THE PEW ENVIRONMENT GROUP

OCEAN SCIENCE SERIES

RESEARCH SUMMARY

The total economic impact of fisheries is nearly three times larger than the landed value.

SEPTEMBER 2010

Marine Fisheries and the World Economy

A Summary of a New Scientific Analysis

Dyck, A.J. and U.R. Sumaila. 2010. Economic impact of ocean fish populations in the global fishery. *Journal of Bioeconomics.* DOI: 10.1007/s10818-010-9088-3

People in coastal countries depend on healthy fisheries for their livelihoods. Gross revenue globally from marine fisheries has been estimated during the last decade at $80 billion to $85 billion* annually. This estimate, however, reflects only the landed, or market, value of the fish as they first leave the boat, and it underestimates the full economic impact of fisheries. A more accurate accounting of the value of the fishing industry to the global economy would incorporate the indirect effects on related industries that depend on well-managed fisheries.

Andrew Dyck and his co-author, Rashid Sumaila, of the University of British Columbia, estimated the total global economic activity supported by marine fisheries (*i.e.*, non-aquaculture, ocean fisheries). They found that by considering the economic impacts of fisheries on other sectors such as boat manufacturing or canning industries, the total global value is approximately $240 billion annually, as calculated from 2003 data—nearly three times the landed value. The authors concluded that considering only the direct value of fisheries underestimates the true economic impact of marine fisheries worldwide. This *Pew Ocean Science Series* report is a summary of the scientists' findings.

** Amounts throughout are in U.S. dollars.*

Downstream Effects of Marine Capture Fisheries

Following a fish through the chain of production from the ocean to a canning plant to the dinner table reveals that marine fisheries support economic activity in many sectors. Such industries as boating, tin mining and retail services may be affected by changes in fisheries production. According to the authors, fisheries can also have significant economic impacts in other sectors, such as agriculture, forestry, manufacturing and financial services. Therefore, changes in the fishing industry could affect livelihoods in and the viability of many economic sectors.

Study Methods

To estimate how changes to the fishing industry may affect other economic sectors such as manufacturing or finance, the authors compiled a variety of economic data in coastal countries. These data included direct revenue from fisheries (*e.g.*, the landed value of the fish) as well as indirect revenue, such as profits from tin manufacturing for cans. The researchers also estimated induced impacts from the fisheries industry, such as changes in household spending by employees in industries supported by fisheries.

The authors used these data in an input-output economic model that considered all of the direct, indirect and induced impacts. Using this model, they estimated the total amount of economic activity that fisheries support by calculating economic multipliers for a number of major regions of the world. These multipliers provide an estimate of how much more revenue, beyond the landed value of the fish, fisheries provide to the economy, including all of the indirect and induced impacts.

FIGURE 1. ESTIMATED ECONOMIC CHANGE IN THE GLOBAL ECONOMY for every dollar of fisheries output

When evaluating the economic impact of fisheries, related sectors such as boatbuilding or canning are rarely considered. This omission underestimates fisheries' true monetary value, which is nearly three times greater than that of the landed value alone. At the regional level, Asia leads in terms of economic impact, but in North America, supported sectors have the most to gain from increased fisheries output.

WHAT THE AUTHORS FOUND	WHAT IT MEANS FOR THE ECONOMY
$1  Every dollar of gross revenue of the fisheries sector ...	Fisheries take in an estimated $80–$85 billion annually ... **$80 billion**
$3  ... supports nearly $3 throughout the global economy.	... but the total economic impact is three times greater. **$240 billion**

Findings and Implications

The authors found the total economic impact of capture fisheries to be $225 billion to $240 billion, or three times the economic activity of the fisheries industry alone. Every $1 of fisheries-sector output produces nearly $3 of output throughout the global economy (Figure 1).

- Regionally, every $1 of fisheries-sector output supports more than $3 of output throughout the North American economy.
- Total direct, indirect and induced impacts from China and Japan account for more than 60 percent of fisheries-related economic activity in Asia and 35 percent globally (Figure 2).
- Asia leads globally in total income supported by the marine-fisheries sector. More than 55 percent of household income from fisheries is earned in Asia (Figure 3).
- For North America, an increase in fisheries output of $1 results in more than $1 of household income among workers in fisheries-related activities, which is the highest in the world (Figure 3).
- Worldwide, household income from marine fisheries is estimated at more than $63 billion annually. Every $1 of landed value supports 75 cents of household income in the world economy (Figure 3).

FIGURE 2. TOTAL ECONOMIC IMPACT OF GLOBAL FISHERIES by region

REGIONAL BREAKDOWN

*For 2003, in billions of U.S. dollars, by "average multiplier"**

KEY: Landed value, or direct value of fish when it changes hands for the first time after leaving the boat
Economic impact, or total contribution to economy including activities directly or indirectly dependent on it

GLOBAL PICTURE

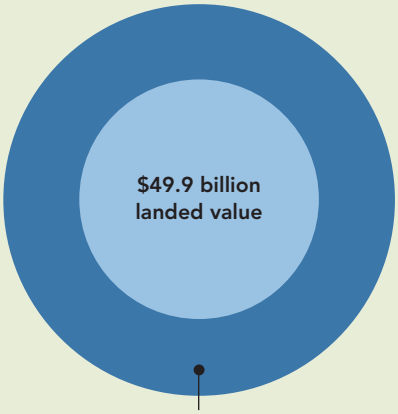
Mainly due to the influence of China and Japan, Asia is the global leader in economic impact. It accounts for about 60% of the global fisheries market.

Landed value total **$84 billion**

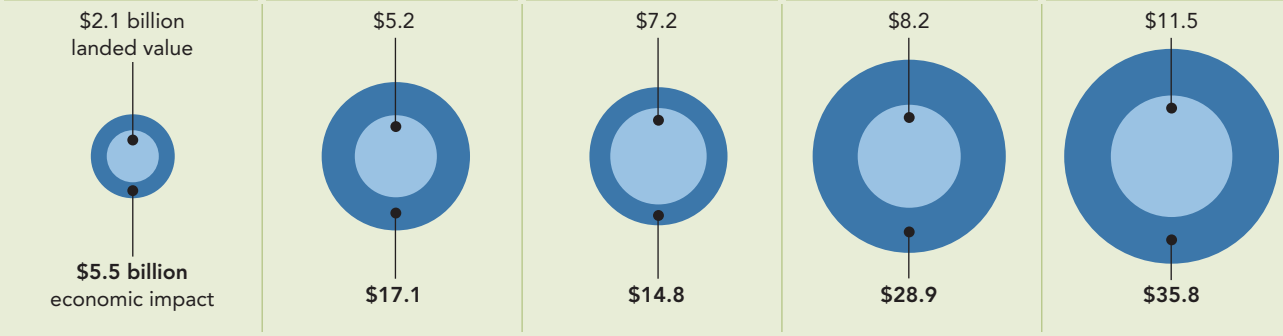
Economic impact total **$235 billion**

ASIA

Multiplier: 2.59



AFRICA	OCEANIA	LATIN AMERICA	NORTH AMERICA	EUROPE
Multiplier: 2.59	Multiplier: 3.27	Multiplier: 2.05	Multiplier: 3.52	Multiplier: 3.12



* a factor by which direct value of fish is multiplied to determine economic impact

FIGURE 3. INCOME EFFECT OF FISHERIES by region

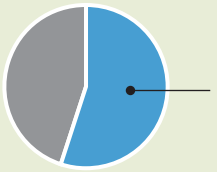
$63 billion

Amount of household income worldwide produced annually through the fisheries sector

Of household income in the world economy ...

every $1of landed value ...

... supports 75 cents in additional income.



Asia leads globally in total income supported by the marine fisheries sector. More than **55%** of household income from marine fisheries is earned in Asia.

For North America, an increase in fisheries output of $1 results in more than $1 of household income among workers in fisheries-related activities, which is the highest in the world.

When accounting for other global economic activities such as indirect and induced effects, the full value of the fisheries sector is far greater than the value of the catch landed. This shows that a healthy fisheries industry provides sizable support to many other sectors in the economy. Overlooking the full impact of the marine fisheries sector to the world economy underestimates important economic and social consequences for people whose work is tied to the fishing industry.

About the Authors

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