

'Forgotten' Fisheries

Inland fisheries and their often overlooked role in economies, livelihoods, health and human development spotlighted in a new report

**"Blue Harvest: Inland Fisheries as an Ecosystem Service"
(UNEP- WorldFish Center)**

The vital importance of inland fisheries to the diet, incomes and livelihoods of people in developing economies is brought into sharp focus in a new report launched recently at the 10th Conference of the Parties to the Convention on Biological Diversity in Nagoya, Japan.

- Globally rivers and lakes are providing 13 million tonnes of fish annually with the true figure perhaps as much as 30 million tonnes due to under reporting of catches.
- These inland fisheries are generating 60 million full and part time jobs in fishing and other activities such as processing with over half these jobs carried out by women.
- Close to 70 per cent of the total inland catch is in Asia with 25 per cent in Africa and around four per cent in Latin America. Much is consumed domestically underlining its critical importance to the people and economies of the developing world.

The new report, compiled by the UN Environment Programme (UNEP) and The WorldFish Center, also highlights the wide ranging importance of inland fisheries in diet, and especially among children, above and beyond the supply of protein.

"Even more important in many countries (than protein) is the role of inland fisheries in supplying micronutrients, especially vitamin A, calcium, iron and zinc; detailed studies in Bangladesh, for example, have shown that daily consumption of small fish contributes 40 per cent of the total daily household requirement of vitamin A and 31 per cent of calcium," says the report.

Role of Fish in Maintaining Healthy Inland Waters

As well as providing nutritional benefits, fish also play a key role in the functioning of aquatic ecosystems. Their consumption of plankton, plants, insects, and other fish is critical to the stability and resilience of river and lake habitats.

Fish also serve as important links between ecosystems. Nutrients and organic matter from fish eggs, carcasses and excretion help to support the production of algae, freshwater organisms and other fish species.

When fish populations decline, there can be serious knock-on effects for other organisms. Widespread mortality of the cisco fish from Lake Mendota in the United States, for example, led to changes in the plankton composition of the lake, decreased the level of nutrients in the water column and caused a decline in the biomass of algae.

The report warns that despite over 40 years of steady production globally, rapid environmental changes are occurring which challenge the viability of future fish stocks and a range of internationally-agreed development targets including the Millennium Development Goals.

It cites low flows, changes in seasonal flooding patterns and loss of habitat and spawning grounds linked with dams, unsustainable agriculture and over-abstraction of water.

Other impacts are coming from urbanization and road building, pollution including wastewater discharges and climate change.

- The report highlights a combination of overfishing and environmental degradation as key triggers for declines in catches in Lake Malawi and Lake Malombe while catches on the Niger River have fallen as a result of dam building and drought related reductions in river flow.
- Pollution is also taking its toll. Chongqing, Nanjing, Shanghai and other major cities in China's Yangtze River valley are adding 25 billion tonnes of wastewater to the river annually, much of which is untreated.

Along with other factors, such as dams and over-abstraction of water, pollution is linked with a decline in Yangtze fish catches with the Chinese sturgeon and the Chinese paddlefish classed as critically endangered.

Achim Steiner, UN Under-Secretary and UNEP Executive Director, said: "This fascinating report has brought to the fore the often neglected subject of inland fisheries. While marine fisheries are under increasing scrutiny, those based on river and lake systems rarely engage the international community—an oversight of potentially profound implications".

"Why? Because an estimated 100 million people in Africa alone get important levels of daily protein from these inland sources alongside essential vitamins and minerals. Meanwhile unofficial estimates put the global inland catch at close to 30 million tonnes, comparable to official marine catches, and employment at 60 million people—13 million more than in equivalent marine fisheries," he added.

The report urges countries to adopt an 'ecosystem approach' to managing inland fisheries given the multiple impacts coming to bear on their health and productivity.

Such an approach needs to address a wide range of factors from curbing pollution and destructive fishing practises to sustaining river flows and restoring habitats, including protecting wetlands and other feeding and spawning grounds.

New dams should be located where they have least impact on river ecosystems, and fish-friendly designs managed to allow fish migration and delivery of seasonal flows. Where possible older dams need to be altered to provide similar benefits.

Patrick Dugan, the lead author based at the WorldFish Center in Penang, Malaysia, added: "Recent achievements in the United States and the Vu Gia-Thu Ban River basin in Vietnam show that political will and careful planning can provide win-win solutions. These have kept some river corridors free from dams, while others are

managed for both environmental and hydropower objectives. We need urgently to replicate these successes more widely and in larger rivers if we are to sustain the world's inland fisheries."

Some Further Highlights from the Report

The report focuses on developing country fisheries in part because inland fisheries in Europe, North America and Australia are now mainly recreational.

Nevertheless they too have important economic benefits. Latest figures show that in the United States, 35 million people or 18 per cent of the population aged 16 years or older, spent \$38 billion on fishing in freshwaters—0.5 per cent of GDP.

In the European Union an estimated 25 million anglers, mainly fishing freshwaters, spend more than \$8 billion a year.

Africa and Asia

- China, Bangladesh, India and Myanmar are the largest producers with a total official harvest from inland fisheries of over five million tonnes a year.
- Another 16 countries, ranging from the Democratic Republic of Congo; Egypt; Kenya; Mali and Uganda to Cambodia; Indonesia; Philippines and Vietnam each report annual catches at over 100,000 tonnes.
- In India, 5.5 million people are employed in fishing and fish-related occupations followed by Bangladesh, an estimated 2.2 million; Nigeria, 1.7 million; Cambodia, 1.6 million and China, 1.2 million.

The biggest harvest in Asia is coming from the Lower Mekong Basin where the estimated inland fish catch is over two million tonnes, worth up to \$3.8 billion at first sale and up to \$7.6 billion on retail markets.

The Mekong provides the main source of protein and micronutrients, including amino acids, for 22 million people in Cambodia and Laos. Catches of small fish, eaten whole, provide calcium from bones and iron and vitamin A from internal organs.

In Bangladesh, over 40 per cent of total fish production comes from inland fisheries and in rural areas up to 80 per cent of households' fish to feed the family: it is often the sole source of income for the landless poor.

- In Africa, the Lake Victoria Basin produces just over one million tonnes annually with export earnings from Nile perch exceeding \$300 million in 2007.

The importance of inland fisheries to household incomes in Africa is highlighted among communities in the Zambezi Basin:

- On Zambia's Barotse floodplain, households earn \$180 a year from fisheries, followed by cattle, \$120 and crops, just over \$90.
- Fisheries are the second biggest source of income among households in the Lower Shire wetlands of Malawi.

- Africa's Congo Basin supports the richest fish biodiversity of any African river with 690 species described.

The rich biodiversity is linked to the complexity of rapids, pools, runs, floodplains and seasonal flooding which brings nutrients from the rainforest into the aquatic food chain.

One of the big challenges to the health and productivity is dams. The study reports that the number of large dams greater than 15 metres in height has grown globally from 5,000 in 1949 to over 50,000 by 2006.

Meanwhile, there are now also an estimated 800,000 smaller dams world-wide.

In only 12 per cent of large European rivers is waterflow unaffected by dams, while in Asia; Africa and Latin America the corresponding figures are 37 per cent, 38 per cent and over 50 per cent respectively.

The impact on fisheries is highlighted in the report with the case of the Pak Mun dam, built on a tributary of the Mekong River in Thailand in the early 1990s.

The Mun River, above the dam, experienced a 60 per cent to 80 per cent fall in fish catches—a loss of around \$1.4 million a year.

It had been hoped that the new reservoir would produce 220kg/hectare of fish but this only reached 10kg/hectare.

Since 2001, a seasonal flooding policy involving opening the dam gates, has been adopted which has assisted in bringing back close to 130 species to the Mun River and reducing the impact of the dam on fisheries.

Overfishing is also becoming a challenge in some inland fisheries with smaller and smaller fish being caught.

The report cites the Tonle Sap fishery of Cambodia and several floodplain fisheries in Africa including the Oueme in Benin and on the Niger in Mali.

This commentary was first distributed on 22 October 2010 at the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity at Nagoya, Japan. It is derived from an original UNEP transcript which is available from the [UNEP](#) website.

The report contributes to The Economics of Ecosystems and Biodiversity—a partnership hosted by UNEP www.teebweb.org

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