

# A Valuable Resource

The value of small-scale inland fisheries lies in its ability to provide essential protein, micronutrients, vitamins and fats for millions of people, particularly in developing countries

Inland fisheries are almost all small-scale fisheries (SSF). The problems of inland fisheries are SSF problems and include access rights, tenure, gender, social welfare and empowerment. More than 60 mn people rely on inland fisheries for at least part of their livelihood and about half of them are women. An estimated 71 low-income countries, in fact, currently produce about 80 per cent of global inland capture fishery production. Inland capture fisheries provide essential protein, micronutrients, vitamins and fats for millions of people, particularly in developing countries.

minimum of human labour, small-scale inland fisheries are usually labour-intensive, requiring a minimum of technology, and the products are consumed locally. Inland capture fisheries represent a valuable resource for many rural communities around the world, and particularly for those rural areas which do not have any access to marine fishery products, either because they are too far from the sea or because they do not have the cash to purchase them.

There are more than 10 mn sq km of lakes, reservoirs, rivers, floodplains and other wetlands around the world which could support inland capture fisheries. Some of these areas are in colder latitudes and may not be very productive. However, there are plenty of freshwater resources in the world's tropical and sub-tropical regions and this is where most of the world's inland fish is caught.

Developing countries harvest the most from their inland waters, with more than 90 per cent coming from Asia and Africa (Table 1). It seems that the world's catch from inland waters has been steadily increasing over the last decades, but it is unclear

**Inland capture fisheries represent a valuable resource for many rural communities around the world...**

Although there have been improvements in technology and efficiency for industrial fishing, for many small-scale fishers the hooks-and-line, traps, crowding and aggregating devices, and fixed and moveable nets that are based on techniques developed long ago are still the main choice to harvest the diversity of inland aquatic habitats. The gears are usually inexpensive and simple to operate once experience has been gained.

Unlike industrial-scale fisheries where technology and machines harvest fish with a

Table 1. Production from inland capture fisheries by continent in 2014 (FAO Yearbook 2016)

Continent	Quantity (tonnes)	Per cent contribution
Asia	8,114,835	68.2
Africa	2,855,870	24
Latin America	497,548	4.2
North America	48,649	0.4
Europe	360,677	3.0
Oceania	18,302	0.2
<b>Total</b>	<b>11,895,881</b>	<b>100</b>

This article is by **Devin M. Bartley** ([Devin.Bartley@fao.org](mailto:Devin.Bartley@fao.org)), **Simon Funge-Smith** ([Simon.FungeSmith@fao.org](mailto:Simon.FungeSmith@fao.org)), **Gerd Marmulla** ([Gerd.Marmulla@fao.org](mailto:Gerd.Marmulla@fao.org)), **Nicole Franz** ([Nicole.Franz@fao.org](mailto:Nicole.Franz@fao.org)) and **Felix Marttin** ([Felix.Marttin@fao.org](mailto:Felix.Marttin@fao.org)) of the Fisheries and Aquaculture Department of FAO, Rome

whether this reflects an actual increase or simply better monitoring and reporting. Certainly, there are signs of greater management of water bodies in some regions to promote productivity, with active stocking and enhancement contributing to higher production.

Most of this inland catch is made up of carps and other carp-like species, tilapia, Nile perch, mussels, crustaceans and Hilsa shad. However, it would be a mistake to assume that there are only a few species; over half of the world's inland fishery catch is not identified to species or even family level (Table 2). Eighteen per cent of the catch is comprised of 314 reported species, but 55 per cent are simply not identified. Inland fisheries can be extremely biodiverse and it is now increasingly apparent that freshwater ecosystems and their fisheries are under threat from habitat loss, pollution and unsustainable fishing. From field studies, we know that inland fisheries actually represent a tremendous diversity of species, all of which are somehow utilized and valued by the rural people who harvest them:

- 1,100 different aquatic species in the Mekong river
- 2,500 species in the Amazon river
- 1,073 species in the Eastern Himalayan region

Many of the species are quite small and may be eaten whole, providing a rich source of micronutrients and adding important quality to diets that may otherwise be relatively poor. A small fish the size of your index finger provides the daily iron and zinc requirement of a small child. Small-scale fisheries from rice fields are especially difficult to collect catch information from, and yet rice fields can produce over 100 different aquatic animal species. Fish, insects, amphibians, snakes and molluscs are collected, often by women and children.

FAO reported 11.9 mn tonnes of fish were harvested from inland waters in 2014. However, FAO also reported that this figure, derived from official country reports, is a likely underestimate of the real

Table 2. Catch from inland capture fisheries (2014)  
Nei = *not elsewhere included*, i.e. not identified to species  
(SOFIA 2016)

FAO English name	2014	Per cent
Freshwater fishes nei	6,566,216	55
<b>Other 314 species included in the FAO database</b>	2,091,308	18
Cyprinids nei	713,104	6
Tilapias nei	410,929	3
Silver cyprinid	353,242	3
Freshwater molluscs nei	334,192	3
Nile perch	251,484	2
Nile tilapia	233,811	2
Freshwater siluroids nei	167,340	1
Common carp	145,566	1
Oriental river prawn	137,677	1
Siberian prawn	137,676	1
Hilsa shad	133,114	1
Torpedo-shaped catfishes nei	116,672	1
Snakeheads (= Murrels) nei	103,550	1
<b>Total</b>	<b>11,895,881</b>	<b>100</b>

production from inland waters. Thus, the value of these fisheries to rural communities and small-scale fishers is also underestimated. We often struggle to imagine the value of these hidden inland fisheries, but FAO and the World Bank have estimated that the global value of inland fisheries is over US\$9 bn. Some figures for other studies give values even more than this.

- The Mekong River in SouthEast Asia has an estimated 'first value' of its fishery catch of over US\$3-4 bn alone.
- In Africa, Lake Victoria's fisheries are valued at US\$850 mn, and the Columbia river in the US is valued at over US\$100 mn.
- Other studies have indicated the West and Central African fisheries have a value of over US\$700 mn.
- Much of this catch is never seen in the mainstream economy, but has a substantial hidden contribution where we have looked closely. In some cases—for example, Indonesia's swamp lands—can

Table 3. The linkages between the 2015 Rome Declaration: 10 Steps to Responsible Inland Fisheries (<http://www.fao.org/3/a-i5735e.pdf>) and the SSF Guidelines ([www.fao.org/3/a-i4356e.pdf](http://www.fao.org/3/a-i4356e.pdf))

The Steps		Chapters from SSF Guidelines
<b>Step 1:</b> Improve the assessment of biological production to enable science-based management	5	Governance of tenure in small-scale fisheries and resource management
	10	Policy coherence, institutional coordination and collaboration
	11	Information, research and communication
<b>Step 2:</b> Correctly value inland aquatic ecosystems	5	Governance of tenure in small-scale fisheries and resource management
	6	Social development, employment and decent work
	10	Policy coherence, institutional coordination and collaboration
	11	Information, research and communication
<b>Step 3:</b> Promote the nutritional value of inland fisheries	1	Objectives
	6	Social development, employment and decent work
	7	Value chains, post-harvest and trade
<b>Step 4:</b> Develop and improve science-based approaches to fishery management	5	Governance of tenure in small-scale fisheries and resource management
	10	Policy coherence, institutional coordination and collaboration
	11	Information, research and communication
<b>Step 5:</b> Improve communication among freshwater users	10	Policy coherence, institutional coordination and collaboration
	11	Information, research and communication
<b>Step 6:</b> Improve governance, especially for shared waterbodies	5	Governance of tenure in small-scale fisheries and resource management
	10	Policy coherence, institutional coordination and collaboration
	12	Capacity development of stakeholders
<b>Step 7:</b> Develop collaborative approaches to cross-sectoral integration in development agendas	5	Governance of tenure in small-scale fisheries and resource management
	9	Disaster risks and climate change
	10	Policy coherence, institutional coordination and collaboration
	12	Capacity development of stakeholders
<b>Step 8:</b> Respect equity and rights of stakeholders	3	Guiding principles
	6	Social development, employment and decent work
	8	Gender equality
<b>Step 9:</b> Make aquaculture an important ally	10	Policy coherence, institutional coordination and collaboration
	11	Information, research and communication
<b>Step 10:</b> Develop an action plan for global inland fisheries		All articles

provide more income than rice, if managed properly.

- Recreational fisheries in the US and Europe are valued at over US\$30 bn.

Accurate information on current yields from inland fisheries are essential for making effective food-security and conservation efforts, but many countries lack the means to collect data from the varied small-scale, often seasonal and dispersed, inland fisheries. In a world where there is already strong competition for fresh water (water extraction for agriculture is expected to double by 2050), it will be essential for the inland fisheries sub-sector to demonstrate the value of managing water for fish as well as for irrigation, hydro-electric power generation and other uses. Too often the sub-sector is left out of policy discussions on how water is managed.

However, the freshwater aquatic habitat, its fishery resources and the people who depend on them are being impacted and threatened by the needs of an ever-growing human population. In spite of the importance of inland fisheries to rural livelihoods, and food security and nutrition, this sub-sector remains largely absent from many national and global discussions. To date, the international effort to effectively integrate inland fisheries into the broader development agenda has fallen short of what is needed.

There has been significant progress in promoting awareness of small-scale fisheries and inland fisheries. The Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) is an instrument negotiated by the international community that speaks to the rights and desires of small-scale fisheries, and environmental sustainability. The SSF Guidelines, although a voluntary instrument, was agreed by consensus and, therefore, also by the governments, of the fishers and communities involved. Furthermore, as recently reported in the SAMUDRA News Alerts of ICSF, the 32nd Session of the FAO Committee on Fisheries



A fisherwoman processing trey riel (*Henicorhynchus spp.*) with salt from the dai fishery on the Tonle Sap river in Cambodia

(COFI) called on FAO and partners to work toward implementation of the Rome Declaration: 10 Steps to Responsible Inland Fisheries (Table 3) in conjunction with the SSF Guidelines and other instruments, such as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, as appropriate.

Clearly, the Rome Declaration represents actions to implement the principles of the SSF Guidelines. The lack of accurate information on the value of inland fisheries will need to be addressed in order for the sector to meaningfully engage in the political discussions on tenure, governance and how water is managed. Mechanisms need to be put in place where these discussions can take place: currently, less than half of international or shared inland water bodies have international agreements on their management and only 11 per cent have a mandate covering fish. We hope that the 10 Steps and the SSF Guidelines will help bring more benefits to inland fishers and their communities by increasing awareness of the value of inland fisheries, especially small-scale inland fisheries, and by motivating policymakers and governments to implement these and other instruments as soon as possible. 3

#### For more

[fao.org/fishery/statistics/software/fishstatj/en](http://fao.org/fishery/statistics/software/fishstatj/en)

**FAO Yearbook. Fishery and Aquaculture Statistics. 2014 Capture Production. FAO, Rome, Italy. 2016**

[fao.org/3/a-i5711e.pdf](http://fao.org/3/a-i5711e.pdf)

**Freshwater, Fish and the Future: Proceedings of the Global Cross-Sectoral Conference. FAO, MSU, AFS Co-publishers. 2016**

[fao.org/fishery/sofia/en](http://fao.org/fishery/sofia/en)

**State of World Fisheries and Aquaculture. FAO, Rome. 2012, 2016**

[fao.org/3/a-i4356e.pdf](http://fao.org/3/a-i4356e.pdf)

**Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. FAO, Rome. 2015**

[fao.org/docrep/016/i2801e/i2801e.pdf](http://fao.org/docrep/016/i2801e/i2801e.pdf)

**Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. FAO, Rome. 2012**