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PROGRESS IN IMPROVING THE INFORMATION BASELINE AND ASSESSMENT OF THE CONTRIBUTION OF SMALL-SCALE FISHERIES IN MARINE AND INLAND WATERS

Executive Summary

This document highlights recent and ongoing activities, products and outputs by the Fisheries and Aquaculture Department in the context of improving the information baseline and assessment of the contribution of small-scale fisheries in marine and inland waters which started in the biennium 2016-17. The paper reviews what has been achieved and how this responds to recommendations of the 32nd Session of the Committee in terms of improving the understanding and assessment of small-scale marine and inland fisheries. More specifically, it summarizes key progress of FAO's work on developing a partnership ("Hidden Harvest 2" initiative) to improve the information baseline on small-scale fisheries and to inform on the implementation of the SSF Guidelines. The development of an updated baseline for the status of global inland fisheries is also outlined. Specific to inland fisheries, this covers the action taken to implement the 10 Steps for Inland Fisheries, including inland fisheries' global production, contribution to the SDGs, valuation, employment, linkages to nutrition, and biodiversity. Moreover, ongoing work on developing tools for improved assessment of small-scale marine and inland fisheries is highlighted. This document complements the information in COFI/2018/7 as well as COFI/2018/Inf.17.

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I. INTRODUCTION

1. FAO has initiated a series of activities on small-scale and inland fisheries to develop a baseline informing on a range of issues in response to requests made by the 32nd Session of the Committee on Fisheries in 2016. These requests covered diverse areas such as employment, nutritional contribution, value chains and trade, fish losses and improved assessment of marine and inland small-scale fisheries.
2. The introduction of a specific section on small-scale fisheries in the FAO questionnaire on the implementation of the Code of Conduct for Responsible Fisheries in 2015/16 has been an important first step to enable FAO to gather information on small-scale fisheries from Member countries, and FAO appreciates the high response rate of countries to this section. An important feature of this improved monitoring is that three questions in that section provide the information which is used to calculate the indicator for SDG 14.b - *Provide access for small-scale artisanal fishers to marine resources and markets*.
3. It is clear that more information is needed to support the monitoring of progress towards securing sustainable small-scale fisheries. In this regard, more specific methodologies and capacities have to be developed to obtain a more complete understanding of the diverse contributions of marine and inland small-scale fisheries to food security and poverty eradication and inform effective management and governance to sustain these contributions.
4. This document will focus on FAO's efforts to improve the information baseline on small-scale fisheries and the related processes of the update of the 2012 study *Hidden harvest: the global contribution of capture fisheries*¹, including improved methodologies for the assessment of small-scale marine and inland fisheries. It will also report on progress on developing a global baseline for inland fisheries.

II. HIDDEN HARVEST II – A BASELINE ASSESSMENT OF THE GLOBAL CONTRIBUTION OF SMALL-SCALE CAPTURE FISHERIES

5. FAO, WorldFish and Duke University have agreed to collaborate to revisit and update the 2012 World Bank, FAO and WorldFish “Hidden Harvest: The Global Contribution of Capture Fisheries” (HH1).
6. The purpose of the new Hidden Harvest study (‘HH2’) is to address the fact that the contribution of small-scale fisheries to global capture fishery harvests in both marine and freshwaters is generally considered to be underestimated and that the earlier publication had some weaknesses, both with regard to scope (it focused on economic contributions and did not take into account, among other things, nutrition and food security) and its scientific robustness.
7. This is in line, among other, with the recommendations of the last session of the Committee, namely to follow-up on the 2014 Second International Conference on Nutrition (ICN2), and recognizes the important role of FAO in coordinating existing databases on the nutritional composition of fish and fish products and in addressing information gaps and research needs related to the contribution of fish and seafood to improved nutrition. The Committee also acknowledged opportunities provided by the United Nations Decade of Action on Nutrition and the 2030 Agenda for Sustainable Development to reinforce the nutrition-focus of fisheries and aquaculture development.

¹ Available at <http://documents.worldbank.org/curated/en/515701468152718292/Hidden-harvest-the-global-contribution-of-capture-fisheries>

8. To kick-start the work on the HH2, a workshop on “Improving our knowledge on small-scale fisheries: data needs and methodologies²” was convened 27–29 June 2017, FAO, Rome. This workshop brought together some 40 experts on data sources and assessment methodologies (including FAO staff) to discuss and advise on the scope and content of the HH2 study. This included the type of data (indicators) to be collected, subsectoral coverage, the methodologies for data collection and analyses, and key partners and information sources.

9. The workshop agreed on two principal objectives for the HH2. Firstly, the HH2 will illuminate the hidden contributions of small-scale fisheries to the three dimensions of sustainable development – social, economic and environmental – as well as governance, quantifying these contributions to the extent possible. Secondly, it will identify the key drivers of change or transformation, including both threats and opportunities, describing these through narratives including key variables that can be quantified.

10. Two principal target audiences have been identified for the HH2. Firstly, the information is directed at policy- and decision-makers both in fisheries and beyond, and at global, regional, national and decentralised levels. This audience is targeted so that they increase their attention and support for small-scale fisheries. Secondly, the HH2 is intended to support small-scale fisheries advocates (such as civil society organizations and fisherfolk organizations) which need to be equipped with information and knowledge to underpin their efforts to ensure that policy and development adequately supports small-scale fisheries.

11. Accordingly, the scope of the HH2 covers reporting on the existing situation (a snapshot) but it should also contribute to understanding trends and developments, forming the basis for identifying actions and investments that are needed for securing sustainable small-scale fisheries and enhancing their contribution to food security and poverty eradication.

12. The HH2 study results (and the final publication) will include:

- 1) a quantification of selected key indicators/variables at the global level and their methodologies; and
- 2) thematic studies on key issues that provide a narrative supporting the global aggregates (and/or tell stories at the regional, national or local level) and analyse the key drivers of change/transformation (with quantifications where possible).

It is important to note that small-scale fisheries can be more important at a local level than at the global or national aggregate levels; and hence, HH2 will aim to include case studies that illustrate this local importance.

13. The HH2 study will use three key approaches to derive the information required to develop the global picture of the contributions of small-scale fisheries:

- Leveraging global datasets by a) correcting for small-scale fisheries misreporting and b) applying ratio estimates to disaggregate small-scale and large-scale fisheries contributions (top-down);
- Undertaking national-level case studies (developed and developing countries) that can form the basis for extrapolation to the global level (bottom-up);
- Assembling non-scalable data that highlight the contributions of and drivers of change in small-scale fisheries for specific people rooted in specific places.

14. The HH2 will also provide an opportunity to present a “characterization matrix” approach to enable a more effective operational determination of what constitute large-scale and small-scale fisheries. This will allow greater cross-comparability between the HH2 case studies. The characterization matrix, which constitutes a flexible and case-by-case method to describe different

² Report available at www.fao.org/3/a-i8134e.pdf

categories of fisheries, will be tested using information from a number of regions, covering both marine and inland fisheries.

15. Important outputs of the HH2 will be not only be data and information but also the assessment and analytical methods that will be developed. These will enable more objective, transparent and consistent monitoring of small-scale fisheries, which will form part of the process of monitoring the implementation of the SSF Guidelines at the local, national or regional levels.

16. The HH2 study will also benefit from a communication strategy to share intermediate and final results and engage with other relevant partners.

III. DEVELOPING A GLOBAL BASELINE FOR INLAND FISHERIES

17. The Thirty-second Session of the Committee welcomed the “Ten Steps to Responsible Inland Fisheries” and requested FAO to develop a plan for their implementation. The 32nd Committee also noted the difficulties faced in accurately measuring inland fisheries production and recommended the development of an effective methodology to monitor and assess the status of inland fisheries, to underpin their value, to give them appropriate recognition and to support their management. It requested FAO to develop an assessment methodology which includes broader ecosystem considerations that impact inland fisheries. The actions which have been initiated to respond to these recommendations are as follows (The relevant “Ten Steps to Responsible Inland Fisheries” are in italics):

18. *Improve the assessment of biological production to enable science-based management:* The data poor and dispersed nature of inland fisheries challenge more conventional management approaches in many of the world’s most important inland fisheries. Some preliminary steps are being taken on data poor fisheries, in particular using methods to integrate different data sources and proxy measurements to establish likely inland fishery production at national or sub-nation/water body levels. A pilot study using Household Expenditure and Consumption surveys as a method to establish inland fisheries product, has yielded positive results and was able to indicate possible instances of over or under reporting of inland fisheries production. This method requires further refinement, and is constrained by the long intervals between such household surveys. It may be of greater utility in establishing sub-national production. The pilot was able to indicate that current reported inland fisheries production may be considerably under-estimated and that global inland fisheries production is possibly closer to the estimate made in the first Hidden Harvest study.

19. There have been efforts to use global water body datasets and link this to productivity, as a means to establish likely inland fishery production. However, methodological problems with different productivity levels by water body within a country and lack of effort data continues to limit the use of this approach. To make more progress on this methodology would require a more comprehensive science programme to go beyond collation of biological productivity across different regions and would require some means to establish fishing effort. This would require the establishment of a science network feeding data into a global dataset and testing downscaled models against known fisheries production that had been assessed using more classical methods (such as monitoring of landings). FAO continues to engage with inland fishery research networks to promote this type of activity.

20. *Correctly value inland aquatic ecosystems:* A significant effort has been made to update the FAO Fisheries and Aquaculture Circular (C942 Revision 3) “Review of the state of the world fishery resources: inland fisheries”. The updated circular seeks to go beyond the analysis of trends in production and provide a deeper analysis of the state of inland fishery resources and their importance/relevance to the achievement of the Sustainable Development Goals (SDGs), in particular, SDGs 2, 3, 6, 7 and 15. It also responds to the 32nd COFI request to cover broader aspects of the

contributions of inland fisheries. This review therefore provides an updated profile for inland fisheries from all countries which have inland fisheries production in excess of 1 tonne. This review also provides the first comprehensive estimate of the global value of inland capture fisheries and a value of recreational inland fisheries. The review also considers the linkages between inland fisheries and aquatic biodiversity. The results of pilot efforts to assess fisheries (described above) are also summarized.

21. *Promote the nutritional value of inland fisheries:* As part of the update of C942 Revision 3, the nutritional role of inland fisheries is reviewed. Further work in this area is possible under the Hidden Harvests 2 initiative. Here, the progress made in updating FAO databases on nutritional composition of fish and linking this to household surveys, research data and other information, will provide an improved understanding of the true contribution of inland fisheries to diets and nutrition.

22. *Develop and improve science-based approaches to fishery management:* In response to the 32nd COFI request to develop an effective methodology to monitor and assess the status of inland fisheries, including broader ecosystem considerations that impact inland fisheries, preliminary work has been undertaken to develop and Ecosystem Approach to Fisheries (EAF) for inland waters. This work includes the development of specific tools to assist in EAF planning and the elaboration of management measures for inland fisheries. Importantly, these tools are needed to take into account the wide range of external (non-fishing) drivers that influence inland fisheries, and typically drive them. These tools will also be of assistance in trying to ensure that fisheries are more effectively addressed within broader planning and management frameworks, particularly those related to water management, irrigation and landscape management.

IV. DEVELOPING TOOLS TO SUPPORT THE ASSESSMENT OF SMALL-SCALE FISHERIES

23. Overexploitation and weak or improper management of fishery resources have undermined stock health with critical impact on biodiversity, food security and livelihoods. Based on FAO's assessment, the fraction of fish stocks that are within biologically sustainable levels has exhibited a decreasing trend from 90 percent in 1974 to 66.9 percent in 2015. In contrast, the percentage of stocks fished at biologically unsustainable levels increased to 33.1 percent in 2015. Although successful management and governance of fisheries depend on many ecological, social and economic attributes, evidence has demonstrated that stocks that are reliably assessed have a better likelihood of being efficiently managed and therefore healthy.

24. Despite this, approximately 60 percent of the total wild catch production (in marine and inland waters) is currently unassessed and this is mostly in small-scale fisheries from developing countries. These fisheries often lack the financial and human resources to collect information needed for proper assessment, monitoring and management. Importantly, most of the theory and applications of fishery stock assessment and management has been built around data-rich stocks, where stock status is assessed using sophisticated population models fitted to fishery-dependent (i.e., long time series of catch, effort, and size data) and often fishery-independent information (i.e., surveys).

25. In order to fulfil several monitoring needs associated to global initiatives such as the SDGs and the CBD's Aichi targets and to better understand the impact of small-scale fisheries on environmental sustainability it is important to develop a methodology that is not only robust, replicable and suitable for most global stocks but also allows comparability (e.g. with respect to maximum sustainable yield levels).

26. The development and implementation of novel assessment techniques for data-poor fisheries can contribute to informed, science-based decision-making resulting in sustainable management. In fact, there are few established data-limited assessment methods to assist in the provision of

management advice, including those estimating overfishing limits and stock status. However, these methods are still under testing phase and are, in most cases, technically and computationally complex. Moreover, what is considered data-limited in developed countries is often far from what is achievable in most developing world, small-scale fisheries. Therefore, these methods are particularly important for small-scale, developing nation fisheries with more traditional and informal management approaches and where resources to conduct scientific surveys are limited and technical capacity for complicated assessments is lacking. It must be acknowledged that sustainable management of fisheries do not always require conventional forms of stock status determination. Instead, empirical rules may be sufficient to inform management decisions.

27. More investments in the assessment of data-limited fisheries will be made under the HH2 and other related work conducted by FAO (e.g. further development and testing of assessment methods to improve coverage of fish stocks included in SOFIA). This work will explore and document both databases and methodological approaches suitable for the assessment and management of data-limited, capacity-limited small-scale fisheries. Moreover, FAO is currently developing, under the FAO/GEF Coastal Fishery Initiative (CFI) Project, a Fisheries Performance Assessment tool that covers the three dimensions of sustainability (ecological, economic and social) as well as the governance component. This tool includes a data-limited assessment module to inform management and will be piloted in at least 25 fisheries in the three regions covered by the CFI project (Latin America, West Africa and Indonesia) through a series of capacity building workshops. This tool, including methodologies, application templates, preliminary results and guidance materials will be made available for users outside the CFI project.

V. CONCLUSIONS

28. The above described efforts will support the monitoring and measurement of progress of the implementation of the SSF Guidelines to support sustainable small-scale fisheries, including through awareness raising and capacity development.

29. They will also support efforts to achieve and report on a number of SDGs, in particular SDG 14.b.

30. The outcome of this work will also provide important baseline information and deliver methodologies for further work in the context of the road map leading up to the International Year of Artisanal Fisheries and Aquaculture in 2022.