Implementing the Small-Scale Fisheries Guidelines for gender-equitable and climate-resilient food systems and livelihoods

Summary baseline report of the FAO FMM/GLO/155/MUL Project

Indonesia, Madagascar, Namibia and the Philippines

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Notes:

1. All data used in this report have been provided anonymously and no reference is made to any of the respondents who were interviewed for the purposes of this baseline survey. All respondents were asked if they gave their consent to be interviewed and there were no objections. The database is, however, available for use by governments (each government being able to access only the data relating to its own country) and shared with the Food and Agriculture Organization of the United Nations (FAO). The data are held on the KoboCollect cloud server and are downloadable as an Excel file; they can be used for analysis as required.

2. This baseline survey report should be read in conjunction with the Women's Small-Scale Fisheries (SSF) Mapping Assessment that was conducted during the same time period (for Indonesia, Madagascar and the Philippines). This adds additional valuable commentary and data analysis specifically relevant to women's organizations operating in small-scale fisheries, and recommendations for consideration in project implementation and broader initiatives for empowering women in small-scale fisheries.

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Abbreviations

COVID-19

coronavirus disease 2019

FAO

Food and Agriculture Organization of the United Nations

FGD

focus group discussion

FIES

Food Insecurity Experience Scale

IDR

Indonesian rupiah (currency)

IGA

income-generating activity

KII

key informant interview

MDD-W

Minimum Dietary Diversity for Women

MGA

Malagasy ariary (currency)

n=

number interviewed

NAD

Namibia dollar (currency)

NGO

non-governmental organization

PHP

Philippine peso (currency)

SSF Guidelines

Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication

1. Introduction

The FAO SSF Umbrella Programme hosted the project *Enhancing the Contribution of Small-Scale fisheries to Food Security and Sustainable Livelihood through Better Policies, Strategies and Initiatives* (GCP/GLO/645/NOR). Implementation of this project was extended as an initiative that evolved into a new project on *Empowering Women in Small-Scale Fisheries for Sustainable Food Systems* in Ghana, Malawi, Sierra Leone, Uganda and the United Republic of Tanzania, with its inception year in 2020, and ending in June 2021. This was followed by a new subprogramme under the FAO Flexible Voluntary Contributions mechanism, entitled *Implementing the Small-Scale Fisheries Guidelines for gender-equitable and climate-resilient food systems and livelihoods*. The subprogramme is designed to be implemented at regional, national and local levels, with a focus on delivering activities to support small-scale fisheries women actors in the post-harvest sector in four additional countries: Indonesia, Namibia, Madagascar and the Philippines.

This report represents a synthesis of findings with respect to key performance indicators from the project's logframe, following the broad thematic areas of:

- food security and nutrition (with a focus on fish consumption in the diet of women, and their families);

- value chain development; and

- gender outcomes and women empowerment.

Data collection was completed in the first five countries between 2020 and 2021 and was published prior to this report (FAO, 2023). The survey tools were updated based on learning from implementation in these countries and further implemented in the additional four countries. The following key steps were taken to ensure synergy across them:

- development and revision of three questionnaire types for the gathering of baseline data and that could be replicated at the end point of the project;

- identification and agreement of the data collection tool to be used (i.e. KoboCollect);[1] and

- a training programme, and delivery of the training for identified teams in each partner country. This covered both the questionnaires and the collection tools themselves.

Section 2 explains the design of the baseline survey, including the questionnaire structure and survey methods. The survey also included questions to understand who the respondents were; their profiles are presented in Section 3. The indicators[2] on which

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[1] All data are held online on a secure server arranged by the Kobo management team and downloadable in various formats, including Excel. Downloaded data represent a complete dataset for the entire project, with analysis on a country-by-country basis requiring further selection as needed.

[2] See footnote 3.

data were collected are presented with the results of the survey in Section 4, where these results are also discussed. The results are organized according to the five core areas of: (1) diets and food access; (2) decision-making and women's empowerment; (3) responsible post-harvest practices; (4) women's fishery organizations; and (5) knowledge management and communications. Sections 5 and 6 include conclusions and recommendations, respectively.

2. Design of the baseline survey

2.1 Survey structure

The baseline survey collected data using a combination of survey instruments (Table 1).

Table 1. Survey instruments for data collection in the four countries

Type of data collection	Target	Data collection profile
Questionnaire for individuals	Individual women; however, some men were interviewed as well	Mainly quantitative, but also some qualitative data
Focus group discussions (FGDs)	Groups of women	Mainly qualitative, but also some quantitative data
Key informant interviews (KIIs) of those in policy, programme or similar levels of sector influence	Policymakers, governments projects or programmes working in the small-scale fisheries subsector or fisheries sector as a whole, including social and health interventions	Mostly qualitative, but also some quantitative data

Source: Authors' own elaboration of survey data.

The survey remained consistent across the four countries, with one adaptation for each country survey, based on the available foods in each country. This adaptation pertains to one indicator, Minimum Dietary Diversity for Women (MDD-W), for which a non-quantitative 24-hour dietary recall is required. This 24-hour recall can be performed through an open recall or a list-based method (see FAO, 2021 for further methodological information and Hanley-Cook *et al.*, 2020 for information on biases associated with proxy methods). For this baseline assessment, a list-based method was selected. Assistance was provided by nutrition specialists within FAO on locating pre-collected "food lists" for each project country. These lists were then incorporated into the survey to ensure that it was context-specific for each country.

2.1.1 Baseline training and field pre-test

As good practice dictates, training of the enumerator team was envisaged from the start. Training guidelines were developed and shared with the team. This gave the opportunity to present and discuss the overall project context and survey purpose with the team, and to introduce them to the three instruments designed for data collection. The training also included time to assist the team in familiarizing themselves with Computer-Assisted Personal Interviewing using KoboCollect – a free, online application that can also be used offline, and is therefore suitable in locations where internet connection is poor.

It was agreed that a field pre-test of the individual questionnaires would take place soon after the training, to help the enumerator teams in each country to gain familiarity with

the questions and to practice uploading data onto the KoboCollect mobile application. The fieldwork commenced soon after this. Table 4 indicates the survey dates in each country.

Focus group discussions (FGDs) and key informant interviews (KIIs) followed a similar outline as the individual survey, based on the outline of the project's framework. These survey instruments sought the opinions of respondents on diet, gender issues in small-scale fisheries, and the facilities they believe exist or are in place and serve small-scale fisheries participants. In addition, the KIIs sought to gain an understanding of the knowledge of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) and of that on capacity development needs, as well as how learning and technological change occur.

2.1.2 Sample size and data collection programme

Calculating the sample size presented some difficulties because of the unreliability of the data on the target population of women in small-scale fisheries, as women are often under-recognized and undercounted in official statistics. Thus, the following assumptions and criteria were suggested for the sampling to endow the baseline and endline survey with credibility, while at the same time remaining manageable (Table 2).

Table 2. Sample size determination

Condition	Number
If:	
the total target small-scale fisheries population is	120 000 000 (see FAO, 2020)
of which 90 percent are in small-scale fisheries primary/secondary industry activities	108 000 000
of which 97 percent are in developing countries	104 760 000
of which 50 percent are women in small-scale fisheries	52 380 000
then:	
with a confidence level of:	95 percent
a confidence interval of:	2.5
the sample size would be:	1 536 (across 5 countries)[i]
rounding this down would result in:	300 interviews per country
Formula for sample size calculation:[ii] Unlimited population: $n = \dfrac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$ Finite population: $n' = \dfrac{n}{1 + \dfrac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2 N}}$	Where: **z** is z score (z= 1.96 for 95% confidence level) **ε** is the margin of error **N** is the population size **p̂** is the population proportion (50% is assumed)

[i] Sample size calculations were made based on five countries participating in the survey, as when the survey was being planned, a fifth country was to be included. However, at a later point, it was decided that the fifth country would not participate in the project.
[ii] *Source*: calculator.net. 2023. *Sample Size Calculator*. [Cited 17 October 2023]. https://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=2.5&pp=50&ps=52380000&x=98&y=15
Source: Authors' own elaboration of survey data.

Table 3 provides the number of respondents interviewed in each of the four countries by type of survey instrument. The dates of the surveys are also given, as well as the season, as it is well known that dietary diversity fluctuates in relation to seasonal availability of foods (Hanley-Cook *et al*., 2022; Ahern *et al*., 2021).

Table 3. Summary of respondent numbers per country

Survey numbers	Indonesia	Madagascar	Namibia	Philippines	TOTAL
Survey dates	20 July to 11 August 2022	15 May 2022 to 8 June 2022	28 March 2022 to 25 April 2022	28 March 2022 to 25 April 2022	
Season	Dry season, normally fishing season, but during the time period, there were strong winds and heavy rains and the fisheries harvest was not good	Dry season / winter (average 20°C), fish harvesting season	Varied, as data collection took place across all 14 regions. For the Zambezi region (inland fisheries) the survey took place during the open fishing season, but not the best fishing season. For the Ohangwena, Omusati, Oshana and Oshikoto Regions, the survey took place during the good harvesting period.	Dry and hot	
Individuals	301	300	398	302	1301
Focus group discussions	10	10	22	8	50
Key informant interviews	10	0	26	9	45

Source: Authors' own elaboration of survey data.

2.1.3 Survey locations and target respondents

The following map shows the locations where data collection took place and the number of individual interviews conducted per point in specific countries. The survey locations were selected based on where project activities are planned in the small-scale fisheries post-harvest sector. In general, all individual and FGD interviews were conducted in the

field, while KII sessions were one-to-one meetings.[3] The target respondents were women working in the small-scale fisheries post-harvest sector. While enumerators made every effort to interview women, a small number of men (n=9) were included as there were cases where enumerators were not able to speak directly to the woman of the household.

Figure 1. Map of data collection locations in the four countries
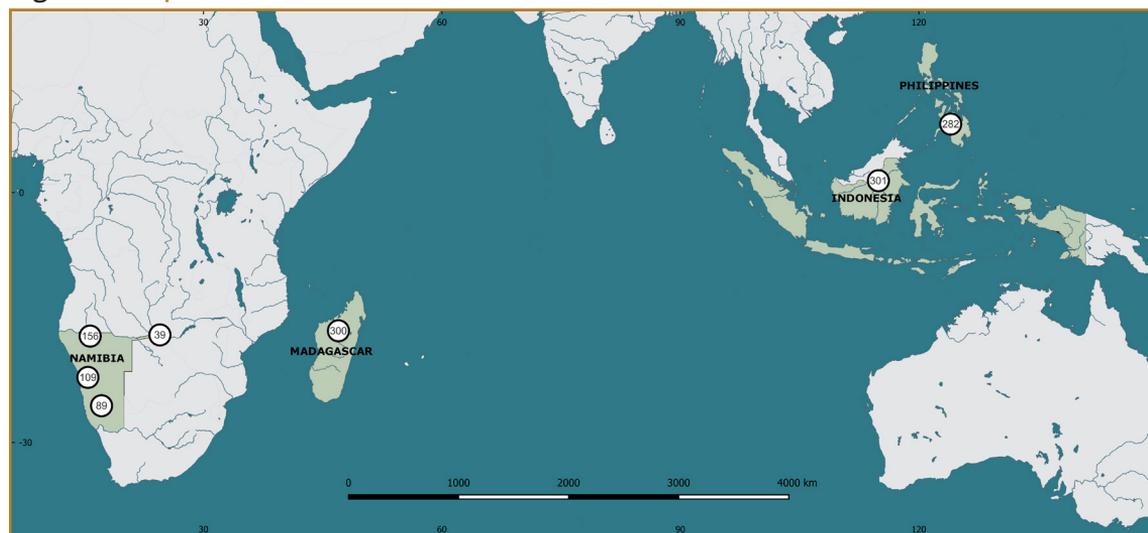
Source: Siren, A. 2024. Map of data collection locations in the four countries. Elaborated by the author based on KoboCollect.

2.1.4 Data analysis

The analysis was undertaken so that the data from the four countries were comparable and similar in presentation. Because of the large amount of data collected (much of qualitative nature), many responses were summarized; also, particular responses are highlighted in the report, as they added a qualitative value to the narrative that provided a deeper understanding and awareness of the situation faced by respondents. The analysis was statistical insofar as straight averages, percentages of totals and sums or counts were used to present data results. The results of the individual survey are presented in tables and graphs in the following sections of this publication, while qualitative additions from the FGDs and KIIs are provided as supplements to help interpret the data.

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[3]   It should be noted that the survey was conducted at a time of high alert due to the COVID-19 pandemic and all social distancing measures and protocols were followed to minimize the possibility of physical contact.

3.   Profile of respondents

In total, the survey reached 1 301 individuals, 50 FGDs and 45 KIIs. As ethical considerations demand, participants were made aware (through informed consent) that the survey was voluntary, and if they consented to participate, they were not required to answer all questions. Thus, for some questions, results indicate a lower number of respondents. Questions on the profile of respondents included their sex, marital status, age and number of years of education. These results may provide insight into the socioeconomic status of the respondents and their access to fisheries resources. For example, there is evidence that women may have varying access to fisheries resources, in that they may be primary users of fisheries resources (if they go fishing), secondary users (accessing fish through kinship or close relationships) or tertiary users (using capital to buy fish from fishers or traders) (FAO, 2015).

3.1   Sex of respondents

The survey targeted mostly women small-scale fisheries actors along the fisheries value chain, as well as those in positions that worked with small-scale fisheries projects and programmes to empower women in their livelihoods activities. Although the target respondents consisted mainly of female small-scale fisheries actors, some male respondents were also included where the enumerator was not able to speak directly with the women of the household. A total of 1 292 female and 9 male respondents were interviewed, representing 99.3 percent and 0.7 percent of respondents respectively.

3.2   Marital status of respondents

Across the four countries, 828 respondents (64 percent) indicated being married, followed by 321 (25 percent) who reported being single. Those who reported being widowed totalled 110 (8 percent), followed by 42 (3 percent) who reported being divorced. Figure 2 depicts the distribution of respondents by marital status.

Figure 2. Distribution of marital status of sampled respondents (n = 1 301)
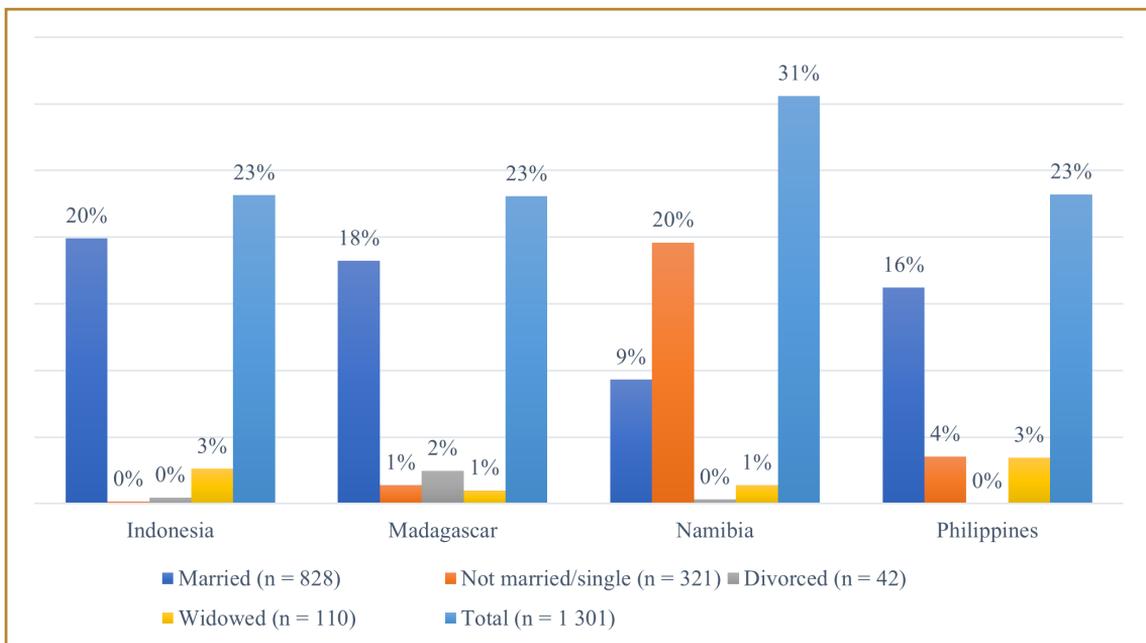
Source: Authors' own elaboration of survey data.

3.3   Respondents' age and other characteristics

The mean age of the respondents in the survey was 43, the oldest being 90 years and the youngest being 15 years of age. Table 4 summarizes the age of respondents.

Table 4. Summary of respondents' age

Country	Age in years (mean)	Age in years (range)
Indonesia	45	18–77
Namibia	40.7	15–90
Madagascar	36	17–69
Philippines	49.9	17–89

Source: Authors' own elaboration of survey data.

In terms of education, the mean number of years spent in school across the four countries was 7 years, and the maximum was 20 years. Looking at country averages, respondents spent more years in school in Namibia and less years in Madagascar, as depicted in Figure 3.

Figure 3. Mean years spent in school per country (n = 1 301)
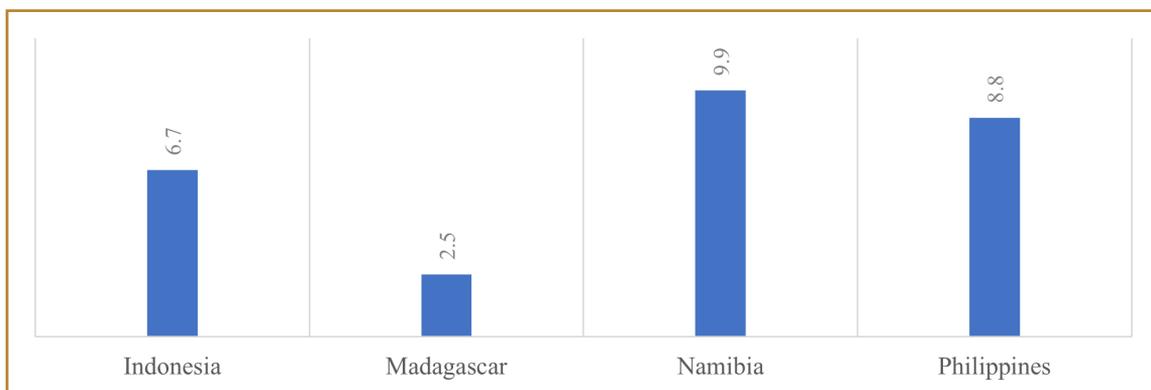
Source: Authors' own elaboration of survey data.

On average, the respondents' household size in the survey countries was 4.8, with the minimum members per household being 1 (in all countries) and the highest 21 (found in Namibia).

4. Survey summary results and discussion

4.1 Fisheries livelihoods and post-harvest practices

Across the four countries, the majority of the respondent households derive most of their income from fish value chain activities. In Indonesia, 75 percent of the households reported that all of total household income comes from small-scale fisheries activities. This is followed by Madagascar, where 65 percent of households indicated that all of their income comes from small-scale fisheries activities. In the Philippines, 35 percent of the respondents reported that all their income is derived from small-scale fisheries activities. The number of households whose income comes exclusively from small-scale fisheries activities is relatively lower in Namibia compared to the other three countries. Figure 4 depicts the proportion of household income that come from small-scale fisheries activities, by country.

Figure 4. Proportion of income from fish-related business (n = 1 301)
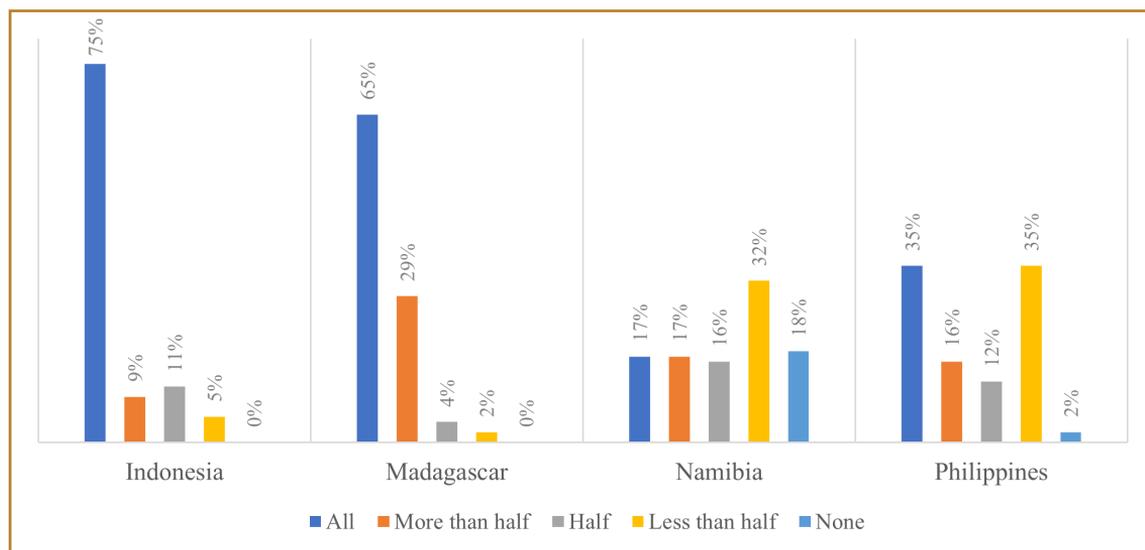
Source: Authors' own elaboration of survey data.

The baseline survey assumed that the respondents may have experienced changes in the environment in the recent or distant past, and that households may adopt measures to counter the impact of these changes. Overall, 81.3 percent of respondents reported diversifying income sources as a main measure to mitigate the impacts of the changes. When it comes to comparison of actual measures adopted per country, diversification of sources of income seemed to be high in Namibia (29.8 percent), Indonesia and the Philippines (26.8 percent each). For other households, joining saving and lending groups was a solution, for example in Indonesia where more than half of respondents reported this as a solution (63.3 percent); no respondents reported this in Namibia.

Farming fish may be seen as a way to increase fish supply when supply from capture fisheries is low. Generally, the respondent households across the four countries largely depend on capture fisheries rather than aquaculture. Of the 1 301 households sampled in this survey, only 13 (1 percent) indicated farming fish.

Figure 5. Proportion of households that farm fish across the four countries
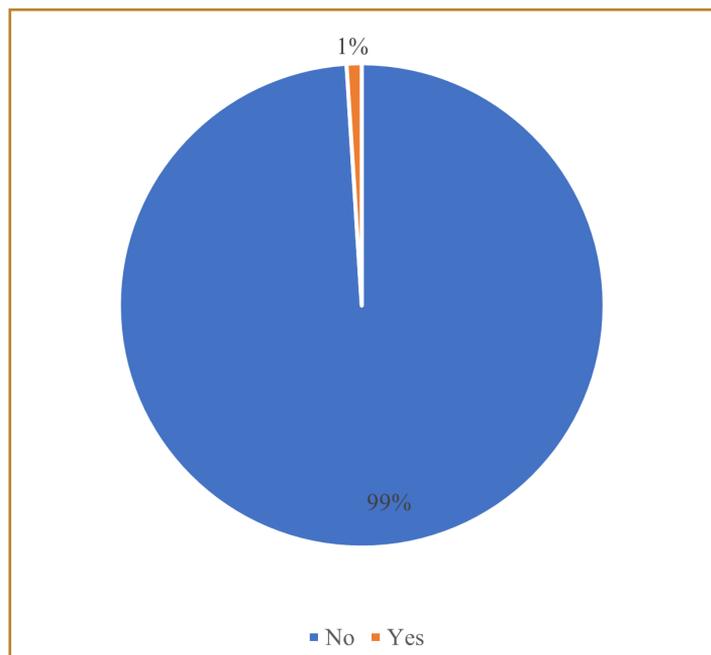
Source: Authors' own elaboration of survey data.

To understand which activities households are involved in throughout the small-scale fisheries value chain, respondents were asked if they or someone in the household fishes, processes fish, markets or retails fish, and transports fish. Follow-up questions were asked if the respondent said yes to any of these questions, to better understand who in the household performs each activity.

Sixty-two percent of respondents reported that at least one household member was involved in fishing, while 38 percent of the respondents indicated that their households did not fish at all. Generally, the bulk of fishing is predominantly performed by men (58 percent of those that reported that someone in the household fishes). This is followed by women, accounting for 26 percent. Children and other household members are also involved in the activity at 12 percent and 3 percent, respectively, as depicted in Figure 6.

Figure 6. Household / family member involved in fishing (n=802)

	58%	26%	12%	3%
	Man (n = 651)	Woman (n = 297)	Child (n = 135)	Other family member (n = 38)
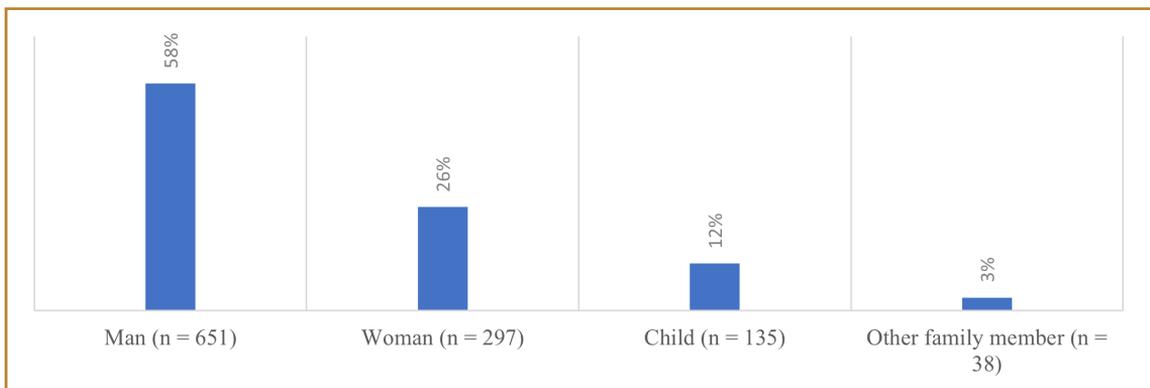
Source: Authors' own elaboration of survey data.

The mean amount of fish that households reported to catch per week varied. In Indonesia, households reported catching around 628.1 kilograms (kg) per week. In Madagascar, the average reported was 54.6 kg per week. This was followed by Namibia and the Philippines, where respondents reported fishing about 24.4 kg and 15.7 kg per week, respectively.

In reference to fish processing across the four countries, 54.3 percent indicated that they process fish, compared to 45.4 percent that indicated not to process. The survey found that of the 707 households that reported processing fish, only 32 percent reported catching their own fish for processing.

The bulk of fish processing work is performed by women (as reported by almost 72 percent of respondents) followed by children (13.3 percent) and men (12.6 percent). Only 2.4 percent of respondents reported that other relatives living in the same household are involved in fish processing, as depicted in Figure 7 (note that households could respond with more than one answer as to who in the household processes fish).

Figure 7. Who processes fish in the household (n=707)

	12.6%	71.7%	13.3%	2.4%
	Man (n = 118)	Woman (n = 674)	Child (n = 125)	Other family member (n = 23)
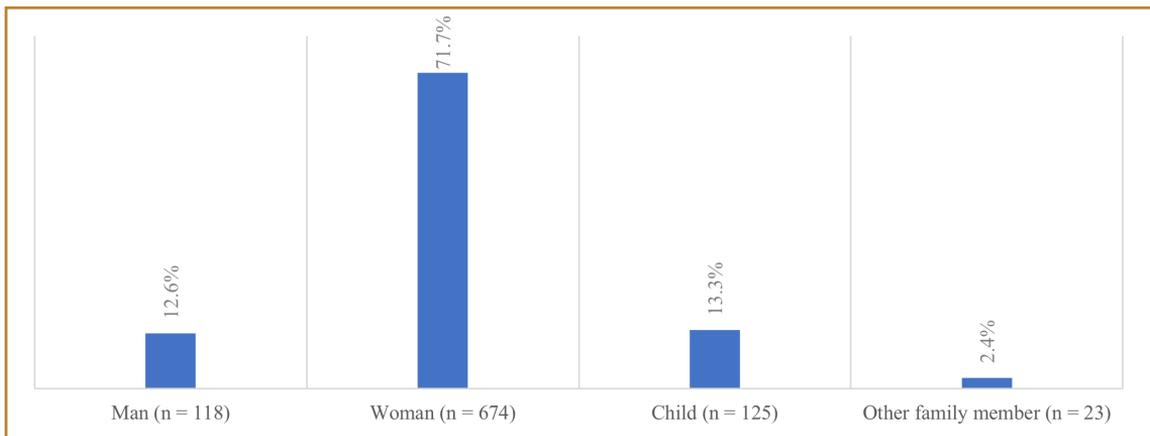
Source: Authors' own elaboration of survey data.

On average, the respondent households in Indonesia process 28.1 kg of fish per week. This is followed by Namibia and Madagascar, where the respondent households process 17.1 kg and 16 kg of fish per week on average, respectively. Small-scale fisheries households in the Philippines reported the lowest mean (4.7 kg) when it comes to amounts of fish processed per week.

When it comes to sources of fish for processing, 34 percent of respondents reported that they source fish that is locally caught by small-scale fisherfolk, followed by that purchased at the market, the origins of which were not known (28 percent). Other important sources include fish caught locally by commercial fisheries, wholesalers who bring fish from other parts of the countries, imported species and gifts or barter (12 percent, 5 percent and 4 percent, respectively, as depicted in Figure 8.

Figure 8. Source of fish for processing (n=491)
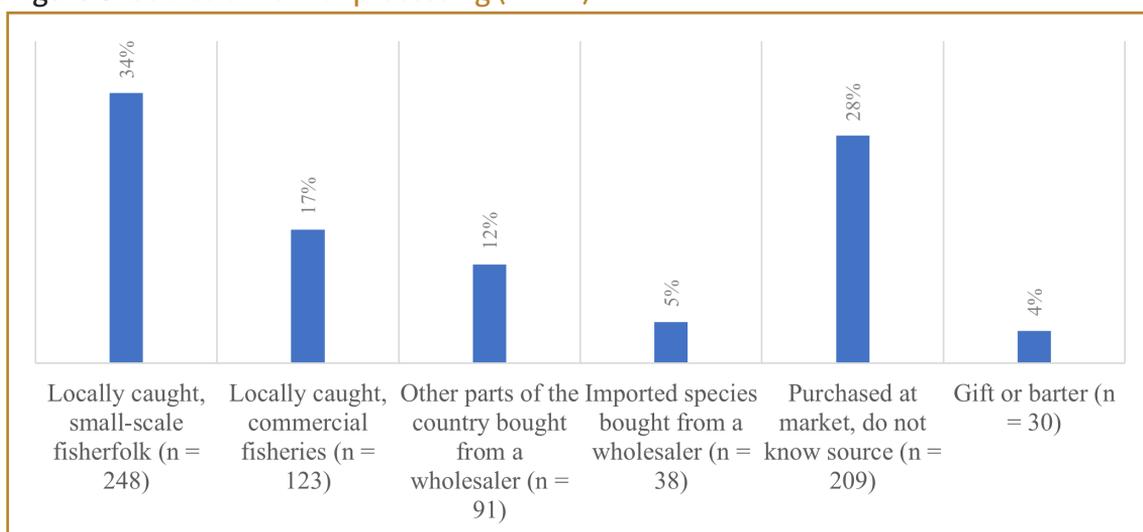
Source: Authors' own elaboration of survey data.

There was a variation in terms of the most common fish processing methods employed by respondent households across the four countries. The most common methods of fish processing are: drying, salting, boiling, frying and smoking. In Indonesia, frying (19 percent) and boiling (21 percent) were the most common methods used, while in Madagascar, it was frying (41 percent), followed by boiling (19 percent). In Namibia, the five most common fish processing methods included drying (30 percent), followed by boiling, at 16 percent. In the Philippines, salting (68 percent) was the most commonly used method of processing fish, followed by drying (25 percent). Figure 9 depicts the distribution of methods of fish processing across the four countries.

Figure 9. Methods of fish processing (n=708)
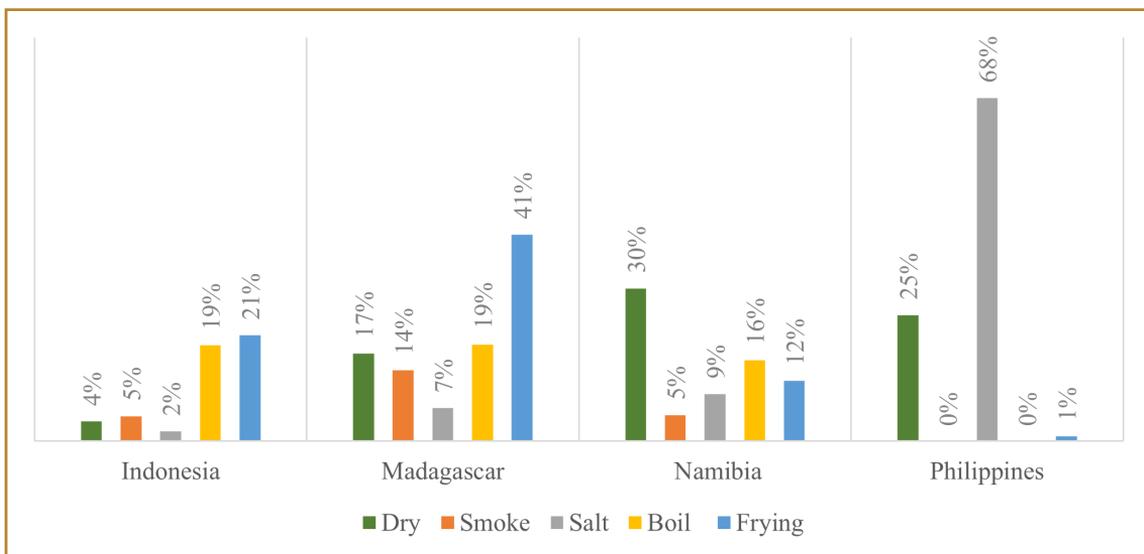
Source: Authors' own elaboration of survey data.

About 44 percent of the respondent households interviewed in the survey across the four countries indicated that they self-taught fish processing methods. The other common source of learning was from their parents (29 percent). The third most common source of learning was from others in the same area (approximately 10 percent). About 5 percent of the respondents indicated learning fish processing from other family members. These results indicate that external sources are not commonly used for learning, the reasons for this being unknown or because of lack of access to learning opportunities. Learning about fish processing from project training, from the internet and from extension workers accounted for 4 percent, 2 percent and 1 percent, respectively. Figure 10 depicts the breakdown of the sources of fish processing knowledge across the countries.

Figure 10. Where respondents learned to process fish (n=708)
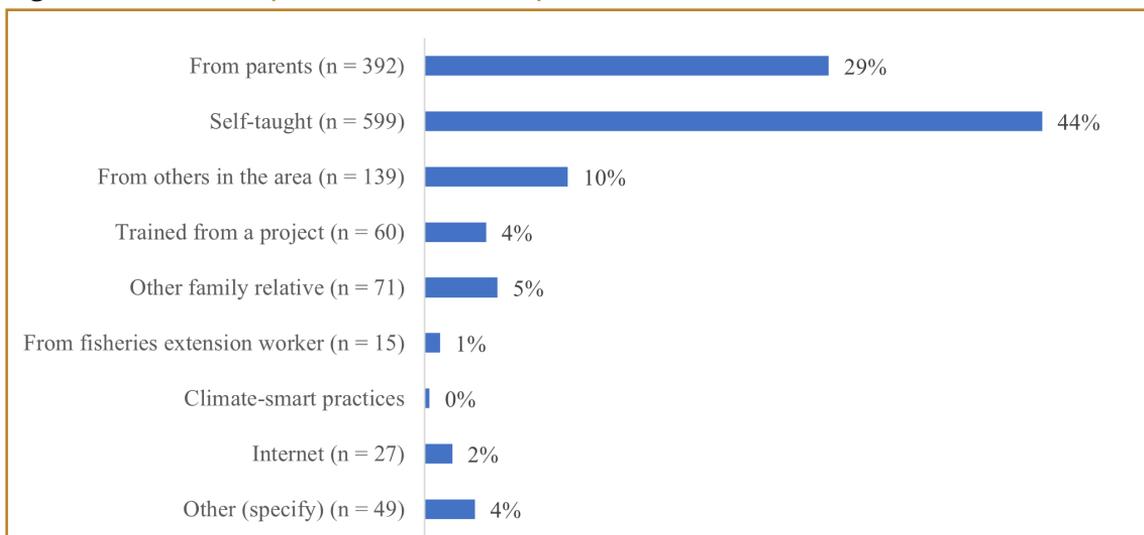
Source: Authors' own elaboration of survey data.

In reference to marketing of fish, 857 households (65.9 percent) reported having someone in their household who is involved in fish marketing and/or retailing. When compared across the countries, the biggest proportion of households involved in fish marketing was in Madagascar (93 percent), followed by the Philippines and Namibia (67 percent and 61 percent, respectively). The lowest was in Indonesia, at 45 percent, as depicted in Figure 11.

Figure 11. Proportion of households involved in marketing fish (n=1 301)
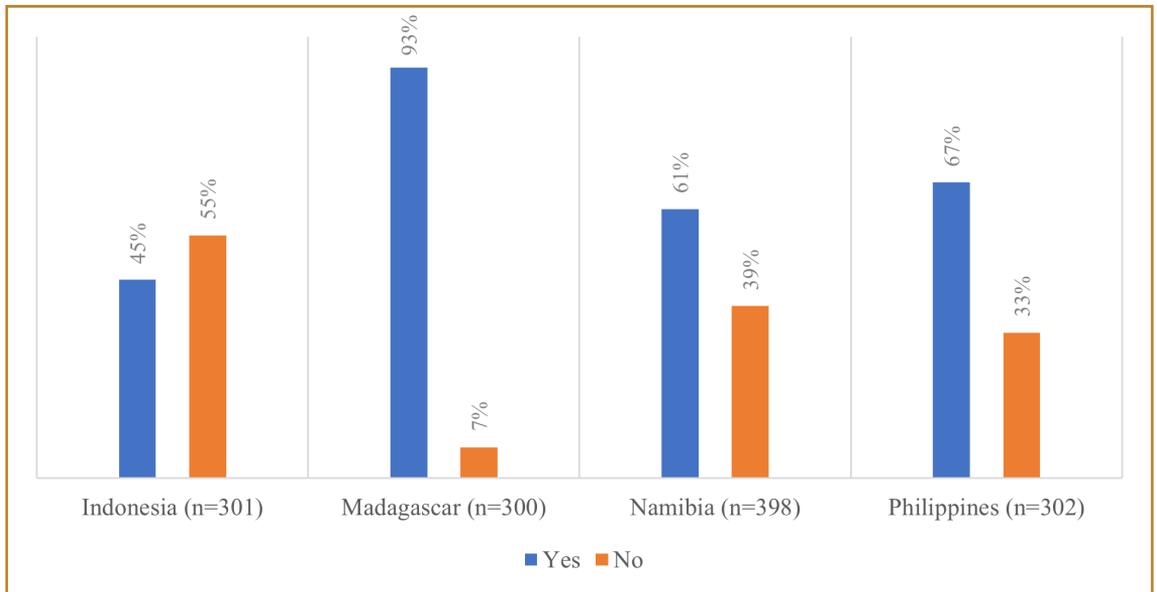
Source: Authors' own elaboration of survey data.

In terms of who, in the household, specifically markets the fish, women are more involved in (as reported by 77.4 percent of respondents), followed by men (12.6 percent). Children and other family members also market fish, as reported by 7.3 percent and 2.7 percent of respondents, respectively. Figure 12 depicts the distribution.

Figure 12. Proportion of who does fish marketing across the four countries (n=856)
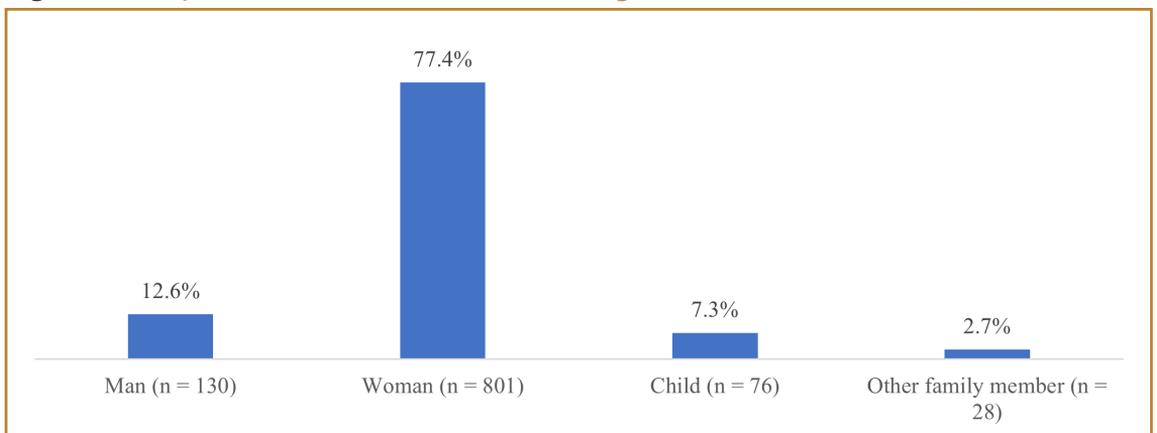
Source: Authors' own elaboration of survey data.

Quantitatively, more fish was reported to be sold in Indonesia per week than in the other countries. On average, the households in Indonesia reported selling 166 kg of fish per week, followed by Madagascar, where households reported that on average, 60 kg of fish is marketed or retailed per week. Households in Namibia reported a weekly average of almost 31 kg and in the Philippines, 20 kg.

In reference to fish transportation, 31 percent of respondents (n=403) reported that a member of their household is involved in transporting fish. In the Philippines and Namibia, the role of transporting fish is mostly performed by women (73 percent and 61 percent, respectively). In Indonesia, men dominate transportation of fish (52 percent), followed by women (40 percent). In Madagascar, the study found that this task is usually performed by children (48 percent) and men (32 percent). Figure 13 depicts the distribution of who transports fish, by country.

Figure 13. Distribution of who transports fish by country (n=403)
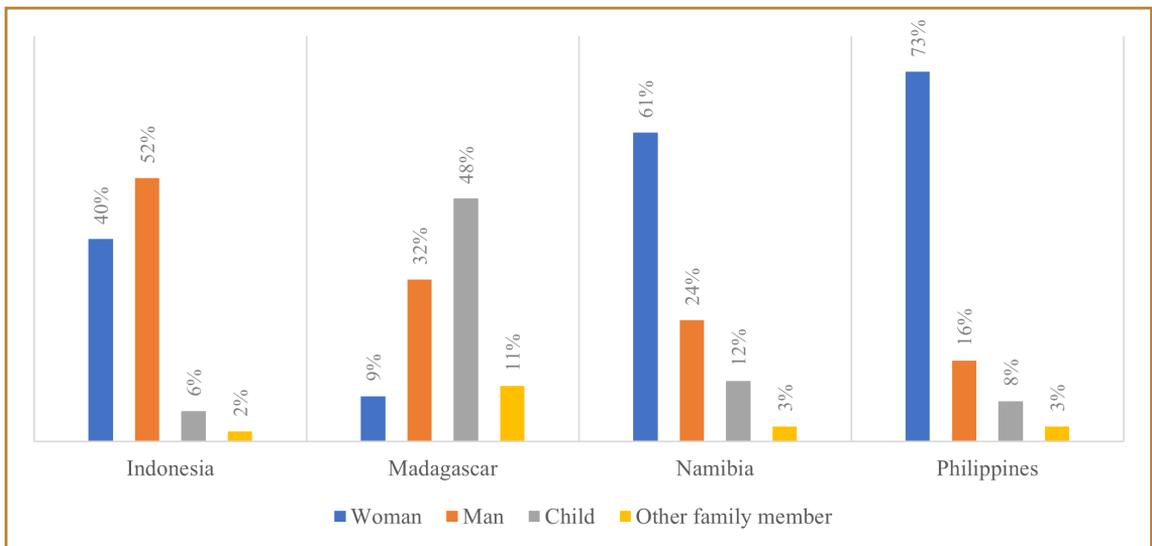
Source: Authors' own elaboration of survey data.

The survey also sought to understand households' participation in trading fish at wholesale level. Only 156 households, representing 12 percent of the total sample across the four countries, reported trading fish. In a similar trend to fish retailing, women tended to be involved more in fish trading compared to other members of their households. Fifty-eight percent of fish trading was reportedly done by women, followed by 37 percent done by men. Children and other family members accounted for 3 percent and 2 percent of fish trading. Figure 14 depicts the details.

Figure 14. Distribution of who, in households, trades fish (n=156)
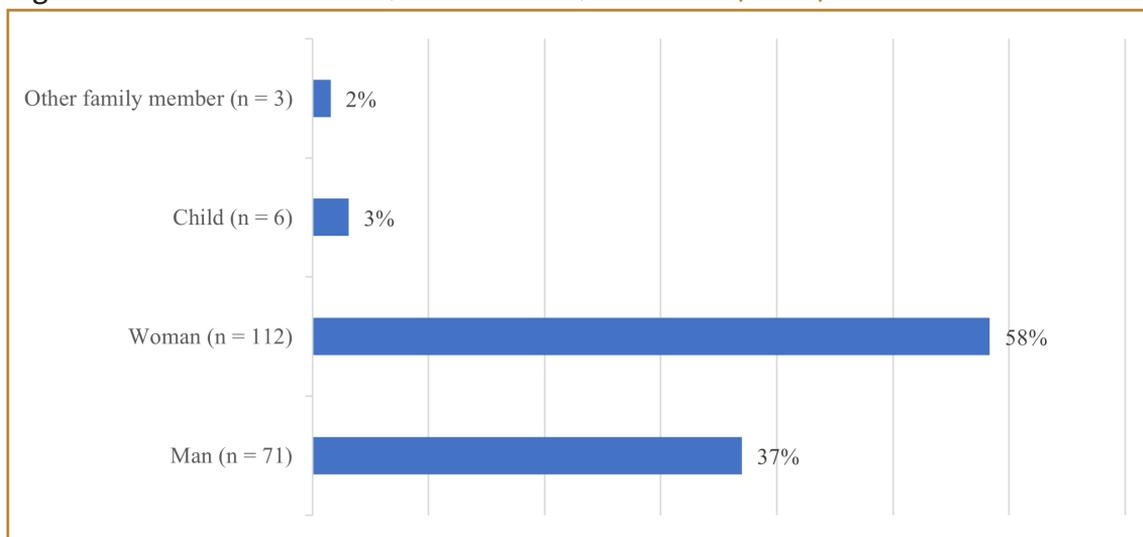
Other family member (n = 3) 2%
Child (n = 6) 3%
Woman (n = 112) 58%
Man (n = 71) 37%

Source: Authors' own elaboration of survey data.

On average, the respondent households across the four countries trade 306 kg of fish per week. A greater number of respondents in Indonesia reported that their household trades fish than in the other countries. On average, Indonesian respondents reported that their households trade 1 032.6 kg per week. The minimum amount that the households traded was 10 kg, while the maximum was 5 000 kg. In Madagascar, the mean was 52.1 kg (ranging from 15 kg to 80 kg). In Namibia, the average amount of fish sold at wholesale per week was 68.1 kg (ranging from 8 kg to 300 kg). In the Philippines, the average amount of fish sold at wholesale was 46.7 kg (5 kg to 350 kg) per week.

Respondents were asked at what price, on average, they sold fish (per kg) that was considered a "good" price. This average was collected as a general indication of good selling prices across all fish species and types, as it was difficult to collect this information for every species and type of fish that is marketed. These data give an indication of the range of prices that fish marketers receive from marketing fish. The average good selling price reported in the four countries was USD 8.23, ranging from USD 0.56 to USD 45.87. It is important to consider that this is an average good price reported across all respondents, including traders and marketers and that what is considered a good price also depends on the socioeconomic context in which the respondents are located.

The baseline survey found that about 23 percent of respondents sold fish for a low price across the four countries, the average low selling price per kg being USD 4.28 (reported low selling prices ranged from USD 0.34 to USD 23.46 per kg).

High on the list of why respondents sold fish for low prices in the four countries was low quality of fish and lack of storage infrastructures (both were reported by 96 percent of respondents, as they could report more than one reason). Other reasons why respondents noted that fish is sold for low prices included oversupply on the market

and to avoid fish spoilage, or sold at a low price because it had already started spoiling. Responses are presented in Figure 15.

The baseline survey sought to assess the extent of physical loss as one of the most common losses in the fish value chain, often because of poor post-harvest handling. Fish loss and waste was reported by 16 percent of the respondents in all four countries, as they noted that they lose or throw away fish, while 84 percent reported that they did not lose any fish. Respondents were asked to recall the last time that they conducted their activities (fish processing cycle, marketing, etc.). According to those that indicated losing or throwing away fish, the average amount of fish lost was 5.8 kg. The maximum reported lost was 50 kg, while the minimum was 0.2 kg in a week.

Respondents were asked for what reasons they lost or threw away fish, and they could respond with multiple answers. The most common reasons why the respondents lost or threw away any fish were: fish spoiled or started rotting; plenty of fish on the market; and low quality of fish on the market. In terms of country-specific reasons, the most common in Indonesia was low quality of fish (47 percent) followed by plenty of fish supply on the market (33 percent). In Madagascar, the common reasons were fish starting to spoil or rot (30 percent) and plenty of fish on the market (29 percent). In Namibia, the most common reasons were fish starting to spoil or rot (41 percent), followed by lack of storage infrastructure (15 percent). In the Philippines, the most common reasons were fish starting to spoil or rot (38 percent) followed by avoiding spoilage (23 percent), as depicted in Figure 15.

Figure 15. Distribution of why respondents lost or threw away fish (n=208)
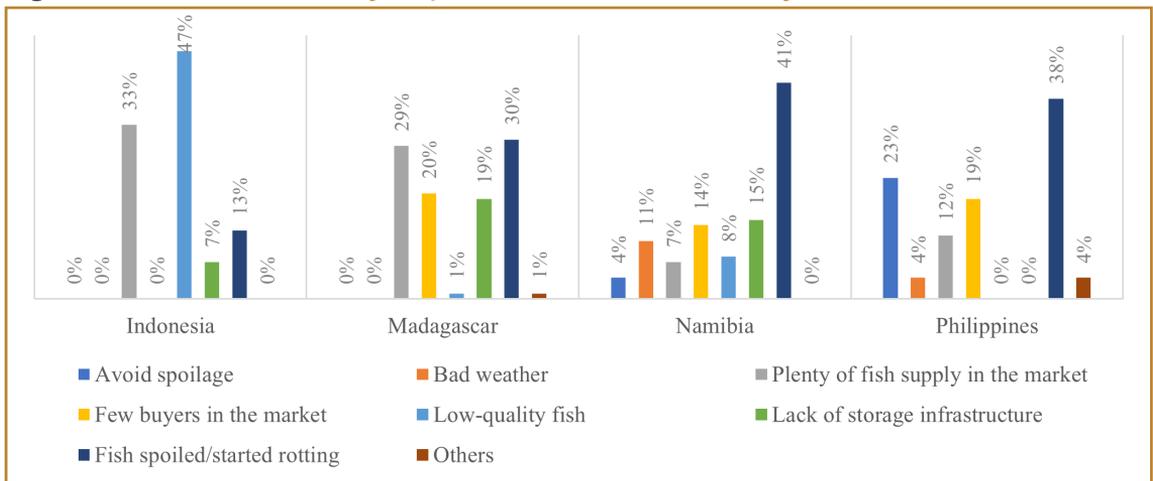
Source: Authors' own elaboration of survey data.

4.2 Decision-making and empowerment

Joint household decision-making is a collective process in which more than one person is involved in the running of affairs around household livelihoods, including expenditure, income, and asset use and control. This is usually seen as an indicator of "empowerment". The survey sought to understand the contribution of women in decisions on how the income realized from fisheries activities is utilized. Four levels of input (all input, moderate input, little input and no input) were assessed. The results indicate that the most common level of input on the use of income from fisheries activity was all input (41 percent), followed by moderate input (26 percent) and no input (25 percent) from women, on deciding how to use the income.

Figure 16. Level of input in decisions related to the use of money from the fish business
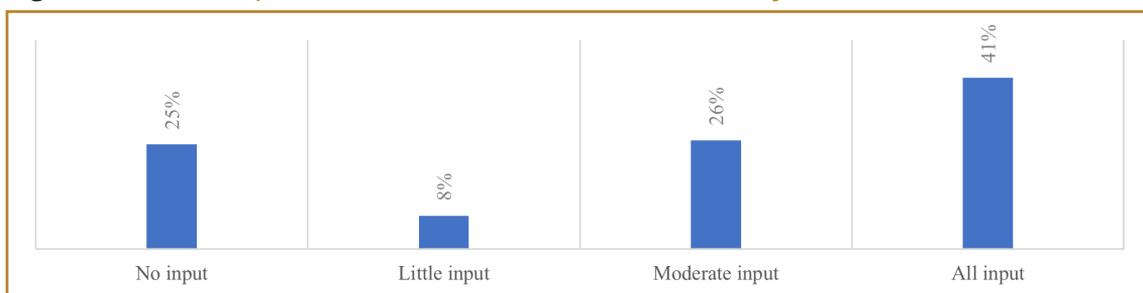
Source: Authors' own elaboration of survey data.

In-country comparison on all input on the use of income from fisheries value chain activities was experienced more in Namibia, at 45.1 percent, and was lowest in Indonesia, at 6.2 percent. When it comes to moderate input, respondents in Madagascar experienced it most frequently, at 46.2 percent, and least frequently in Indonesia, at 4.1 percent. No input on decision-making was experienced more in Indonesia, at 69.2 percent, compared to the other three countries. Figure 17 depicts the distribution across the surveyed countries in detail.

Figure 17. Women's participation level in decision-making (n=1 301)
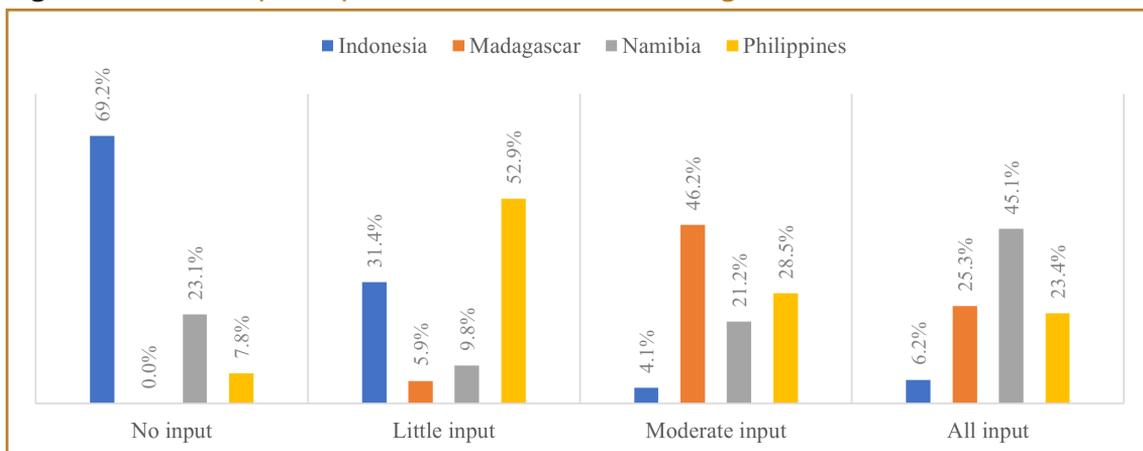
Source: Authors' own elaboration of survey data.

4.2.1 Ownership of assets

When it comes to ownership of assets for fisheries business, the survey sought to ascertain both the number owned and the level of control, in terms of who decides how to dispose of the specific assets. The assets included locally produced fishing equipment (such as baskets), externally produced fishing equipment (e.g. synthetic nets, hooks and lines), transportation equipment to collect fish and fish products, tools necessary to perform various functions (drying mats, knives, etc.), fish processing equipment, and storage equipment (such as sacks and bundles). Other assets included cell phones as a means of communication for conducting business.

Almost all small-scale fisheries households reported owning most of the assets. Generally, there was an overlap of responses on asset ownership.

In Indonesia, 46 percent of respondents indicated owning at least one asset for transportation. This is followed by 35 percent and 31 percent who reported owning fish processing equipment and fish storage equipment, respectively. For respondents in Madagascar, locally produced fishing equipment were the commonly owned assets, at 41 percent, followed by externally produced fishing equipment and tools (such as drying mats and knives, at 26 percent and 25 percent, respectively. In Namibia, the most commonly owned assets were means of communication and fish storage equipment, at 39 percent each, followed by fish processing equipment, at 38 percent. In the Philippines, the most commonly owned assets were externally produced fishing equipment (38 percent), followed by transportation (28 percent) and fish storage equipment (26 percent). Figure 18 shows the percentage of respondents per country owning one or more assets.

Figure 18. In-country distribution of assets owned by respondents (n=1 294)
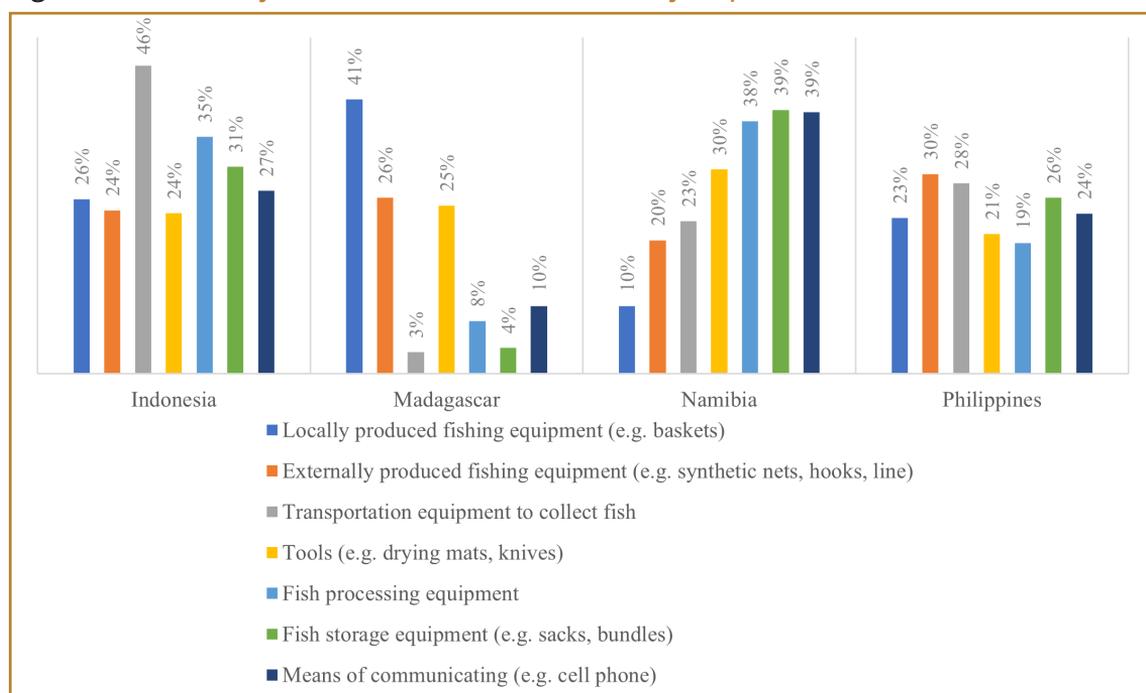
Source: Authors' own elaboration of survey data.

There is marked variability in reference to the number of assets owned within each category of asset. There are more households that own fewer (one or two) assets than those with more assets (three or more). Table 5 presents the distribution details as percentages.

Table 5. Distribution of percentages of the number of assets owned per household (n=1294)

Fisheries asset owned	% with 0	% with 1	% with 2	% with 3	% with 4	% with 5+
Locally produced fishing equipment	0.5%	27.0%	28.0%	11.1%	9.2%	24.2%
Imported produced fishing equipment	0.5%	22.3%	21.5%	16.2%	6.0%	33.5%
Transportation equipment to collect fish	2.0%	73.2%	18.5%	3.7%	2.0%	0.7%
Tools (e.g. drying mats, knives)	1.0%	24.8%	26.7%	21.7%	9.2%	16.5%
Fish processing equipment	1.2%	32.7%	31.1%	14.2%	5.7%	14.9%
Fish storage equipment (e.g. sacks, bundles)	1.4%	43.5%	29.0%	11.3%	5.4%	9.5%
Means of communication (e.g. cell phone)	3.1%	69.8%	20.8%	4.0%	1.4%	0.8%

Source: Authors' own elaboration of survey data.

In reference to who specifically owns a particular asset across the four countries, women ("You/respondent" in Figure 19) have a slightly larger proportion of ownership of tools for handling, means of communication, equipment for storage, and assets used for processing, (50 percent, 43 percent, 31 percent and 28 percent, respectively). However,

spouses have a slightly higher proportion of ownership when it comes to equipment used for fishing, specifically, imported equipment. The baseline survey found that there is a degree of joint ownership with spouses in all categories of assets. Figure 19 shows the breakdown.

Figure 19. Who owns the fisheries assets (n=1 294)
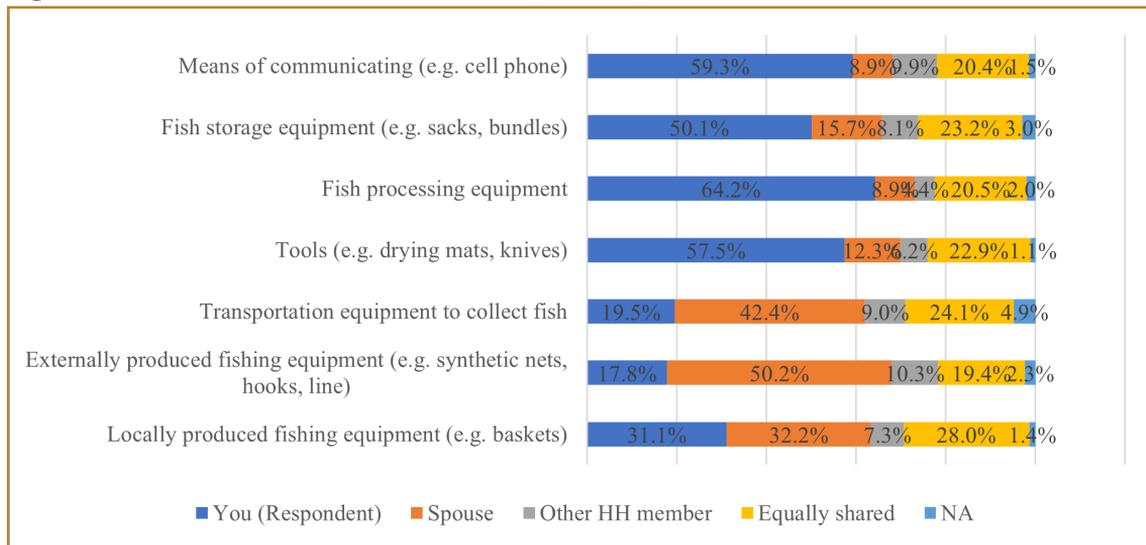
Source: Authors' own elaboration of survey data.

4.2.2 Decision of asset disposal

In reference to deciding whether to give away, sell or rent out an asset most of the time, a similar trend to that concerning ownership is observed. Women (You/respondent in Figure 20) make the majority of the decisions to rent out an asset or sell it when it comes to tools for fish handling, as well as for means of communication (usually, a cell phone), fish storage and fish processing equipment (44 percent, 37 percent, 29 percent and 25 percent, respectively). Spouses dominated in decisions to sell or rent out assets mainly pertaining to imported and locally produced fishing equipment and transportation equipment. It should be noted that there was a marked level of joint decision-making in asset renting out or sale reported in all categories of assets. Refer to Figure 20 for the percent distribution of assets disposal decision-making.

Figure 20. Who mostly decides to dispose of the fisheries asset (n=1 301)
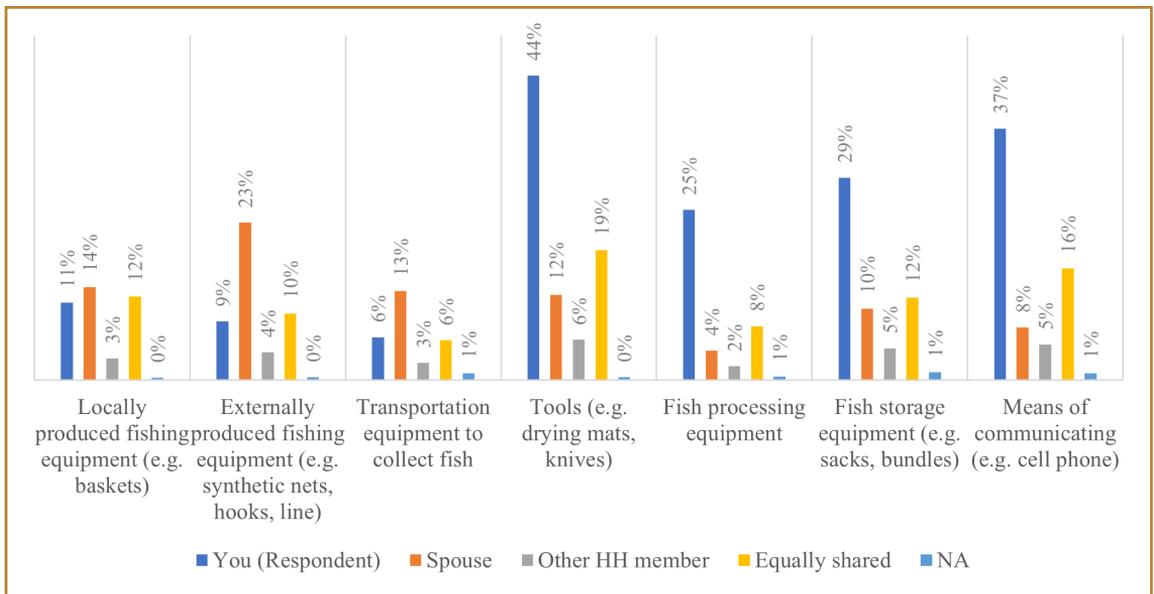
Source: Authors' own elaboration of survey data.

4.3 Women and leadership in fisheries organizations

Among other things, the FAO Flexible Voluntary Contributions project aims to encourage women to participate and be representatives in local and regional small-scale fisheries organizations. As such, the survey sought to determine whether women working in small-scale fishing were members of any local fisheries organizations available in their locality. Even though FGD and KII interviews indicated a presence of fisheries groups in the countries, 919 participants (71 percent) surveyed in the four countries do not belong to any fishing organizations. The other 382 (29 percent) of respondents reported being a member of fisheries organizations. Across the countries, Namibia and Indonesia had relatively more respondents that reported that they are not a member of a fisheries-related organization (96 percent and 79 percent, respectively) as compared to the Philippines and Madagascar, where 58 percent and 42 percent of households, respectively, reported belonging to any fisheries organization, as presented in Figure 21.

Figure 21. Membership in local fisheries organizations (n=1 301)
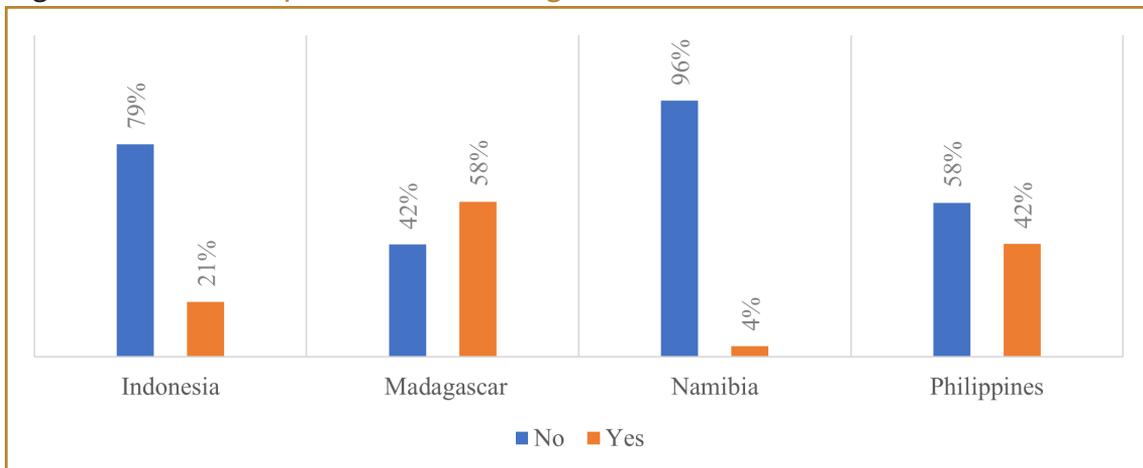
Source: Authors' own elaboration of survey data.

Of the households that indicated being members of fisheries organizations, only a small proportion (21 percent) confirmed that their organization attends local government meetings. Small-scale fisheries actors' participation in such local- and national-level platforms exposes them to relevant decision-making and fisheries policymaking processes. Some respondents during FGDs and KIIs noted that they believe that attendance of such forums accords them a chance of gaining business-related benefits such as increased networking opportunities, skills and knowledge in line with improved technologies as well as possibilities of access to markets and information.

4.4   Knowledge and communication

The project also aims to help women in different localities, countries and areas to learn from one another and to access information that is relevant to their livelihoods. Survey respondents were asked how they learned to use the various technologies they use in their day-to-day fishery activities. The results of the survey indicate that the most prevalent source of information on how to use the various technologies was self-taught (44 percent), followed by learning from parents (31 percent). Other ways women learned to use technologies included receiving training from a project (cited by only 8 percent across the countries) and a family relative at 6 percent. These results reflect the fact that there is low contact between the women and extension service delivery. Figure 22 depicts the distribution of sources of knowledge on how to use technologies in the small-scale fish value chain across the four countries.

Figure 22. How small-scale fisheries learned the technologies used (n=1 301)

Self-taught (n = 786) 51%
From parents (n = 377) 25%
From others in the area (n = 140) 9%
Trained from a project (n = 90) 6%
Other family relative (n = 75) 5%
Fisheries extension worker (n=26) 2%
Internet (n = 17) 1%
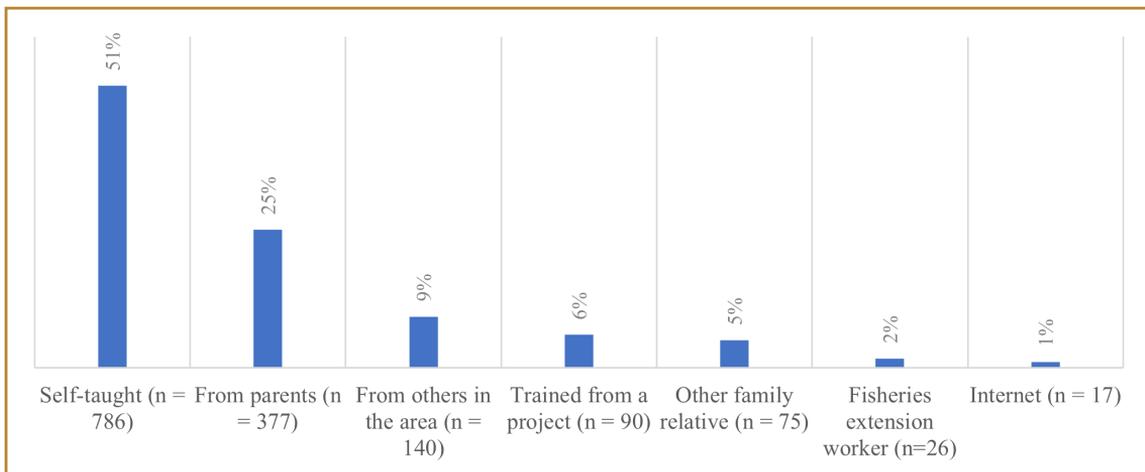
Source: Authors' own elaboration of survey data.

Between countries, there were no significant variations in reference to sources of learning for the use of technologies. The major source was self-taught, followed by learning from parents. In Indonesia and Madagascar, there was mention of contact with fisheries extension workers as a source of information, and of some form of information and communications technology mediums (such as television and the internet) as sources of knowledge in using fisheries business-related technologies, especially in Indonesia and Namibia. Figure 22 depicts the breakdown.

Figure 23. Where and how the respondent learned technologies used, by country (n=1 301)

Legend:
- From parents
- Self-taught
- From others in the area
- Trained from a project
- Other family relative
- From fisheries extension worker
- Television
- Internet
- Other

Indonesia: 13%, 19%, 2%, 4%, 3%, 1%, 0%, 1%, 0%
Madagascar: 4%, 26%, 1%, 1%, 1%, 0%, 0%, 0%
Namibia: 12%, 19%, 8%, 0%, 4%, 0%, 0%, 1%, 0%
Philippines: 5%, 7%, 2%, 3%, 0%, 0%, 0%, 0%, 0%
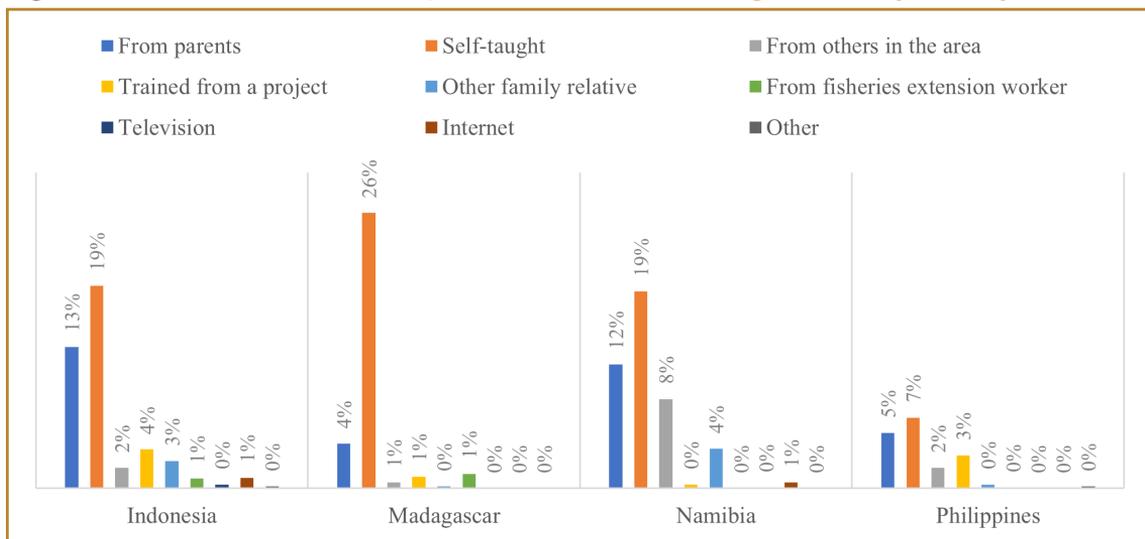
Source: Authors' own elaboration of survey data.

The majority of the respondents (87 percent) reported that they had not received any special training from projects, government or any other organization in their daily business operations. Across the four countries, only 169 respondents (13 percent) had received some sort of training. Of these 169 respondents, 54 percent reported receiving training on fish value addition (fish processing – drying, handling, packaging, cooking and preparing). Other types of training received included fishing (8 percent) and fish marketing (12 percent). Other trainings included climate-smart practices (5 percent), governance and social protection. Figure 24 depicts the distribution.

Figure 24. Type of training received from projects/government (n=169)
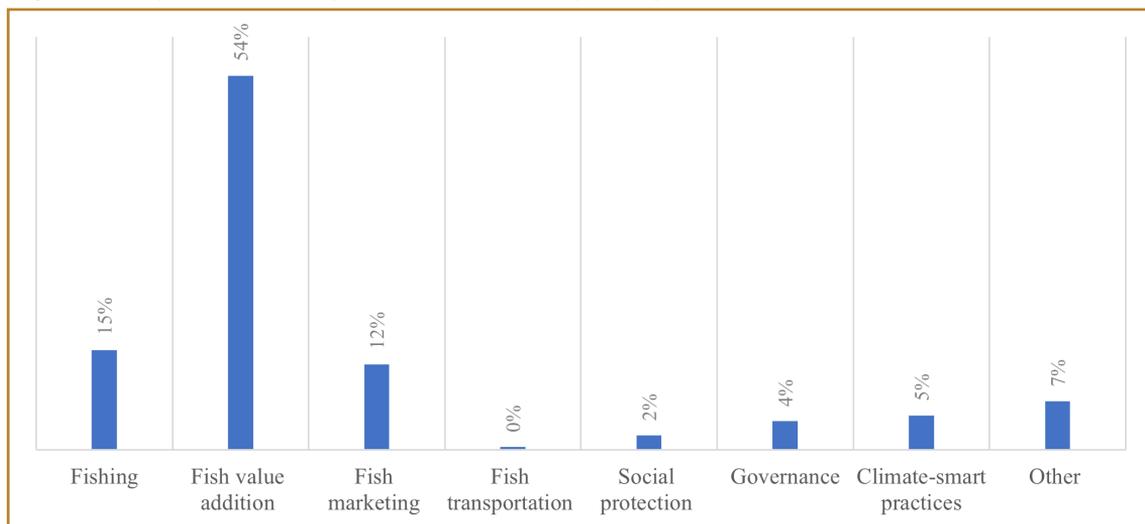
Source: Authors' own elaboration of survey data.

4.5   Food, nutrition and food security

4.5.1 The Food Insecurity Experience Scale

The baseline survey included the Food Insecurity Experience Scale (FIES), an experience-based indicator based on eight questions that capture a range of individual experience of food insecurity over a recall period of 12 months (INDDEX, 2018). The FIES is used as one of two indicators for Sustainable Development Goal 2.1 (relating to ending hunger and ensuring food access), to assess the prevalence of food insecurity in a population (INDDEX, 2018).

In summary, three-quarters (75.12 percent) of respondents in the Philippines experienced moderate or severe food insecurity. Indonesia had the lowest rates across the surveyed countries, at 21.07 percent. Severe food insecurity among the survey countries was highest in Namibia, at 46.85 percent, and lowest for Indonesia, at 8.36 percent.

It should be noted that in Madagascar, the FIES results could not be obtained. The number of women that answered "yes" (of the total *n=135*) to several food-insecurity-related

questions (FIES items) was very high, which can be interpreted as a non-quantifiable sign of a high prevalence of food insecurity among the sampled women.[4]

Table 6 presents a summary of the percentage of respondents who experienced food insecurity, by country.

Table 6. Prevalence rates of food insecurity (percentage of individuals), by country

Country	Category	% of individuals	Margin of error
Indonesia	Moderate + severe	21.1%	6.9
	Severe	8.4%	4.59
Madagascar	Moderate + severe	—	—
	Severe	—	—
Namibia	Moderate + severe	67.7%	7.19
	Severe	46.9%	7.29
Philippines	Moderate + severe	75.1%	6.6
	Severe	8.2%	4.01

Source: Authors' own elaboration of survey data.

4.5.2 Minimum Dietary Diversity for Women

In addition to the FIES, the survey administered questions to measure Minimum Dietary Diversity for Women (MDD-W). Dietary diversity is a proxy indicator based on the premise that consuming a wide variety of nutrient-dense foods is more likely to ensure an adequate intake of essential nutrients and other bioactive compounds, which in turn will lead to improved diet quality and health outcomes. The MDD-W indicator is defined as:

> *a dichotomous indicator of whether or not non-pregnant women 15–49 years of age have consumed at least five out of ten defined food groups the previous 24 hours. The proportion of women of reproductive age who achieve this minimum of five food groups out of ten in a population can be used as a proxy indicator for higher micronutrient adequacy.* (FAO, 2021).

A list-based non-quantitative 24-hour recall was conducted with each individual respondent. The MDD-W indicator is based on 10 food groups, although 18 food groups are included in the list-based data collection module (see the Annex to this publication). Of these, the eight food groups that are not included in MDD-W analysis were included in data collection in order to capture a "snapshot" of the whole diet, and include foods such as processed snacks and beverages. The data on these food groups is not presented

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[4]   It was not possible to produce reliable FIES results for Madagascar, because the data did not pass the initial validation assessment tests. Of the initial 300 women included in the survey, 135 were eligible for FIES calculations (meaning they had no missing responses and non-extreme raw scores). Using the Rasch model for data validation, an initial Rasch reliability value of 0.72 was calculated. Nevertheless, two items showed extreme not acceptable (>2) Outfit values: "Worried" (Outfit=39 586) and "Ate less" (Outfit = 26 347). Consequently, they were removed, resulting in a reduction of the eligible sample to 133 women and a new Rasch reliability value of 0.46. This value falls below the acceptance cut-off.

in this report. The food lists gave examples of foods in each food group, according to the local context. To analyse the data, a simple sum was calculated to determine the number of food groups each woman consumed (that is, a "food group diversity score" is constructed, ranging between zero and ten). In this regard, when MDD-W was reached (i.e. if a woman consumed at least five or more food groups), the indicator was assigned a value of 1, and a value of 0 otherwise.[5]

Construction of the MDD-W indicator was constrained to respondents within the target population for the indicator (non-pregnant women between the age of 15 and 49 years). The survey results show that the percentage of survey respondents within this target population achieving MDD-W was highest in Indonesia, at 89.9 percent, followed by the Philippines at 70.6 percent and Namibia at 29.9 percent. Madagascar had the lowest percentage of women reaching MDD-W among all the four countries at 4.4 percent. Table 7 presents the details by country.

In terms of the food group diversity score (the sum of food groups consumed by a respondent), the highest average was for Indonesian respondents, at 6.76 food groups (out of the ten food groups that comprise the MDD-W score), followed by the Philippines (5.62) and Namibia (3.77). Madagascar has the lowest food group diversity score among the countries, at 2.58.

Table 7. Minimum Dietary Diversity for Women calculations, by country (n= 1 292)

4.5.2 Minimum Dietary Diversity for Women (MDD-W) summary results	Indonesia	Madagascar	Namibia	Philippines
Total number of women (n)	301	300	398	302
Number of MDD-W age-eligible non-pregnant women (15-49 years) (n)	217	250	324	154
Number of women with complete data, consent, and age-eligible (n)	217	250	324	153
Number of women reaching MDD-W (n)	195	11	97	108
Percentage of women reaching MDD-W (%)	89.9%	4.4%	29.9%	70.6%
Food group diversity descriptors				
Mean number of food groups consumed per women	6.76	2.58	3.77	5.62
Standard deviation food groups consumed per women	1.71	1.06	1.75	1.9
Median food groups consumed per women	7	2	4	6

Source: Authors' own elaboration of survey data.

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[5]   The calculation of MDD-W includes only ten food groups. These are the first ten food groups (1 to 10) detailed in Table 7 of this publication. The consumption of at least five of these ten food groups has been validated as a proxy method associated with micronutrient-adequate diets.

The food groups included in the calculation of the MDD-W indicator (1–10) are detailed in Table 8, which provides the percentage of respondents who self-reported consuming foods from each of the food groups. For more information on the food groups, please see FAO, 2021.

Table 8. Percentage of women consuming each food group

Food groups	Indonesia	Madagascar	Namibia	Philippines
1 – Grains, white roots, tubers and plantains	100%	99.2%	82%	100%
2 – Pulses (beans, peas and lentils)	83.4%	45.6%	12%	15%
3 – Nuts and seeds	48.4%	0.8%	9%	9%
4 – Dairy	15.2%	4.4%	27%	39%
5 – Meat, poultry and fish	97.2%	19.2%	89%	99%
6 – Eggs	63.6%	0%	21%	58%
7 – Dark green leafy vegetables	68.2%	54.4%	27%	82%
8 – Other vitamin A-rich fruits and vegetables	58.1%	0.4%	18%	48%
9 – Other vegetables	78.3%	31.6%	59%	65%
10 – Other fruits	63.1%	2.8%	33%	48%

Source: Authors' own elaboration of survey data.

As seen in Table 8, the food groups reportedly consumed most commonly by respondents across the four countries are group 1 (grains, white roots and tubers, and plantains), group 5 (meat, poultry, fish), and group 9 (other vegetables). Food group 5 (flesh foods) was enumerated in a disaggregated manner to capture which of the flesh foods (meat, poultry, fish, etc.) respondents consumed, as the project is particularly interested in fish consumption in target populations.

In reference to the foods in food group 5 (meat, poultry and fish) consumed by respondents in the previous 24 hours for MDD-W eligible respondents, in all countries, the vast majority consumed fish only, followed by red meat and fish. The percentage of women who reported consumption of meat, poultry or fish in Madagascar was particularly low in comparison to other countries (19.2 percent), which was a somewhat unexpected finding given that the targeted communities are involved in fishing activities. It was noted that many women prefer to sell the fish for money, and that consuming the fish is often seen as a last option (if they cannot directly sell the fish fresh, they process it, store it, and sell it later, but consumption is the last option). Additionally, the survey was conducted between mid-May and beginning of June, when there are typically strong winds which affect fishing activities (thus, this is often a time of lower fish availability). Figure 25 depicts the disaggregation of animal flesh food groups by country.

Figure 25. Animal flesh foods (food group 5) consumed by women eligible for the Minimum Dietary Diversity for Women score (n = 944)
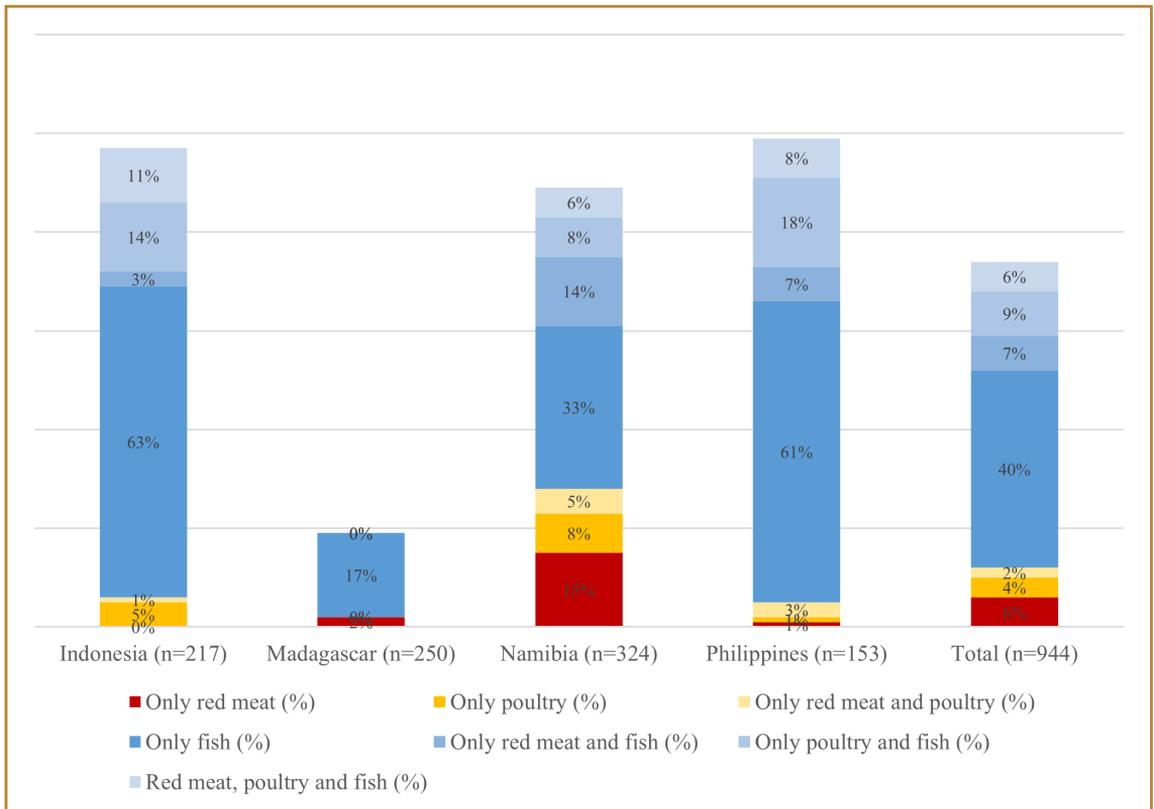
Source: Authors' own elaboration of survey data.

4.6 Fish for household consumption

Small-scale fisheries contribute significantly to the nutrition security of their household members. Women participating in small-scale fisheries often bring fish for direct consumption within their households or communities.

4.6.1 Access to fish and fish species consumed

In the respondents' households, fish is a regular part of meals. With respect to access to fish for home consumption, the survey's findings reveal that on average the respondents across the four countries buy around 2.4 kg per week (with a maximum of 30 kg being reported). Households mainly eat smaller- to medium-sized fish and reserve larger ones for sale. The most common fish species consumed by the respondent households in the four countries are presented in Table 9.

Table 9. Common fish species consumed in respondent households

Country	Common fish species consumed
Indonesia	Mackerel tuna *(Euthynnus affinis)*, Sardinella *(Amblygaster sirm)* and skipjack tuna *(Katsuwonus pelamis)*
Namibia	Cape horse mackerel *(Trachurus trachurus)*, three-spotted tilapia *(Oreochromis andersonii)* and angelfish/Atlantic pomfret *(Brama brama)*
Madagascar	Herring, sardines, anchovies and mackerel
Philippines	Mackerel *(Scomber Linnaeus)*, big-eyed scad *(Selar crumenophthalmus)* and jacks *(caranx hippos),* Indian sardine *(sardinella longiceps)* and round scad *(Decapterus punctatus)*

Source: Authors' own elaboration of survey data.

Twenty-three percent of all the respondents interviewed reported that their households consumes fish seven days per week. Another 27 percent indicated consuming fish three days per week and 18 percent of the households across the four countries reported consuming fish four days per week. Looking at country-specific trends, the greatest percentage of respondents in Indonesia reported that their households consume fish seven days in a week, followed by Philippines and Namibia (12 percent, 7 percent and 4 percent, respectively). Even though the results indicate that in Madagascar, not many households consume fish seven days in a week, fish is still consumed between two to five days per week. Figure 26 depicts the distribution of frequency of fish consumption by households, by country.

Figure 26. Weekly frequency of fish consumption at home (n=1 301)
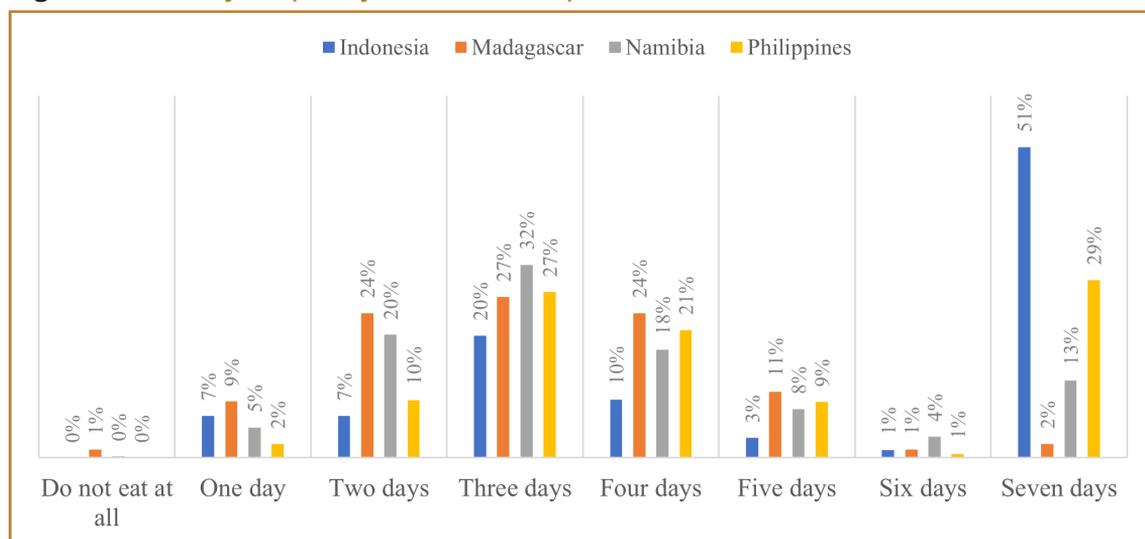
Source: Authors' own elaboration of survey data.

The survey found that almost 39 percent of the respondents reported that they catch their own fish for consumption. Forty-three percent indicated that they do not catch their own fish for consumption, while about 18 percent reported to sometimes catch their own

fish for consumption. Zooming in on country-specific findings, the highest proportion of households catching their own fish for consumption was in Indonesia (61 percent), followed by Madagascar (47 percent) and the Philippines (38 percent). The proportion was relatively low in Namibia (16 percent). Figure 27 depicts the details.

Figure 27. Percentage of small-scale fisheries their own fish for consumption, by country (n=1 301)
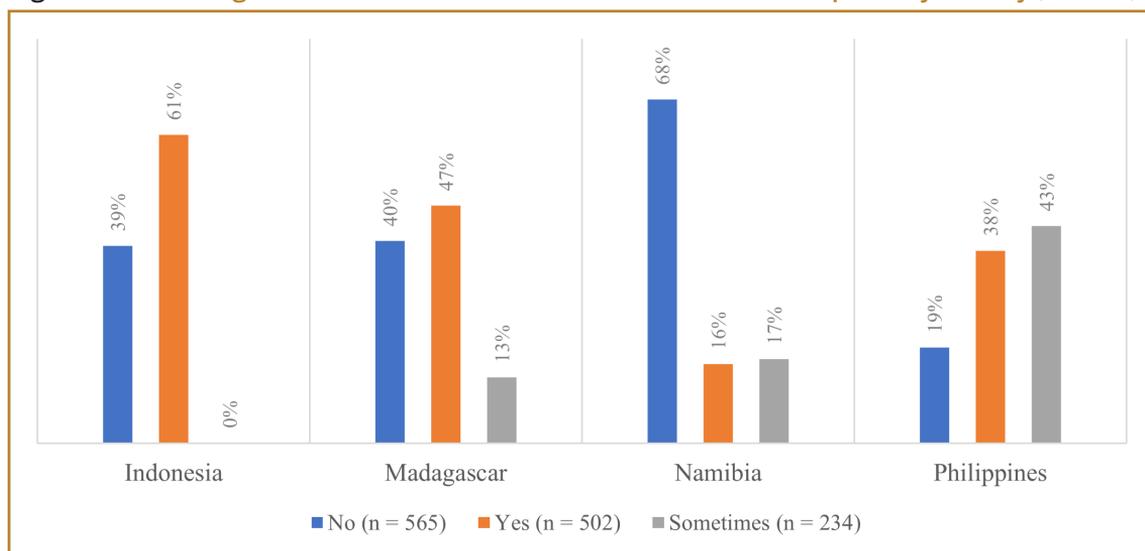
Source: Authors' own elaboration of survey data.

For the households that do not catch their own fish for consumption, the main source of the fish that they consume is local small-scale fisherfolk (40 percent). Another 28 percent of households purchase the fish they consume from the market, but they do not know where the fish is brought from. This is followed by those that consume fish caught by commercial fisheries within local sources, at 14 percent. About 10 percent of the fish that the households consume comes from other parts of the country by wholesalers. Figure 28 depicts the distribution of fish for home consumption.

Figure 28. Source of fish for home consumption (n=565)
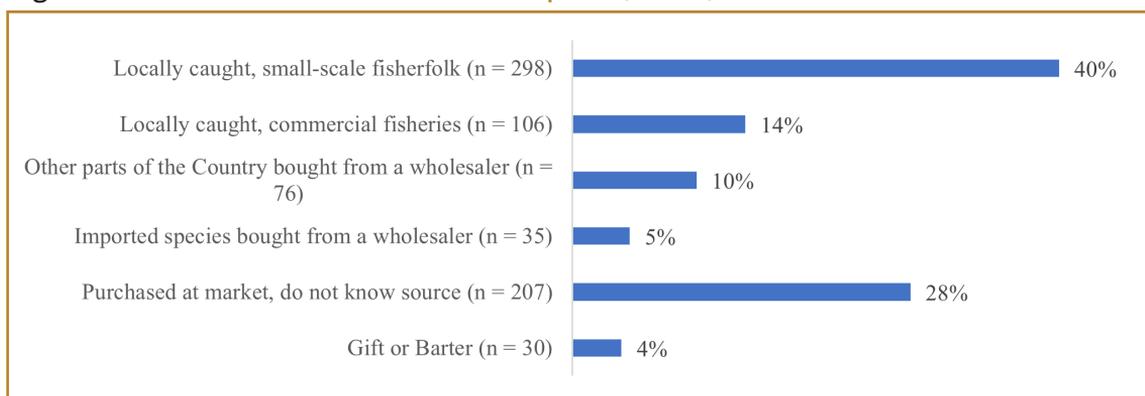
Source: Authors' own elaboration of survey data.

In terms of seasonal fish availability, respondents were asked if there are times when they are unable to consume fish. The majority of respondents (65 percent) stated that there are times when they are unable to obtain fish. As for country comparison analyses, the majority of small-scale fisheries that cited difficulty obtaining fish were from Indonesia (80 percent) and Namibia (43 percent). In the Philippines and Madagascar, small-scale fisheries households have less barriers in obtaining fish, as only 19 percent and 16 percent respectively indicated they could not access fish for household consumption. Figure 29 illustrates the breakdown.

Figure 29. Number of times families could not eat fish (n=1 301)
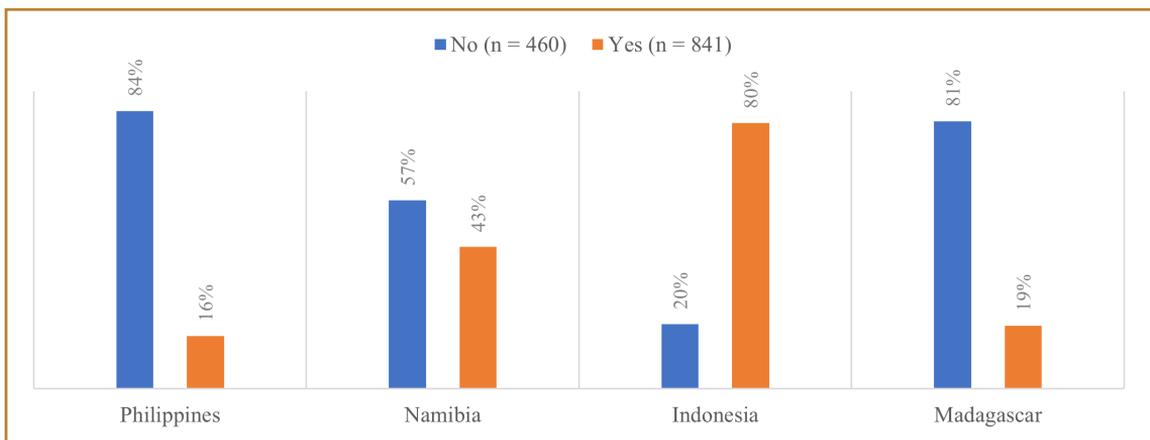
Source: Authors' own elaboration of survey data.

As for the months in which respondents cannot consume fish, the months from November to January were reported by a greater percentage of respondents in the Philippines. In Indonesia, August is the month most respondents reported being unable to consume fish. In Namibia, most respondents indicated October to March as the months they cannot consume fish, while many participants cited May and September as the months they cannot consume fish in Madagascar. Figure 30 depicts the details.

Figure 30. Months respondents have difficulty accessing fish (n=841)
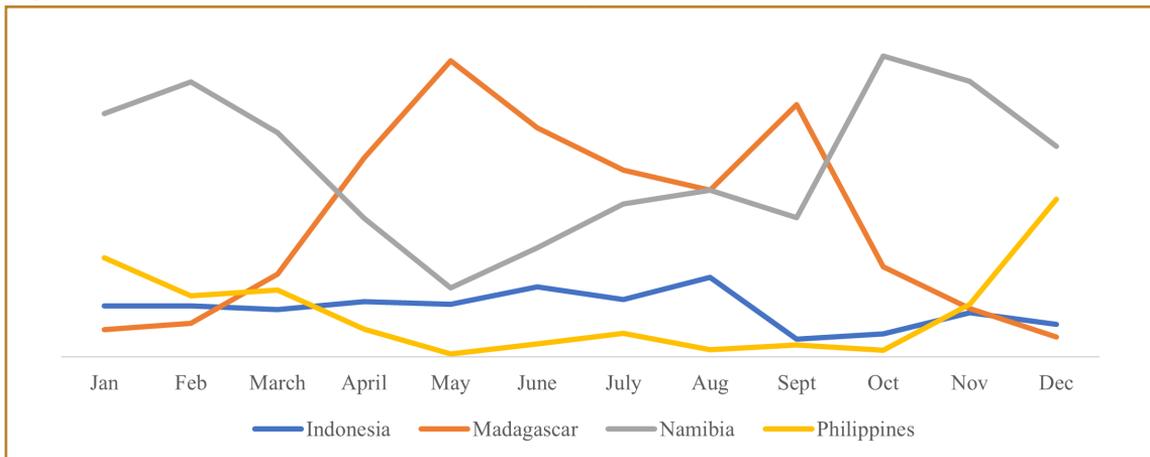
Source: Authors' own elaboration of survey data.

The major barriers to consuming fish among respondent households in the four countries included lack of money to acquire the fish (54 percent), the fish being too expensive (47 percent) and market scarcity (46 percent). Few respondents (almost 12 percent) cited dietary restrictions as a barrier, while others (about 12 percent) expressed concern about bad weather and fish being spoiled as a result of storage challenges. Figure 31 displays the distribution of household barriers to fish consumption.

Figure 31. Barriers to consuming fish in project countries (n=1 301)
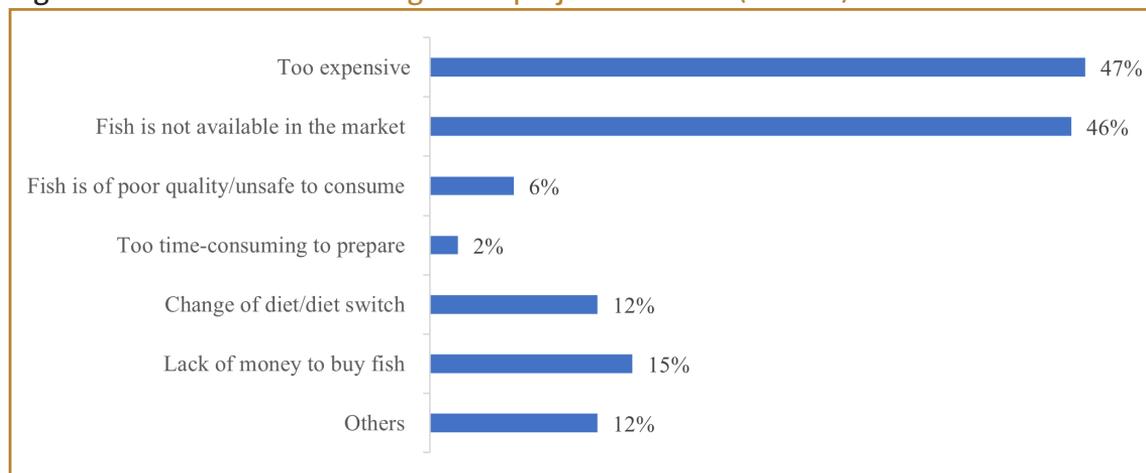
Source: Authors' own elaboration of survey data.

In a country-by-country analysis of the barriers, there was an overlap in terms of what respondents felt were the barriers to consuming fish. High cost of fish was reported by more respondents in Namibia (41 percent) and the Philippines (32 percent). Lack of fish in the market was more common in Madagascar and Namibia (42 percent each). Poor quality of fish or fish that was unsafe for consumption was reported more in Madagascar (50 percent) than any other surveyed countries. Respondents in Indonesia and Namibia also reported preparation of fish taking too long as another barrier (54 percent and 42 percent, respectively). Change of diet was mentioned as a barrier in Namibia (57 percent) and Madagascar (25 percent). All countries reported lack of money to buy fish as a barrier to household fish consumption in almost equal measure. The lowest under this category occurred in Indonesia, at 7 percent. Figure 32 depicts the percent of responses per barrier across the four countries (respondents could report multiple barriers).

Figure 32. Percent of responses per barrier across the four countries (n=1 018)
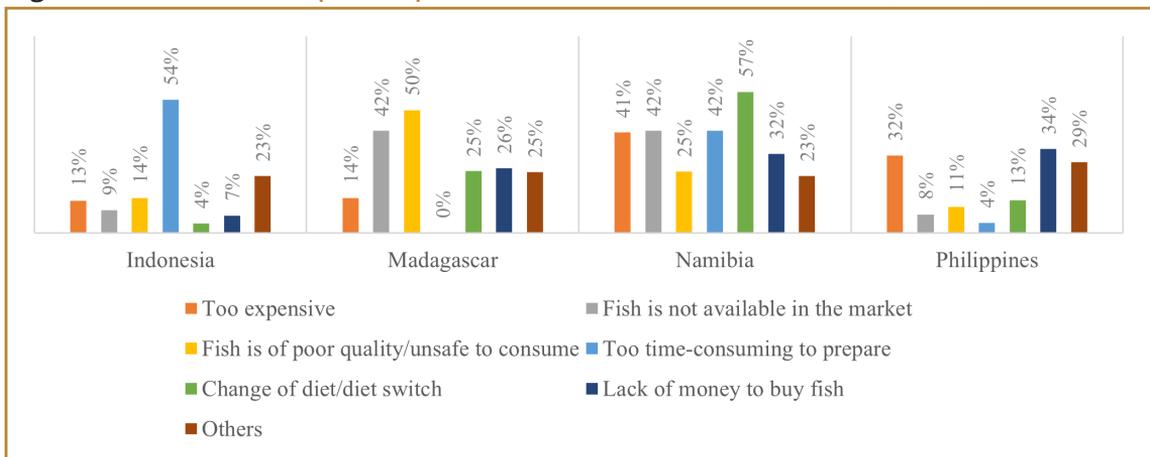
Source: Authors' own elaboration of survey data.

Note: Respondents could report multiple barriers.

Of the total sample across all four countries, 55 percent of respondents said they are certain they will be able to obtain the fish they require. Twenty-nine percent said they are usually certain that they get the fish they need from the source they like most of the time. Around 17 percent of respondent households reported that they often search for fish and end up without fish at least three days each week. However, the country-by-country picture indicates that households in Madagascar, Indonesia and, to a certain degree, the Philippines felt more certain they would be able to obtain the fish they needed (77 percent, 75 percent and 47 percent, respectively). Focus groups and open-ended answers shed more light on this, as weather patterns and seasonal changes affect the availability of fish: strong winds or heavy rains can result in no fishing activities for many days. In Namibia, the level of certainty in acquiring fish was relatively low. Figure 33 depicts respondents' level of certainty to access fish by respondents across the four countries.

Figure 33. Households' certainty to access fish (n=1 301)

Indonesia: Certain 75.08%, Usually certain 19.93%, Very uncertain 4.98%
Madagascar: Certain 77%, Usually certain 17%, Very uncertain 6%
Namibia: Certain 15%, Usually certain 46%, Very uncertain 39%
Philippines: Certain 47%, Usually certain 33%, Very uncertain 21%

■ Certain (n = 711) ■ Usually certain (n = 373) ■ Very uncertain (n = 217)
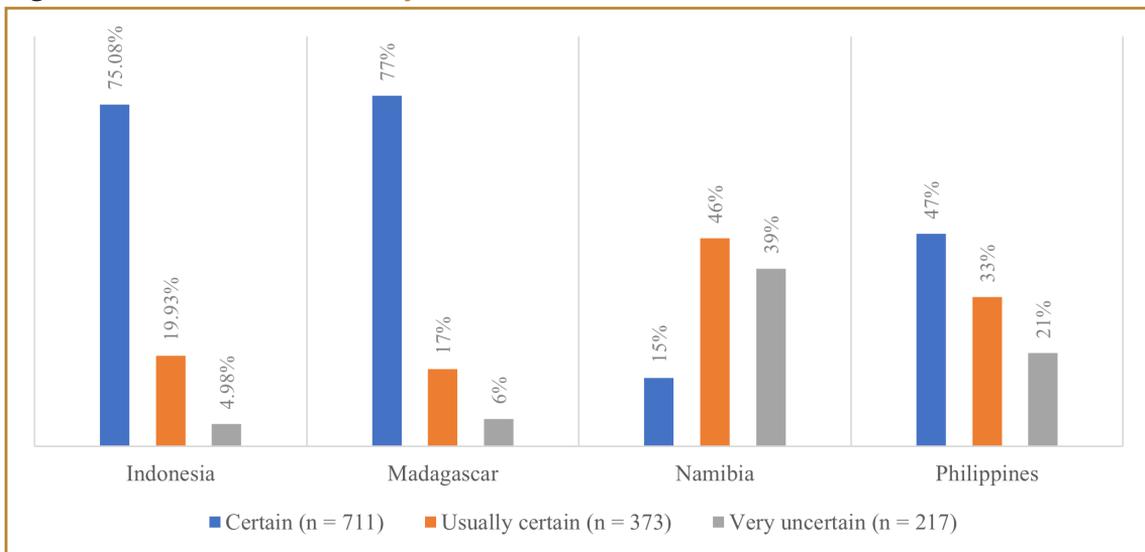
Source: Authors' own elaboration of survey data.

A total of 98.2 percent of the interviewed households purchase fresh fish, followed by dried fish at 30 percent. About 23 percent of respondents reported purchasing canned or tinned fish and a few (3 percent) prefer smoked fish as depicted in Figure 34.

Figure 34. Forms of fish purchased by respondent households (n=1 301)

Fresh (n = 1124): 98%
Dried (n = 340): 30%
Smoked (n = 37): 3%
Tinned (n = 261): 23%
Others (n = 16): 1%
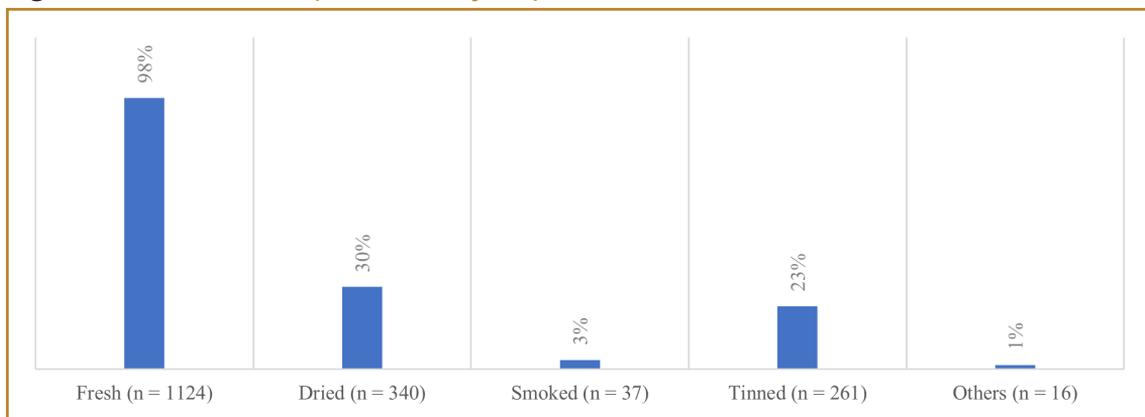
Source: Authors' own elaboration of survey data.

The project intends to facilitate the development of fish and fish products that are processed or prepared by small-scale fisherfolk. The survey sought to establish if households buy or consume fish products such as fish powder, fish paste or other products. The majority of respondents (51 percent) in the four countries indicated not to buy these products. Of those that reported buying fish products, 32 percent indicated buying fish paste, and 9 percent mentioned other products including: fish mince, shrimp paste, tinned

fish and *kerupuk*[6]. Six percent reported self-preparation for consumption, while 1 percent indicated buying fish powder.

Of those that reported purchasing or consuming these products within the household, 36 percent of respondents indicated all household members consume these products. Male and female children seem to consume fish products in almost equal measure in the respondent households (12 percent and 11 percent, respectively). Figure 35 depicts the distribution of the sampled respondents who reported consuming fish products.

Figure 35. Who consumes fish products in the household (n=751)
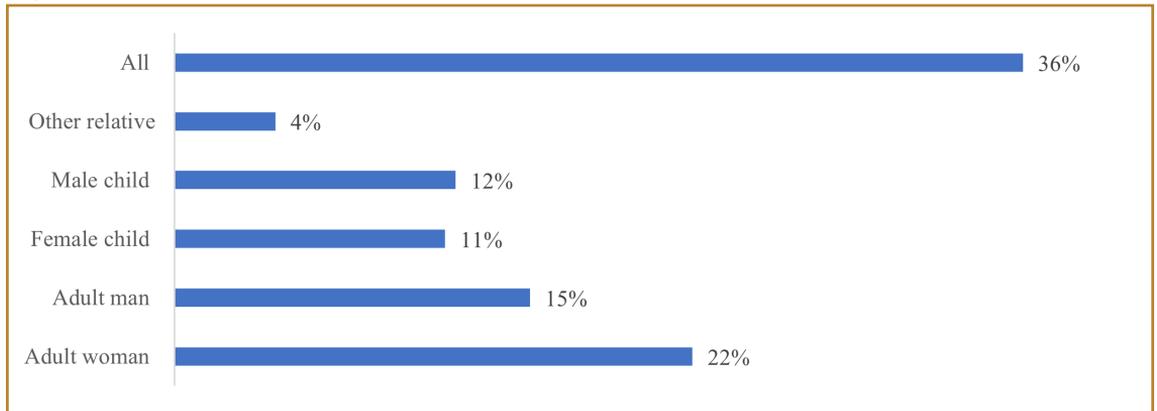
Source: Authors' own elaboration of survey data.

A country-by-country comparison indicates that the majority of respondents in Indonesia and the Philippines consume more fish products compared to the other two countries.

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6   Crispy fish snacks.

5. Conclusions

5.1 Food, nutrition and food security

Fish appears to be consumed by the majority of respondents (except for those in Madagascar) and therefore contributes to improved dietary diversity. However, high rates of food insecurity (based on the FIES) are reported by respondents in all countries,[7] with moderate and severe food insecurity being highest in the Philippines, and less than 50 percent of the women across all four project areas reaching the MDD-W. The number of food groups consumed per woman was on average 4.7 (less than the threshold required to meet the MDD-W of five food groups). However, the average number of food groups consumed by respondents in Madagascar and Namibia was particularly low (2.58 in Madagascar and 3.77 in Namibia), while the average was considerably higher in the Philippines (5.62) and Indonesia (6.76). There are similarities in some of the species consumed (such as mackerel), but overall, the species reported to be consumed represent a diverse group of fisheries resources for human consumption.

The target sample (women involved in fisheries-related activities) should be noted in relation to dietary practices such as fish consumption, as it may be expected that those involved in fishing activities may consume fish more often or in higher quantities (an aspect that was not assessed in this research). It is also noteworthy that the MDD-W indicator is validated as a proxy indicator for micronutrient adequacy in the diet of women of reproductive age. However, there is some evidence suggesting that it may also reflect a "worst-case scenario" for household food consumption, as gendered politics of household food provisioning may result in women (or, often, young children) consuming less diverse foods than other household members (Gupta, Sunder and Pingali, 2020). Women may experience greater challenges with meeting their nutrient needs because of gendered norms in household food provisioning, greater nutrient needs during menstruation, pregnancy and lactation, and challenges relating to livelihood activities and income-generating activities to purchase foods. There is evidence that increased decision-making and women's empowerment result in a higher likelihood of achieving dietary diversity (Amugsi *et al.*, 2016). Thus, the recommendations from this survey go hand-in-hand with such evidence.

5.2 Fisheries livelihoods and post-harvest practices

Women dominate the fish processing and marketing industries. Men are more involved in other activities, such as fishing and transportation. Most households do not catch their own fish, instead relying on imported species purchased from wholesalers and small-scale fishers who catch locally. Across the four countries, the most common methods of

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[7]   With the exception of Madagascar, where it was not possible to analyse results because the data did not pass the initial validation assessment tests (for further details, see footnote 5 of this publication).

fish processing are boiling, drying and frying. These methods are primarily self-taught or passed down from parents. There is little evidence that households are exposed to outside knowledge in terms of fish processing, whether through extension worker training or other means. In numerous instances, respondent households sell fish for a low price, because of oversupply. Although some households have adopted improved technologies in their fisheries activities, respondents and their households have diversified their sources of income to cope with environmental changes.

5.3   Decision-making and empowerment

The survey found that women in small-scale fisheries mostly provided all input and moderate input regarding decisions on the use of income gained from fisheries-related business activities.

However, in Namibia, women indicated making most of the decisions related to income realized from fisheries-related business activities. Joint decision-making on selling or renting out the assets is relatively low.

When it comes to asset ownership and the level of control over who decides to use, rent, or dispose of specific assets, women indicated that they make the majority of decisions on smaller assets such as tools, communication devices and fish storage. Men are more likely to rent and sell fishing equipment (both locally made and imported) and transportation equipment.

5.4   Women fishery organizations

Despite the presence of fisheries-related organizations in some of the countries, the majority of respondents surveyed do not belong to any such organizations. Some members attend meetings of the local government. Attendance of such meetings, according to those who belong to fisheries organizations, increases their chances of accessing skills in fish processing and their fishing quota, marketing information, loans, and other networking opportunities.

5.5   Knowledge management and communication

The vast majority of respondents have never been exposed to outside knowledge about their daily fisheries-related business operations. The majority of knowledge is self-taught or obtained from parents, with a smaller amount obtained from extension workers. However, only a small percentage of those who had access to project training, government, television and the internet learned about fish value addition, fishing, fish marketing, climate-smart practices and governance from such sources.

6. Recommendations

Following the analysis of the survey data, the following recommendations could be areas on which to focus technical support and project direction.

Food, nutrition and food security

There is a need to understand the barriers to consuming a more diverse diet across all four countries. In addition, quantitative food consumption data would enable understanding of the consumption levels in these populations. This can also help to ascertain the quantity of foods consumed from different food groups, in turn to be able to further evaluate nutrient adequacy and provide recommendations at the food group level.

As many of the surveyed respondent households experienced moderate or severe food insecurity and many surveyed respondents experienced low dietary diversity, there is a need to increase efforts to improve food security and access to affordable and nutritious food.

A better understanding of the underlying causes of low dietary diversity and food insecurity in these populations would facilitate the development of policies and interventions to address these issues. For example, a better understanding of the low fish consumption or preference to sell fish over consuming it in fishing communities surveyed in Madagascar can help to target consumption campaigns or nutrition messaging, in order to encourage consumption of at least part of the catch within fishing communities.

Fisheries livelihoods and post-harvest practices

The project can build capacity of women in order to increase their participation in all aspects of the value chain, such as fishing and business management, as well as alternative livelihoods such as aquaculture or other diversified livelihood options. This can also help address issues surrounding access to fish, governance, access to finance and underlying gender norms around fishing and fish access for women. Technologically, apart from boiling and frying fish, women need to be exposed to other value addition techniques for product diversification, taking into consideration market demand.

There is a need to invest in infrastructure to reduce instances of households panic-selling fish for a low price, in cases of high supply on the market. The project must also take a special interest in the children working in the fishing sector to prevent child labour, especially in Madagascar.

Decision-making and empowerment

The project should focus on building the capacity of women through the implementation of gender-transformative approaches in order to promote joint decision-making at household level. There is a need to promote use of technology, especially communication among respondent households, to promote access to information and markets. However,

it is also necessary to keep in mind that any promotion of technology should be accompanied by clear plans for management, maintenance and use of these technologies, as well as awareness-raising and technical support implemented through a gender lens, in efforts to mitigate any potential negative impacts relating to gender norms, use and benefits derived from new technologies. The project should also support access to and use of fish processing and fish storage equipment among women working in small-scale fisheries activities across the countries. In addition, training on financial literacy, organizational and business management for women involved in the small-scale fisheries value chain is needed in order to empower them economically and aid their involvement in household financial decisions, particularly relating to the use of and benefit from income derived from their activities.

Women fishery organizations

The project needs to work on revamping or establishing fisheries groups and associations across all four countries. These groups will need support from stakeholders and other partners to be able to advocate for improved access to small-scale fish processing and storage equipment from governments, as well as to loans and other opportunities. The project should embark on massive awareness-raising and sensitization campaigns among women on the importance of joining groups, so as to gain access to networking opportunities, capacity development and knowledge-sharing.

Knowledge management and communication

The project should prioritize capacity-building initiatives for small-scale fisheries organizations or groups in order to support business growth and the adoption of new technologies. It would also be beneficial to promote mentorship and exchange programs among small-scale fisheries organizations or groups in order to improve learning. To transfer skills, there is also a need to increase engagement with governments and other service providers that provide further trainings to promote extension services across all four countries. This is particularly true in the case of gender issues and concepts, as gender-sensitive extension services may prove influential in empowering women in small-scale fisheries for sustainable food systems.

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Annex

Minimum Dietary Diversity Score for Women food groups (18 total), with 10 food groups counted in the score in bold type

Food groups
1 – Grains, white roots, tubers and plantains
2 – Pulses (beans, peas and lentils)
3 – Nuts and seeds
4 – Dairy
5 – Meat, poultry and fish
6 – Eggs
7 – Dark green leafy vegetables
8 – Other vitamin A-rich fruits and vegetables
9 – Other vegetables
10 – Other fruits
11 – Insects and other small protein foods
12 – Red palm oil
13 – Other oils and fats
14 – Savoury and fried snacks
15 – Sweets
16 – Sugar-sweetened beverages
17 – Condiments and seasonings
18 – Other beverages and foods

This report presents the design and results of a baseline survey with respect to a project of the Food and Agriculture Organization of the United Nations (FAO) focusing on empowering women in small-scale fisheries. The project supports the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines), giving particular attention to the post-harvest sector in seven countries in sub-Saharan Africa: Ghana, Malawi, Sierra Leone, Uganda, the United Republic of Tanzania, Madagascar, Namibia, and two countries in Asia: Indonesia and the Philippines. The results of the first five countries were published separately, as the project collected data in these countries in 2020–2021, with the additional four countries presented in this report added to the project in mid-2021.