Food and Agriculture Organization of the United Nations

Duke UNIVERSITY

WorldFish

# Illuminating Hidden Harvests

## The contributions of small-scale fisheries to sustainable development

## Executive Summary

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## Executive Summary

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A number of experts contributed in their individual capacity to provide further insights on small-scale fisheries data in various countries. Others have contributed but wish to remain anonymous.

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# Abbreviations and acronyms

| | |
|---|---|
| ASF | animal source food |
| ASFIS | Aquatic Sciences and Fisheries Information System |
| BNP | Big Numbers Project |
| CAOPA | African Confederation of Artisanal Fisheries Professional Organizations |
| CBD | Convention on Biological Diversity |
| CCRF | Code of Conduct for Responsible Fisheries |
| CCS | country and territory case studies |
| CSO | civil society organization |
| DHA | docosahexaenoic acid |
| DHS | demographic and health survey |
| EEZ | exclusive economic zone |
| EPA | eicosapentaenoic acid |
| FCS | food consumption score |
| FPIC | free, prior and informed consent |
| GDP | gross domestic product |
| GT | gross tonnage |
| GVA | gross value added |
| HIES | household income and expenditure survey |
| hp | horsepower |
| ICSF | International Collective in Support of Fishworkers |
| IHH | Illuminating Hidden Harvests |
| ILO | International Labour Organization |
| ISCO | International Standard Classification of Occupations |
| ISIC | International Standard Industrial Classification of all Economic Activities |

| | |
|---|---|
| LDC | least developed country |
| LFS | labour force survey |
| LMB | Lower Mekong Basin |
| LME | Large marine ecosystem |
| LSMS-ISA | Living Standards Measurement Study – Integrated Surveys on Agriculture |
| MPA | marine protected area |
| nei | not elsewhere included |
| NGO | non-governmental organization |
| OECD | Organisation for Economic Co-operation and Development |
| PPP | purchasing power parity |
| RFMO | regional fisheries management organization |
| RNI | recommended nutrient intake |
| SAU | Sea Around Us |
| SDGs | Sustainable Development Goals |
| SES | social-ecological system |
| SIDS | Small Island Developing State(s) |
| SSF Guidelines | Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication |
| TAC | total allowable catch |
| TAG | Technical Advisory Group |
| TURFs | Territorial use rights in fisheries |
| UN | United Nations |
| UNDRIP | United Nations Declaration on the Rights of Indigenous Peoples |
| UNPFII | United Nations Permanent Forum on Indigenous Issues |
| VIF | variance inflation factor |
| WTO | World Trade Organization |

# Executive Summary

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# Introduction

Small-scale fisheries account for at least 40 percent of the global catch from capture fisheries and provide employment across the value chain for an estimated 60.2 million people, about 90 percent of the total number employed in fisheries globally. The economic value of these fisheries, however, is only a part of their importance: for example, nearly 53 million additional people were estimated to be engaged in subsistence activities in 2016. Rightly considered from a holistic and integrated perspective, small-scale fisheries define the livelihoods, nutrition and culture of a substantial and diverse segment of humankind.

This study, *Illuminating Hidden Harvests: the contributions of small-scale fisheries to sustainable development* (hereinafter Illuminating Hidden Harvests, or IHH), uncovers the contributions and impacts of small-scale fisheries through a multidisciplinary approach to data collection and analysis. The study provides information that quantifies and improves understanding of the crucial role of small-scale fisheries in the areas of food security and nutrition, sustainable livelihoods, poverty eradication and healthy ecosystems. It also examines gender equality as well as the nature and scope of governance in small-scale fisheries, and how this differs between different countries and fishery units.

The IHH study was carried out in support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), themselves developed in recognition of the plight of small-scale fishers, fishworkers and associated communities. The SSF Guidelines provide advice and direction for the enhancement of responsible and sustainable small-scale fisheries, through the development and implementation of participatory, ecosystem-friendly policies, strategies and legal frameworks.

Similarly, the Sustainable Development Goals (SDGs) present a holistic framework for work towards achieving the development objectives set out in Agenda 2030. The 17 SDGs are necessarily interconnected, in recognition of the links between for example poverty, inequality, climate change, environmental degradation, peace and justice. The purpose of this report, therefore, is to contribute to a more holistic understanding of what small-scale fisheries are, their importance, and why they are essential to efforts to achieve the SDGs. By using this knowledge wisely within a human rights-based approach in line with the SSF Guidelines, and by empowering small-scale fishers and fishworkers, a more inclusive, equitable, sustainable and resilient small-scale scale fisheries subsector can be achieved. Realizing this goal would benefit hundreds of thousands in fishing communities and society at

large. In many countries achieving the SDGs will not be feasible without ensuring a sustainable future for small-scale fisheries.

With this in mind, the IHH report is aimed at all those with a stake or an interest in the small-scale fisheries subsector, in particular decision-makers who are concerned with fisheries, poverty eradication, food security and nutrition, and sustainable development more generally. It is also addressed to small-scale fisheries actors themselves and those who support them.

# Study design: a tapestry of approaches

The IHH study estimated a set of indicators to illuminate the contributions of inland and marine small-scale fisheries to sustainable development and the challenges faced in maintaining those contributions. The indicators focused on the environmental, economic, gender, food security and nutrition, and governance dimensions of small-scale fisheries. Data to produce the indicators were collected and collated using a tapestry of approaches and sources, including 58 country and territory case studies (CCS); an ad hoc questionnaire sent to FAO Members; and available global, regional and national datasets (e.g. FAO Food Balance Sheets, household income and expenditure surveys). In addition, a tailored methodology for data validation, analysis and extrapolation to the global level was designed and implemented. For important topics for which global, quantitative figures were not relevant or available, a series of thematic studies conducted by experts in these subjects was implemented (Figure 1).

In particular, the CCS constituted the backbone of the IHH effort to build a comprehensive, multidisciplinary dataset covering small-scale fisheries across the world. CCS were conducted by national and international small-scale fisheries experts through the compilation of existing sources of data available at national level. Countries and territories included in the study were selected prioritizing those where the fisheries sector played an important role in terms of production (especially small-scale fisheries), employment and nutrition, according to existing databases.

The 58 countries and territories studied span a range of economic classifications and geographic locations, representing about 69 percent of the world's marine catch, 63 percent of inland catch, 73 percent of marine fishers, and 54 percent of inland fishers (according to FAO FishStat data, average values for 2013-2017).

A detailed methodology was designed with specific protocols and data compilation guidelines to ensure comparability across case studies and robustness of the estimates of IHH indicators. Moreover, compilation of CCS data involved a thorough quality assessment process. The IHH methodology did not prescribe a standard definition of small-scale fisheries due to the global diversity and complexity of the subsector. Instead, CCS experts provided the most common definition (e.g. legal or operational) for small-scale fisheries adopted in their country or territory.

The IHH study is the most comprehensive, systematic research effort to date to focus exclusively on small-scale fisheries. Nevertheless, it still had to contend with the intrinsic limitations in data availability and information for the subsector. As a result, for some small-scale fisheries, particularly in inland waters, data remained unavailable or hidden.

**Figure 1** The tapestry of approaches used in the IHH study

# Key findings of the chapters

The key findings of the report's chapters, encompassing production and environmental interactions, livelihoods and economic value, gender, nutrition and governance of small-scale fisheries, are summarized below, ending with detailed suggestions on future directions and actions. A snapshot of the key findings is presented in Figure 2.

## Chapter 3. The challenge of defining small-scale fisheries: determining scale of operation by identifying general fisheries characteristics

Small-scale fisheries exhibit a range of characteristics related to their scale of operation, which itself occurs along a continuum from foot fishers to semi-industrial vessels. Although there is no generally agreed cutoff between small-scale and large-scale designations, most countries have their own operational definitions. National definitions of small-scale fisheries are typically based on a limited set of quantitative metrics, such as vessel size and power, gear type, or area of operation. Such limited quantitative characterizations may in some cases exclude legitimate small-scale fishers or enable larger-scale vessels to be included as part of the small-scale fleet. This can lead to disputes and conflict, as well as dissatisfaction and non-compliance with fisheries regulations.

At the global scale, FAO and several global and regional instruments, policies and strategies specifically address small-scale fisheries. Identifying the scale of a fishery is therefore often useful and even necessary, at both policy and operational levels.

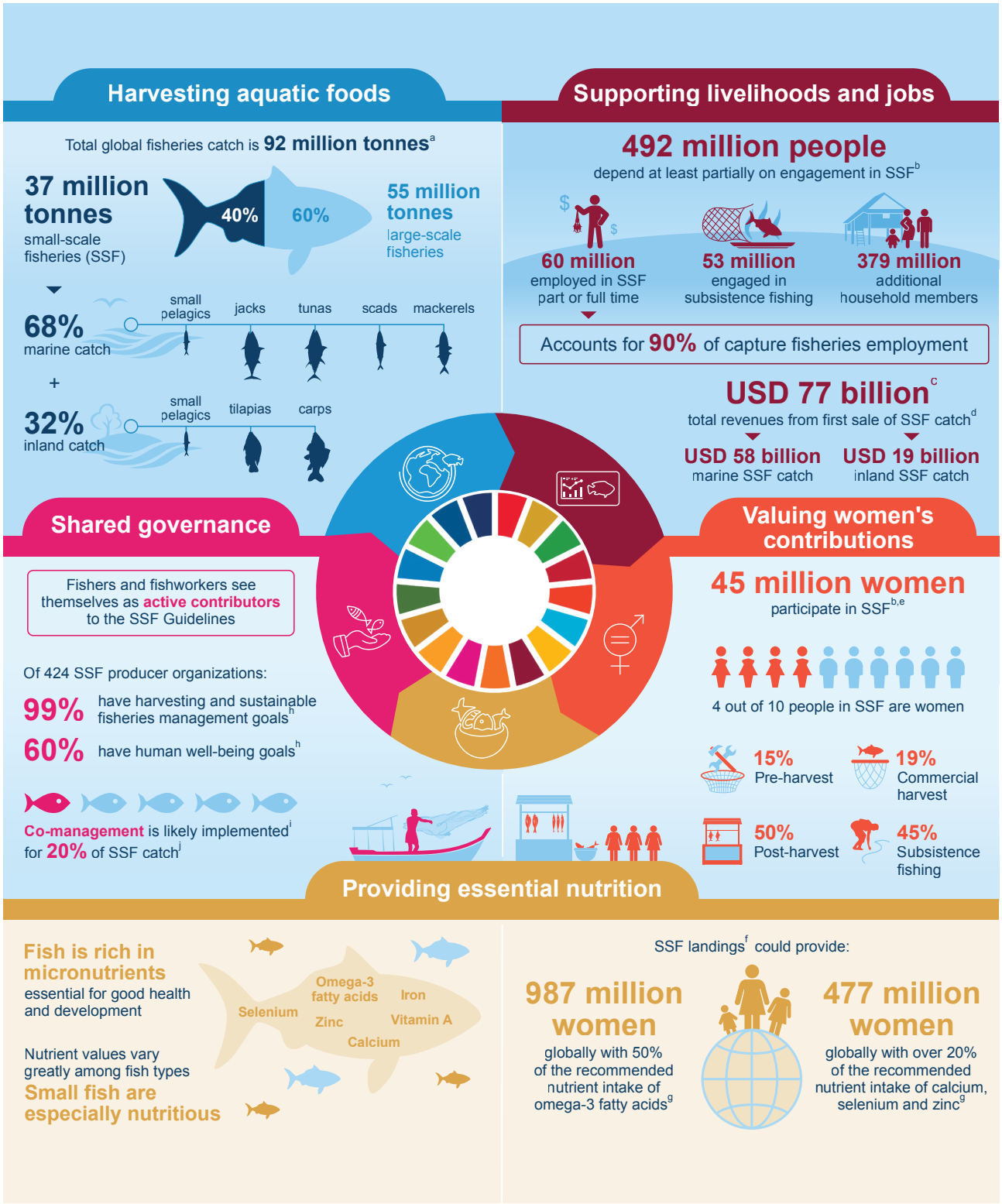
For the IHH study, a method was developed to characterize the scale of fisheries that allowed for comparison between individual CCS and across the whole IHH dataset. This involved an approach that addressed the complexity of small-scale fisheries in a systematic, objective manner, using a number of different criteria to provide a diversified description of each fishery. Building on previous related work, the study utilized a scoring matrix, or "characterization matrix", based on the type of data likely to be routinely collected for statistical or fishery management reporting purposes, but also including relevant qualitative information to enable a more holistic characterization of a fishery.

The characterization matrix consists of separate matrices for marine and inland fisheries. The unit of assessment is a "fishery unit", which, for the purposes of the IHH study, was considered to constitute a relatively homogenous type of fishing activity in terms of the characteristics relevant for grouping fisheries. The matrix applies a range of characteristics related to such fishery units (e.g. vessel and gear types, harvesting operations, degree of organization, and preservation and disposal of catch). Characteristics are separated into four types across a range of scales from small to large, and a score is provided for each depending on where it fits in this range. The aggregation of the scores from all the categories provides an overall picture that facilitates differentiation between larger-scale and smaller-scale fisheries.

### Key chapter findings and messages:

- Globally and regionally, small-scale fisheries exhibit a range of characteristics that place them along a continuum with respect to their scale of operation. There are no fixed, universal boundaries that set these fisheries apart from large-scale fisheries, making it difficult for them to be identified and categorized.
- There are international and regional instruments, policies and strategies, including those of FAO, that specifically address small-scale fisheries. This infers the need for a working definition of these fisheries, particularly to ensure that fisheries management, conservation, trade and market measures support – or at least do not hinder – the social and economic development of the small-scale fisheries subsector.
- From a policy and operational perspective, the term small-scale fisheries encompasses diverse characteristics: a small-scale scale fishery in one country may be considered large-scale in another, making it difficult to standardize the application of basic quantitative metrics at the regional or global level. This diversity in how small-scale fisheries are defined has hitherto restricted the ability to objectively compare small-scale fisheries between nations or regions.
- The IHH study resolves this issue by using a matrix approach that scores fisheries with respect to the scale of their operation across multiple characteristics, to better understand the nature of the fisheries found in the 58 CCS.
- As there are no prescribed scoring cutoffs that can be used to separate small-scale fisheries from large-scale fisheries, data from the matrix do not point to a unique, universal definition of small-scale fisheries. However, the matrix provides a standardized approach that can be applied to any fishery to determine where it lies along the continuum of small-scale to large-scale fishing operations, with higher-scoring fishery units sharing many if not all of the characteristics of large-scale fisheries. Furthermore, by scoring each of the fishery characteristics using value ranges drawn from a variety of sources (e.g. from official censuses to expert elicitation), this matrix approach is also suitable for data-limited fisheries.

**Figure 2** Key findings of the IHH study




*Notes:* **a** Average in 2013–2017 extrapolated from 58 IHH country and territory case studies. **b** Extrapolation from 78 national household-based surveys for 2016, including full- and part-time employment along the value chain (numbers rounded). **c** Extrapolated from 58 IHH country and territory case studies. **d** From first sale of SSF catch (2013–2017). **e** Supported by knowledge and insights of 28 gender advisors. **f** Landings include only fish retained by fishers for consumption, sale or trade, whereas catch includes all fish caught. **g** Based on predictive nutrient modelling by the IHH team and partners. **h** Based on global IHH survey of 717 SSF organizations. **i** Based on perceived high participation of fishers, which is used as a proxy for implementation. **j** Based on governance data on marine and inland catch for 58 countries and territories, representing about 55% of the global catch.

## Chapter 4. Production and environmental interactions of small-scale fisheries

A substantial part of current and future production by capture fisheries comes from small-scale fisheries, but the full extent of this contribution is only poorly understood because the catch from these fisheries is often missed in national data collection systems – owing to the low priority commonly given to these activities, coupled with limited budgets and capacity for monitoring and reporting. The available data are therefore frequently incomplete, inadequately disaggregated or inaccessible (e.g. found only in paper format).

The inland fisheries subsector consists almost entirely of small-scale fisheries, which are often seasonal, sparse, and found in remote locations. This means that sampling and monitoring can be particularly costly and time-consuming. As a result, inland fish catches and their socioeconomic contributions are especially under-reported, often with no accurate estimates of fishing effort, all of which make the subsector particularly vulnerable to neglect. Similar problems also apply to many marine small-scale fisheries, with the challenges in both environments being greatest in smaller-scale, non-vessel-based fisheries.

A primary goal of the IHH study was therefore to develop more comprehensive and reliable global estimates of the catch of small-scale fisheries, as well as of the interactions of these fisheries with the environment. This chapter addresses the following questions:

- What are the contributions of small-scale fisheries to the global catch?
- What are the interactions of small-scale fisheries with ecosystems?
- What are the impacts of climate change on small-scale fisheries?

As described above, the global estimates of small-scale fisheries catch were based on globally representative samples (both in terms of regional coverage and of total catch volumes) obtained from the 58 CCS, extrapolated to provide global estimates. The reliability of the catch estimates from the CCS were checked through triangulation with the responses to the ad hoc questionnaire and data from the FAO FishStat global capture production database (FAO, 2020).The information on environmental interactions and the impacts of climate change also reported here were obtained from broad reviews of the scientific literature.

## Key chapter findings and messages:

### Small-scale fisheries production: global figures and regional patterns

- Globally, small-scale fisheries are a significant component of capture fisheries, providing an estimated 36.9 million tonnes of catch per year, with marine small-scale fisheries catch (25.1 million tonnes) more than double that of inland small-scale fisheries (11.8 million tonnes). This corresponds to around 40 percent of total global capture fisheries production. When looking at aggregated (small-scale and large-scale fisheries together) catches, both CCS data and FAO FishStat capture production data show similar figures for inland and marine fisheries (less than 5 percent difference). However, as the FAO FishStat data are not disaggregated by scale of operation, it is not possible to determine any potential differences between the two data sources for the small-scale and large-scale fisheries subsectors.
- Asia was the region with the largest contribution of small-scale fisheries catch during 2013–2017, accounting for 64 percent (23.4 million tonnes) of the global total, while Oceania was the region with the least absolute contribution, at 0.4 million tonnes.
- The range of total small-scale fisheries catch per capita varied across regions, from 52.6 kg/person/year in Oceania, down to 3.4 kg/person/year in Europe. When looking only at the inland subsector, the catch per capita for least developed countries was significantly higher (4.5 kg/person/year) than that of other developing and developed countries or areas (1.0 and 0.4 kg/person/year, respectively).

### Coverage and granularity of small-scale fisheries production

- Total catch values, and particularly those for the inland subsector, are likely underestimated mostly due to limited availability of information on unreported or unmonitored catch for the more remote, smaller-scale fisheries (e.g. foot fishers and gleaners in small freshwater bodies and freshwater, brackish and coastal wetlands). The lack of systematic collection of reliable and comprehensive catch data and ancillary information in many small-scale fisheries hinders fisheries assessment and management, as well as a proper understanding of the contribution of small-scale fisheries to sustainable development.
- Although this study was able to achieve considerable taxonomic granularity in catch species composition, a substantial proportion of small-scale fisheries catch were not recorded at the individual species level (40 percent and 62 percent of the catch data obtained from CCS for marine and inland fisheries, respectively, were not associated to individual species), thus constraining the assessment and management of these fisheries. The most common functional groups found in marine small-scale fisheries catches were herring, sardine and anchovy and miscellaneous pelagic species (20 percent and 19 percent, respectively); for inland small-scale fisheries, the most common groups were miscellaneous freshwater fish and cyprinids (63 percent and 15 percent, respectively).

### Nature and scale of small-scale fisheries operations

- Harvest efficiencies (calculated as the annual total catch of a given country divided by total number of fishers and/or total kW of the motorized small-scale fisheries fleet) in both marine and inland small-scale fisheries were much higher for the motorized portion of the fleet, as expected. The harvest efficiencies (tonnes/fisher/year) of all fishery types (non-vessel, non-motorized and motorized) showed marked regional differences, being consistently higher for Europe and the Americas, with an overall maximum of 11.6 tonnes/fisher/year in the case of motorized vessels in Europe.
- Small-scale fisheries vary in their technological and operational scale and complexity, both within and between marine and inland subsectors. In fact, while fisheries operating at the lowest scale account for less than 1 percent of the total marine small-scale fisheries catch with available operational information, these fisheries represent 12.9 percent of the inland small-scale fisheries catch. Moreover, the variation in technological and operational scale of small-scale fisheries challenges the definition of a cutoff between small-scale and large-scale subsectors.

### Environmental considerations of small-scale fisheries

- While there are examples where actors in small-scale fisheries attempt to minimize or mitigate fishing impacts on the environment, by virtue of the numbers of people engaged, certain interactions of these fisheries with the environment can result in effects that are detrimental to vulnerable species and critical habitats. Data collection efforts should focus on improving the understanding of the environmental impacts of small-scale fisheries on aquatic environments in order to design and implement mitigation measures, while sustaining fishery yields and livelihoods.
- Small-scale fisheries are among the most vulnerable food production systems to the impacts of climate change, as seen in case studies and anecdotal evidence from the literature. However, data and evidence on such impacts on small-scale fisheries are not systematically collected through standardized frameworks. This information is critical to develop and implement well-informed adaptive strategies to promote climate-resilient small-scale fisheries.

## Chapter 5. Small-scale fisheries contributions to economic value and livelihoods

The serious economic plight of many small-scale fishers and fishing communities has been acknowledged since at least the middle of the last century. In the early 1970s, FAO wrote that "the people engaged in these activities and their families continue, with few exceptions, to live at the margin of subsistence and human dignity" (FAO, 1974, cited in Béné, 2003).

At much the same time, while poverty was described as being a global characteristic of traditional fishing communities, it was also acknowledged that those fisheries made important contributions to national economies. This dichotomy remains and, as noted in the SSF Guidelines, "Despite their importance, many small-scale fishing communities continue to be marginalized, and their contribution to food security and nutrition, poverty eradication, equitable development and sustainable resource utilization – which benefits both them and others – is not fully realized".

For the same reasons that catch in the small-scale subsector is frequently under-reported, the contributions of small-scale fisheries to local and national economies are also often overlooked. Responding to these weaknesses, this chapter aims to improve understanding of the importance of small-scale fisheries by addressing the following questions:

- What is the scale of the economic benefits generated by small-scale fisheries?
- What is the total employment and number of livelihoods dependent on small-scale fisheries, and what is the role of these fisheries in employment at the subnational level?
- How much of small-scale fisheries catch is exported?

Data from the 58 CCS were extrapolated to derive a new global estimate of the landed economic value of small-scale fisheries production. Household-level data (referred to in the section above on study design) were used to make assessments of the contribution of small-scale fisheries to employment and livelihoods. The standardized estimates of the percentages of small-scale fisheries catches that were commercially exported were derived from the CCS data.

### Key chapter findings and messages:

#### Economic value of small-scale fisheries production

- Extrapolating from 58 CCS, the average annual landed economic value of the global small-scale fisheries catch during 2013–2017 was estimated to be almost USD 77.2 billion in nominal terms, including more than USD 58.1 billion from marine small-scale fisheries and over USD 19.0 billion from inland small-scale fisheries. This estimate is approximately 49 percent higher than the figure obtained in the initial Hidden Harvest study in 2012, though different sources and methods were used.
- The estimated total revenues from the harvesting segment of small-scale fisheries are comparable to the total revenues generated by some of the largest industries in the ocean economy.
- In comparison with large-scale fisheries, for the 58 CCS (representing 68 percent of the global catch reported in FAO FishStat (FAO, 2020c), small-scale fisheries generated 44 percent of the total landed economic value of the catch. This share reflects the significant portion of catch value generated by small-scale fisheries in many countries worldwide.

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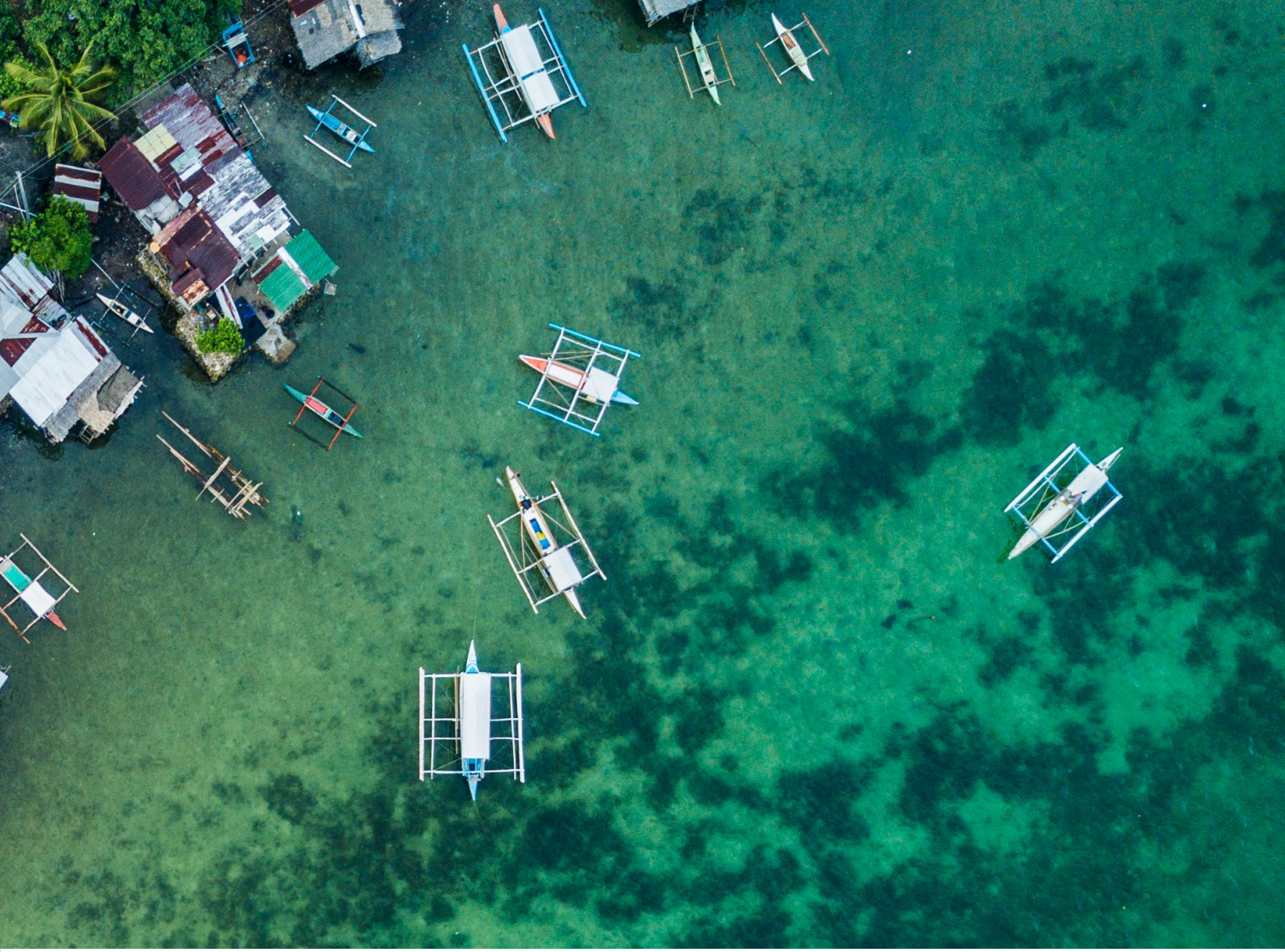
## Small-scale fisheries livelihoods: employment, subsistence, and additional livelihoods dependent upon fisheries

- Estimates extrapolated from 78 national household-based surveys show that 60.2 million people were employed part or full time along the small-scale fisheries value chain in 2016 (compared to 7.3 million people estimated for large-scale fisheries). This confirms that small-scale fisheries account for almost 90 percent of global fisheries employment.
- Of these, an estimated 27.5 million were employed part or full time in the harvesting segment of the value chain (14.6 million in inland and 12.9 million in marine small-scale fisheries).
- Women account for 35 percent of the total employment along the small-scale fisheries value chain (20.9 million).
- Women represent roughly one-half (49.8 percent) of the people employed part or full time in the post-harvest segment of the small-scale fisheries value chain.
- The total employment along small-scale fisheries value chains in 2016 was equivalent to 1.9 percent of the globally employed population, or 1 out of every 50 jobs worldwide, and equivalent to 6.7 percent of agricultural employment (i.e. crop, livestock, forestry and fisheries). Marine small-scale fisheries are likely the subsector with the largest employment in the ocean economy.
- Additionally, an estimated 52.8 million people were engaged in small-scale fisheries harvesting or processing for subsistence at least once a year: 36 million (68.1 percent) in inland fisheries and 16.8 million (31.9 percent) in marine fisheries. Of these, 23.8 million were women (45.2 percent).
- Together, these estimates show that 113.0 million people were either employed in small-scale fisheries along the value chain or engaged in harvesting or processing for subsistence in 2016.
- These 113.0 million people have an estimated 378.7 million additional household members. Therefore, considering all of those employed in small-scale



fisheries along the value chain, plus those engaged in subsistence activities[1] and their dependents, the number of those whose livelihoods are at least partially dependent upon small-scale fisheries is 491.7 million people.

- These 491.7 million people represent almost 6.6 percent of the world population as of 2016 and 13.2 percent of the population in the 45 least developed countries. Under the current methodology, which is based on national surveys, there are likely still more people unaccounted for who are dependent on small-scale fisheries.

### Role of small-scale fisheries in exports of fish and fish products

- International trade was a significant feature of small-scale fisheries in the CCS (inclusive of informal trade), across all regions. According to estimates for 22 countries studied, representing 48 percent of global marine capture fisheries production, on average almost 26 percent of the marine small-scale fisheries catch by volume was exported during the period 2013–2017.
- According to estimates for nine countries studied, representing 25 percent of global inland capture fisheries production, on average just over 16 percent of the inland small-scale fisheries catch was exported in the period 2013–2017.

## Chapter 6. Towards gender inclusivity and equality in small-scale fisheries

Small-scale fisheries cannot be understood without considering gender, and to consider gender requires confronting the absence of women in the already limited data available for these fisheries. There is a persistent gender data gap because fisheries, as with many other sectors, are caught in a gender-blind feedback cycle that reinforces the perpetuation of sexist data (i.e. involving information that mostly concerns men). This exacerbates the marginalization of women and presents a limited view of the contributions of small-scale fisheries to economies, food security and nutrition, and sustainable development.

[1] Assuming this engagement is sufficiently frequent to provide some dependence upon fisheries for livelihoods.

The chapter aims to contribute to a better understanding of these issues by addressing the following questions:

- What are the gender-related gaps and barriers that persist in the collection and analysis of small-scale fisheries data?
- How is gender addressed in the different dimensions of small-scale fisheries?

This chapter is informed by qualitative and quantitative data from three main sources: the 58 CCS, estimates extrapolated from 78 national household based surveys and input from 28 IHH gender advisors.

### Key chapter findings and messages:

- An estimated 44.7 million women worldwide participate in small-scale fisheries value chains or engage in subsistence activities, which translates into 39.6 percent of the total people active in the subsector. Women represent 15.4 percent of total employment in the pre-harvest segment of the small-scale fisheries value chain (e.g. gear fabrication and repair, bait and ice provisioning, boat-building), 18.7 percent in the harvesting segment (including vessel-based and non-vessel-based activities), 49.8 percent in the post-harvest segment (e.g. processing, transporting, trading, selling) and 45.2 percent of the total actors engaged in small-scale fisheries subsistence activities.
- Women participate in small-scale fisheries most commonly through informal and unpaid activities, limiting their social protections and security. While this participation can be partially highlighted through estimates of engagement in subsistence activities, much of it continues to be systematically excluded from official fisheries data collection and analysis, and thus women's contributions are insufficiently considered in fisheries decision-making.
- Women are over-represented in intertidal, low-gear, invertebrate fisheries due to limitations in access to gear and fishing habitats. These fisheries are less likely to be defined as fishing, and thus may not be monitored, resulting in underestimations of catch, social importance and environmental impact.
- Women in many contexts have less access to small-scale fisheries, but also stand to significantly benefit from that access, with broad societal implications for food security and nutrition and poverty alleviation.
- Women continue to be under-represented in small-scale fisheries governance systems, and those who do participate are typically only able to engage in limited ways. Barriers include gender-blind small-scale fisheries policy, and lack of capacity to implement existing policy.
- The IHH study illustrates that gender-disaggregated fisheries data are still rare, especially in official national-level fisheries statistics. Gender disaggregation should be the minimum requirement for all monitoring and research that informs fisheries policies and programmes. Gender-blind data or biased data collection methodologies overlook women in fisheries, obscuring the full contributions of small-scale fisheries towards the realization of the SDGs and towards achieving gender-inclusive fisheries policies and practices, as called for by the SSF Guidelines.

## Chapter 7. Contributions of small-scale fisheries to food security and nutrition

The global and regional consequences of global food insecurity and malnutrition are profound. For example, an estimated 22 percent of children under the age of 5 were affected by stunting in 2020 and 6.7 percent from wasting, while 5.7 percent were overweight. For millions globally, including vulnerable people and those beyond the reach of formal markets, aquatic foods from small-scale fisheries represent a crucial and sometimes irreplaceable source of micronutrients and fatty acids important for growth and good health.

Achieving SDG 2 (Zero hunger) will therefore not be possible in many places without sustained or strengthened contributions from aquatic foods, for which small-scale fisheries will have to play a prominent role, as is well recognized in the SSF Guidelines. The nutritional benefits from small-scale fisheries accrue directly and indirectly. Direct nutritional benefits are realized through providing nutrient-rich food to families, while indirect benefits accrue through economic pathways, with small-scale fisheries providing livelihoods for men and women, and thus income to purchase food. A better understanding of the values and functioning of these pathways is central to developing policy actions, programmes and investments that enable a sustainable and equitable future for the small-scale fisheries subsector and the lives it supports.

This chapter focuses on the following questions:

- What is the profile of nutrients important to human health present in small-scale fisheries landings?
- How do small-scale fisheries provide physical and economic access to nutritious food for urban and rural people?
- How do small-scale fisheries contribute to the diets and healthy growth of children in the first 1 000 days of life?
- How can national information systems for fisheries be improved to reflect the nutrition contributions of small-scale fisheries?

Over the last decade, there has been an increase in quantity and quality of available data on the nutritional quality of fish. This chapter leveraged these new data and information to illuminate global, regional and national nutrition contributions from small-scale fisheries. In particular, the limited data available on the nutrient content of different fish species were used to predict the nutrient content of other species or catches using a recently developed modelling approach that links the nutrient profiles of fish to a number of their traits. Results from the CCS, catch predictions, and outputs from these models were also used to assess the nutrients available from small-scale fisheries landings. Other high-quality information from data "bright spots", notably the African Great Lakes region, was used to demonstrate policy directions that could help to optimize nutrition outcomes from small-scale fisheries.

## Key chapter findings and messages:

### Contributions of small-scale fisheries to nutrition

- The nutrient potential of fish is measured as the sum of the nutrients contained in the catch at the time of landing. In this study the concentrations of iron, zinc, calcium, vitamin A, selenium and omega-3 fatty acids in each functional group of fish were investigated by analysing publicly accessible databases and novel methods of predictive modelling to estimate the nutrient potential of global inland and marine fisheries catches. Understanding nutrient potential provides an important new method to assess the impacts of fisheries policy on nutrition outcomes.
- While all fish are highly nutritious, the most nutritious species from both inland and marine fisheries are small (< 25 cm body length), pelagic species. For adult women, a 100 g portion of small fish provides on average 26 percent of the recommended nutrient intake (RNI) for calcium and 72 percent of RNI for omega-3 fatty acids, while a 100 g serving of large fish on average provides 12 percent and 51 percent, respectively, for the same nutrients.
- Fish species harvested by large- and small-scale fisheries contain similar quantities of most nutrients, although the average catch from large-scale fisheries contains 25 percent more omega-3 fatty acids than that of small-scale fisheries. This may reflect the relatively high latitude and deep-water focus of large-scale fisheries, where species tend to be richer in omega-3 fatty acids.
- Finfish catches from small-scale fisheries in all regions (but less so in Europe) can play an important role in addressing known nutrient deficiencies. For example, the finfish catch from small-scale fisheries in Africa has the potential to contribute the equivalent of 20 percent of RNI of calcium, selenium, zinc and omega-3 fatty acids to over 50 percent of women (137.0 million) of reproductive age. In Asia, where calcium intakes are estimated to be well below requirements, finfish catch has the potential to contribute the equivalent of 20 percent of RNI of calcium for 25.2 percent of women (271.0 million) of reproductive age.
- CCS from Lake Victoria found that a serving of small indigenous *dagaa* (*Rastrineobola argentea*) contains six times the calcium, twice as much iron, three times more zinc, four times more vitamin A and twice the omega-3 fatty acids as an equivalent serving of the introduced Nile perch (*Lates niloticus*).
- Loss of fish quality and quantity from inadequate handling, processing and storage frequently reduces the contributions of small-scale fisheries to food security and nutrition. The introduction of appropriate food safety standards and education programmes for fishers, fishworkers and households would contribute to improved nutrition and livelihoods.

### Small-scale fisheries and physical and economic access to food: new insights in sub-Saharan Africa

- An analysis of World Bank Living Standards Measurement Study data from the African Great Lakes region found that households living close to small-scale fisheries, and engaging in these fisheries, were less likely to be income-poor (down by 9–15 percent); had increased fish consumption (about twice as often per week and up to three times as much); and had higher rates of household food security (up by 12.6 percent).
- Proximity to small-scale fisheries is also associated with lower inequality in fish consumption (i.e. between wealthy and poor households), by an average of 30 percent. Dried fish is more important to the diets of rural households (by a factor of 1.3 to 1.8 compared to urban households) and those living far from fishing grounds.

### Small-scale fisheries and fish consumption during the first 1 000 days of life

- The first 1 000 days of life (from conception to 2 years of age) represent a critical window of child development, when children and their mothers require a nutrient-rich diet to ensure proper growth.
- Proximity to small-scale fisheries increases access to fresh fish by a factor of up to 13 and increases dietary diversity in children. Moreover, small-scale fisheries are an important source of nutrient-rich foods for rural children from 6 to 24 months of age, especially in low- and lower-middle-income countries.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### Illuminating the magnitude and distribution of nutritional benefits from small-scale fisheries

- Strategies are needed to ensure the nutritional benefits from small-scale fisheries and fish products are shared across value chains to include vulnerable groups.
- Initiatives are required to ensure that the benefits to health from fish consumption by infants, children and lactating mothers are widely known and incorporated into practice in order for the nutrition benefits from small-scale fisheries within households to be optimized.

## Chapter 8. Global patterns of management and governance of small-scale fisheries: contributions towards the implementation of the SSF Guidelines

Many definitions of governance have been put forward, but the definition used for the purposes of this report can be summarized as "the formal policies in place to manage small-scale fisheries through interaction between governments and the public in particular regarding access to and use of fishing resources ...". Governance has been described by the United Nations as being "perhaps the single most important factor in eradicating poverty and promoting development" (United Nations, 1998).

In essence, governance involves the means and processes by which decisions are made and put into practice. Good governance therefore requires the existence of effective and efficient institutions to facilitate those processes. The institutions may be formal, legislated entities or may be informal and based on social relationships. Critically, they should be accepted by society as being legitimate; in turn, society should be engaged in and empowered by them.

In this report, the measures of governance examined are particularly those regarding access to and use of fishing resources; the rights that have been devolved to fishers and that shape incentives for long-term use; and the local norms that give form to informal governance and processes of community development. This chapter therefore addresses the following key research questions:

- What does the policy framework governing small-scale fisheries look like, and how well aligned is it with the SSF Guidelines?
- What are the main management tools used to govern small-scale fisheries, and how much catch is governed through them?
- How is access governed in small-scale fisheries?
- What formal rights do fishers have to manage small-scale fisheries, and how much catch is governed through devolved rights to fishers?

The analyses provided in this chapter were mostly based on three independent sources of data. The first was the IHH governance dataset, which included 976 formal policies provided by the CCS authors, plus the associated catch and other metadata. A second source was data collected through the FAOLEX fisheries legislation database, which was used to verify the policy information obtained in the case studies and also provided complementary information on missing policies where required. The third source was a global database of 717 fishing civil society organizations (CSOs) compiled by Duke University using a snowball sampling approach. In addition, thematic studies on social and cultural identity in small-scale fisheries and on indigenous small-scale fisheries were undertaken by experts in these fields.

## Key chapter findings and messages:

### The management of small-scale fisheries and governance of tenure

- The analysis of small-scale fisheries in this chapter showed that management rights are formally granted to fishers in nearly 75 percent of countries included in the study, governing more than one-third of the marine (35 percent) and inland catch (39 percent) reported for these countries.
- Co-management policies and the amount of catch governed by them were analysed for 55 percent of the global small-scale fisheries catch estimated by this study. Results show that at the national level, 40 percent of the catch comes from fisheries with formal co-management provisions, but according to experts' perceptions, only half of these involve a high level of fisher participation in co-management arrangements. Co-management is more common at the local level but, nevertheless, while 90 per cent of the catch comes from fisheries with local co-management provisions that are formal, only 40 percent are perceived to involve a high level of fisher participation.
- In order to further strengthen the role of fishers in decision-making processes, more effort is needed to create local enabling conditions for them to be able to exercise their tenure rights. This can be accomplished through local supporting institutions, such as CSOs and decentralized fisheries agencies with clear roles and responsibilities.
- Combining management rights with the rights of exclusion and transferability can also increase fishers' empowerment to manage their fisheries, as long as processes and the outcomes for exclusion and transfers respect the principles of fairness and equity in line with the SSF Guidelines. This fuller form of devolved rights is currently very limited in formal small-scale fisheries laws and regulations, governing less than 5 percent of catch.
- For most fishers, there is often a lack of clear mechanisms for participation in national decision-making processes. The majority of formal small-scale fisheries policies that grant management rights to fishers only have jurisdiction in small geographic areas, not throughout the entire country. As a consequence, fishers' ability to participate in and influence national-level decision-making processes is likely to be limited. Developing national-level spaces for the participation of fishers, their organizations and their supporters could help to address current limitations.
- State policies have often failed to protect indigenous fishers' tenure rights, who have as a result experienced loss of rights to access, harvest and manage resources, thus threatening the survival of their culture and way of life. Attempts to correct colonial legacies have prompted some states to take measures distinguishing indigenous fishers from non-indigenous small-scale fisheries, and to legally recognize indigenous rights to land and water. Although six countries in the IHH dataset reported fisheries laws that acknowledge distinct rights for indigenous fishers, these laws are rarely implemented; yet their existence creates leverage for indigenous fishers.

### Factors influencing governance and management effectiveness

- Social and cultural identity plays a vital role in the viability and day-to-day organization of small-scale fisheries, determining who is part of a group and who is not. This influences how management and governance is locally received, shaped or resisted, and ultimately how effective it is. Incorporating social and cultural identity into small-scale fisheries policy research requires complementing quantitative and technical research with qualitative and interpretative studies of how small-scale fisheries work in practice, as well as acknowledging fishers and fishing communities themselves for the valuable insights they can give.

### Civil society organizations

- The analysis of the goals of more than 424 producer organizations shows that there is high alignment between the goals of fishers and the goals of the SSF Guidelines, indicating fishers are active contributors to SSF Guidelines implementation and not passive recipients of state action.
- The analysis also shows that most fishers' organizations see high compatibility between sustainable fisheries management and human well-being, as practically all of them expressed goals related to harvesting and sustainable fisheries management, with about 60 percent also expressing goals related to human well-being, labour rights, food security, or to human and environmental health.

### Contributions to the SDGs, in particular Target 14.b

- An analysis of coastal preferential access areas for small-scale fisheries showed they are a commonly used spatial tool in all regions of the world for marine

fisheries. In a sample of 52 countries, the median coverage of such areas was 3 percent of the exclusive economic zone. While coverage varies between countries, this median shows that preferential access for small-scale fisheries globally is very low. As small-scale fisheries are likely to be the largest employer in the ocean economy, greater attention to securing access to resources for small-scale fisheries through preferential access areas could also be an important mechanism towards achieving SDG 1 (No poverty).

- Licensing is the most commonly used tool in legislation for regulating access to resources for small-scale fishers. While licensing regulations govern about 70 percent of marine and inland small-scale fisheries catch, only almost 45 percent of the catch they govern is paired with devolved rights. Licensing on its own is least likely to empower fishers and fishworkers, and thus their ability to participate in decision-making processes concerning their fisheries is limited. With some less commonly used access strategies such as place of residence or history of use, tenure rights are devolved in more than 95 percent of cases, thereby making them better suited to contribute to SDG Target 14.b ("Provide access for small-scale artisanal fishers to marine resources and markets"). Yet, currently these alternative management approaches govern less than 30 percent of marine and inland small-scale fisheries catch.

## Chapter 9. The way forward: turning challenges into opportunities for securing the role of small-scale fisheries in sustainable development

Small-scale fisheries have a very important role to play in fighting hunger and poverty and in sustainable development generally, a role which was recognized by the endorsement of the SSF Guidelines by members of the FAO Committee on Fisheries in 2014. The SSF Guidelines provide an agreed policy framework for realizing the potential of these fisheries and are also a tool for taking action in line with the 17 SDGs of Agenda 2030. The IHH study was undertaken in support of the implementation of these instruments and remains the most comprehensive, systematic data engagement effort to date with a global focus exclusively on small-scale fisheries. It has succeeded in generating new knowledge and information on small-scale fisheries and their contributions to sustainable development. Building on the study and its findings, efforts and actions need to be accelerated in support of small-scale fisheries to achieve the SDGs, which calls for innovative, holistic and multidisciplinary solutions underpinned by principles of fairness, equity and inclusiveness.

Each chapter of this report has included results and key messages on actions and the support needed to achieve the objectives of the SSF Guidelines and the SDGs. This final chapter highlights some of the major steps and actions proposed, as detailed below.

### Further explore and build on the CCS data

The richness of information that has been collected through the CCS should be further explored to enhance knowledge and construct indicators that can help monitor the diverse small-scale fisheries dimensions, guiding policymakers in prioritizing key areas of intervention and informing those interventions. Moreover, the comprehensive set of innovative methods used by the IHH study can be replicated and built on in order to acquire enhanced knowledge in the future, at national, regional and global levels.

### Reconsider how small-scale fisheries are characterized and defined

There are a number of reasons why it is important to be able to identify small-scale fisheries and distinguish them from their larger-scale neighbours (and often competitors), ranging from local management to implementation of global instruments focused on the subsector. The characterization matrix developed and applied in the IHH study provides a standardized tool that can be readily used for this purpose. Use of the tool at local, national and international levels can show where a fishery lies along the range from small- to large-scale, enabling appropriate management and policy interventions to be made with greater certainty. Scale is a determining characteristic of the subsector, but characterization and understanding must go beyond to also consider the full nature of these fisheries and the benefits they provide across the value chain – such as livelihoods and incomes, nutrition, and cultural values, among others – if those benefits are to be sustained and improved as intended in the SSF Guidelines.

### Incorporate the multidimensional contributions of small-scale fisheries across polices and actions

Small-scale fisheries should be conceptualized and governed as multidimensional livelihood portfolios that provide the enabling environment for sustainable development, and not just as an economic activity. Strategies are needed to leverage the full range of benefits of small-scale fisheries and fish products across value chains, particularly for vulnerable groups, including improving intrahousehold distribution of fish. Within these strategies, policies beyond the fisheries sector, in particular with regard to food security and nutrition and local economies, should incorporate the actual and potential contributions of the small-scale fisheries subsector in their goals and actions.

### Incorporate nutrition and other livelihood outcomes into management decisions and design

Ensuring that fisheries are sustainable is fundamental to ensuring the sustainability of their benefits, but management and governance need to go further:

namely, adopting policies and implementing management measures that strive towards optimizing the benefits from small-scale fisheries for fishers, fishworkers and their communities, as well as for society at large. These should include, for example, taking into account of the nutrition potential of species and optimizing the contribution of small-scale fisheries to food security and nutrition and human health; ensuring equitable access of women to resources and leadership; and respecting and protecting the sociocultural values of small-scale fishers.

## Recognize the needs and benefits of effective participatory approaches, and put them into practice

The knowledge, culture, traditions and practices of small-scale fishing communities are clearly important and must be recognized and supported, including particular attention to Indigenous Peoples, by enabling them to participate effectively in decisions concerning their livelihoods. This will require greater and more equitable participation in all aspects of management of those involved in the small-scale fisheries value chain and will necessitate shifts towards greater institutional diversity, accompanied by changes in power and decision-making authority, at all levels of governance. Fishers and fishworkers in small-scale fisheries – both men and women – and their organizations should be empowered and provided with the space to co-lead in national, regional and international fisheries governance and management decision-making settings.

## Improve data and information for promoting SSF Guidelines implementation

The SSF Guidelines provide a clear and comprehensive framework "to support the visibility, recognition and enhancement of the already important role of small-scale fisheries and to contribute to global and national efforts towards the eradication of hunger and poverty" (FAO, 2015, Preface), which will also enhance the contribution of these fisheries to the achievement of the SDGs. To implement the SSF Guidelines there must be continued efforts to fill the knowledge gap and improve the understanding of the nature and contributions of the small-scale fisheries subsector, which will require a substantial shift in how different information systems and sources are integrated and linked, and how small-scale fisheries and their role are defined and monitored.

## Build on IHH study approaches and methods to improve data collection and analysis, moving beyond the limitations of "business as usual"

The IHH study developed approaches and collected data in support of SSF Guidelines implementation, the results of which demonstrate the need for monitoring and decision-making systems and processes at country level to be further developed or adapted if the multiple objectives for small-scale fisheries are to be effectively secured. Building on the study's findings and methods, data collection and analyses at all levels should be strengthened, including:

- disaggregating data and information on both small- and large-scale fisheries to allow for governance and management decisions that are adapted to the multidimensional characteristics of small-scale fisheries;
- applying participatory and innovative approaches, including drawing on traditional and local knowledge and expert insight;
- applying multidisciplinary and multisource approaches, encompassing all interlinked dimensions of small-scale fisheries and their contributions, and creating integrated information systems;
- making better use of surveys not specifically directed at fisheries, e.g. household-based surveys and those of the World Bank Living Standards Measurement Study, as well as integrating fisheries-specific modules with such surveys.

## Collect information to help recognize the role of women and ensure their visibility and participation

Women play an important role in small-scale fisheries value chains, but their role is often not recognized, and they continue to face challenges based on gender inequality. This needs to be changed by re-evaluating how the subsector is characterized to include the entire value chain, and through concerted broad-based efforts towards gender equality. With regard to data and information, it is important to ensure that data collection activities actively seek and include meaningful gender-disaggregated information to enable decisions that, for example, provide women with equal access to resources and decision-making processes in recognition of their many contributions across the value chain.

## Build capacity and partnerships

Capacity building, partnerships and joint efforts by governments, small-scale fishers, fishworkers and organizations, researchers, development agencies and other stakeholders will be required to secure sustainable small-scale fisheries. This includes strengthening the coproduction of knowledge to fully uncover the hidden contributions of small-scale fisheries and to unleash their potential for supporting SSF Guidelines implementation and the achievement of the SDGs.

Taken as a whole, the information obtained from the IHH study and distilled in this report reinforces the reality that small-scale fisheries are much more than just a subsector of the economy: they are the foundation of the livelihoods and culture of an extensive and diverse component of humanity. It is hoped that this study will stimulate and facilitate support and action to move forward in implementation of the SSF Guidelines and related SDGs with increased and renewed commitments and efforts.

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# Glossary

| Term | IHH Definition |
|---|---|
| Apparent consumption | A proxy measure to indicate the supply of food available in a country for an indicated reference period. For a given food commodity, it refers to a country's total production plus imports, minus exports and non-food uses, and can be further adjusted for food in storage. It differs from actual consumption, which is measured through household or individual food consumption surveys. Apparent food consumption per capita is obtained by dividing national consumption by population size (based on FAO, 2022a). |
| Aquatic food | In the context of the results presented in this report, aquatic foods include finfish, crustaceans, molluscs, tunicates and echinoderms that are harvested from the water. |
| Catch | Catch figures within the IHH report refer to "nominal catch", which is defined as the live weight equivalent of the landings (i.e. landings on a round, fresh basis; landings on a round, whole basis; or landings on an ex-water weight basis), excluding discards (based on FAO, 1990). |
| Civil society organizations (CSOs) | In this report, CSOs mostly refer to fisher and fish harvester organizations including producers, non-state supporters, hybrid federations or platforms, and private corporations. More broadly, a civil society organization (CSO) or non-governmental organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. Task-oriented and driven by people with a common interest, CSOs perform a variety of services and humanitarian functions, bring citizens' concerns to governments, monitor policies, and encourage political participation at the community level. Typically, they are organized around specific issues, such as the UN pillars of peace and security, human rights, and development (based on UN, 2021). |
| Co-management | A partnership arrangement in which government, the community of local resource users (fishers), external agents (NGOs, research organizations), and sometimes other fisheries and coastal resource stakeholders (boat owners, fish traders, credit agencies or money lenders, tourism industry, etc.) share the responsibility and authority for decision-making in the management of a fishery, particularly as it relates to the access and/or withdrawal of fishing resources. For co-management to take place the state has to be willing to devolve management, exclusion and/or transferability or alienation rights to individuals, groups and communities. Thus co-management encompasses various types of partnering arrangements and degrees of power-sharing, and can be instructive, consultative, cooperative or delegated (based on FAO, 2013; Berkes *et al.*, 2001; Sen and Nielsen, 1996; Schlager and Ostrom, 1992). |
| Country and territory case study (CCS) authors | National and international small-scale fisheries experts who conducted the IHH country and territory case studies. In this report, the terms CCS authors and CCS experts are used interchangeably. |
| Customarily managed small-scale fishery | "Customary management" is defined as "local practices that are designed to regulate the use, access, and transfer of resources". Applied here, this would indicate a small-scale fishery that is governed or self-governed by fishers, their leaders, or other local stakeholders usually outside of a management framework determined by the state (based on Berkes, ed., 1989; Cinner and Aswani, 2007; Johannes, 1978). |

| Term | IHH Definition |
|---|---|
| Dependent livelihoods | Partially dependent livelihoods: all members of a household where at least one member is employed in small-scale fisheries or engaged in subsistence fishing.<br><br>Fully dependent livelihoods: the total number of household members who are solely dependent upon employment in small-scale fisheries, calculated as the proportion of employed household members who are participating in small-scale fisheries, multiplied by the total number of household members (based on ICLS, 2013; WCED, 1987; Chambers and Conway, 1991). |
| Devolution of tenure rights | Refers to when fishing authorities grant management, exclusion and/or alienation rights to individuals, groups and/or communities over the catch or any other aspect of the fishery as well (based on Schlager and Ostrom, 1992). |
| Devolution rights index (DRI) | An index that measures the strength of the devolution of rights to fishers, which increases the likelihood fishers will find incentives to invest in the future of the resource. The DRI assesses three levels: partially devolved, mostly devolved and fully devolved (based on Schlager and Ostrom, 1992). |
| Discards | The part of the catch that is not retained on board and is returned at sea, dead or alive. This may include target species or any other species (both commercial and non-commercial) discarded at sea (FAO, 2019). |
| Employment (full-time, part-time, occasional) | All persons of working age who, during a short reference period (typically the week prior to a survey interview), were engaged in any activity to produce goods or provide services for pay or profit. This covers (i) employed persons "at work", i.e. who worked in a job for at least one hour during the reference period; and (ii) employed persons "not at work" due to temporary absence from a job, or to working-time arrangements (such as shifts in work, flexitime and compensatory leave for overtime). The definition includes both part- and full-time employment in order to capture seasonal variation. Employed persons are typically engaged in market-oriented activity, selling the majority of the product (though in some cases consuming a portion of their catch) (based on ICLS, 2013; WCED, 1987; Chambers and Conway, 1991). |
| Employment in the harvesting segment of fisheries | All persons employed (as per definition of "employment") in activities connected to harvest fishing. Harvest fishing activities are identified according to the International Standard Industrial Classification of all Economic Activities (ISIC) standards agreed for use by UN Member States by which measures of economic activity can be compared (in the System of National Accounts). According to the ISIC, harvesting activities include capture fisheries, i.e. the hunting, collecting and gathering activities directed at removing or collecting live wild aquatic organisms (predominantly fish, molluscs and crustaceans) from oceanic, coastal (marine fisheries as per ISIC code 0311) or inland waters (as per ISIC code 0312) (UN, 2008). |
| Employment in the pre-harvest segment of fisheries | All persons employed (as per definition of "employment") in activities connected to pre-harvest fishing, such as (i) building of ships and floating structures (ISIC code 3011) and (ii) repair of other equipment, which includes repair of fishing nets (including mending), as per ISIC code 3319 C (UN, 2008). |
| Employment in the post-harvest segment of fisheries | All persons employed (as per definition of "employment") in activities connected to post-harvest fishing, such as (i) processing and preservation of fish, crustaceans and molluscs (ISIC code 1020); (ii) wholesale of food, beverages and tobacco (which includes wholesale of fishery products), as per ISIC code 4630; and (iii) retail sale of food in specialized stores, including fish, other seafood, and products thereof (as per ISIC code 4721) (UN, 2008). |

| Term | IHH Definition |
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| Fishery unit | The unit of assessment for recording CCS data. Fishery units were defined by CCS authors based on characteristics relevant to the country's small-scale fisheries subsector. Depending on the country, the definition of fishery units may (or may not) rely on one or more of the following elements:<br>• Target fish species, groups of species, or stock (including geographic area or location);<br>• Fishing method, gear and/or vessel type;<br>• Fishing fleet / groups of vessels or individual fishing operators pursuing the fishing operation(s)<br>• Management units |
| Food consumption score (FCS) | A household-level dietary diversity score measuring frequency and diversity of food items consumed over a seven-day recall period, according to relative nutritional value (based on Leroy *et al.*, 2015; WFP, 2008). |
| Formal co-management | Formal co-management refers to the existence of written policy, law and regulations explicitly mandating a systematic inclusion of the voices of stakeholders in management. A consultative process can be considered formal co-management if there is an expectation that it may result in management action, even if this is not always the outcome. Policies can explicitly mention the devolution of management, exclusion or transferability rights to fishers – or policies can be quite general and lack specificity about who, where and when. For this designation, policies do not need to be implemented on the ground and can only exist on paper (based on Sen and Nielsen, 1996). |
| Functional group (of species) | A group of species sharing ecological, taxonomic and/or economic characteristics. IHH functional groups were based on a combination of pre-existing species classification schemes (ISSCAAP Division, ISSCAAP Group, FAOSTAT Group of Commodities, and Central Product Classification) and some individual adjustments, where necessary, to add or remove species from a functional group, based on IHH team expert opinion. |
| Gender | Refers to socially defined roles, responsibilities and behaviours that are assigned to women and men (FAO, 2007). |
| Gender analysis | Gender analysis is the study of the different roles of men and women in order to understand what they do, what resources they have, and what their needs and priorities are. It provides the basis for informing policies, programmes and projects that address inequalities (FAO, 2017). |
| Gender equality | Refers to when women and men have equal rights, opportunities and entitlements in civic and political life, in terms of access, control, participation and treatment (FAO, 2017). |
| Gender equity | Refers to fairness and impartiality in the treatment of women and men in terms of rights, benefits obligations and opportunities. At times, special treatment / affirmative action / positive discrimination is required (FAO, 2017). |
| Gender inclusivity | Gender inclusivity is the process of improving the terms of participation by gender across society, particularly for women and gender minorities – who are often marginalized – through enhancing opportunities, access to resources, voice and respect for rights. In the context of fisheries, this means engaging with gender in fisheries management, policy and the overall valuation of the sector, through explicit commitments and strategies to implement gender-inclusive approaches and appropriate accountability mechanisms (Mangubhai and Cowley 2021; Mangubhai and Lawless 2021). |

| Term | IHH Definition |
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| Gross value added (GVA) | GVA is an economic measure of the value of goods and services produced in a region, industry or sector of an economy (UN, 2003). It measures the increase in income after deduction of the costs of intermediate inputs in production. GVA of an economic sector = total sector revenue – intermediate consumption (e.g. initial costs) (UN, 2003). |
| Hybrid federations or platforms | Organizations composed of both producer organizations and non-state "supporters". |
| IHH country and territory case studies (CCS) | Data collection instruments for estimating measures for the key indicators to accurately describe small-scale fisheries at country or territory level. The CCS provided the basis for disaggregation between small- and large-scale fisheries, as well as for global extrapolations of key indicators. These case studies harnessed existing data from the best available sources at national, subnational and/or local levels, and ensured comparability across countries and territories. |
| Landed economic value | Landed weight of fish multiplied by the ex-vessel price. This is often called "landed value", which however does not account for many other values that the catch may have for people. |
| Local norms and values | Refers to the different de facto types of rules and social relations that generate incentives for fishing behaviour and are embedded in livelihood and fishing practices among individuals, groups or communities. |
| Local policy | A particular rules system, governance arrangement, or regulation that only has jurisdiction over a small geographical scale within national boundaries. The jurisdiction of a local small-scale fisheries policy can be determined by the boundaries of a municipality, village, a particular waterbody, a set of geographical coordinates, or another type of geographically delimited area. |
| Minimum dietary diversity for infants and young children | Minimum dietary diversity for infants and young children is expressed as the proportion of infants/children who consumed at least five out of eight food groups in the previous 24 hours. It is used as a proxy indicator to predict nutrient adequacy in populations, and is one dimension of the minimum acceptable diet (MAD) indicator (WHO, 2021). |
| Minimum dietary diversity for women | Minimum dietary diversity for women is expressed as the proportion of women who consumed at least five out of ten food groups in the previous 24 hours. It is used as a proxy indicator to predict nutrient adequacy in populations (FAO, 2021). |
| National policy | A particular rules system, governance arrangement, or regulation to which the entire country is equally subject. The jurisdictional boundaries are usually determined by the delimitations of the exclusive economic zone or territorial seas. |
| Nominal value | Unadjusted rate or current price, without taking inflation or other factors into account. |
| Nutrient potential | The nutrient potential of fish is measured or estimated as the sum of the nutrients contained in the catch at the time of landing. |
| Non-state supporters | Organizations that do not directly represent small-scale fishers and fishworkers but that represent the interests of small-scale fisheries (e.g. NGOs that do not have fishers/fishworkers as members). |
| Patron–client relationship | A relationship between two actors where one acts as a patron and the other as a client. The patron is usually in control of the fishing means of production, property rights of the fishery, or commercialization channels, and contracts with the fisher who contributes labour to land catch (based on Basurto *et al.*, 2020). |

| Term | IHH Definition |
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| Producer organization | An organization whose members are primarily or all fishers and/or fishworkers, or their organizations. |
| Purchasing power parity (PPP) | PPP is a spatial price deflator and currency converter to control for price level differences between countries, thereby allowing volume comparison of different monetary metrics such as GDP, consumption, etc. (based on International Comparison Program, World Bank; World Development Indicators database, World Bank; Eurostat-OECD PPP Programme). |
| Scale of operation | Refers to the technological, economic, operational and organizational characteristics of small-scale fisheries. It is used by the IHH characterization matrix to categorize different fisheries. |
| Sexist data | Data resulting from the omission of certain identity groups (i.e. based on gender or other identity characteristics such as age, class, ethnicity) that creates, maintains and/or reinforces social inequalities (based on D'Ignazio and Klein, 2020). |
| Small-scale fisheries | The definition of small-scale fisheries varies considerably in different countries, but generally includes low-technology, low-capital, labour-intensive fishing practices. Often, the term artisanal is used to refer to small-scale fisheries. In the context of this report, the term small-scale fisheries refers to the whole value chain of pre-harvest, harvesting and post-harvest activities, including subsistence fisheries and excluding recreational fisheries. For the purpose of CCS data collection, the most common definition (e.g. legal or operational) for small-scale fisheries in each country or territory was used. |
| Social inclusivity | Involves the removal of institutional barriers that maintain unequal opportunities, thereby accessing development outcomes and introducing changes at the system level (Barclay *et al.*, eds., 2019). |
| Subnational policy | A particular rules system, governance arrangement, or regulation that has a jurisdiction determined by the boundaries of a state, province or other biophysically defined regional scale (e.g. a river basin or watershed). |
| Subsistence fisheries activities | Also defined as "working for own consumption": individuals of any sex and age that carry out an activity at least once over the last 12 months in order to produce and process fish for their own final use, with no transaction occurring in the marketplace. By definition, considered here as small-scale fisheries (based on ICLS, 2013; WCED, 1987; Chambers and Conway, 1991). In this report, this is used interchangeably with "subsistence fishing" and "subsistence activities". |
| Target species | Those species that are primarily sought by the fishers in a particular fishery, through a directed fishing effort. There may be primary as well as secondary target species (Cochrane, ed., 2002). |
| Tenure rights | In accordance with the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, tenure rights refer to rules and norms that determine who can use which resources, for how long, and under what conditions. These systems may be based on written policies and laws, as well as on unwritten customs and practices. They determine how people, communities and others are able to acquire rights and associated duties to use and control fisheries (based on FAO, 2022b). |

*Illuminating Hidden Harvests: the contributions of small-scale fisheries to sustainable development* (hereinafter IHH) is a global study uncovering the contributions and impacts of small-scale fisheries through a multidisciplinary approach to data collection and analysis. The study provides information that quantifies and improves understanding of the crucial role of small-scale fisheries in the areas of food security and nutrition, sustainable livelihoods, poverty eradication and healthy ecosystems. It also examines gender equality as well as the nature and scope of governance in small-scale fisheries. The IHH study was carried out in support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), themselves developed in recognition of the plight of small-scale fishers, fishworkers and associated communities and released as a contribution to the International Year of Artisanal Fisheries and Aquaculture 2022. This document provides the executive summary of the IHH study.

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