

Gender in Aquaculture and Fisheries: Engendering Security in Fisheries and Aquaculture

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Short Communication



Engendering Statistics for Fisheries and Aquaculture

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Abstract

A curated set of sex-disaggregated statistics on employment in the fisheries and aquaculture sectors was disseminated by Food and Agriculture Organization of the United Nations (FAO) for the first time in 2016. For the period of 2009-2014, only 27 % of FAO Member countries reported sex-disaggregated employment data for the fishery sector and 33 % for the aquaculture sector. The FAO data on employment focuses on the primary sector and does not include information about the secondary sector of post-harvest processing activities. In 2014, the average number of women engaged in both fisheries and aquaculture in the reporting countries was 19 % of the total workforce and, when considered across a four year average, the figure was 15 %. This paper presents a focus section on the reported statistics for Asia, where women, on average, made up 15 % of the workforce in the primary sectors for those countries reporting. An attempt has not been made to provide estimates for countries not reporting. Enhanced statistics for the secondary post-harvest and service sectors, not presently covered in FAO fisheries and aquaculture statistics, would greatly improve the understanding of the importance of women's contribution to fisheries and aquaculture, food security and livelihoods. To complement the encouragement for improved national reporting, FAO offers support through tools and guidelines to improve data collection efforts that form the foundation of reporting. Future work needs to continue to support the use of inclusive activity definitions to better include the fisheries and aquaculture activities in which women are typically engaged. Finally, in 2017 the employment dataset for fisheries and aquaculture will be released including the reported sex-disaggregated figures.

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Introduction

A lack of sex-disaggregated data for the fisheries and aquaculture sectors has been well noted in the literature (Ifeka 1989; Aguilar and Castañeda 2001; Williams et al. 2006; Gopal et al. 2014) and this has resulted in an incomplete understanding of women's and men's roles in the sectors and the gaps that persist between them. A lack of understanding, and data, on the multitude of roles women play throughout the 2 sectors means that women are often invisible to policy-makers. By failing to consider the role of women or address gender-specific constraints to improving production and productivity massive losses have been found to result in both sectors in terms of production, household food security and income, particularly for the poor (FAO 2013). Further, women have usually been excluded from decision-making mechanisms and roles in fisheries and aquaculture management (Lentisco and Alonso 2012).

For the first time in 2016², FAO released a selection of sex-disaggregated statistics for employment in aquaculture and fisheries, following many decades of data collection. The collection of national employment statistics started in 1950 for the fishery sector and in 1951 for the aquaculture sector. The data presented here provides a first summary of this data and provides a particular regional focus on data reported from Asia. The regional focus on Asia is of particular interest in light of the dominance of production and employment for both the fisheries and aquaculture sectors as well as the strong participation of women in the sectors (FAO 2006). In 1970, the first country, Japan, reported sex-disaggregated employment data for the fishery sector and in 1990 sex-disaggregated data was first reported for the aquaculture sector. The FAO data is only for work in the primary sector and does not include information about the secondary sector of post-harvest processing activities.

Women play an active and important role in the secondary sectors of aquaculture and fisheries. Here, they are estimated to make up, on average half of the workers (FAO 2014) and in some cases they make up 90 % of the workforce in the processing industry (FAO 2016a). They are found in all positions and roles in the secondary sector, and the lack of inclusion in statistics

²FAO statistical reporting on employment always have a two-year time-lag. For instance, the 2016 reporting was on the 2014 reported data.

reported to FAO is not an indication of importance, but rather an outcome of constraints on the resources required for this reporting. Nevertheless, the omission of employment data from the secondary sectors means that the overall estimates based on primary sector data cannot be extended to cover the rate of participation of women throughout the value chains. A number of estimations of the total number of women in fisheries and aquaculture have been made. Notably, estimates were made for fisheries employment in the 2012 document *Hidden Harvest* (Kelleher et al. 2012). The document was produced as the result of an in-depth analysis where national and regional case studies were combined with the available, nationally reported data of FAO. Throughout the fisheries value chain it was estimated that women made up 47 % of the workforce combining large and small-scale fisheries in developing and developed countries (Kelleher et al. 2012). Making a global comparison between small and large-scale fisheries, women were estimated to have made up 46 % and 60 % of the respective value chains.

Materials and Methods

The collection of nationally reported statistics on fisheries and aquaculture, and, of relevance here, employment in the primary sectors of fisheries and aquaculture, is part of the formal mandate of the FAO.

Questionnaires are sent to all FAO member states and reporting is requested annually. To collect the employment data, a questionnaire for reporting on number engaged within the following categories is dispatched: “Working domain”: Aquaculture; Inland Waters Fishing; Marine Coastal Fishing; Marine Deep-Sea Fishing; Marine fishing not elsewhere identified (nei); Subsistence; Unspecified. “The working status categories include”: Full time; Part time; Occasional; Status unspecified. Finally, sex could be reported as: Female; Male; Unspecified.

Typically, the national data is transmitted to FAO between August and December, following the close of the reporting year. Once the data have been received, checked and corrected, as required, they are incorporated into the FAO databases. This cycle results in an apparent lag of 2 years for data reporting. The data presented and discussed here are those reported by member nations, and estimates, when appropriate.

Results

Current state of sex-disaggregated statistics for fisheries and aquaculture employment for FAO

In 2014 it was reported that 19 % of all people engaged in the primary sectors of both fishing and aquaculture were women (FAO 2016a). Considering the employment data from all countries as an average across the period 2009–2014, an average of 51.3 million people were dependent on the fisheries sector for their income and livelihood. Overall, 34.2 million people (67 %) were engaged in the primary sector of capture fisheries and 17 million people (33 %) in aquaculture. From this total, 79 % of workers were men, 15 % women and 6 % were recorded as sex-unspecified. Of all women, 5.2 million (70 %) were engaged in the fishery sector and 2.3 million (30 %) in the aquaculture industry.

The figures presented here were calculated using a combination of reported values and estimates made based on past reporting. The number of reporting countries and the degree of disaggregation of the data fluctuates between years, therefore estimates are made for non-reporting years. For example, in the period 2009–2014, 173 countries were included in calculations with either reported or estimated data.

Regional reporting

Sex-disaggregated reporting for employment in the fishery and aquaculture sector varies greatly between countries and regions. During the period of 2009–2014, on average only 27 % of countries worldwide reported sex-disaggregated employment data for the fishery sector and 33 % for the aquaculture sector (Fig. 1). Some countries only report men or unspecified in their employment figures. It is not always possible to tell whether these figures include women, in other words, that sex disaggregated data is not collected or if women engaged in the sector were not included in the data collection. In certain cases countries which formerly reported fully sex-disaggregated statistics, have reverted to reporting only unspecified. In these cases the estimations have been made on the formerly reported ratios of female to male workers.

The 5 world regions also strongly differ in the number of people engaged in the capture fishery and aquaculture sector (Table 1), and it is

anticipated that as reporting improves within each region the distribution of engagement in the sectors and degree of engagement within each sector by gender may shift.

Table 1. Employment numbers in the fishery and aquaculture sectors by region and gender (values show averages for the years 2009-2014)

Fishery							
Region	Women		Men		Unspecified		Total
Africa	548,807	13 %	3,395,680	78 %	381,655	9 %	4,326,142 12.6 %
Americas	250,130	16 %	977,327	61 %	371,405	23 %	1,598,862 4.7 %
Asia	4,417,886	16 %	22,505,040	80 %	1,077,019	4 %	27,999,944 81.8 %
Europe	6,182	3 %	202,270	81 %	40,885	16 %	249,337 0.7 %
Oceania	7,607	21 %	26,786	74 %	1,649	5 %	36,042 0.1 %
Aquaculture							
Region	Women		Men		Unspecified		Total
Africa	12,236	7 %	129,614	71 %	39,342	22 %	181,192 1.1 %
Americas	7,284	3 %	102,118	41 %	142,270	56 %	251,672 1.5 %
Asia	2,239,364	14 %	13,285,438	80 %	1,056,232	6 %	16,581,034 97 %
Europe	14,085	19 %	48,497	64 %	12,840	17 %	75,422 0.4 %
Oceania	685	12 %	3,760	66 %	1,283	22 %	5,727 0 %

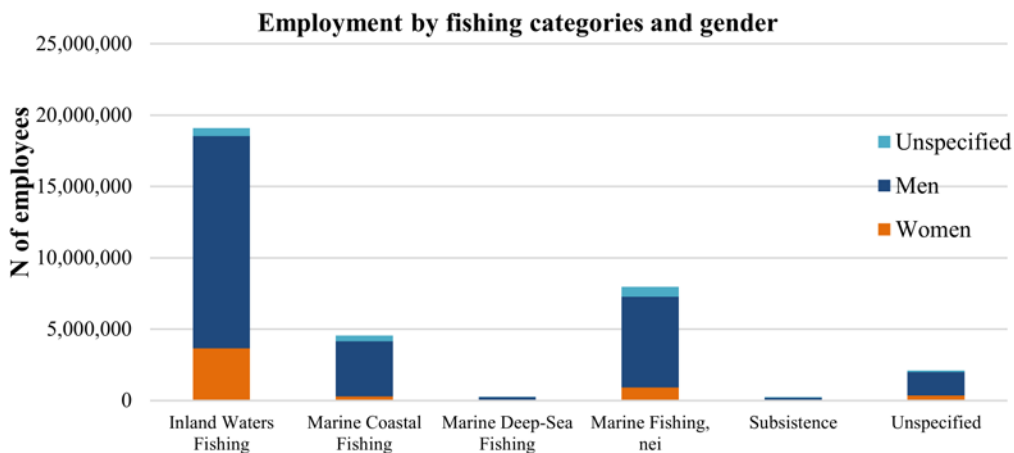
The average numbers for 2009-2014 show that, 87 % of the global population working in the fishery and aquaculture sectors was in Asia, followed by Africa (9 %), Americas (4 %) and Europe (1 %). Looking at the fishery and aquaculture sectors separately, a very similar pattern can be observed. In the aquaculture sector, Asia even accounts for 97 % of total employment, while Africa, the Americas and Europe only account for 1 % each.

When only women workers are considered, a very similar pattern is depicted. In the fishery sector, 84 % of employment was recorded in Asia, followed by Africa (10 %) and the Americas (5 %). In the aquaculture sector, Asia accounts for 98 % of all women's employment.

Reporting by sector

The highest employment numbers globally were recorded for Inland Waters Fishing (56 % of total number of fishers), followed by Marine Fishing nei (23 %) and Marine Coastal Fishing (13 %) (Fig. 1). Similarly, the highest

percentage of reported numbers of women engaged in fishing were in the Inland Waters Fishing sector (70 %) (Fig. 2), followed by Marine Fishing (17 %) and Marine Coastal Fishing (5 %) (Fig. 3). Within the Inland Waters Fishing category women represented 19 % of the total workforce during the period 2009–2014.



Employment by fishing categories and gender

Fig. 2. Average employment numbers by fishing categories and gender (values show averages for the years 2009–2014 across 173 countries. Total number 51.3 million people.

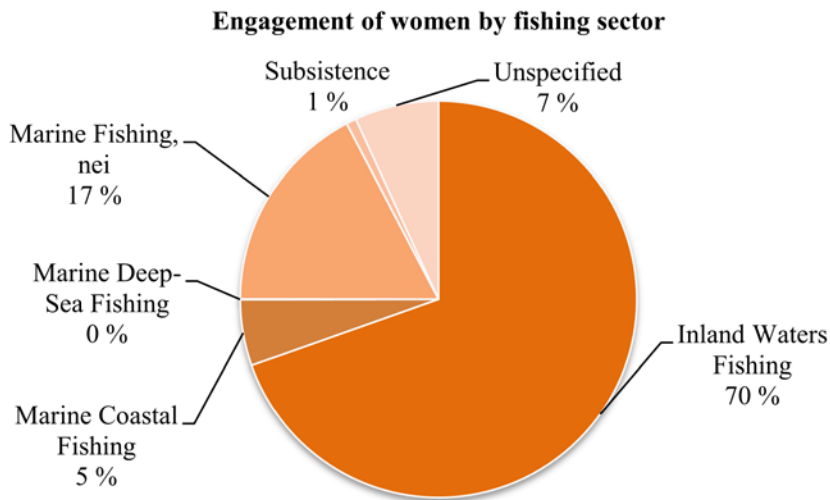
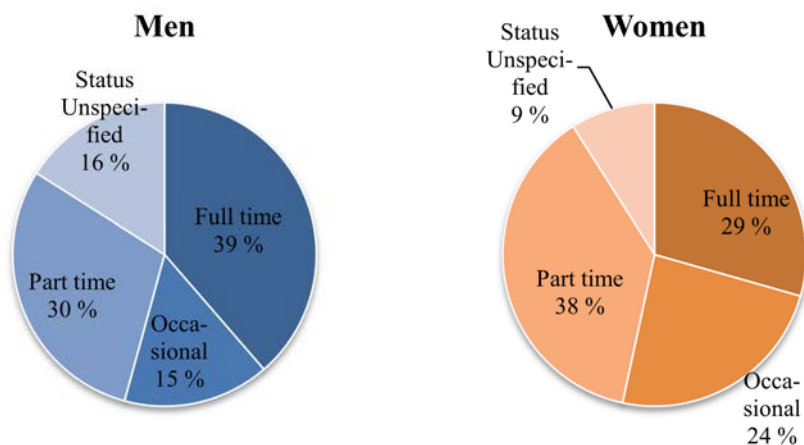


Fig. 3. Percentage of reported women engaged in the different fishing sectors (values show averages for the years 2009-2014), N=7.5 million

Working times of fishery and aquaculture employees worldwide

Fishery



Aquaculture

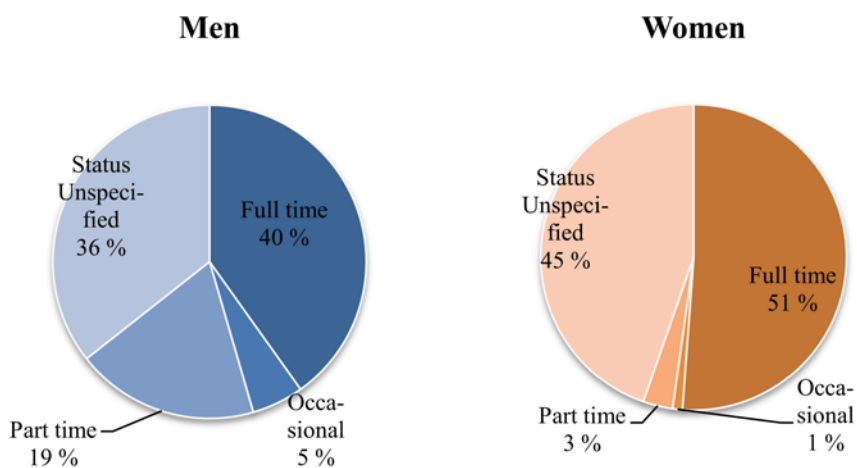


Fig. 4. Percentage of women and men engaged in the fishery and aquaculture sectors by working times (averages for the years 2009–2014)

The data compiled by FAO through national reporting provides information about number of people employed and the working times of employees in the fisheries sector. Most men were full-time employees in the fishery sector (39 %), whereas most women worked part-time (38 %) or on an occasional basis (24 %) (Fig. 4). Women may be more engaged in small-scale or subsistence fishing, splitting their time between fishing and their family obligations. In the aquaculture sector, however, 51 % of women were recorded as full-time workers. Small-scale aquaculture units may be located close to the household, making it easier for women to look after both the family and the

farm. At the same time, women working at modern aquaculture facilities may be more likely to work full-time.

Regional highlights from Asia

The data reported to FAO of employment statistics in the fisheries and aquaculture sector started in 1952, with Japan first reporting sex-disaggregated

Table 2. Average number of countries in Asia that reported employment data to FAO during 2009–2014, M = Men, U = Unspecified

Sector	Only M or U	All genders
Fisheries (50 countries)	33 countries (66 %)	8 countries (17 %)
Aquaculture (36 countries)	26 countries (72 %)	8 countries (23 %)

employment fisheries statistics in 1970 and aquaculture in 1990. From the 50 Asian countries that have ever reported employment statistics for the fishery sector, on average only 8 (17 %) countries reported information on female workers during 2009–2014. For the aquaculture sector, 8 (23 %) out of 36 countries reported sex-disaggregated data (Table 2). These few countries reported that overall, 4.4 million (66 %) women were engaged in the fishery sector, while 2.2 million were employed in the aquaculture sector (34 %). Some of the largest countries in the region has not been reporting fisheries statistics for a number of years and the addition of this reporting could further increase the ratio of women working in both fisheries and aquaculture.

In Asia for the years 2009–2014, an average of 28 million (63 %) people were employed in the fishery sector and 16.5 million people (37 %) were engaged in the aquaculture sector. For both sectors, 30 % of all employment was recorded in mainland China. Overall, 80 % of the employees were men, 15 % women and 5 % sex-unspecified.

The majority of people (all genders) were employed in the Inland Waters Fishing sector (57 %), followed by Marine Fishing nei (26 %) and the Marine Coastal Fishing sector (12 %) (Fig. 4). The highest number for employment in the fishery sector was recorded in China (30 %), India (29 %), Myanmar (10 %) and Indonesia (9 %). Women were mainly reported as engaged in the Inland Waters Fishery (71 % of women) and the Marine Fishing (nei) sector (17 %).

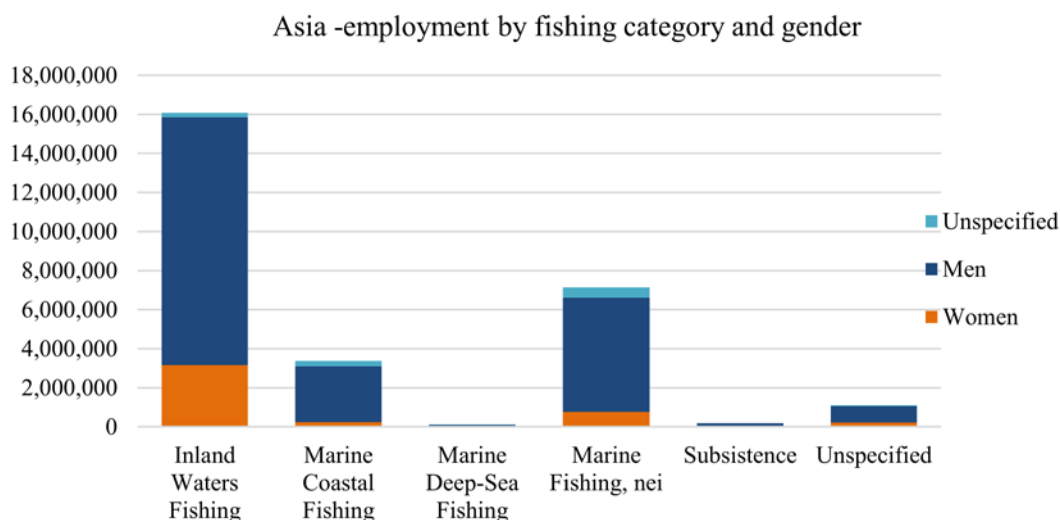


Fig. 5. Average employment numbers by fishing categories and gender (values show averages for the years 2009–2014)

Discussion

As the reported figures are examined it must be kept in mind that each of the following factors may result in nationally reported data that do not reflect the true level of participation: a lack of a national data reporting programme; the collection of only partial data; and a lack of synchronization in national reporting systems. Numerous studies exist that provide a snap-shot of available sex-disaggregated employment data. Although these are often not reflected in the national statistics reported to FAO, they should be considered in parallel with national reports to reduce the patchiness of coverage and the biases that may therefore be included.

In many areas, narrow definitions of fisheries, e.g., where activities such as shellfish gathering or gleaning are excluded, results in the exclusion of women from employment statistics. Further, in some countries “fishing” as an activity is usually only identified when the fish is caught for selling, which underestimates the importance of subsistence fishing and especially the role of women. Another form of exclusion is when women are not permitted to register as fishers, and thereby be counted in the statistics.

The FAO study, “The role of women in fisheries and aquaculture” (FAO 2015a), combined studies that were carried out in Chile, Colombia, Paraguay and Peru to investigate the engagement of women in the fishery and aquaculture sectors. The study concluded that the numerical and qualitative importance of women in fisheries and aquaculture was not adequately reflected in the available statistical information. The authors emphasized the importance of placing more focus on the whole fisheries value chain to include all pre and post-harvest activities in which women engage. According to Pereira (2001), women are more involved in seafood processing, marketing, and aquaculture, compared to capture fisheries. Although this study focused on South America, similar findings would be made in Asia and across all regions.

A recent FAO Globefish publication, entitled “The role of women in the seafood industry” (Monfort 2015) casts a global light on the various roles women play throughout the sectors. Per the report, women usually engage in small-scale activities, which demand little in terms of capital and technology and are compatible with their family obligations. Activities include fishing from shore, such as collecting benthic animals, small-scale and subsistence fishing and small-scale aquaculture. The engagement of women in small-scale fishing differs among countries and can range from women themselves fishing or taking care of the fishing equipment used by men. Women may also participate in diverse ways in financing the activity or by supporting family fishing enterprises through various tasks. Furthering this knowledge will help to formulate the right questions for data collection, avoiding the underestimation of small-scale and subsistence activities. In most regions, fish catching is male-dominated and women make up the dominant proportion of the labor force in seafood processing and post-harvest activities. It was estimated that up to 90 % of all workers in the secondary sectors are women (FAO 2012). In addition, in many Asian and African countries, women are key players in seafood trading and selling.

Similarly, in a study about the Pacific Islands Gillett (2009), found that certain definitions or categories negatively affect the accurate portrayal of the importance of women in fisheries employment, and this also applies globally. Gillett (2009) found that the concept of using “main unpaid activity” in surveys for defining the subsistence fisheries sector, downplays the importance of secondary activities, e.g., even for women who do considerable fishing,

childcare is often the main unpaid activity. Also, commercial fish processing, where many women are employed, is often recorded in the manufacturing sector and not the fisheries sector.

FAO does not currently report employment data collected for post-harvest processing, and this results in a blindspot for an area of significant engagement of women. Thus, enhanced statistics for the secondary post-harvest and service sectors would greatly improve the understanding of the importance of women's contribution to fisheries and aquaculture, food security and livelihoods. An important challenge, also, for the FAO fisheries data compilation on fish production is the different definitions for "fishing" and "fishing categories" that exist in different countries.

Collecting fisheries employment statistics seems to be more difficult than counting jobs in most other sectors. Many fishers work in isolated places and in many cases there is no source of indirect information (e.g., tax or retirement scheme records). In addition, the combination of formal and informal work together with varying degrees of participation in subsistence activities further complicates the situation. During an FAO workshop in March 2016, entitled "Regional workshop towards improving small-scale fisheries and aquaculture data collection", participants noted the need for a Master Sampling Frame for household-based fisheries and aquaculture and recognized that the most appropriate source of information to develop such a frame is the Census of Population. Considerable knowledge of the sector is required to collect meaningful information. The workshop recommended that fisheries statisticians raise the issue of inclusion of suitable screening questions in the Census of Population with relevant officers in National Statistics Offices responsible for the Census of Population. Moreover, the "Guidelines to Enhance Fisheries and Aquaculture Statistics through a Census Framework" can help countries to establish an integrated data collection and statistical system for fisheries and aquaculture (Global Strategy 2015). The document provides guidance on designing a household questionnaire survey for fisheries and aquaculture in order to establish frame information on the populations engaged in small-scale fisheries. This can serve as a basis to design further regular monitoring of the sector.

The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) (FAO 2015b) was the first fishery instrument addressing gender. To follow up, in late 2016 FAO hosted an expert workshop on gender-equitable small-scale fisheries in the context of the implementation of the SSF Guidelines. The SSF Guidelines recognize the multiplicity of roles, contribution and the crucial importance of women in the small-scale fisheries sector worldwide and the implementation of the SSF Guidelines and their explicit call both for better data reporting and explicit inclusion of gender should facilitate better national sex-disaggregated reporting. As gender is mainstreamed throughout fisheries with various mechanisms such as these Guidelines the motivation for regular data collection and reporting of sex-disaggregated data should become more consistent. The human dimensions must be considered in fisheries regulations, policies and plans, and this simply must include the gender perspective (FAO 2016b) or fisheries and aquaculture activities and development strategies.

Conclusions

If the work on gender-mainstreaming conducted with fisheries and aquaculture is done with the aim to foster the potential and capacity that already exists with women in fisheries and aquaculture communities around the world, then the first step is surely to establish a strong foundation of data.

Although sex-disaggregated reporting on fisheries employment statistics is slowly improving, on average only 27 % of all countries reported to FAO the participation of women in the primary fisheries and aquaculture sectors. Thus, increasing the awareness of the role women play in the seafood sectors more broadly is crucial. FAO has a role to play by providing capacity building to improve national data collection systems and by encouraging countries to report sex-disaggregated employment data. Particularly in Asia, where both sectors are so important, the very low reporting rates must be urgently improved. Looking forward the work being done on promoting standards and methodology provides pragmatic tools for countries looking to improve their statistical reporting on sex-disaggregated employment statistics.

Informed policy-making depends on high quality information. Similarly, the FAO needs good quality data to understand global trends and disseminate knowledge about social, economic and environmental aspects of global food systems. The FAO Fisheries and Aquaculture Department depends on member states to report their data in a timely fashion and according to FAO standards.

In addition, more transparent data sharing, such as the compilation of metadata, will improve the quality of FAO fisheries statistics and along with expanded definitions of fishing activities to better increase recognition of the female workforce. To meet this objective the full complement of reported sex-disaggregated employment statistics available to-date will be released going forward in 2017.

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