a pump boat, create a community store, and joined community activities and efforts long after the disaster ended. The shortcomings of women collectives that spawned during the disaster showed that such organizations require external institutional support to continue to operate.

Graziano, Pollnac and Christie (2018) found, in their study of 30 coastal villages in three provinces of Palawan, Occidental Mindoro and Batangas, that women were more aware of municipal climate adaptation plans than men since they market their fish in the municipal markets. The training programmes on climate change awareness were attended more by women. The study argued that this might be because the training project's focus on increasing women's participation might have discouraged men's attendance.

#### **4.3.8. Impact of COVID-19 pandemic**

The COVID-19 pandemic has had a severe impact on the lives and livelihoods of small-scale fishers and their dependents. A study in Southeast Sulawesi Province, Indonesia (Campbell *et al.*, 2021) on COVID-19's immediate impact found that small scale-fishers and traders with pre-existing vulnerabilities were negatively affected by the pandemic. The total catch weight and price per kilogram of fish declined at a steeper-than-usual rate, resulting in a large decrease of total catch value. Fishery commodities for exports were more affected than locally traded species. This is not only problematic on its own, but it can also result in overfishing as fishers adapt by focusing on specific species.

An analysis of the impact of COVID-19 on aquatic food systems and small-scale fisheries in Bangladesh found that women experience worse effects during pandemics because of their existing vulnerabilities. In the Bangladeshi SSF community, lactating women and children in low-income families lack dietary diversity, reducing their capacity to cope with diseases (Sunny *et al.*, 2021). Mandal *et al.*'s (2021) study in Dhaka city, Bangladesh, found a significant reduction in the frequency of fish consumption during the pandemic because of higher fish prices as well as because people refrained from buying fish at the wet market out of fear of contracting COVID-19 from raw fish. Women and children are affected more because of the existing inequality in food allocation.

The effects that women and men experience from the COVID-19 pandemic are different. A study done across tropical small-scale fisheries communities found that more women than men fishers felt that the lack of traders have affected them, while more men than women fishers felt that low prices impacted them. For women, lack of traders is a problem since women relied on processing fish as a coping strategy under COVID-19 (Campbell *et al.*, 2021).

During the COVID-19 pandemic, women employed in fish processing plants and retail are more vulnerable because they have to work in close proximity, their lower job position does not offer social protection, and they are more likely to be laid off (Bennett *et al.*, 2020).

#### 4.4. DRIVERS OF CHANGE FOR GENDER EQUALITY

This report has reviewed literature published since 2011 on the drivers of gender inequality in small-scale fisheries in Asia. It has analysed what the literature discussed in terms of gender division of labour, access to resources as well as well-being of women and men. In this section, we summarize the sections above and analyse further to identify drivers of changes towards gender equality. The review can be synthesized into the following five areas that are important for changes in gender equality to happen in fisheries in Asia, that is: (i) specificity; (ii) terminology; (iii) perception; (iv) participation; (v) power relations and violence. Below, we discuss each of these matters in detail.

**SPECIFICITY MATTERS:** Although fisheries is perceived to be a masculine and male-dominated space, there is now a recognition that women do play a large role in it. In general, women glean or fish in shallow areas of the waterbody, while men fish in deep waters. For example, women collect seaweed, shells and invertebrates, while men fish for finfish as well as other high value commodities such as squid, octopus, and tuna.

However, women's involvement is location specific, and also can change with time and circumstances. For example, seaweed collection is done by women in the Philippines, and men in Bangladesh, although it is not exclusive to a certain gender. While, in general, marine deep-water fishing is done by men, in

Thailand, women are also seen to be engaged in it. Although, in general, men fish for higher valued fish, that is not necessarily the case.

Similarly, use of fishing gear is often associated with men, but women also use gear including gillnets, cast nets, spears and beach seine nets. In Sri Lanka, it has been reported that depending on the location, women pull beach seine nets only at the last part, or from the setting up of the net until the catch lands. Net mending is done by women in Bangladesh, but in Southeast Asia, men are also involved. Fish marketing is done by women in Southeast Asia and some parts of India, but done by men in Bangladesh and in other parts in India.

Gender roles can differ by time and with external circumstances. With the ban on fishing, wives were asked by husbands to help out in keeping a watch for authorities. More men traders join the fish trade when market infrastructure becomes better.

It is important that gender analysis is conducted in each location, since it is difficult to generalize the roles and activities of women and men in fisheries. A generalization that women are only involved in supporting men fishers would not allow us to capture the roles that women play in different locations, with different types of fishing, gear and fish species; a lack of knowledge on specificity can lead to neglecting and excluding women in fisheries. Keeping women invisible also leads to a partial understanding of fishing activities in the location, especially since gear that women use can be invisible, since traditional gear such as bamboo baskets might not be registered or perceived as gear.

**TERMINOLOGY MATTERS:** Often fishing is defined in masculine terms and fishers are defined as those involved in offshore boat fishing for finfish. Hence, fishing association memberships target these groups of fishers. Gleaning at the coast, in mangroves and in seagrass is often not considered fishing, and not included in fisheries statistics that are recorded in landing sites. Women are often part-time fishers, fishing near their houses between other tasks. If these activities are not counted as fishing, then they will not be given compensation during disasters or fishing bans or be covered by insurance. Fisherwomen in the Philippines have raised their voices to demand support when all the government support was targeted at the offshore boat fishing that men are engaged in, neglecting the fishing activities that women do.

Women also play a large role in post-harvest activities such as fish trade and fish processing, but these are often excluded from fisheries management schemes. There is a general understanding that women dominate this sector, especially in Southeast Asia. However, the sector is rarely studied under a fisheries framework, and studied more in terms of women's enterprise. There is little understanding of the extent to which fishing households are dependent on this post-harvest sector and its importance to household nutrition.

**PERCEPTION MATTERS:** There is a strong perception that men fish, and women just support men. Women are not considered independent fishers. Also, women are often unable to engage in fishing without men, as seen in Sri Lanka's beach seine net pulling, where women can do tasks in the entire process except going out on boats to set the net, which is done by men. However, this review has shown that women do fish independently using various gear. The perception that women are not doing real fishing is strong among fishery officers as well as fishermen, and few men acknowledge that women play a role in fishing.

This lack of acknowledgement leads to women's invisibility in fisheries and is the root cause of women not being able to gain their fair share in the sector. This is seen in, for example, the contract system in Myanmar, where contracts are done at the household level with the male head of household as the fisher. Women also work alongside men but the contract system only acknowledges men as fishers and makes women invisible.

Women fishers often perceive themselves as fishers and have a relatively high sense of empowerment in engaging in fisheries. In the Philippines, women came together to claim support as fishers. In Sri Lanka, women who are employed to pull beach seine nets are often those who work with unlicensed operators, making their work informal. These women are not affiliated with the local caste hierarchy and instead refer to themselves as Veder (also known as Vedda), claiming a different identity from other women to justify their role in fisheries.

Women also play an important role in supporting fishery as an occupation through engaging in non-fishing work. Considering the volatile as well as decreasing income from fishery, women's non-fisheries income, which adds to the household income, is important to allow fishing households to continue their fisheries livelihoods. Again, such contributions by women are not appreciated as an important support system for fisheries.

**PARTICIPATION MATTERS:** Women take part in all the nodes of the fisheries value chain. Some studies have pointed out that women's participation would enhance conservation activities and increase the possibility of success in conservation, since women are more active in community-based conservation activities than men. Aside from women's roles and contribution being left invisible as discussed above, there are various barriers preventing women from full participation in the fisheries value chain. The most often cited reasons are women's lack of access to information and technology. Women are often deprived of the opportunities to gain information and learn new technologies in fisheries, both because of their lower education and because they are not seen as "fishers" and are not targeted for training. Access to information can improve both women and men's preparedness for, and adaptation to, disasters. There have been success cases where training for women has led to their effective participation. Such lack of access to information is further exacerbated by their restriction on mobility. Purdah and other cultural



restrictions on women's mobility prohibit them from taking full part in fisheries or go out and learn new information and technologies. Women's workload limits women's mobility as well as women's access to information and other exposure to the outside world. Women's workload in terms of household work and other reproductive responsibilities limits the time they can spend on fisheries. The particular timings used by women and men in fisheries (working during the night or the small hours of the morning, and irregular activities based on weather and catch) can put time constraints on fishing households that are different from other households in general.

Infrastructure development can play a large role in enhancing women's mobility. Better infrastructure in the marketplace such as shades and toilets can make it easier for women to work as fish sellers. Better roads and safe transportation help women traders transport fish in easier, cheaper and safer ways. Infrastructure development can facilitate women's participation in fisheries, but mechanization is found to have mixed results. Mechanization can lead to women losing jobs in fisheries.

**POWER RELATIONS AND VIOLENCE:** Aspects of women's roles in fisheries, such as the benefits they get from fisheries, are entangled in complex gender relations within the family and society. In many countries in Asia, women are the ones who manage the household finances, especially in poor households. Once there is more money in the household, women start to lose their decision-making power. Relationships with family members and family support are important for women's participation in fisheries – they can be both enabling and constraining. Family members, such as parents and husbands, can restrict women from leaving the home to engage in fishery activities including post-harvest activities such as selling and processing. The opposite is also true, with women going fishing with their husbands and engaging in selling and processing to earn incomes on their own.

Some studies have highlighted the issue of gender-based violence in fishing communities. Women in fishing communities can be vulnerable to violence when male members of the family are out fishing. At the same time, women are vulnerable to domestic violence from their husbands, especially when the fish catch is low. Men in fishing villages also experience violence in boats, and such experience of violence as well as low catch can increase alcohol consumption among men. Various studies have pointed out the relationship between consumption of alcohol and domestic violence. The violence forms a vicious cycle, with men experiencing violence in fisheries, which leads to heightened violence at home. Women suffer not only from direct violence but also when men's health deteriorates due to heavy drinking. Domestic violence is not only harmful for life, health, security and dignity of both women and men, but also affects the economy. Studies have shown that lower domestic violence leads to higher income.

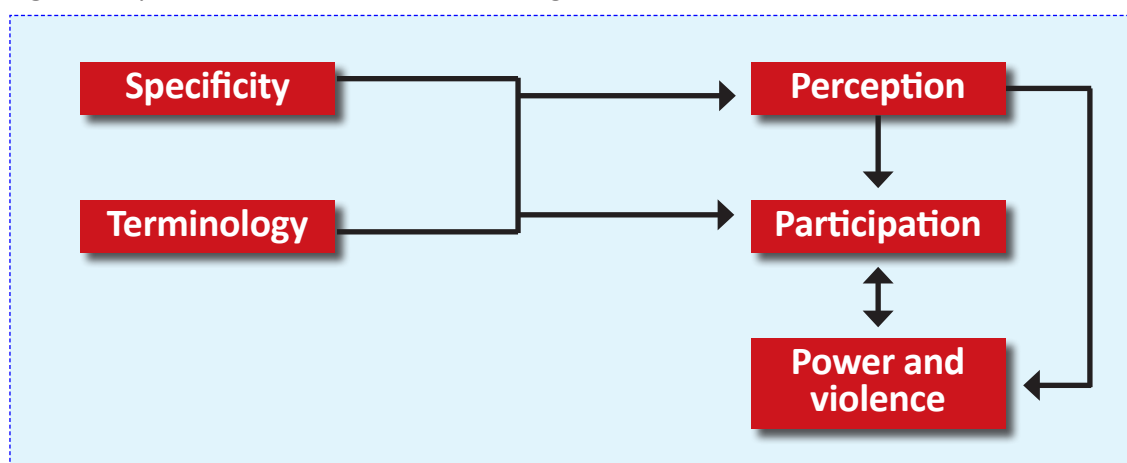
The power relations in society also affect women's roles in and benefits from fisheries. Women are excluded from fishing associations, and very few women own boats. Women own businesses but often these businesses are micro or small-scale businesses and among large businesses, there are much fewer women owners. This is a result of women's lack of access to finance, restricted mobility, skills and knowledge as well as connections or network.

On the other hand, there is evidence that the involvement of women can strengthen the initiative for fisheries resource conservation. A number of women's groups have successfully organized themselves for post-harvest activities, access to finance, market, information or technology, as well as for fisheries resources management. Although it should be noted that it is not always the case that women can work in solidarity, and we cannot expect that women will be able to work and support each other just because they are women. We need specific analyses on which people can work with whom for what purpose.

#### 4.5. ENTRY POINTS FOR CHANGE

Section 4.4. synthesized the findings from the literature review on gender and fisheries in Asia (shown in Figure 3).

**Figure 3.** Synthesis of the literature review on gender and fisheries in Asia



Source: Authors' own elaboration.

In order to address the gender inequality situation in Asia, we need to improve women's meaningful participation as well as change the perceptions of women's roles and contribution in fisheries. For this, we need to have more location- and situation-specific knowledge on gender and fisheries and review the terminology that we use in fisheries to be more gender inclusive. In order to address the terminology issue, we need to change the definitions used in fisheries. In order to address the specificity issue, we need to collect more gender-disaggregated data as well as conduct gender analysis in different situations. Value-chain approach will allow us to expand terminology, provide specificity and further change perceptions. Women's participation can be improved through organizing women's groups. Further attention to power

relations and violence against women is needed, especially identifying the most vulnerable group among women. In the following, each of these recommendations are discussed in detail. In the end, further recommendation for gender mainstreaming and future research is addressed.

### **(1) REVIEW DEFINITION OF “SMALL-SCALE FISHERIES”**

It is often the case that women in fisheries become invisible because of the way small-scale fisheries is defined or understood. It is important to include in the definition of fisheries the whole value chain of fisheries – including post-harvest activities – as well as fishing activities that are done without gear and boats and carried out along the shore and near houses, as well as part-time fishing. These areas are where women are more concentrated. The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (FAO, 2015) has made clear that small-scale fisheries encompass all activities in the fish value chain. When discussing fisheries management, it is important to include all vertical as well as horizontal linkages to fisheries including regular, seasonal and part-time activities.

If women are not included as “real” fishers, they are excluded from fishers’ organizations, through which they can access credit and insurance. They will not be entitled to support post-disaster, since they are not considered fishers. Women’s fisheries activities such as post-harvest and gleaning will be neglected and will not be targeted for compensation or support.

On the other hand, by acknowledging women’s role in the fisheries value chain, fisheries resources management is seen to become more effective. Women fish in the shallow water along the coast, so have more knowledge of the mangrove and seagrass areas. They are also highly concerned with fisheries resources, since their trade and processing activities are affected by fish yield. So, involving women as important players in fisheries will lead to better fisheries resources management.

It is noted that the activities of fisheries and the involvement of women and men is different in different locations and changes over time. There is a need to train fisheries officers to widen their scope of coverage and improve the awareness of interconnection of various activities on fisheries management. Tailor-made project interventions are important to take into consideration the socio-political, cultural, spatial and ecological contexts that can vary across regions (Stacey *et al.*, 2021; Hapke, 2012).

### **(2) COLLECT GENDER-DISAGGREGATED DATA**

Collection of gender disaggregated data is essential to have a context-specific understanding of the fisheries situation. In order to have more specific understanding of fisheries, gender

analysis on the use of gear, involvement by species and fishing types as well as on fish trade and fish processing is needed. Especially, there is little gender research on post-harvest activities, making it difficult to assess the importance of fisheries in household nutrition and survival.

The lack of gender-disaggregated data is one of the most important reasons for women's roles and contribution being invisible in fisheries. By collecting gender-disaggregated data, it is possible to get more accurate fisheries data, since it will enable us to include catch from women's gleaning and other activities. This, in turn, will enable us to have more accurate data on the nutrition from fish in the household. These data are important for better fisheries resource planning; thus, collecting gender-disaggregated data has far greater benefits than just making women visible.

### **(3) CONDUCT GENDER ANALYSIS**

The way women and men are engaged in fisheries and how they derive benefits and face challenges are different in each location, and change over time and under different policies; hence, it is important to conduct gender analyses regularly and whenever a new project is to be started. Gender analyses need to be done with the participation of both women and men. This process will also be useful in developing different types of technologies that would be useful for women and men differently, by adopting a bottom-up approach to technology development.

### **(4) REVISIT OBJECTIVE OF FISHERIES MANAGEMENT USING A GENDER-SENSITIVE VALUE CHAIN APPROACH**

If fisheries management is reviewed from a value chain perspective, many of the areas where women are concentrated but invisible would be included in the fisheries management framework – including fish trade, fish processing and part-time or seasonal fishing activities for home consumption. Women tend to be concentrated in small enterprises in post-fisheries activities, and the value chain approach will be able to identify the power relations that they face with other actors and the structural bottlenecks in their businesses. Value chain analysis helps identify opportunities for fish processors. For example, training can be designed so that the quality of product is improved to meet higher niche markets and obtain a certificate.

Most importantly, gender-sensitive value chain analysis allows us to revisit the objective of fisheries management, checking how we want to balance the different priorities of environment conservation, food security, trade, export and identity as fishers. A gender-sensitive value chain analysis will also support the unpaid work and reproductive work that

women spend a considerable time doing, so that support in this area can be included as part of the fisheries management framework. Using a gender-sensitive value chain perspective will enable projects to widen their points of intervention, making the projects more dynamic and wide ranging. A revisiting of priorities will further lead to changes in investment priorities, such as whether we place a higher priority on local livelihoods or on small-scale fishing, or on fishing production as a whole. The wider livelihood range that the value chain approach allows will highlight the importance of insurance, financial access and the types of infrastructure development.

#### **(5) ORGANIZE AND WORK WITH WOMEN'S GROUPS**

There have been cases where women's groups or SHGs worked well to improve fisheries-related technologies and improved income. Organizing women's groups and working with them has proved to be an effective approach to enhance women's position and visibility in fisheries. However, we need to note that organizing groups is not a panacea for women's empowerment, since we need to take into consideration the relationships between members, and poorer women can be further marginalized inside the groups. We need close monitoring and regular gender analysis that incorporates an intersectionality perspective, that is, an analysis that takes into consideration the differences between women.

#### **(6) ADDRESS GENDER-BASED VIOLENCE IN FISHERIES**

Both women and men in fisheries are vulnerable to violence. Women can be more vulnerable to violence since the violence that men experience outside the home can increase domestic violence against women. Alcoholism is closely associated with domestic violence. Experience of violence by men on boats can also translate to increased domestic violence. Increase in violence reduces the income of fishing households (Lentisco and Alonso, 2012). There is a need for fisheries projects to also address the issue of gender-based violence in the fisheries sector – on boats, in communities and in households.

As Section 6.9 of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries stated:

All parties should create conditions for men and women of small-scale fishing communities to fish and to carry out fisheries-related activities in an environment free from crime, violence, organized crime activities, piracy, theft, sexual abuse, corruption and abuse of authority. All parties should take steps to institute measures that aim to eliminate violence and to protect women exposed to such violence in small-scale fishing communities. States should ensure access to justice for victims of inter alia violence and abuse, including within the household or community.

All stakeholders – from government officers to community people to enterprise owners and company employers or workers – need to be trained on how to detect and prevent violence in these sites, and the fight against violence needs to be considered part of the work to improve the fisheries sector.

#### **(7) SPECIAL ATTENTION TO FEMALE-HEADED HOUSEHOLDS AND WOMEN LEFT BEHIND**

It has been identified that female-headed households, especially those who do not have any male members, are the most vulnerable in fishing communities because of their lack of resources. It is important to take note of these households in fishing communities and design special support for them. With the decline in fish catch, more men are going out of the village for labour migration, leaving women to be de facto female heads. Such households would also be in a difficult situation if remittances do not come. Women tend to continue with fishing activities without the men since they have little alternative employment opportunities. Again, special attention is needed for this group of people.

#### **(8) GENDER MAINSTREAMING**

Policy and institutional support from governments and relevant organizations are critical for gender mainstreaming and women's empowerment in the fisheries sector (Lentisco and Alonso, 2012). State intervention that ignores women's importance to the household and local economy inadvertently increases the strain on poor women (Hapke, 2012). Therefore, making sure that gender perspectives are integrated into all policies, interventions and implementation is important to ensure that the most vulnerable sections benefit from the interventions. Gender mainstreaming activities include but are not limited to the following:

- Monitor and evaluate and share lessons on successful cases of gender integration in fisheries.
- Bottom-up approach to ensure women's every-day experiences and knowledge are reflected in the project design and management. Languages and concepts of gender need to be translated for ease of implementation.
- Develop communication tools to convey the concept of gender inequalities to both women and men in the community. Not only training, but also other forms of participatory workshops and dramas and visuals can be developed.
- Upgrading the skills and knowledge of women in fisheries, both in terms of effective harvesting, market information for trade, and technologies for



processing activities, as well as support to diversify income. Improved skills and knowledge strengthen women's decision-making power in the household, community and market.

- Establish gender focal points, introduce standardized and regular gender training, and perform annual gender-based assessments to identify the gaps in improving gender inequalities.

Allocation of budget for gender equality projects is essential for successful gender mainstreaming (Alarcon, Ibabao and Lobredo, 2018).

#### **(9) CONDUCT MORE RESEARCH**

Research on gender and fisheries is seen to be skewed to certain countries, and largely absent in others (refer to Tables 4 and 5 for number of articles per country). There are gaps in literature in various areas including:

- use of gear as well as infrastructure;
- gender-sensitive technology development and its adoption;
- time use of women in fishing communities;
- women's participation in fisheries activities and its impact on gender relations;
- effectiveness of women's groups in fishing as a livelihood and fisheries resources management;
- issue of violence in fishing communities;
- gender analysis of fishers' associations; and
- adaptation of women and men to climate change in fishing communities.

It is noted that most studies are limited in geography and across time. Most of the studies are done in a limited location and there is little work that covers the national level. There is also a lack of long-term studies. There are studies that document the success or positive impact of projects, but how it develops further under dynamic fisheries development is not well-documented.





Woman aquaculturist in  
Kampong Thom Province,  
Cambodia.



## 5. Women and men in small-scale aquaculture in Asia: Barriers, constraints and opportunities towards equality and secure livelihoods

### 5.1. GENDER DIVISION OF LABOUR

The gender division of labour in aquaculture varies from country to country depending on the importance of aquaculture and the level of technology as well as the socio-cultural value system. Women's participation in aquaculture is shaped by a combination of religious and cultural norms as well as poverty in the context of Bangladesh (Belton, Ahmed and Jahan, 2014). In China, women engage in every part of the aquaculture operation (from pond construction to harvesting), but this is not the case in some rural parts of Bangladesh and India, where women are restricted to pond construction and prawn seed collection because their education and training are limited (Shah and Bukhari, 2019). In addition, the household workload restricts any increase in women's involvement in aquaculture in the case of Bangladesh (Kantor, Morgan and Choudhury, 2015) and as also found based on the review of literature in Asia and Africa (Morgan *et al.*, 2016).

Based on reported and estimated data of 33 percent of FAO member countries' data that had gender-disaggregated data for aquaculture during 2009-2014, 98 percent of the women employed in aquaculture work in Asia, and more than half of them work full time. The ratio of women working full time in aquaculture (51 percent of total) is more than that for men (40 percent) (Gee and Bacher, 2017).

Women engage in several different stages of the operation of commercial hatcheries and nurseries, including the selection of brood fish and their transfer, recording the weight of brood fish and inducing them to breed, spawning and the incubation of eggs, artificial fertilization, packaging, and transportation of fry (Joshi *et al.*, 2016). In the State of Gujarat, India, prawn peeling, fish curing, drying, marketing, net making, fishing in canals and clam shell collection are the major thrust areas in which women participate and where they assume leading roles in the rapid growth of aquaculture (Joshi *et al.*, 2016).

#### 5.1.1. Gender-disaggregated data and research

The aquaculture sector remains male dominated and women's roles and contributions are not reported and accounted for in statistics, development programmes and institutions despite their major role in aquaculture (Satapornvanit *et al.*, 2016). Based on studies in Cambodia, the Lao People's Democratic Republic, Thailand and Viet Nam, Satapornvanit *et al.* (2016) noted that as far as women's involvement in the different points of the aquaculture value chain are concerned, large gaps in knowledge exist.

Information and knowledge gaps were pointed out in regard to control over income, decision-making, professional choices and opportunities, as well as gendered participation.

Additionally, gender-disaggregated data on roles and contribution can guide strategies for efficient technology transfer and for improving product quality (Fitriana, 2017). Rajaratnam, Ahern and McDougall (2020) argue that there are three important limitations in the studies on aquaculture from the perspective of a political economy of fish agri-food systems:

- (1) Women's labour and contributions are undercounted and can lead to gender-biased policies (as also discussed by Frangoudes and Gerrard, 2018; Brugere and Williams, 2017) and inadequate funding and investment where women are concentrated, marginalizing their work (as also discussed by Biswas, 2017; Aregu *et al.*, 2017).
- (2) There is an over-emphasis on gender roles and lack of a broader industry context.
- (3) Women are often treated as a homogenous group, overlooking differences of age, class, race and so on.

### 5.1.2. Gender division of labour in different types of aquaculture

More women participate in economic activities than ever before. In the Khulna and Chittagong region, Bangladesh, apart from domestic chores, women work in offices, commerce and agriculture, including fish and shrimp farming. While the number of people employed in Bangladesh's agriculture sector was shrinking, that in aquaculture was expanding more than ever (Nuruzzaman, 2012).<sup>4</sup> Bernier *et al.* (2016) also noted that in Khulna, more women are engaging in agriculture and aquaculture-related activities than in the past. As women took on more responsibilities outside the home, their participation in the labour force increased, in both farm and non-farm areas (Rahman and Islam, 2013). Prior research has also suggested that as prawn aquaculture grew, so did women's involvement in it (Ahmed *et al.*, 2009 in Bernier *et al.*, 2016).

The gender division of labour pattern in aquaculture is that men are engaged in physically strenuous work while women are engaged in work that needs patience and meticulous attention. In the Philippines, women are sought after for de-boning work for cultured milkfish fillet (Salayo *et al.*, 2012).<sup>5</sup> However, there are deviations to these patterns: women using the *banca* (a wooden fishing boat) to go out and feed

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<sup>4</sup> Golda shrimp or Giant freshwater prawn (*Macrobrachium rosenbergii*), Inland pond.

<sup>5</sup> Milkfish (*Chanos chanos*); Marine cage and brackish pond.

young fish is an example, as is men counting fingerlings (Roxas *et al.*, 2017).<sup>6</sup> Mutia *et al.* (2020) noted that in Lake Taal,<sup>7</sup> the Philippines, most of the aquaculture activities are dominated by men, and women are involved in bookkeeping and bill paying. In India, census data from 2001 showed that girls working in fisheries and aquaculture ended up working longer hours than boys (FAO, 2013). In the Malabar coastal area of India, seaweed farming and mussel farming are largely feminine, and open sea cage culture largely masculine (Ramachandran, 2012).<sup>8</sup> Social norms limit women's ability to participate in some aquaculture activities (Debashish *et al.* 2001 in Morgan *et al.*, 2016).

Compared with fisheries, gender issues in aquaculture require a different framework of analysis, particularly if fish are raised in ponds situated within a household or community farming system that also includes crop or livestock activities, which affect the gender division of labour and access to control over resources (FAO, 2013). In all sites of the Tonle Sap Lake area, Cambodia and in the Visayas Region, the Philippines, the need to renegotiate domestic responsibilities (or the way in which they are done) was central to women's ability to take on new activities in different ways (Locke *et al.*, 2017).

In Lake Taal, the Philippines, women complement or subsidize men's roles by performing several reproductive activities including household food and finance management, while men perform productive work. However, when women transition from the reproductive to the productive domain, men are still limited in performing domestic work that could ease the multiple burdens of women (Mutia *et al.*, 2020).<sup>9</sup> The gender division of labour in different aquaculture farming systems is described below.

### 5.1.3. Small-scale pond aquaculture

In many parts of Asia, small-scale pond aquaculture is carried out in the backyard and provides supplementary income and nutrition for the household. For example, in the Kashmir region, India, rice farming is the main occupation while aquaculture is secondary, along with livestock farming. Small-scale freshwater aquaculture production is considered a family activity, and all members of the family are engaged, while temporary workers are hired for extra work such as construction (men) and harvest (women). Both men and women are involved but women take up more of the aquaculture work, since men migrate out of the village for labour (Shah and Bukhari, 2019).

Small backyard ponds are used for many purposes including washing clothes and utensils, watering

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<sup>6</sup> Milkfish (*Chanos chanos*); Marine cage.

<sup>7</sup> Tilapia (*Oreochromis niloticus*) and Milkfish (*Chanos chanos*); Freshwater lake cage, pond culture.

<sup>8</sup> Mussel (*Perna viridis*), Seaweed (*Kappaphycus alvarezii*); Open marine cage.

<sup>9</sup> Tilapia (*Oreochromis niloticus*) and Milkfish (*Chanos chanos*); Freshwater lake cage.

animals, and bathing (Hambrey *et al.*, 2008 in Belton *et al.*, 2011); fish from most household ponds are for household consumption and contribute significantly to household food security and nutrition.

People in rural areas mostly consume carp of various types, and small indigenous fish such as *Amblypharyngodon mola* (Belton *et al.*, 2011). Research from Faridpur and Khulna districts, Khulna Division of Southwestern Bangladesh, found that women preferred to keep the fishponds close to their homes shaded as (i) they didn't want to cut valuable trees, and (ii) the pond is used for washing and bathing, and the trees ensured privacy (Farnworth *et al.*, 2016).<sup>10</sup>

The often-observed division of labour is that men do the physical work such as pond preparation as well as seed production and collection, while feeding and harvesting is done by both women and men (FAO, 2013). The division of labour in aquaculture is less stringent compared to fisheries, but there are slight differences in locations especially in the area of marketing as well as in terms of how much women and men are involved in aquaculture. For example,

- In Makawanpur district, Nepal, men purchase and stock fry, while feeding and fertilizing of the pond is done by women, as the pond is near the house and it is perceived as an extension of women's household work. The whole family takes part in harvesting. Women and grown up children sell fish and vegetables in the weekly market held in the village, while the men sell live fish in the city market through the Cooperative Society (Shrestha, Amatya and Bista, 2017).<sup>11</sup>
- In Bangladesh, while there is no strict gender division of labour, women are often more involved in stocking ponds, preparing feed, feeding, supervising and managing the ponds, fertilizing, liming, and harvesting fish for home consumption, sorting, cleaning and grading fish for the market, while men harvest fish and sell at the market as well as purchase inputs such as fish seed and feed (Kruijssen *et al.*, 2016).
- Farnworth *et al.* (2016) noted that in Bangladesh and Nepal, women feed and fertilize the pond, engage in limited harvesting using push nets and hooks, sorting fish, processing

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<sup>10</sup> Carp (*Cyprinus carpio*), Tilapia (*Oreochromis niloticus*), Walking catfish (*Clarias batrachus*); Freshwater homestead ponds.

<sup>11</sup> Grass carp (*Ctenopharyngodon idella*), common carp (*Cyprinus carpio*), Nile tilapia (*Oreochromis niloticus*), flying barb *Esomus danrica*), pool barb (*Puntius sophore*), faketa. (*Barilius barna*) and Lesser spiny eel (*Macrogynathus aculeatus*); in freshwater homestead ponds.



and drying, as well as occasionally engaging in farm gate sales.<sup>12</sup> Men do the stocking, harvesting using cast nets and also market the fish in more formal markets.

- In Lake Taal, the Philippines, pond operators not only hired both male and female caretakers, they also paid them equal wages (Mutia *et al.*, 2020).<sup>13</sup>
- In the Terai region, Nepal, both men and women were involved in pond site sales of carp (95 percent of the sales), while only women sold fish in the local market (5 percent of sales). Both men and women collected small indigenous species from canals for pond stocking and harvesting, but water management was men's sole province (Rai *et al.*, 2017).<sup>14</sup>

Women's involvement varies across locations, technologies and cultural contexts. For example, women in Hindu families were active fish farmers, but women from conservative Muslim families showed low participation (Debashish 2001 in Kruijssen *et al.*, 2016: p.4). In Manipur, India, women do not take part much in pond preparation and harvesting in aquaculture, because of the absence of technology that would allow women to participate easily (Meetei, Saha and Pal, 2016).<sup>15</sup>

Women play a larger role when the pond is extensive culture than intensive, and when the pond is in the backyard, rather than far away from home. For example, based on cases in Bangladesh, Kruijssen *et al.* (2016) noted that women are involved more if the pond is close to the home, and they may have more control over decisions with regard to fish production and use. Shah and Bukhari (2019) also noted that women are involved in all activities, including salting and drying fish, mending nets, and feeding fish, especially since the aquaculture farm is for family consumption. Belton, Ahmed and Jahan (2014) noted that in Mymensingh district, Bangladesh, men tend to manage commercial ponds away from the homestead.

Meetei, Saha and Pal (2016) described that in Manipur, India, women independently undertake small-scale operations in aquaculture, allowing men to take up other work. Women are active in integrated aquaculture such as fish culture in paddy fields and the integration of animals with fish culture and horticulture. Women dig ponds with men, prepare ponds for stocking fish seed, buy seed, manage the ponds by fertilizing and feeding, harvest fish, transport and market fish. However, important decisions

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<sup>12</sup> Carp (*Cyprinus carpio*), Tilapia (*Oreochromis niloticus*), Walking catfish (*Clarias batrachus*); Freshwater homestead ponds.

<sup>13</sup> Tilapia (*Oreochromis niloticus*) and Milkfish (*Chanos chanos*); Freshwater lake cage.

<sup>14</sup> Rohu (*Labeo rohita*), silver carp (*Hypophthalmichthys molitrix*), bighead carp (*Aristichthys nobilis*), mrigal (*Cirrhinus mrigala*), common carp (*Cyprinus carpio*), and grass carp (*Ctenopharyngodon idella*), Indian flying barb, (*Esomus danricus*) and Pool barb, (*Puntius sophore*); freshwater homestead ponds.

<sup>15</sup> Unspecified freshwater fish; freshwater ponds and paddy fields.

such as selecting and purchasing fish species to cultivate, netting and harvesting are done by men.

Siddiqua, Haque and Barman (2017) found that in Southern Bangladesh, women are more involved in subsistence pond culture rather than commercial pond culture.<sup>16</sup> Where the aquaculture was homestead-based, women participated more (89 percent) than where it manifested as commercial fish culture (69 percent) or commercial shrimp culture (36 percent). Research by Jahan *et al.* (2015) from multiple districts across Bangladesh surveying 2 678 farmers also observed that women's involvement in homestead ponds was higher than in semi-intensive pond culture.<sup>17</sup> They found that women were more involved in homestead pond culture especially of small indigenous species (Table 11).

As seen in Table 11, women's involvement is higher in homestead ponds where the investment and return are lowest, and as the investment and return increase, their involvement decreases. Women spent time feeding fish in homestead ponds and tilapia ponds, while men spent much time on feeding panga (striped catfish or *Pangasianodon hypophthalmus*) and koi (climbing perch or *Anabas testudineus*), as well as guarding panga and koi, which are higher value fish species than tilapia.

Women's involvement can also vary according to relative wealth of their households, with wealthier households replacing women's labour with hired labour (Barman 2001 in Kruijssen *et al.*, 2016). Jahan *et al.* (2015) noted that for both homestead and commercial ponds and rice-fish culture, women rarely worked as hired labour.<sup>18</sup> For gher-based technologies, comparatively more women were hired, although much less than men (6 to 17 percent of total labour contribution).<sup>19</sup> The reason behind this is, for pond and rice-fish, women in the household take up most of the work, while for gher-based aquaculture, since it is not in the backyard, they need to hire other women.

Often women's aquaculture activities are linked to lower productivity. The reason why women are more actively engaged in homestead fish ponds is not only because it is near the house, but also because it is often less productive. Haque *et al.* (2015) identified that women are more involved in highly shaded ponds in the southwest region of Bangladesh compared to moderately shaded ponds.<sup>20</sup> The highly shaded ponds are not only located closer to the house, but also less productive, and thus men are less interested.

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<sup>16</sup> Polyculture of carps and Golda shrimp/Giant freshwater prawn (*Macrobrachium rosenbergii*) in freshwater ponds; and monoculture and polyculture of Bagda/Giant tiger prawn (*Penaeus monodon*) with some brackishwater species of fish in 'gher' in rice fields.

<sup>17</sup> Small indigenous species (including *mola*, *dhela*, *darkina*, *puti*, and *gura chingri*).

<sup>18</sup> *Pangasius* (*Pangasius pangasius*) (pond, beel); Multiple species of carps (pond); Tilapia (*Oreochromis niloticus*) (pond); Walking Fish (*Anabas testudineus*), Golda shrimp or Giant freshwater prawn (*Macrobrachium rosenbergii*) (pond, 'gher' rice fields, 'beel' natural water holding depression), Bagda or Giant tiger prawn (*Penaeus monodon*), 'gher' rice fields, and small indigenous species (including *mola*, *dhela*, *darkina*, *puti*, and *gura chingri*), Homestead polyculture pond.

<sup>19</sup> Ghers are modified low lying rice fields with raised dykes.

<sup>20</sup> Tilapia (*Oreochromis niloticus*), Catla (*Catla catla*), Rohu (*Labeo rohita*), Mrigal carp (*Cirrhinus cirrhosis*), and Common carp (*Cyprinus carpio*); Freshwater shaded ponds with cages.

**Table 11.** Fish production in different aquaculture technologies

Items	Fish (Homestead pond)	Panga (pond)	Koi (pond)	Tilapia (pond)
Cost (BDT per ha)	92 727	1 836 158	2 894 189	517 899
Gross fish return (BDT per ha)	150 841	2 421 458	3 504 941	783 843
Fish net margin (BDT per ha)	57 941	585 300	610 752	265 943
Total labour use (person-days per ha)				
Women	45	3	14	32
Men	146	356	448	176
Hired men	16	153	181	94
Hired women	0.37	1	0	2

Source: Jahan, K.M.-, Belton, B., Ali, H., Dhar, G.C. & Ara, I. 2015. *Aquaculture technologies in Bangladesh: An assessment of technical and economic performance and producer behavior*. Malaysia, WorldFish.

#### 5.1.4. Freshwater cage culture

Women play a large role in cage culture. In the coastal areas of Greater Noakhali district, Bangladesh, women are directly involved in cage preparation and maintenance, the identification of male and female freshwater prawn, procuring quality seed and stocking of fish. Cage culture, which does not require a pond, is an alternative aquaculture that is suitable for landless women; typically, women are involved in cage culture in marshlands, which are not privately owned (Ahmed, Halim and Sultana, 2012). In Pizhala area of Kadamakudy Panchayat in Ernakulam district, Kerala, India, Joseph and Gopalakrishnan (2017) found that women are engaged in the management of cage farms, for example, procuring seed, rearing fish seed in the nursery, scheduling feed, doing the actual feeding, maintaining the cages, and marketing.<sup>21</sup> They also sold the fish on their own. Vipinkumar *et al.* (2017) also noted that in Kerala, India, women are engaged in cage culture through record keeping, seeding, feed preparation and feeding, but not in decision-making.

#### 5.1.5. Mariculture

Mariculture is male dominated because it is considered physically strenuous and also because it is conducted far from the house, making it difficult for women to attend to household work and fish culture work at the same time. Ferrer *et al.* (2017) added, based on their study in the Philippines, that mariculture was also introduced as a men's occupation, when the government introduced it as an alternative livelihood for small-scale fishers, who were mostly men; thus, men were given training. They also noted that in many mariculture presentations, the fish farmer operator is depicted as male. Men perform the role of

<sup>21</sup> Pearl spot/ Green chromide (*Etroplus suratensis*), Marine cages.

cage fabricators and training programmes targeted them. Men were also hired as fish-cage watchers and caretakers, who also feed, stock, and clean nets. A similar situation was found in Sabah state, Malaysia. The fish cage industry mainly rears hybrid grouper fish (*Epinephelus* species) and it is an occupation that is perceived to be for men because of the high demand for labour and investments. Women are engaged through their fish breeding and harvesting activities, but these roles are unrecognized (Tamoethran, Hussin and Cooke, 2019).

Ferrer *et al.* (2017) argued that women do play a role in mariculture. Their study in the municipality of Bolinao showed that while 43 men operated mariculture cages, there were also nine cages operated by women. They also noted that in the municipalities of Balingasag (Misamis Oriental Province), Lopez Jaena (Misamis Occidental Province), Sual, Bolinao (both in Pangasinan Province), Calape, Talibon (both in Bohol Province), and Santo Tomas (La Union Province) in the Philippines, women actively participate in mariculture operations except as watchers and net menders. The watchers of the fish cages are often locally hired men. Changing, cleaning, and mending nets is a physically strenuous task, and carried out mostly by men. Women go with their husbands to help in the feeding or in the stocking activities. Sometimes, women feed the fish alone while the husband fishes nearby. Harvesting is laborious and risky, and usually involves the men, while women sort fish.

Division of labour can be different by size of operation. In Balingasag, Misamis Oriental province, in the Philippines, Roxas *et al.* (2017) found that larger operators will hire men for cage culture management and repairs, while small-scale operators do this within the family with both women and men taking part. Most (80 percent) of large and medium-sized operations are owned by men. Women workers are hired to count the fingerlings for stocking in fish cages. Hired watchers for large operators, sometimes armed, are all men and they secure the fish cages day and night from poaching. In small-scale operations, men alternate with their wives and male children or both to keep watch over their cages. Feeding is often done by men, but women feed the juvenile milkfish when their husbands engage in fishing, or find an extra job, or when the men are sick. Fish harvesting is done by hired men or male members of the family, while women prepare the food for the harvesters. If they cannot afford to hire other men, women in the household are involved in harvesting. Fish are sold at the farm to traders.

Grouper and lobster farms from South East Sulawesi, Indonesia, mainly utilized family labour, unlike seaweed and oyster farms in this area, which used more non-family labour. Grouper and lobster farms are more male dominated (one woman to three men) compared to seaweed and pearl oyster farming (almost equal numbers of women and men) (Aslan *et al.*, 2015).<sup>22</sup>

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<sup>22</sup> *Kappaphycus alvarezii* and *Eucheuma denticulatum*; Rope farming.

### 5.1.6. Seaweed culture

There are many case studies on women's involvement in seaweed culture, but it is sporadic and difficult to generalize; however, these tend to suggest that women are active in seaweed culture. But there is a lack of gender-disaggregated data in seaweed production. For example, in Sabah, Malaysia, the government launched a Mini Estate System under the National Seaweed Nucleus (NSN) programme, which was to provide an opportunity for women to participate in seaweed cultivation and enhance their skills, knowledge and income. However, seaweed cultivation is often seen as a family enterprise, and the exact number of women and men directly or indirectly engaged in seaweed activities is not known. Earlier, the strenuous work of sitting under the sun for long hours had discouraged youths from engaging in seaweed production. Later, young women seem to have taken more interest, but there is no data showing the extent to which women and men are now involved in seaweed culture, making it difficult to assess the effect of this programme on women's participation (Hussin and Khoso, 2017).

The active participation of women in seaweed production has been anecdotal, such as the description by Fitriana (2017) in Nusa Tenggara Timur Province, Indonesia (Box 10). But these stories show how women make use of seaweed production to strengthen their economic basis.<sup>23</sup> In Tamil Nadu, India, Krishnan and Narayanakumar (2013) reported that seaweed cultivation had a very positive impact on the socio-economic status of women cultivators.<sup>24</sup> Women were leading seaweed cultivation activities and also performing routine household chores (Hussin and Khoso, 2017). In coastal India, since the late 1960s, women have been collecting seaweed commercially, while around the year 2000, women turned to seaweed culture (Ramachandran, 2012).

Seaweed cultivation is seen as a family enterprise in countries such as the Philippines and Indonesia. In the municipalities of Salcedo and Guiuan in the province of Eastern Samar, the Philippines, seaweed production activities are considered 'family work' or '*pintakasi*', that is, cooperative free labour done by immediate community members. Family members, women and girls, and men and boys are involved in seaweed farming. However, men are responsible mainly for providing the inputs (seedlings, ties, ropes), attaching seaweed to the main rope in the sea, doing the daily maintenance, harvesting the seaweed, and selling seaweed to traders. Cleaning the ropes, tying the seedlings to the ropes, untying the seaweed, and sun-drying the seaweed were done particularly by women and children. The study concluded that seaweed production processes are equally distributed between men and women with help from their

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<sup>23</sup> *Kappaphycus alvarezii* and *Eucheuma spp*; "long line" which uses ropes floating in the water column and "off bottom" which uses ropes that are held near the surface of the seafloor.

<sup>24</sup> *Kappaphycus alvarezii*, Marine rafts.

## Box 10. Gender division of labour in seaweed production in Indonesia

In Nusa Tenggara Timur Province, Indonesia, there is a clear gender division of labour in seaweed farming. Although the farming is conducted as a family enterprise, the inputs (seedlings and ropes) are mostly obtained by men, since this involves travel. Both women and men clean the ropes on land before the seedlings are attached. Tying the seaweed seedlings to the ropes is done by the whole family, although women dominate this activity. Men take the seaweed-laden ropes to sea in dugout canoes and attach the tied seaweed to the main ropes. Men also maintain the ropes daily. During harvest time, women collect the fallen seaweed and untie the seaweed from the ropes. In Alor Regency, women dived to collect fallen seaweed, while in Kota Kupang city and Rote island, women collected seaweed along the coast. For selling to traders, women sold their seaweed if the trader was also a woman, likely because it made them comfortable. Women and men contribute similar amounts of labour to most processes in seaweed production. There are slight differences in how the seaweed business is owned by women and men. In Kupang City and Alor Regency, seaweed farms are a family business, but owned by men as heads of household. In Rote, seaweed farming is an individual business and women and men own separate farms, although they cooperate for labour-intensive work such as tying seedlings to ropes.

**Note:** *Kappaphycus alvarezii* and *Eucheuma spp*; Cultivated by “long line” which uses ropes floating in the water column and “off bottom” which uses ropes that are held near the surface of the seafloor.

**Source:** Fitriana, R. 2017. Gendered participation in seaweed production - Examples from Indonesia. *Asian Fisheries Science*, 30S: 245–264.

children, both boys and girls (Cuaton, 2019).<sup>25</sup> In South Sulawesi, Indonesia, both men and women are engaged in seaweed farming, operating it as community level farming with additional labour hired from non-farming families in the village (Larson *et al.*, 2021).<sup>26</sup> Seaweed production is important for the household. In Sabah Malaysia, women’s income from seaweed farming has enabled men to continue fishing since it stabilized the income in households experiencing unstable fishing income (Hussin and Khoso, 2017).

Gendered norms and beliefs influenced men and women’s participation in livelihood activities (Gopal *et al.*, 2014) which is also evident in the seaweed farming industry. Gender division of labour in seaweed cultivation is also determined by cultural beliefs. In northeastern Malaysia, Hossin *et al.* (2014) claimed

<sup>25</sup> *Kappaphycus alvarezii* locally called “cottonii” or “guso”, *Kappaphycus striatum* locally called “guso”, *Gracilaria spp.* or “gulaman”, and *Caulerpa spp.* or “lato”; Marine rope farm.

<sup>26</sup> *Kappaphycus alvarezii* (in shallow coastal areas), *Kappaphycus striatum*, *Eucheuma denticulatum* (in shallow coastal areas) and *Gracilaria* (coastal ponds).



that, in the Suluk community, women were distanced from seaweed cultivation because it was believed that menstruation has a deleterious supernatural effect on seaweed production. It was considered shameful for men if their women took part in seaweed cultivation.

The gender division of labour in seaweed farming differentiates how women and men accumulate knowledge around the production as well as how they experience policy changes. A study of seaweed farmers in Zamboanga City and Bohol and Tawi-Tawi provinces, the Philippines found that men noted a wider impact on seaweed including environmental risks, weather, pollution and fish predation, women were reported to be more interested in site suitability as an important strategy to manage diseases (such as ice-ice disease) and pests (that is endophyte infestation) (Suyo *et al.*, 2021).<sup>27</sup> Ramirez, Narvaez and Santos-Ramirez (2020) argued that the introduction of a zoning system to allow and allocate seaweed farming areas near the coast will benefit women more than men and allow women to participate more in seaweed farming, since seaweed farming further from the coast is heavily dominated by men.<sup>28</sup>

#### 5.1.7. Shrimp and prawn farming

This section includes both small-scale coastal or brackish water shrimp farming as well as freshwater prawn farming. In Khulna, Jessore and Bagerhat in Bangladesh, women engage in a wide array of tasks in shrimp farming, from repairing dykes and planting crops, to cleaning ponds, selecting and buying larvae, acclimatizing and releasing the fry, collecting feed and dispersing it, monitoring the growth of the fry and guarding the small-scale shrimp ponds near their homes (Nuruzzaman, 2012).<sup>29</sup>

In the Mekong Delta, Viet Nam, women are considered unlucky, so they are not allowed to visit hatcheries or to wade into intensive shrimp ponds, while in extensive coastal shrimp ponds, both women and men are involved in all activities (Ha and Nguyen, 2014).<sup>30</sup> Extensive coastal shrimp farming is supported by the conservation of the forest and the cultivation of crabs, shellfish, and molluscs, which allows for natural recruiting of wild shrimp together with stocking of additional seeds from hatcheries. However, men are responsible for decisions on farming techniques, when to dredge and when to stock, whereas women help to harvest and sell the shrimp.

Coastal shrimp farming can take up much of women's time. Swapnan and Gavin's (2011) study of villages in the North and South Bedkashi unions under Koyra sub-district located at the heart of the shrimp farming

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<sup>27</sup> *Kappaphycus alvarezii* and *Eucheuma spp.*; Marine rafts.

<sup>28</sup> *Eucheuma cottonii* and *Eucheuma spinosum*, Marine rope and marine rafts.

<sup>29</sup> The paper discussed training on Golda shrimp or referred to as Giant freshwater prawn (*Macrobrachium rosenbergii*) targeted to women. This statement is for small-scale shrimp ponds in general.

<sup>30</sup> Species of shrimp was not specified in this paper.

areas in southwest Bangladesh showed how women's workload has changed after the introduction of commercial saline water shrimp farming, with women expressing difficulty in attending to other income generating activities and household work (Table 12).<sup>31</sup> Brackish-water shrimp farming was considered to provide higher economic benefit, and farmers started to convert their land and freshwater ponds to shrimp ponds. Women were not able to continue with their rice production once some lands started to be converted into shrimp ponds because their lands also get affected by salinity. Therefore, they did not have a choice but to engage in shrimp farming, which increased their workload.

**Table 12.** Change in daily activities of women in the study villages after the introduction of shrimp cultivation in southwest Bangladesh

Activities before the introduction of shrimp farming	Present activities after the introduction of shrimp farming
Preparing food in the morning	Preparing food in the early morning
Drying rice in the sun or boiling and husking of rice	Working in shrimp ponds, collecting shrimp fry. Paddy production has ceased
Taking care of their children and other family members	Work in ponds all day long, leaving no time for family matters
Working in their own vegetable garden (source of income)	Vegetables cannot be grown because of salinity
Maintaining hens and ducks and selling eggs (source of income)	No option for raising ducks as the owners of shrimp ponds do not allow it, also high salinity
Selling handmade mats prepared from tree leaves during their leisure period (source of income)	Trees are disappearing because of increasing salinity. No leisure period after working in shrimp ponds

**Source:** Swapan, M.S.H. & Gavin, M. 2011. A desert in the delta: Participatory assessment of changing livelihoods induced by commercial shrimp farming in Southwest Bangladesh. *Ocean & Coastal Management*, 54(1): 45–54.

Women are more involved in freshwater prawn labour than coastal shrimp labour. Belton (2016) showed that in Bangladesh, women's wages can increase significantly when there is labour shortage, and women get more control over the farming when their husbands out-migrate for labour.<sup>32</sup> Freshwater prawn farming provided women with income that they can decide on their own to spend for the household. Even though freshwater prawn farming provided women with job opportunities and income, in some places, their social well-being deteriorated because of land grabbing (see Section 5.2.).

<sup>31</sup> Species of shrimp was not specified in the paper.

<sup>32</sup> Golda shrimp/Giant freshwater prawn (*Macrobrachium rosenbergii*); Homestead ponds.

#### 5.1.8. Crab farming

There have been cases of success among women crab farmers, although the total number of women crab farmers is not known. Shanthi, Krishnan and Ponniah (2012) reported successful women entrepreneurs in mud crab farming in cages, pens and tanks in Tamil Nadu, India. Women acquired loans from self-help groups (SHGs) to start crab farming, and raised awareness among the group on how crab farming can provide women with independent income.

Shanti, Krishnan and Ponniah's (2012) study on crab culture, along with fish and shrimp culture showed that women participate in different parts of the aquaculture value chain, especially if traditional activities are involved.<sup>33</sup> Women's SHGs helped women participate in more complex activities. Women with higher education or those that have family businesses, generally with family support, showed high entrepreneurship skills and managed complex aquaculture structures.

Crab fattening is not for home consumption, but solely for the market. In the southwest region of Bangladesh, a project was promoted to integrate Nile Tilapia into mud crab culture so that households can use it as a source of protein for everyday consumption and at the same time earn an income through crabs (Haque *et al.*, 2017). Women were targeted for training on how to raise crabs and integrate their culture with tilapia, as well as training on nutrition. Trained women farmers were able to increase their income by more than 20 percent and double the protein consumption in the household.

#### 5.1.9. Oyster and mussel farming

Women are reported to be active in oyster and mussel farming, alongside men. Since the activities take place in nearshore or inshore locations, it allows women to better juggle their household responsibilities and aquaculture activities. In Western Visayas, the Philippines, almost 80 percent of the households engaged in oyster farming said that their family members are engaged in farming activities. Women participate in harvesting, processing (shucking and bottling in brine or fermenting) and marketing of oysters and mussels as well as feeding and ancillary activities such as net-mending and post-harvest (Rana, Siriwardena and Hasan, 2009 in Salayo *et al.*, 2012). In bivalve farming, especially mussel and oyster culture in Kerala, India, women and men are almost equally involved in decision-making, with women being in charge of financial management (Vipinkumar *et al.*, 2017). There seem to be substantial opportunities to develop women's participation and benefit through oyster aquaculture as can be seen in Box 11.

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<sup>33</sup> Mud crab (*Scylla serrata*) (Unspecified farming method, pond culture); fresh water prawns (*Macrobrachium spp.*), Unspecified water crab (Crab fattening pen); Unspecified crab (Concrete tank), Tiger shrimp or Giant tiger prawn (*Penaeus monodon*, pond culture); sea bass (*Lates calcarifer*, unspecified farming method); Unspecified ornamental fish (farming method not indicated).

#### 5.1.10. Ornamental fish

Both women and men are involved in ornamental fish raising, although the information available is descriptive. According to a study in Panangad and Kotatt regions in Ernakulam and Thrissur districts, Kerala, India, ornamental fish farming became integrated into the household daily routine along with other agricultural activities and both the husband and wife were involved in all the related activities. Men engaged in tank building, pond preparation, covering the ponds with nets to keep the leaves out, quarantining, giving medicines, looking after brood fish, packaging fish and transporting them. Women were involved in fish feeding, exchanging water, removing waste, cleaning the premises and packing the fish as well as family chores (Jayalal, Sruthi and Gopal, 2016).

#### **Box 11. Improving women's participation in oyster aquaculture in India and Sri Lanka**

In Kasaragod and Malappuram district in Kerala, India, oyster aquaculture is an emerging value chain that provides opportunities to empower women and gives them an economic alternative to capture fishery, which has issues of declining stocks, increasing costs, and seasonality.

In Puttalam Lagoon, Sri Lanka, the Canadian International Food Security Research Fund, supported by the National Aquatic Resources Research and Development Agency (NARA), initiated a pilot on coastal farming of oyster (*Crassostrea madrasensis* or *Crassostrea belcheri*). The project promotes women's participation in oyster farming by linking to their existing activities such as clam and fish harvesting. The project provided a means of entering the market by bringing in marketers and buyers to teach marketing to the women. The private sector buyers guided the oyster growers on how to select oysters that meet market criteria. NARA provided water quality analysis and monitoring, while the private sector constructed a purification process facility so that oysters are treated in sterilized seawater to remove bacterial contamination. Women were required to balance their existing fish post-harvest work, agriculture and domestic responsibilities with oyster farming, and noted that they could spend 2 to 4 hours a day during the fishing season on oyster farming while in the off season they would be able to spend 3 to 6 hours a day. During these different seasons, women's domestic responsibilities have not changed. The oyster farms were set up close to the home village, so that women could easily juggle multiple responsibilities. It was also important that access to the oyster farms did not require boats, which would have required women to depend on men to attend to the farm. The study showed that 92 percent of women thought that oyster farming increased their household income, 86 percent said that they can conduct the farming independently, 65 percent said they are the primary decision-makers of the oyster culture, and 97 percent said that oyster farming allowed them to assert a stronger leadership position in the community.

**Source:** DeJager, T. & Jayasinghe, C. 2016. From capture to culture Space for mainstreaming women in coastal aquaculture development in Sri Lanka. In J. Njuki, J. Parkins & A. Kaler, eds. *Transforming Gender and Food Security in the Global South*. pp. 49–75. London, Routledge.

In Mumbai and Thane districts, Maharashtra, India, men participated more in activities such as checking the health of the fish and water parameters, culturing and maintaining the live food, recording of parameters, setting up fish for breeding, preparing tanks for rearing or breeding, recording activities, preparing the fish for sale, packaging fish, preparing and maintaining the filter system, and marketing. Women, however, were more involved in feeding, tank cleaning, siphoning feed and removing the offspring. Men spent eight hours a day on ornamental fish production while women spent four hours, since women need to spend much longer hours on household and community work (Yadav and Sharma, 2017).

#### **5.1.11. Other aquaculture systems**

Quarry fish farming is carried out in Perumbavoor municipality, Ernakulum district in Kerala. A group of young people formed an SHG called Samanwaya which converts quarries into large freshwater reservoirs, raising African catfish. The farms require regular maintenance and feeding, which creates jobs, and these quarry farms generated profits. Men exclusively managed activities such as preparation of the quarry, purchase of raw materials and other activities. Other activities such as seeding, feeding, maintenance, harvesting, and marketing were undertaken by both men and women, while feeding was done mostly by women (Vipinkumar *et al.*, 2017).

### **5.2. ACCESS TO RESOURCES**

Access to financial resources, as well as training and formal education, are important to shape the outcomes of women in aquaculture (FAO, 2017). Gender inequalities such as ownership and access to resources (land, ponds, fisheries-related assets), lack of independent credit, unequal access to education, training, and knowledge, different social capital and networking (lack of bargaining power in cooperative, associations, and unions) are heavily skewed against women (FAO, 2013). To what extent women participate in and benefit from aquaculture is shaped by gender relations that govern the resources and support that they get from family members (Kruijssen *et al.*, 2016; Morgan *et al.* 2015a). In the following sub-sections, resources that are considered crucial for women and men in aquaculture are reviewed: financial resources, technology and training, land and income as well as social network and policy support.

#### **5.2.1. Access to finance**

Lack of access to affordable credit to buy seeds, cages and feed is a problem for fish farmers, both women and men. Meetei, Saha and Pal (2016) noted that in Manipur, India, one of the major constraints for women in aquaculture is their lack of access to credit. In Lake Taal, the Philippines, 47 percent of respondents, both male and female, have availed of credit and loans mostly provided by commercial banks; women usually avail of loans for the family. Loans acquired by women are often used for buying

fishing paraphernalia and for household needs. Both women and men can borrow money from commercial banks, but the extent to which women have control over the credit is not clear (Mutia *et al.*, 2020).<sup>34</sup> MYSAP (2020a) in their aquaculture training project in Sagaing Region, Myanmar, experienced the need for micro-credit services to accompany training, so that farmers can employ the technology being proposed.

Case studies carried out in Egypt, Ghana, Maldives, South Africa, Tanzania, and Viet Nam on financial services for small- and medium-scale aquaculture and fisheries producers (Kleih *et al.*, 2013) found that traditional formal financial services are reluctant to meet the needs of small and medium enterprises (SMEs), and small and medium-scale aquaculture and fisheries enterprises in those countries still rely predominantly on informal sources of credit. However, the study did not include any gender analysis, thus it is not clear whether women-led enterprises are more disadvantaged. However, since women are more concentrated in small scale aquaculture, among all the women engaged in aquaculture, there might be more women who experience lack of access to credit more than men. Others have also identified difficulties that small-scale operators face. Zamroni, Laoubi and Yamao (2011) in the case of Indonesian seaweed farmers identified that farmers borrow from family, friends and brokers (intermediaries) because they have problems accessing formal financial institutions.<sup>35</sup> Intermediaries allow for flexible payment schedules and also repayment in kind, which is convenient for farmers. At the same time, the farmers are tied to the intermediaries and cannot sell to other buyers.

### 5.2.2. Income

Income from aquaculture can provide women with financial freedom, as well as improve their self-esteem and their status in the household (FAO, 2017). Aquaculture can benefit women more than men. Picaulima *et al.* (2017) did a study in Kei Islands, Indonesia, where the income comes from ecotourism, aquaculture and fisheries in different degrees depending on the location. In places where mariculture is active, women's incomes are higher, while in places where fisheries are active, men's incomes are higher. That said, some studies show that women in aquaculture do not necessarily have control over their income. In Bangladesh, women have hardly any control over aquaculture income, despite putting major work into aquaculture (Kruijssen *et al.* 2016).

Aquaculture contributes to women and men's income not only through the sale of fish but also by creating employment. In four townships (Twantay, Maubin, Nyaungdon, Kayan) in Ayeyarwady and Yangon regions, Myanmar, the wages offered by fish farms are reportedly higher than those in crop farms, particularly for

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<sup>34</sup> Tilapia (*Oreochromis niloticus*) and Milkfish (*Chanos chanos*); Freshwater lake cage.

<sup>35</sup> *Euclidean cottonii*; farming method not specified.



women (Belton, Filipski and Hu, 2017).<sup>36</sup> However, women workers in general seem to be paid less than men workers. The reasons given are less alternative employment for women (Jahan *et al.*, 2015) or that men do physically heavier work (Shah and Bukhari, 2019).

Such wage disparities are also seen in fish processing factories. Women factory workers' wages were 26 percent less than those of men in Khulna region and 31.5 percent less in Chittagong region, both in Bangladesh (Nuruzzaman and Uddin, 2017). Women's low education, and lack of alternative employment for lower-educated women contribute to women's low wages, and in some places, lower caste can further depress their wages (FAO, 2013).

### 5.2.3. Access to technology and training

In order to facilitate the generation of independent incomes for women from aquaculture, projects have targeted women to enhance their technical knowledge of the sector.

- In Tamil Nadu, India, post-tsunami, brackish-water aquaculture technologies were transferred by ICAR–CIBA (Indian Council of Agricultural Research's Central Institute of Brackishwater Aquaculture) to Women's Self-Help Groups (WSHGs) as an alternative livelihood option. Welfare measures directed by various government agencies and non-governmental organizations (NGOs) also brought about positive changes in attitudes among the women and they were able to improve their contributions to family incomes (Shanthi, Mahalakshimi and Chandrasekaran, 2017).
- In Kerala, India, mussel farming racks were demonstrated as a women-friendly and profitable technology that can be made and placed in the water by hiring men at a cost of about USD 5.50 a day. The remaining activities, which include seeding in specially stitched cloth bags tied on ropes, monitoring of growth, harvesting, cleaning (depuration), and shucking can all be done by women (Ramachandran, 2012).
- Noting that commercially profitable technologies are often taken up by men, and women get excluded, WISH Pond technology was introduced in Stung Treng province, northeast Cambodia, as a pond design that allows both women and men to take up aquaculture, after consultations with them (Seila *et al.*, 2016).<sup>37</sup> For example, as both male and female farmers found it difficult to calculate feed ratios,

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<sup>36</sup> Rohu (*Labeo rohita*), Silver barb (*Barbonymus gonionotus*), Freshwater pond.

<sup>37</sup> African catfish (*Clarias gariepinus*); Pond culture.

the project introduced a type of basic measure, such as a used condensed milk can, to measure the feed for their fish (Kwasek *et al.*, 2015).<sup>38</sup>

- In the regions of Khulna, Barisal, Jashore and Faridpur, Bangladesh, fish seed quality improvements and farmer training were conducted under the United States Agency for International Development (USAID) funded Aquaculture for Income and Nutrition (AIN) project (2012–2013). The project identified the importance of combining improved seed and training. The project specifically targeted poor and women fish farmers and of the 20 000 farmers that went through training, around 90 percent were women (AIN, 2014 in Karim *et al.*, 2016).<sup>39</sup>
- In Dinajpur District, Bangladesh, training on hapa-based tilapia seed production was conducted using flexible locations and timings to ensure that both women and men could participate.<sup>40</sup> The female household members were able to participate effectively with the support of a women’s training team (Barman and Little, 2011).
- In Sagaing Region, Myanmar, the Inland Myanmar Sustainable Aquaculture Programme (INLAND MYSAP) trained women farmers on small-scale aquaculture, on how to check water quality, and how to fertilize the pond and feed fish. Before training, a woman demonstration farmer could harvest rohu weighing 80 grams after 1.5 years. After she adopted the technology, she could harvest rohu weighing 560 grams after eight months (MYSAP, 2020b).

At the same time, there are challenges in improving access to technology equally for women and men. Women might not be able to access technology due to the perception that they cannot operate machinery, and because men are the ones who own all the machinery, as was seen in a case in Bangladesh (Naved *et al.*, 2011). There are further restrictions in terms of women going into the water or handling things that need physical strength, or because of their lack of knowledge and education (Kantor, Morgan and Choudhury, 2015; Kruijssen *et al.*, 2016). It was noted that targeting women in projects does not guarantee that they will benefit as intended, because men have been found to take control of new technologies as soon as their profitability became apparent (Quisumbing and Kumar, 2011). Choudhury and McDougall (2018) recommended that introducing technologies such as gillnets for catching mola and that do not require women to go into ponds to harvest would allow women to take part in aquaculture better. Other challenges are described in cases such as:

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<sup>38</sup> African catfish (*Clarias gariepinus*); Pond culture.

<sup>39</sup> Rohu (*Labeo rohita*), Catla (*Catla catla*), Mrigal (*Cirrhinus mrigala*); in Homestead pond culture.

<sup>40</sup> Seed production of Nile tilapia (*Oreochromis niloticus* L) in nylon mesh net cages (*hapas*).

- Lack of access to credit can hamper women from implementing what they learn. In Kerala, India, women received financial and technical support for the ornamental fish trade, but the financial support was not enough and they had to find additional resources themselves, which led to women not earning profits (Jayalal, Sruthi and Gopal, 2016).
- A study on seaweed production in Alor and Rote Ndao Regencies and Kupang City, Nusa Tenggara Timur Province, Indonesia, found that men have more opportunities to acquire skills and technology as they typically participate in community meetings as heads of households, and women are left behind. Although their participation was encouraged, women believed male participation was enough and felt inferior in attending (Fitriana, 2017).
- A study in a mariculture park in Balingasag, Misamis Oriental, the Philippines, noted that the Bureau of Fisheries and Aquatic Resources (BFAR) built a milkfish processing plant in 2011 to increase women's participation in fish cage operations. In order to sell to supermarkets and other institutional buyers, the products produced by the women had to comply with certification standards, such as Good Manufacturing Practices (GMP) and Hazard Analysis and Critical Control Points (HACCP). Women were given training to provide documents on food safety. However, the very minimal volume of processing and lack of regular expert supervision and monitoring hindered the women's compliance with the standards. Without external expert support, it was difficult for women to maintain the standard, since most women did not finish high school (Roxas *et al.*, 2017).
- A study from Zamboanga Peninsula, the Philippines revealed that women's access to information was through their husbands. They commonly rely on their husbands for market information (Ramirez, Narvaez and Santos-Ramirez, 2020).

It is important that the technical assistance is provided to women and men directly and not to assume that knowledge is shared within the household (Ramirez, Narvaez and Santos-Ramirez, 2020; Morgan *et al.*, 2015b). Similarly, membership in organizations needs to be accessed equally by women and men so that both can have better access to resources. At the same time, there are problems if the training is focused only on women, as can be seen in Box 12.

Training needs to involve powerful owners and family members as well as community members so that they can accept new roles for women in aquaculture. Studies in Bangladesh showed that without a buy-in and agreement from the community that it will benefit the whole family, involving women in aquaculture – both in attending training and adopting new practices – can face opposition (Choudhury and McDougall,

### **Box 12. Pond demonstration training in Khulna and Barisal districts, Bangladesh**

The communities in southwest Bangladesh received pond polyculture and fish cage culture training. The pond polyculture training was targeted only at women and was conducted at the village. Some of the training participants were selected as demonstration farmers and were provided with fingerlings. Some women who did not get the fish was blamed by their husbands for not being able to receive anything from the project and were not able to get help from their husbands in fish farming. Some other women as well as some men expressed their dissatisfaction at only women being trained. Men felt that they are excluded and some were not willing to work on fish farming, leaving all the workload of raising fish to women. The project observed that targeting only women might have had an unintended result in increasing women's workload.

Source: Morgan, M., Choudhury, A., Braun, M., Beare, D., Benedict, J.J. & Kantor, P. 2015. *Understanding the gender dimensions of adopting climate-smart smallholder aquaculture innovations*. Penang, CGIAR Research Program on Aquatic Agricultural Systems.

2018; Farnworth *et al.*, 2015). Changing wider gender perceptions is crucial for the successful introduction of women's involvement in aquaculture.

Based on the study of aquaculture technology adoption processes from Bagerhat, Faridpur and Khulna, Bangladesh, Farnworth *et al.* (2015) argue that access to market information especially on price, as well as connections to other actors in the value chain is important for both women and men, and information communication technologies (such as mobile phones and local Internet kiosk services) need to be accessible as well. It is more effective if technological training is transferred as a package rather than separately in order for farmers to understand the impact of the technology on their livelihoods. Training needs to be introduced step by step, starting from farmgate to the larger marketplace, so that the resistance to women accessing public marketplaces will be resolved slowly (See Box 13).

In Bangladesh, for gender integration, aquaculture projects have taken the "couple" approach – that is, to involve both husband and wife in aquaculture technology training. However, such training rarely involved critical questioning of gender inequalities and how such gender issues might affect livelihoods and the effectiveness of adoption of new technologies, weakening the expected effect from the project (Terry, 2014).

Certifications can be useful to access better markets, but it can be a challenge for small producers where women are concentrated. In Viet Nam, there are mainly four certification schemes that exist for shrimp farming:

### **Box 13. Gradual introduction of women to the marketplace: evidence from Bagerhat, Faridpur and Khulna, Bangladesh**

The study that compared four projects on homestead aquaculture technology delivery in Bagerhat, Faridpur and Khulna districts in Bangladesh has shown how the knowledge that women gained through the training on how market functions has improved their voice in when and how to sell. In all the places, the social norm is that men are the ones who go to the market to sell fish. Through the project interventions, Bagerhat district women felt that it is acceptable for women to sell fish at home if they use veil and behave decently such as showing respect to elders. Women in Khulna district said that they learned how to talk to people during the training, and gained more confidence to sell in the market. Several women in Khulna said that they are now leading the selling activities since they are able to check market information. Even though many women still face criticism when they go to the market, women who participated in the training are gaining confidence to challenge the gender norms.

Source: Farnworth, C.R., Sultana, N., Kantor, P. & Choudhury, A. 2015. *Gender integration in aquaculture research and technology adoption processes: Lessons learned in Bangladesh*. Penang, WorldFish.

- the Global Partnership for Good Agricultural Practice (Global GAP);
- the Aquaculture Stewardship Council's (ASC) Shrimp Aquaculture Dialogue (ShAD);
- Best Aquaculture Practices (BAP);
- Vietnamese Good Aquaculture Practices (Viet GAP).

Marschke and Wilkings (2014) argued that these certification schemes benefit larger producers or companies and are less suitable for small producers. The article did not contain gender information but women are concentrated in small producers and the certification schemes might not be favourable for small producers.

#### **5.2.4. Access to waterbodies**

For aquaculture, it is not only access to land but also access to waterbodies that is important. In Tami Nadu, India, women are engaged in fish marketing, wild shrimp collection as well as jellyfish processing, and crab fattening. It was found that women not only had access to, they had control of, brackish water areas such as ponds and lakes, creeks and canals in the villages that they could use for small-scale fishing and aqua-farming (Shanthi, Mahalakshimi and Chandrasekaran, 2017).

Pond ownership is an important aspect in making technology training more effective. Women can own land and ponds as per Islamic law in Bangladesh, however, in practice, less than one percent of pond

owners are women (Jahan *et al.*, 2015).<sup>41</sup> Household ponds are often jointly owned, but as Belton *et al.* (2011) noted, household ponds can belong not only to the whole family, but to several related or extended families, making the negotiation even more complicated.

Choudhury and McDougall (2018) observed that in two villages from Bagerhat district, Bangladesh, training women on homestead ponds itself is not enough, since ponds are often jointly owned. It is important to understand how decisions are being made for jointly owned ponds and how women navigate layered gender relations with owners and other stakeholders. In particular, young women are more vulnerable in asserting their decisions on the management of the pond. They also noted that how women and men perceive ownership is different. Women experience psychological ownership while men claim legal ownership. That is, for women, their sense of control over the land is not based on legal ownership but on how much they are entitled to the land based on their position in the household. Such a sense of ownership might be influenced by laws, age, household wealth, and experience of women, and need careful consideration to capture the nuanced differences to address women's empowerment through provision of ownership of ponds. Women's knowledge of aquaculture can also influence their sense of ownership, emphasizing the importance of training to women.

Certain types of gher aquaculture in open canals do not require land, and can create employment for landless women and men in Bangladesh.<sup>42</sup> However, these women and men still need to negotiate for drainage access and control over irrigation channels. That said, the emergence of gher shrimp culture has caused predatory land grabbing for shrimp farming, which has affected the livelihoods of paddy farmers. The change from paddy cultivation to prawn aquaculture has led to a decline in the production of crops, including paddy, cattle and poultry, over which women have more control, while shrimp, prawn or fish culture as well as rent from land are controlled by men (Belton, 2016).<sup>43</sup>

In southwest Bangladesh, cage culture in open-access waterbodies (such as canals that run beside households) does not require any ownership of land such as in the case of gher and ponds, and is considered to have the potential to benefit landless women (Box 14). However, women still need men's support, since most do not know how to buy inputs. Efforts to create bank accounts under women's names were ineffective as, in reality, they often own the account in name only, because decision-making patterns in the household did not change (Morgan *et al.*, 2015a).

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<sup>41</sup> Pangasius (*Pangasius pangasius*) (pond); Multiple species of carps (pond); Tilapia (*Oreochromis niloticus*) (pond); Golda shrimp or Giant freshwater prawn (*Macrobrachium rosenbergii*) (pond) and small indigenous species (including *mola*, *dhela*, *darkina*, *puti* and *gura chingri*) (Homestead polyculture pond).

<sup>42</sup> Ghers are modified rice fields with high, broad peripheral dikes.

<sup>43</sup> Tiger shrimp or Giant tiger prawn (*Penaeus monodon*), Golda shrimp or Giant freshwater prawn (*Macrobrachium rosenbergii*); Homestead ponds, rice field culture.



#### **Box 14. Introduction of cage aquaculture for resource-poor women in Bangladesh**

In southwest Bangladesh, cage aquaculture was introduced targeting resource-poor people who do not own land and do not have access to culture fish in ghers and ponds. Cage aquaculture was considered suitable for women and men who do not have ownership to land since they will have access to common open-access waterbodies such as canals to introduce cage culture. The project selected resource poor women and men who live close to such open access waterbodies, so that it is easier for women to be involved without mobility constraints and juggling with household work. Women attended training and with input support from the project, women were able to enjoy the harvest. In one of the target villages, a women's group managed the cages and opened bank accounts in women's names. However, they suffered from unequal power relations in the women's group and also men did most of the cage culture work and also made decisions. In another village, even though women owned the cages, they did not have a good understanding on how to buy inputs and manage expenses and profits. Although cage aquaculture did not make a sea change to gender roles and power relations, the project has shown how resource-poor women are able to take their first step towards benefiting from aquaculture.

Source: Morgan, M., Choudhury, A., Braun, M., Beare, D., Benedict, J.J. & Kantor, P. 2015. *Enhancing the gender-equitable potential of aquaculture technologies*. Penang, CGIAR Research Program on Aquatic Agricultural Systems.

#### **5.2.5. Post-harvest activities**

Although poorly documented, women are active in post-harvest activities (Allison, 2011). Studies on seaweed culture in Tawi-Tawi, the Philippines and South Sulawesi, Indonesia indicate that more women than men are engaged in post-harvest activities. These activities include drying seaweed as well as processing seaweed into cakes and crackers, which contribute to an increase in household income of as much as 40 to 60 percent (Dumilag, 2019; Nurbayani, Nursini, and Zamhuri, 2021).

Women also work as fish processing workers, but their wages are lower than men's (Pant, Shrestha and Bhujel, 2013; Jahan *et al.*, 2015; Belton *et al.*, 2011). A study of shrimp processing factories in Khulna and Chittagong in Bangladesh showed that the workers were young: 72 percent of female and 76 percent of male workers were under 35 years old. There were more girls under 18, compared to boys under 18. There are many women workers without husbands (unmarried, separated, widowed or divorced), who make up 37 percent of the female workforce. They have been considered less powerful players in the labour market (Nuruzzaman and Uddin, 2017).

### 5.2.6. Self-help groups or women's groups

Organizing women's groups and working with them results in better success for aquaculture projects. Women are often excluded from fisheries organizations, which are not only gender-blind but also under-resourced and give only minor roles to women. FAO (2013) finds this a lost opportunity in fisheries or aquaculture development. Women are considered to be more responsive in working on socio-economic development projects. For example, in Tamil Nadu, India, where the project worked through the Tamil Nadu Corporation Development of Women (TNCDW) by incorporating the concept of the SHG, the initial success of women in seaweed farming motivated men to enter the activity (Krishnan and Narayanakumar, 2010; 2013).

In coastal Kerala, India, mussel farming is dominated by women-led SHGs. Mussel farming technologies that are women friendly and allow women to operate them easily with some help from men were introduced and gained popularity. Male entrepreneurs started commercial production of mussels through women's SHGs, which created new jobs for women and replaced the clam harvesting in which women used to be engaged. However, as the mussel farming industry grew, the bank loans that women SHGs used to have exclusive access to were also expanded to men's SHGs, creating competition. With men's SHGs joining mussel farming, the costs of labour and quality seeds increased, and the space in aquaculture for women's SHGs reduced. Women SHGs are at risk of being marginalized (Ramachandran, 2012).

Women's groups or SHGs and women leaders are not a panacea for gender equality in aquaculture. A study on gender action plans (GAPs) in South, Southeast and East Asia finds that planners often assume that involving women's committees will automatically take care of women's involvement, but without collaboration between women's committees and other leaders, little change can be expected (Bosma *et al.*, 2019). As can be seen in Box 15, merely having a woman as a leader does not address gender inequality, and poor women can be further marginalized.

## 5.3. WELL-BEING

This section will review literature that discusses the social and economic well-being of women and men in aquaculture, specifically, on food, economic or social security as well as the impact of COVID-19.

### 5.3.1. Food security and family nutrition

Increase in aquaculture production and availability of fish for domestic consumption is often understood as contributing to food security, but whether this translates to alleviation of poverty and improvement of nutritional status of the poor is not automatic (Allison, 2011). Prawn aquaculture in Mongla sub-district, Bagerhat district, a coastal area of the Bay of Bengal, Bangladesh, is affected by climate change through

### **Box 15. Having a woman leader does not by itself solve the problem of gender inequality**

In an aquaculture training project in Khulna District, Bangladesh, the project trained women and men lead farmers, who in turn trained their group members. Since the success of the project depends on the lead farmers, their selection was done carefully. They selected people with secondary school education, those who are energetic, interested and have enough time to spare for the project. Women leaders who were elected were often already empowered and active, who are ready to challenge social norms. However, this does not necessarily mean that the selected women put priority on supporting the group over her own economic benefits. The project highlighted that active and vocal women leaders do not necessarily work for the betterment of all women, and quieter women can actually be better leaders. With capacity development on assertiveness, such women can be capable leaders.

**Source:** Farnworth, C.R., Sultana, N., Kantor, P. & Choudhury, A. 2015. *Gender integration in aquaculture research and technology adoption processes: Lessons learned in Bangladesh*. Penang, WorldFish.

its effect on prawn post-larvae fishing. The decrease in income from catching post-larvae has been further translated into deficient food intake. Women and girls were more vulnerable, and inadequate nutrition intake was linked to higher maternal mortality, birth defects and stunted growth of children (Ahmed, Occhipinti-Ambrogi and Muir, 2013).

Aquaculture can improve household food and nutrition status, as has been seen in Chitwan and Nawalparasi districts, Nepal. Women's involvement in aquaculture was considered to be the factor that benefited household nutrition security (Pant, Shrestha and Bhujel, 2013). A similar situation was seen in Khulna District and Barisal District, Bangladesh (Morgan *et al.*, 2015). MYSAP Inland aquaculture project in Myanmar has shown that the beneficiary households increased meals containing fish from 5.98 times per week in 2019 to 7.36 in 2020. MYSAP Inland aquaculture project supported small-scale freshwater pond aquaculture integrated with vegetable and fruit production on pond embankments. As a result, the average minimum dietary diversity of women in the beneficiary households increased from 5.0 in 2019 to 6.1 in 2020 (MYSAP, 2020c).<sup>44</sup>

However, Farnworth *et al.*'s (2015) study from Bagerhat, Faridpur and Khulna, Bangladesh warned that

<sup>44</sup> Dietary diversity was measured by data on which of the ten aggregated food groups the respondents recall having eaten in the last 24 hours. The ten groups are: nuts and seeds, dairy products, meat, poultry, fish, eggs, dark green leafy vegetables, other vitamin-A-rich fruits and vegetables, other vegetables, other fruits. The study only covered consumption by women.

even when aquaculture leads to changes in equality in intra-household food distribution, it is difficult to sustain the change, unless norms of gender equality are internalized and both women and men feel that they benefit from changes in gender relations.

### 5.3.2. Economic security

Aquaculture provides rural households with income and a certain level of economic security, but it is especially important for women, considering their weaker position in the labour market and limited employment opportunities. There are many examples that show the importance of aquaculture income for women, such as:

- In Indonesia, seaweed farming is considered to contribute to women's stronger purchasing power, but they were not the only ones who benefited. Women who were not seaweed culturists also benefited by being engaged in seaweed processing or being hired as paid labour in seaweed farms (Larson *et al.*, 2021).<sup>45</sup>
- Seaweed farming off the coast of Kelantan, Malaysia, brought in an average of USD 1 129-2 402 per year per farmer. This income has improved women's socio-economic status (Siew-Moi *et al.*, 2017).<sup>46</sup>

That said, these economic benefits can be restricted because of women's weaker claims on other resources, as defined by law and custom. Choudhury and McDougall (2018) studied two villages from Bagerhat district, Bangladesh, where women expressed feelings of insecurity over their lack of legal ownership of the pond. Women's ownership is not secured upon divorce or separation. Inheritance laws are dictated by religious laws that favour men. There are both Muslim dominated villages and Hindu dominated villages under their study. Under the Sharia (Muslim) law, a daughter is entitled to only half of the property of her brother. A widow is entitled to only one-eighth of the property if she has children and one-fourth if she does not. Women are involved in aquaculture, adopting new technologies, but their decision-making on the use of ponds is restricted by their limited ownership. Some women might have stronger decision-making power because of the knowledge that they gained through training, others are prohibited from implementing their knowledge, since male relatives think that they know better than the women. Hindu laws in Bangladesh are governed by the Dayabhaga school of Hindu law, which does not provide for daughters and mothers in their fathers' and sons' property. A woman cannot inherit any property if she does not bear a son. A widow receives equal property as a son, but only has a right to use it during her lifetime.

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<sup>45</sup> *Kappaphycus alvarezii* (in shallow coastal areas), *Kappaphycus striatum*, *Eucheuma denticulatum* (in shallow coastal areas) and *Gracilaria* (coastal ponds).

<sup>46</sup> *Kappaphycus alvarezii*, raft culture.

Women also tend to earn much less than men, Ali *et al.* (2018) noted that in the Mekong Delta in Viet Nam, men workers in pond farming of striped catfish earned 15 percent higher wages than women workers.

### 5.3.3. Social security

Aquaculture can provide not only economic security but also social security to women. In Tamil Nadu and Kerala, India, with the exception of open sea cage farming technology, mariculture has proved to be a successful platform for women's empowerment. Mussel and seaweed farming have freed women from depending on collecting clams and seaweed from the wild, saving them a significant amount of time. Through mariculture, women earned not only more income but also were able to send their children to school, participate more in decision-making bodies and also were able to organize themselves to eliminate alcoholism (Ramachandran, 2012).

Many instances of insecure working conditions in fish processing have been reported. For example, in fish processing factories in Goa, young women migrant workers from Kerala, Tamil Nadu and Karnataka work 10 to 12 hour shifts, with limited contact with outsiders (FAO, 2013). Women workers in shrimp farms in Bangladesh are reported to be vulnerable to exploitation and sexual harassment. Such vulnerability is because in a situation where other employment opportunities are scarce, women tend to perceive that this as the only option they have (Halim, 2004 cited in Belton *et al.*, 2011).

Women's vulnerability and marginalization can be shaped by the constant reminder of their inferiority in society. Based on a study in Bangladesh, Kruijsen *et al.* (2016) identified that society's recognition and the individual's self-perception shape women's sense of entitlement. When women's work is not valued or the society does not approve of women working outside the home, women develop a self-perception that they do not have adequate skills to participate in the market.

Such marginalization can be further exacerbated by women's lack of time. Because of their responsibilities for household work and care work, women are not able to spend as much time on paid economic activities as men (Farnworth *et al.*, 2015), and when women want to be engaged in both, they are deprived of sleep and the time for engaging in other income generating work (FAO, 2017). Social norms restrict women's mobility, which restricts their ability to participate in aquaculture work (Morgan *et al.*, 2016).

Studies on fish farming in Bangladesh find that decision-making power in aquaculture in Bangladesh is heavily skewed toward men, although it has been suggested that there is more joint decision-making when it comes to harvesting fish for home consumption (Naved *et al.*, 2011; Jahan *et al.*, 2015).<sup>47</sup>

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<sup>47</sup> Pangasius (*Pangasius pangasius*) (pond, "beel" natural water holding depression); Multiple species of carps (pond); Tilapia (*Oreochromis niloticus*) (pond); Walking Fish (*Anabas testudineus*), Golda shrimp or Giant freshwater prawn (*Macrobrachium rosenbergii*) (pond, 'gher' rice fields, 'beel' natural water holding depression), Bagda or Giant tiger prawn (*Penaeus monodon*) ('gher' rice fields, and small indigenous species (including *mola*, *dhela*, *darkina*, *puti* and *gura chingri*) (Homestead polyculture pond).

Support from the family, especially from husbands and in-laws, is a key determinant for women to translate their gains from aquaculture for their benefit. Without the support of the husband, women suffer from criticism that they are neglecting the care of children and household work (Bosma *et al.*, 2019). The husband's support is essential since it will provide access to financial resources and business networks for women (FAO, 2017).

Insecurity is experienced by children and in the household. Poverty leads to child labour in aquaculture (Ferdousi and Faruk, 2016). Children drop out of school and work alongside their parents, and with lack of adequate legislation on child labour, parents find it natural for children to work with them. The household's economic security and women's participation in paid work is hampered when there is domestic violence, men's alcohol abuse and other strained marital relations. In a Cambodian fishing village in Tonle Sap, when domestic violence was reported to be on the decline, men attributed it to improved incomes, while women attributed it to better law enforcement and awareness raising campaigns (Locke *et al.*, 2017).

#### **5.3.4. Policies related to gender and aquaculture**

The ASEAN general fisheries policy easibility study (2020) conducted based on the terms of reference adopted by the ASEAN Ministers on Agriculture and Forestry (AMAF) shows that there is no fisheries or aquaculture policy in ASEAN that focuses on gender issues. However, there are several policies, strategies or plans of actions that mention gender as one of the areas of attention. For example,

- FAO's Policy Guidance Note on Strengthening Sector Policies for Better Food Security and Nutrition Results, Fisheries and Aquaculture acknowledged widespread gender inequalities as one of the challenges for sustainable fish supply.
- ASEAN good aquaculture practices (ASEAN GAqP) for food fish covers under socio-economic aspects that workers should be provided with decent working conditions for both genders. It also states that workers should not be discriminated on the basis of gender.
- Mekong River Commission (MRC)'s fisheries management and development strategies have listed monitoring of gender issues as one of its strategic priorities.
- ASEAN (2017) Strategic Plan of Action for The ASEAN Cooperation in Agricultural Research and Development (2016–2020) include a clause stating the importance of integrating gender issues into climate friendly agriculture, fishery and forestry practices to reduce the higher vulnerability of women to the social and economic impacts of natural disasters and climate change.



- SEAFDEC's (2020) Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 states the importance of achieving sustainable development with gender integration in the process.

Not only are gender issues not a specific focus in fisheries or aquaculture policies, but when they are, they are often grouped together as common gender issues for both fisheries and aquaculture. However, fisheries and aquaculture can have conflicting priorities: women and men in aquaculture can be affected by fisheries policies and not only aquaculture policies. Fisheries policies can also affect aquaculture, as seen in the case of a woman whose only livelihood option is aquaculture, in Satkhira district in coastal Bangladesh:

“Mostly I am catching shrimp fry in the Kholpetua river. Shrimp fry collection starts from the month of Boishak (mid-April) and peaks in Jaishtho (mid-May). We can continue through to Bhadro (mid-September), when the numbers of fry start falling. I spend early dawn hours or the late evening catching shrimp fry. During the full moon there are more fry and I work all hours. There are quarrels with other women over where we can catch shrimp fry. But wild shrimp fry collection is banned by government during March to July. I know it is banned and I am doing it illegally, but I have to survive with my three children. I am tired and want to do something easier. But how?” (Bernier *et al.*, 2016, p. 139)

The gender policy for aquaculture has been difficult to establish because it falls between agriculture and fisheries. That is, aquaculture is often discussed together with fisheries because it deals with fish and aquatic animals. At the same time, aquaculture is discussed in conjunction with agriculture because ponds use land, and also in relation to integrated farming.

However, efforts have been made to identify specific gender issues in aquaculture and to take action on gender inequality. In Viet Nam, the second gender strategy (2011–2020) of Ministry of Agriculture and Rural Development (MARD) has introduced a new action area where the capacity of leaders to implement the gender agenda is included in their performance evaluation criteria. However, translating this strategy to gender action plans at the provincial level still faces challenges. A workshop with the provincial Ministry of Agriculture and Rural Development identified some of the barriers to gender integration as culture and customs, gender-based preconceptions, and violence against women and other vulnerable genders (Bosma *et al.*, 2019).

A workshop on empowering vulnerable stakeholder groups in aquaculture was organized under Asia-Europe Meeting (ASEM) aquaculture platform and barriers to women's empowerment have been identified as: religion, traditions, culture, beliefs or taboos (mostly found in India, Indonesia, and the Philippines), lack of support from the family and the community (mostly seen in India, Indonesia, Malaysia

and Cambodia), a feeling of inferiority (Malaysia), lack of decision-making power (India, Indonesia, Malaysia, the Philippines, Cambodia), lack of government support (Cambodia) (Bosma *et al.*, 2019).

### 5.3.5. Climate change

Gender analysis is rarely included in climate change discussion in fisheries and aquaculture (Williams *et al.*, 2019). Sumagaysay (2016) pointed out how in the Philippines women fish dryers can be affected by climate change and the adaptation strategies that they need to undertake.

Bene *et al.* (2015) maintained that climate change adaptation plans should include access to universal social protection schemes – including health, family planning and emergency support – for women and men in fisheries and the aquaculture sector, who are often not covered in such schemes. Flexible approaches are needed for adaptation to climate change (see Box 16).

### 5.3.6. Impact of COVID-19

The COVID-19 global pandemic has caused a drop in global aquaculture output for the first time in decades, with an unconfirmed and estimated drop of 1.3 percent in 2020, a stark departure from the 4 to 5 percent annual increase in global aquaculture production over about 60 years (FAO, 2021). Physical distancing and other restrictions affected women fish vendors. In some places of Sagaing and Shan State, Myanmar, the local government moved vendors from enclosed markets to an open field. However, adhering to physical distancing resulted in a reduction in the amount of vending space. Markets were also opened for fewer

#### Box 16. Need for a flexible approach to post-disaster livelihood choices

The study of 100 women's livelihoods adopted before and after tsunami in coastal districts of Tiruvallur, Kancheepuram, Cuddalore and Nagapattinam in Tamil Nadu, India, showed how aquaculture contributes to post-disaster adaptation. Before tsunami, women were engaged in fresh fish sales. After the tsunami, women were engaged in mud crab fattening and seabass nursery rearing in hapas aside from taking part in the 100 days rural employment under the National Rural Employment Guarantee Scheme of the government. Women's self-help groups have facilitated the adoption of these technologies under the guidance of ICAR-Central Institute of Brackishwater Aquaculture. The technology transferred include crab fattening in cages, pens and in tide-fed-ponds, Asia seabass nursery rearing in hapas, farm-made fish feed development, ornamental fish farming, polyculture of seabass and mud crab. The beneficiaries were able to enjoy an increase of 43 to 80 percent of their usual income through the adoption of these technologies. They were also able to improve nutritional security through an additional 1 to 2 kg of seafood for home consumption.

Source: Shanthi, B., Mahalakshmi, P. & Chandrasekaran, V.S. 2017. Assessment of challenges faced by the coastal women due to the impact of climatic change in selected coastal districts of Tamil Nadu, India. *Indian Journal of Fisheries*, 64.

hours a day. This resulted in fish being left over and a decrease in fish price, and vendors' profit decreased by half or more (Griffith, 2020).

The shutting down, imposition or both of restrictions on restaurants, fish markets and supermarkets have caused fishery businesses to seek alternative channels of distribution, i.e., direct sales from producers to consumers via digital platforms and contactless delivery, which has seen rapid growth because of the pandemic (FAO, 2021). Value-added fishery products that can be conveniently cooked at home have also seen growth (FAO, 2021).

#### **5.4. DRIVERS OF CHANGE FOR GENDER EQUALITY**

Both women and men play a large role in aquaculture, but there is no gender-disaggregated data on how many women and men are engaged in which type of aquaculture, playing what roles and getting how much benefit. The absence of data makes it difficult to capture the precise situation, and develop suitable policies. Despite the absence of official data, researchers have made efforts to document aquaculture practices and conduct gender analyses on aquaculture activities, generally at a few specific locations and in one-off studies.

For gender division of labour, although in general aquaculture is male dominated, women are involved in different ways across countries and regions and their involvement is shaped by cultural norms and economic situations. Although physically strenuous work such as pond preparation is mainly done by men, both women and men are engaged in feeding and harvesting and selling of fish, although to different degrees depending on the location. Women are involved more in extensive aquaculture, especially in homestead culture, and less in commercial and intensive aquaculture. This is not only because homestead ponds are near the house so it is easy for women to juggle with their reproductive work, but also because extensive aquaculture does not require much investment. Since the yield in homestead aquaculture tends to be lower than in other aquaculture system, it is less contested by and inviting less interest from other family members, and women are able to take control over the production and catch from homestead ponds. Higher yielding products such as koi and some cage culture need to be guarded, which work is done mainly by men. Women are more involved in freshwater pond culture than mariculture. Mariculture is introduced more as a men's occupation and, thus, women are even further marginalized in their roles. However, women are also heavily involved in mariculture, especially in the coastal area, for seaweed and crab culture, and other shellfish cultures. Aquaculture can demand women's time without giving them much benefit, such as in shrimp farming where women's labour is mobilized for aquaculture, but women do not receive an independent income; moreover, the increase in shrimp farms affected women's rice production, which is important for their food security.

In terms of access to resources, women tend to have less access to various resources such as land (pond), technology, credit, labour and technology. Women workers in aquaculture tend to be paid less wages than men. Small-scale aquaculture operators have more difficulty in accessing formal credit than those in larger scale operations. Women are concentrated in small-scale aquaculture, and women tend to rely more on loans from family members for aquaculture than on formal commercial loans. Women's lack of land ownership is a restriction on their involvement in pond aquaculture. Cage culture and gher aquaculture are ways to overcome women's lack of land ownership in certain settings, but women still need to negotiate for access to waterbodies. Introduction of technology can benefit women, but the challenges are (i) technology might not be useful or suited for women, (ii) women also need other support (such as credit and training) to implement the technology, (iii) family members might not allow women to use the technology, not believing in women's ability, (iv) men might take control over the technology once it is seen to be profitable.

Aquaculture can improve household food and nutrition status, but concerns were raised that even if the total amount of fish for home consumption increases, intra-household distribution of food might still be unequal; hence, women and girls might not benefit from the increased fish as much as they should. It is also pointed out that some commercial aquaculture such as crabs will increase household cash income but will not increase food availability unless the income is used for buying food.

Women still have weaker decision-making power inside the household and community compared to men, and still need their husbands and in-laws' approval to gain benefits from their aquaculture activities. How much control women have over their income from aquaculture is very much dependent on social norms and practices as well as the intra-household gender power relations. So, it cannot be assumed that an increase in women's aquaculture income will directly benefit them. Women's income from aquaculture can increase women's position and say in the household, but such translation of income to position in the household depends on the social norms and other factors such as their rights to property and employment options. Women's groups or self-help groups are considered to be effective in ensuring women's access to resources and markets. However, having a group itself is not a panacea to ensure women's benefits, and multiple dimension support is still needed.

What is coming out alarmingly in the literature is that even though gender issues in aquaculture are often discussed in conjunction with gender and fisheries, aquaculture has a totally different nature from a gender perspective. Such treatment of gender issues in aquaculture can seriously misjudge the core issues in aquaculture. Even though both fisheries and aquaculture involve fish, aquaculture has other issues such as land access (for ponds), waterbody access (for cages), and the technology is different. At the same time, aquaculture is often discussed in agriculture as part of integrated farming, especially pond aquaculture. Even though agriculture will have a strong focus on access to land, it would not focus as much on access to waterbodies and on the value chain of fish. Therefore, it is important that gender

and aquaculture issues are taken up in their own right. There are five drivers of change that need to be attended to for gender equality in the aquaculture sector.

**LAND AND OTHER SPACE RESOURCES:** Pond aquaculture requires land. Women often do not own land, and in some places do not inherit land, or they lose access to land upon divorce or separation. Therefore, women have less say in how to use ponds. Family members who perceive women as incapable can ignore their opinions. On the other hand, when women are supported by family members, they are able to earn income from pond aquaculture.

In some places, cage farming can overcome this limitation on land ownership and provide women with direct access to this means of production. However, cage farming needs access to waterbodies, which women might not be able to negotiate given their weaker position in the society and household, and women still need support from men to set up cages.

Therefore, access to land and waterbodies is a key factor for gender equality in aquaculture. Land access does not necessarily have to be in terms of legal rights but the sense of entitlement and recognition of such entitlement to land are crucial. In this sense, aquaculture has more similarity with agriculture in the sense that access to land becomes a crucial pre-requisite for gender equality.

**TECHNOLOGY:** Women are more active in backyard pond culture than in other types of aquaculture because it is near the house and easier to juggle with other household responsibilities. Women's participation is higher in extensive than intensive aquaculture, and in small-size farms than large-size farms. In short, women are seen active in low productivity ponds that nevertheless would provide food for the family and some income.

Seeing women only as backyard aquaculturists restricts their ability and pathways to grow. Various training programmes targeted women, in the expectation that aquaculture will provide them with viable livelihood options. These programmes are important, but their success depends on how much women's knowledge is recognized and accepted by their family members, and whether they have other resources that are needed to carry out aquaculture (such as access to credit). The difficulty is not in starting up backyard aquaculture, but in expanding it to a commercial scale. If technology is not provided together with financial support as well as mentoring support so that women can convince their family members to accept their aquaculture activities, it would be difficult for women to use the technologies and put into practice the knowledge that they have learned. Once technology that women have introduced to the household starts to be viable, men of the household may take over the production.

Technology dissemination is often carried out through women's SHGs. SHGs can provide mutual support for women and better visibility as well as better access to financial support. However, SHGs are not a

panacea, and there are dangers of some women being marginalized in SHGs, and of elite capture by better-off women.

Carefully designed technology dissemination is needed to provide holistic support to women so that they can adopt and potentially adapt the technology. That is, technology that is introduced needs to take into consideration not only the specific technology itself, but the circumstances that women are in. It needs to be developed together with women to take into consideration their constraints in time and mobility, as well as their weaker access to resources. It needs to be a technology that women themselves are able to handle without having to rely on other people's support. Also, other support needs to be provided along with the technology itself so that women can concentrate on aquaculture, such as taking care of their reproductive and other responsibilities.

**INCOME:** Aquaculture provides various benefits and opportunities for women, including food, information, and recognition, depending on the location and circumstances. Importantly, it also provides income and employment opportunities to women, who would otherwise have limited opportunities. However, how this income will actually benefit women and what control women will retain over the income is questionable. In some places, the income from aquaculture has improved women's status in the household and community. In other cases, women's contribution is not recognized and women do not have control over the income from aquaculture. In aquaculture operations such as seaweed farming, which is considered a family activity, even though women take up the bulk of the work, their work can be taken for granted and may not improve their status in the household. The gender wage gap among aquaculture farm workers and workers in fish processing is another issue.

**GENDER NORMS:** A number of gender norms restrict women's role in aquaculture. These include, among others, women not being able to go into the water, women's restricted mobility outside the home, some aquaculture activities being barred for women because it is considered unlucky, such as in the case of shrimp hatcheries in Viet Nam, or menstruating women not being permitted to work in seaweed culture. Many of the aquaculture activities that women are active in are accepted by the family and society, because these are considered as an extension of household work, such as backyard pond aquaculture.

Such norms make women's contribution to aquaculture obscured. Introduction of aquaculture can benefit the household, but it might also just add to women's workload without providing them any benefit.

Gender norms that keep women and their needs invisible also make it difficult to highlight some problems that can affect aquaculture production as a whole and the household's well-being. Crab culture can provide the household with good income. However, crab farmers do not eat the crabs and all are sold in the market or for export. The introduction of crab culture can increase women's workload and deprive them of time and resources for food security for the household. Another problem is competition for water resources. There are competing uses for pond water – not only for raising fish, but also for washing



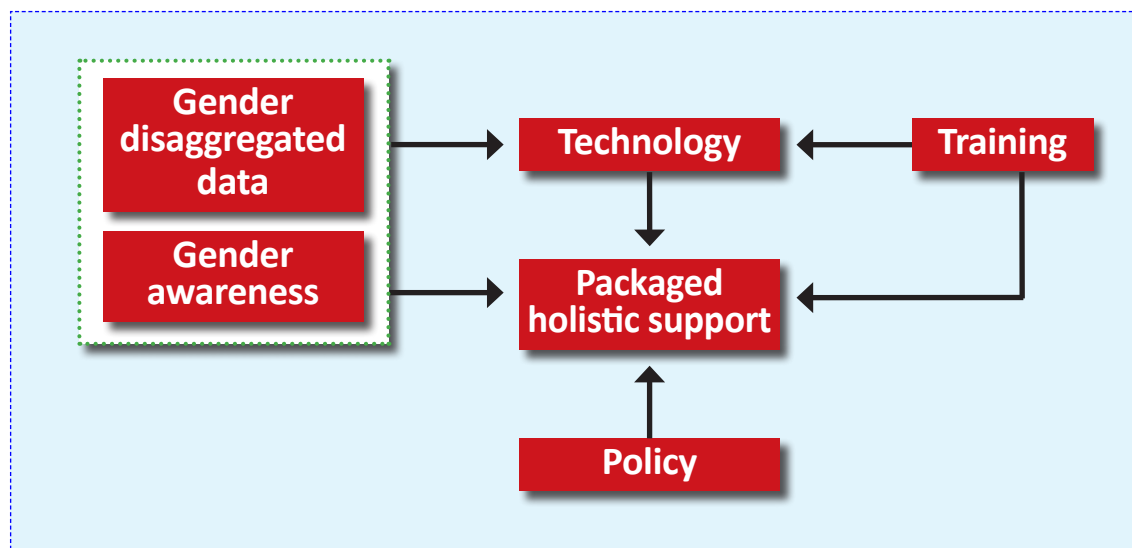
clothes and dishes as well as watering backyard vegetables that women raise for home consumption. There is a need for aquaculture interventions that take into consideration women's and men's livelihoods from a multi-dimensional perspective.

**POLICY:** There is very little policy documentation that discusses gender and aquaculture. Aquaculture can be discussed as a sub-sector in fisheries, or a sub-sector in agriculture (as part of the backyard farming system). Aquaculture can be affected by both fisheries policies (such as ban on harvesting larvae) as well as agriculture policies (in terms of land and water use). Therefore, gender issues in both fisheries and agriculture will be relevant for aquaculture. There is a need to develop a gender and aquaculture policy that encompasses these intersections.

## 5.5. ENTRY POINTS FOR CHANGE

Based on the analysis in section 5.4., it is clear that a comprehensive policy to recognize and support gender equality in aquaculture is needed, that encompasses resource access, income and other benefit control, holistic technology development, and addressing norms. This leads to entry strategies for gender equality that can be summarized in figure 4.

**Figure 4.** Summary of entry points for gender equality in aquaculture



Source: Authors' own elaboration.

Each of these entry points are described in detail below:

### **(1) COLLECT GENDER-DISAGGREGATED DATA**

First and foremost, gender-disaggregated data need to be collected on aquaculture farmers and their operations, including small-scale farmers and farmers doing extensive farming. Gender disaggregated data need to be collected in each node of the value chain in aquaculture, including aquaculture production support services, trade and market, as well as processing.

### **(2) RAISE AWARENESS ON WOMEN'S ROLE AND CAPACITY TO STRENGTHEN THEIR ENTITLEMENTS**

Ideally, women's land rights need to be strengthened, and their inheritance rights as well as their individual access to land (and not through their husbands) are important. However, noting that this cannot be done immediately, improving women's sense of entitlement is important. There is a need to raise awareness among family members and the community members about the important roles that women play and their knowledge of aquaculture, so that they will be able to better negotiate with their family members to independently perform their aquaculture activities. Women's rights advocates in aquaculture can learn from struggles of women in agriculture on land rights, rights to common access resources, rights to water and waterbodies, as well as wetlands.

### **(3) DEVELOP TECHNOLOGY SUITABLE FOR WOMEN, WITH WOMEN**

Technology needs to be developed together with women farmers, so that the technology can meet their needs. The gillnet development in Bangladesh, which makes it easier for women to harvest without going into water, is a good practice but such examples are rare.

### **(4) TRAINING AND AWARENESS RAISING FOR FISHERIES OFFICERS**

Fisheries officers are not informed of the roles that women play in aquaculture, and of their needs. Such lack of awareness stems from various reasons including the absence of gender-disaggregated data and gender analysis that can inform the officers, lack of gender awareness in the education of fisheries professions, as well as gender-blind policies that do not call attention to gender equality among officers. There is a need to train fisheries officers on gender analysis, so that they will be able to identify gender needs in aquaculture villages, provide information and technological advice in a more accessible way to both women and men, identify missing factors for poor women and men benefiting from aquaculture, and provide effective monitoring, support and mentoring. Recognition from "powerful" people can improve women's status and make it easier for women to implement what they learned in training. Conscious officers can influence the views of community people to change the gender discriminatory perceptions.

#### **(5) AQUACULTURE SUPPORT NEEDS TO BE DONE AS A PACKAGE**

Small-scale aquaculture support needs to encompass three different domains: aquaculture is at the intersection of both agriculture and fisheries; it is part of household food security as well as income, and it can be seen as part of reproductive work as well as productive work. Aquaculture project design needs to take a holistic livelihood approach and be packaged together with not only aquaculture technology, but also financial support as well as family food consumption and household gender based division of labour in order for aquaculture projects to benefit smallholder women and men.

#### **(6) DEVELOP GENDER POLICY IN AQUACULTURE**

Since aquaculture cannot be covered only under fisheries policy or be covered under agriculture policy, there is a need to develop a gender policy only for aquaculture. It is important that the policy note the importance of aquaculture both for food security and for income, and strike a balance between food and income or export.

#### **(7) MORE RESEARCH NEEDED**

The research is skewed to certain countries and to certain areas of aquaculture, and there is little knowledge on types of aquaculture by species or by technology. Also, there are not many studies on the impact of aquaculture on gender relations and women's empowerment. Much of the literature available refer to women and gender in passing, but their main focus is not gender analysis. There is, thus, a need for more gender analysis in aquaculture in Asia.





Woman fisher in Kampong  
Thom, Cambodia.

©Sam Ath Kancharith

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FAO-RAP@fao.org  
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