Achieving Paris climate target could net additional billions in fisheries revenue

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Two women working at local fish market in Bagan Myanmar Credit: BANITAtour / Pixabay

Achieving the Paris Agreement global warming target could protect millions of tonnes in annual worldwide fisheries catch, as well as billions

of dollars of annual revenues for fishers, workers' income and household seafood expenditures, according to new research from the University of British Columbia.

The study, released today in *Science Advances*, compared the ecosystem and economic impacts of the Paris Agreement warming scenario of 1.5 degrees Celsius to the current "business as usual" 3.5 C warming scenario. The researchers concluded that achieving the Paris Agreement would result in benefits for 75 per cent of maritime countries, with the largest gains being made in developing countries.

"Achieving the Agreement's target could increase global fishers' revenues by $4.6 billion annually, seafood workers' income by $3.7 billion, and reduce household seafood expenditures by $5.4 billion," said Rashid Sumaila, lead author of the study and professor and director of the Fisheries Economics Research Unit and the OceanCanada Partnership at UBC's Institute for the Oceans and Fisheries and School of Public Policy and Global Affairs. "The largest gains will occur in developing country waters, such as Kiribati, the Maldives and Indonesia, which are at greatest risks due to warming temperatures and rely the most on fish for food security, incomes and employment."

The study also found that under the Paris Agreement scenario, the total mass, or biomass, of the top revenue generating fish species would increase globally by 6.5 per cent, with an average increase of 8.4 per cent in the waters of developing countries and a marginal decrease of 0.4 per cent in the waters of developed countries.

"Larger fish biomass and higher ocean productivity means higher catch potential, so with the exception of Europe, all continents will benefit from the Paris Agreement," said Travis Tai, co-author of the study and Ph.D. candidate in the Institute for the Oceans and Fisheries. "Countries in places like northern Europe, on the other hand, stand to gain more fish

as they move towards the poles in search of colder waters under global warming. They will gain less if we limit warming, but in many cases, the losses are buffered by increases in fish prices."

For example, Russia is projected to see reduced catches by 25 per cent, led by lower biomass of pollock and cod under the 1.5 C warming target relative to 3.5 C.

"However, a projected 19 per cent increase in fish prices, known as 'price effect,' should result in a negligible overall loss of less than two per cent in fishers' revenues in Russia," said William Cheung, co-author and associate professor in the Institute for the Oceans and Fisheries' Changing Oceans Research Unit and science director for the Nippon Foundation—UBC Nereus Program. "Conversely, for the U.S., fishing revenues are expected to decrease by eight per cent due to price effects but will be offset by a 21 per cent increase in catch potential."

The marine fisheries sector supports approximately 260 million full and part-time jobs worldwide, many of these in large developing countries, and seafood products remain a critical export commodity for many developing countries.

"A steady supply of fish is essential to support these jobs, food sovereignty, and human well-being," said Sumaila. "Adapting to existing climate change effects and implementing the Paris Agreement is crucial for the future of the planet's ocean fisheries, while facing the growing challenges of supporting healthy and peaceful societies into the future."

More information: "Benefits of the Paris Agreement to ocean life, economies, and people," *Science Advances* (2019). DOI: 10.1126/sciadv.aau3855 , advances.sciencemag.org/content/5/2/eaau3855