

A global map of the prevalence of poverty in the fishing sector

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Introduction

Eliminating poverty in its many forms by 2030 is the first of the 17 Sustainable Development Goals that were adopted in 2015 by all member countries of the United Nations. Even though the world has achieved exceptional progress towards this objective by reducing by more than half the number of people living under extreme poverty since 1999, there is still a long way to go. This is particularly the case for isolated places such as fishing communities. In fact, it is estimated that 80% of fishers around the world are poor. But before we can even think about strategies on how to improve their situation, there is a simpler question: who are these people and where do they live?

In order to solve this question, we compiled a database with information for each country on the total number of fishers per country, the total revenues in 2018 from fishing activities and the average costs of fishing. We used this information to estimate the average profits per fisher by country. Additionally, we collected information to define what a fisher in each country would need to earn in order to maintain their household beyond a poverty line that accounts for food, shelter, clothing, health and education.

Results

Number of fishers

Based on data published by Teh & Sumaila (2013), we present a map on the total number of fishers per country. In total, their data reports close to 45 million fishers around the world. Of these, there were 8 countries (out of 129) with more than 1 million fishers each, with India (16.5 million) and China (7.4 million) having the largest numbers. At a regional level, Asia represents 80.4% of all fishers in the world, followed

by South America with 8.6%, Africa with 6.0%, North America with 1.8%, Europe with 1.7%, and Oceania with 1.5%.

Total revenues in 2018

In 2018, global fisheries generated a total revenue of \$159 billion USD, with China (\$18.6 billion USD), Japan (\$17.5 billion USD) and the US (\$16.6 billion USD) being the top three countries and accounting for 33% of the global revenue. In contrast, 91 out of 129 countries analyzed in this study, accounted for \$16 billion USD or 10% of the global revenue, highlighting the vast disparities in access to and capacity to fish in the ocean.

It is worth noting that according to a global analysis by Pauly & Zeller (2016), global fisheries landings have been decreasing since 1996, even though fishing fleets keep fishing new species, farther away from the coast, deeper into the ocean, and using more efficient technology. This trend further highlights the need to analyze patterns of wealth distribution in fisheries, as poverty in this sector might increase if current trends are not properly addressed.

Poverty prevalence

Based on global fisheries landings from 2018, the wages of fishers in 68 out of the 129 (53%) countries were below their poverty line, with 51 countries (39%) well below (<50%) their poverty line. Additionally, when considering the total number of fishers in countries below the poverty line, as many as 40 million out of 45 million (89%) fishers around the world have estimated incomes below their respective national poverty line (median = 0.91 times the poverty line), with China and India alone accounting for 24 million of those fishers.

There were 13 countries out of 129 (10%), where fishers earned profits 5 times or more their respective poverty lines, which we called the “High earners”. However, these countries only represent 368,000 fishers, accounting for less than 1% of fishers around the world.

At a regional scale, Oceania was the region with the highest percentage of fishers under the poverty line (95.2%), followed by Asia (92%), South America (90%), North America

(79%), and Africa (78%). Europe was the region with less fishers (17%) below the countries' poverty line.

What's next on the use of geographical data to achieve the Sustainable Development Goals?

As part of the EthicalGeo initiative, sponsored by the American Geographical Society, this project aims to highlight how the use of geographical data can have great implications for advancing societal goals and even stir up ethical debates. For example, by analyzing the patterns in the number of fishers worldwide, we noticed that more than 80% of fishers live in Asia, primarily in China and India, but also in Bangladesh, Viet Nam, Philippines, Myanmar and Thailand, many of them countries where climate change is expected to have great impacts by displacing many coastal communities in the next 20 to 30 years (REF). At the same time, these are some of the countries where fishers do not make an income above the poverty line, compromising the well-being of fishers themselves and their families. This problem will only be accentuated through time as global fisheries landings keep declining as they have for the last 30 years, but also as climate change effects keep disproportionately affecting already vulnerable places, such as fishing communities (REF).

Our work doesn't finish in having a first picture of the problem but continues on to gather more geographical data on the particular needs of fishing communities around the world. Through partnerships with governments, academia, NGOs and the private sector, the next step will be to create a global repository of data on income, economic disparities, access to services and economic alternatives of fishers and their families. With this information, we will not only be able to 'track' where poor fishers live, but also to design strategies to support their economic development based on their particular conditions.

When thinking about the broader implications of this work, it is easy to say that we cannot aim to eradicate poverty in its many forms by 2030 if we don't even know where poor people are. This map is a first step in a strategy to create targeted plans to meet this objective, particularly in developing nations where fisheries are diverse, fecund, and integral to cultural identity.