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# COMMITTEE ON FISHERIES

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## INLAND FISHERIES: ISSUES, DEVELOPMENTS AND NEEDS

### Executive Summary

Inland capture fisheries provide commerce, employment, nutrition and recreation for people throughout the world, and particularly in the developing world. However, the sector is impacted by numerous other uses of water, as well as by irresponsible fishing practices. In spite of the importance of, and threats to inland capture fisheries, the sector is not often well considered in national or international development agendas. This document describes the sector, recent developments and suggested actions that FAO and Members may consider taking to ensure that inland fisheries are not neglected in national and international efforts to increase food security and poverty alleviation.

### The Committee is invited to:

- review the current situation in regard to inland capture fisheries;
- advise on measures that need to be taken to ensure inland capture fisheries and the people that depend on them for food and nutritional security are appropriately considered in national, regional and global policy discussions;
- consider the need for a high-level policy meeting on inland capture fisheries, possibly in conjunction with the Global Conference on Inland Capture Fisheries: Freshwater, Fish and the Future.

## INTRODUCTION

1. Inland capture fisheries are an important source of commerce, employment, nutrition and recreation for people throughout the world, and particularly in the developing world<sup>1</sup>. Currently, inland fisheries are being impacted by other uses of water (e.g. hydro-power, withdrawals for agriculture, industrial processes and transportation), as well as by irresponsible fishing practices. These practices result in a loss of fishery production, reduced food security and loss of aquatic biodiversity.
2. In spite of the threats facing this sector that is extremely important for over 60 million people in the developing world, inland fisheries are not often highly considered in national or international development agendas. The marine sector has recently received international and regional attention, and international initiatives do exist for fresh water. The inland capture fisheries sector has not been well represented in fora on fresh water in comparison to biodiversity conservation, agriculture and other users of freshwater. The fact that inland fisheries is often given low priority relative to other uses of water, arises in part, from inaccurate or incomplete estimates of the status and trends in inland fishery production and its true economic and societal value.
3. The purpose of this document is to briefly review the sector and major issues impacting upon it, and to update the committee on upcoming activities being undertaken by FAO for which advice is requested.

## THE INLAND CAPTURE FISHERIES SECTOR

4. Seventy-one Low-Income Food-Deficit Countries produce 80% of global inland capture fisheries output and women represent over half of the individuals in the inland fisheries supply chain. The inland fisheries sector is extremely diverse deploying a wide variety of fishing techniques, ranging from simple hand-held gear to purse seines operated by commercial fishing vessels. Inland fisheries include commercial/industrial, small scale and recreational fisheries, each with a different economic and social structure. Small-scale fisheries are by far the largest component of the inland fishery sector.

### **Management of inland capture fisheries – the need for improved information**

5. Many inland fisheries are difficult to manage effectively because they are often exploited by small-scale, part-time or subsistence fishers and productivity is often influenced by sectors outside the fishing sector. Effective management is further complicated by a lack of accurate information on fishing effort and production from the sector.
6. FAO collates data on inland fisheries production submitted by Member countries. This voluntary system of data reporting is known to be incomplete and generally leads to an under-estimation of production from inland fisheries. Barriers to improved reporting include the complexity of stock composition, the variety of fishing methods, the diverse demographics of fishers, the diffuse spatial patterns of catches and landing sights, the low economic value of individual fisheries in the GDP compared to other water-based activities and the lack of information on subsistence fishing<sup>2</sup>.
7. To address the lack of information, FAO initiated a strategy for improving information on status and trends of capture fisheries<sup>3</sup>. The strategy recommended the following for small scale and multi species fisheries, which would also include the majority of inland fisheries:

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<sup>1</sup> For more complete information on the inland fisheries sector see SOFIA 2010 Outlook, *What future for inland fisheries?* Pp 173-197, on which much of this chapter is based.

<sup>2</sup> Beard, T.D. et al., 2011. Ecosystem approach to inland fisheries: research needs and implementation strategies. Biological Letters at <http://rsbl.royalsocietypublishing.org/content/early/2011/02/08/rsbl.2011.0046.full.html>;

<sup>3</sup> FAO Strategy for Improving Information on Status and Trends of Capture Fisheries. Rome, FAO. 2003. 34p. <ftp://ftp.fao.org/docrep/fao/006/y4859t/y4859t00.pdf>

*States, relevant intergovernmental and nongovernmental organizations, and financial institutions should recognize that many small scale fisheries and multi species fisheries, particularly in developing countries are not well monitored and awareness needs to be raised on the importance of monitoring these fisheries. They are probably underestimated and therefore under-represented in current fisheries status and trends information and consequently they are not adequately considered in the development of plans and policies for fisheries.*

8. However, national authorities are unlikely to invest the required resources in data collection and monitoring when the magnitude of their inland fisheries is unclear. Additional challenges arise from the view that inland fisheries is not a growth sector and that replacing inland fisheries with industrial and agricultural activities will boost national production and contribute to economy and social well-being. This attitude, coupled with a lack of appreciation for the risks of overexploitation, leads to minimal investment in inland fisheries.

9. It is unreasonable to assume that countries will suddenly devote limited resources to collecting data on production from and monitoring of inland fisheries. Although there are current efforts to develop frame surveys and institute data collection systems on some major inland water bodies<sup>4</sup>, there are other alternatives that can help improve information on the sector. Development of geo-spatial and remote sensing tools that estimates production using characteristics of water bodies could provide a broad indication of potential catches from each region. Fisheries production can also be estimated indirectly through household surveys of fish consumption<sup>5</sup> which would address the problem that a significant proportion of inland fish consumed in the developing world is consumed by the fisher's family or bartered locally.

10. Most of the large lake and river basins in the world are shared between several countries requiring commitment to joint management plans, most efficiently dealt with through the establishment of lake or river basin organizations (LBOs/RBOs). However, most basins do not have such mechanisms in place, and the ones that exist do not have or do not exercise their mandate in fisheries. Proper management of inland fisheries requires understanding the full range of ecosystem services provided by inland aquatic ecosystems and how those services are related to fisheries. For instance, drinking-water quality and maintaining biodiversity are enhanced by many of the same factors that promote healthy fisheries, while using inland waters for hydropower generation, agricultural irrigation and industrial processes is generally detrimental to fish and fisheries. Given the multiple uses and users of fresh water, a holistic ecosystem approach to managing inland fisheries that could involve sectors outside the fishery sector will be necessary.<sup>6</sup>

11. The ecosystem approach to fisheries considers stakeholders' input in setting the objectives of fishery management. Often for inland fisheries, major threats to the fishery cannot be addressed by the fisheries sector alone, e.g. water withdrawal for agriculture or hydro-electric development. In such cases the fishery sector must engage the other water users to make development and management plans that accommodate all stakeholders and provide optimum benefits from inland waters. Management interventions will be needed to provide balanced objectives that allow aquatic ecosystems to produce fish, maintain biodiversity and deliver *inter alia* electricity, water for irrigation and human consumption, and flood control in the face changing climates.<sup>7</sup>

<sup>4</sup> See for example see efforts of the Lake Tanganyika Authority (<http://lta.iwlearn.org/management-program>) and Lake Chad PRODEBALT programme <http://www.cblt.org/en/sustainable-development-programme-lake-chad-basin-prodebalt> to improve fishery information.

<sup>5</sup> Hurtle, K.G. 2009. Fisheries of the Mekong River Basin, pp 197-249 in (I.C. Campbell ed.) The Mekong. Elsevier.

<sup>6</sup> Management of inland waters for fish: a cross-sectoral and multi-disciplinary approach in SOFIA 2014

<sup>7</sup> Brummett, R.E., M.C.M. Beveridge, and I.G. Cowx. 2013. Functional aquatic ecosystems, inland fisheries and the millennium development goals. Fish and Fisheries 14:312-324.SOFIA 2014.

## RECENT DEVELOPMENTS IN FAO

12. FAO gives attention to inland fisheries through its regional commissions (COPESCAALC, CIFAAC, EIFAAC, CACFish) and more recently FAO, in partnership with several advanced scientific institutions, government agencies and inter-governmental agencies, including *inter alia* Michigan State University (MSU), the US Geological Survey (USGS), the International Collective in Support of Fish-workers (ICSF), the Network of Aquaculture Centres in Asia-Pacific (NACA), the Lake Victoria Fisheries Organization (LVFO) and the Lake Tanganyika Authority (LTA), has convened a series of workshops and conferences to address the problem of inland fisheries management and the low profile of this sector<sup>8</sup>. The development of International Guidelines for Securing Sustainable Small-Scale Fisheries<sup>9</sup> represents a significant step towards raising the profile of small-scale inland fisheries. Other activities addressing specifically inland fisheries management using an ecosystem approach are underway in several areas of Africa.<sup>10</sup> Most of these fora, however, have been largely limited to the fishery sector, i.e. they did not include the other users of freshwater. As such, their impact on improving the overall management of water for fish has been limited.

13. The role of inland fisheries in food security is slowly being realized outside the fishery sector. Recent discussions of the High Level Panel of Experts on Food Security and Nutrition are now including inland fisheries.<sup>11</sup> To address the multiple uses of freshwater, FAO instituted the FAO Water Platform which is a multi-sectoral fora to address water and sustainable development.<sup>12</sup> The current SOFIA highlights the necessity of managing freshwater for multiple objectives. Furthermore, FAO and MSU are entering into collaborative efforts to convene a global conference on inland fisheries, *Freshwater, Fish and the Future*.<sup>13</sup> The conference will be a cross-sectoral dialogue among water-users that will strive to raise the profile of inland fisheries and incorporate them in agricultural, land-use, and water resource planning through development of improved assessment frameworks and value estimation.

## NEED FOR ACTION

14. Given the projected increased demand for food and energy from inland waters<sup>14</sup>, no one sector will be able to meet all of society's needs. Marine fisheries have mostly reached the limit of their biological production and aquaculture will play a role in increased fish production, but the scope for inland fisheries to also contribute to increased food production has been neglected or even compromised. A range of estimates exist for global production from inland fisheries; the highest estimate is close to 100 million metric tonnes.<sup>15</sup> This figure is most likely an over-estimate and should be further examined. None-the-less it demonstrates that production from inland waters is or can be significantly higher than the approximately 12 million tonnes officially reported. In addition, nutrient inputs from rivers to the sea sustain some of the most productive marine fisheries. However, rivers also bring pollutants to marine ecosystems – healthy inland ecosystems are therefore also important for many marine fisheries.

<sup>8</sup> For example, T. D. Beard et al., 2011. Ecosystem approach to inland fisheries: research needs and implementation strategies. Biological Letters at

<http://rsbl.royalsocietypublishing.org/content/early/2011/02/08/rsbl.2011.0046.full.html>;

Report of the Workshop to develop a FAO strategy for assessing the state of inland capture fishery resources FAO Fisheries and Aquaculture Report R1016 <http://www.fao.org/docrep/016/i3046e/i3046e.pdf>

<sup>9</sup> (COFI/2014/3)

<sup>10</sup> NEPAD/FAO Fisheries Programme and FAO Multidonor Mechanism projects in *inter alia* Malawi, Volta Basin, Lake Chad Basin, and Lake Tanganyika Basin.

<sup>11</sup> <http://www.fao.org/fsnforum/cfs-hlpe/water-food-security-scope>

<sup>12</sup> <http://www.fao.org/nr/water/what.html>

<sup>13</sup> <http://inlandfisheries.org/>

<sup>14</sup> See SOFIA 2014

<sup>15</sup> Welcomme, R.L. 2011. An overview of global catch statistics for inland fish. ICES J. Mar. Sci.68:1751-1756.

15. International Finance Institutions (IFIs), such as the World Bank (WB), the African Development Bank (AfDB), the Asian Development Bank (ADB), the Inter-American Development Bank (IDB) and the International Fund for Agricultural Development (IFAD) have played pivotal roles in supporting countries with investments in the sector. Continued investments in the fisheries sector are needed to safeguard future contribution of the sector to poverty alleviation and regional economic development. However, a declining trend in total investments in the sector is apparent, including investments by national governments, both in physical and social infrastructure.

16. National governments should ensure that IFIs recognize the importance of inland fisheries for development in a national and regional context and to help identify investment opportunities. These opportunities could be included in the joint strategic documents<sup>16</sup> which are periodically updated. Governments are invited to include the inland fisheries sector in the aforementioned strategic documents where investment priorities are identified.

17. It is vital that inland fisheries are valued appropriately and included in global discussions. It is certain that food and nutritional security will be more difficult to achieve in many rural areas if inland fisheries are neglected in water development and management programmes.

## CONCLUSION

18. Inland capture fisheries is an important sector currently providing food security for millions of people in both the developed and developing countries. However, due to lack of information and poor policy framework, the sector is under-valued, under-appreciated and therefore under threat. Policy and legal frameworks that specifically address inland fisheries are lacking in many countries; many river-basin authorities do not include inland fisheries in their mandate and those that do, do not actively address inland fisheries in their work plans.

19. All Members need to develop policy frameworks specific for inland fisheries and ensure that river and lake basin authorities, and similar entities actively include inland fisheries in their mandates and work plans. Policy frameworks and work plans should include integrated approaches to sustaining aquatic environments. An ecosystem approach<sup>17</sup> will be required; however this is still a major challenge in the low-capacity and data deficient environment in most less developed countries.<sup>18</sup>

## SUGGESTED ACTION BY THE COMMITTEE

20. The Committee is invited to:

- (a) review the current situation in regard to inland capture fisheries;
- (b) advise on measures that need to be taken to ensure inland capture fisheries and the people that depend on them for food and nutritional security are appropriately considered in national, regional and global policy discussions;

<sup>16</sup> Country Strategy Paper (AfDB, <http://www.afdb.org/en/documents/project-operations/country-strategy-papers/>),

Country Partnership Strategy (ADB, <http://www.adb.org/countries/documents/1211>).

Country Strategic Opportunities Programme (IFAD, <http://www.ifad.org/operations/policy/cosop.htm>)

Country Strategy (IDB, <http://www.iadb.org/en/projects/country-strategies,6831.html>)

Poverty Reduction Strategy Document and/or the Country Assistance Strategy (WB, <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,contentMDK:20120702~pagePK:41367~piPK:279616~theSitePK:40941,00.html>),

<sup>17</sup> SOFIA 2014 Outlook section

<sup>18</sup> Dugan, P. *et al.* 2007. Inland fisheries and aquaculture. Comprehensive Assessment of Water Management in Agriculture. *Water for food, Water for life, A Comprehensive Assessment of Water in Agriculture*. International Water Management Institute, Earthscan and Colombo, London. 459-483.

- (c) consider the need for a high-level policy meeting on inland capture fisheries, possibly in conjunction with the Global Conference on Inland Capture Fisheries: Freshwater, Fish and the Future.