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Fishing Industry's Fuel Efficiency Gets Worse as Ocean Stocks Get Thinner

By [CORNELIA DEAN](#)

If the fishing industry were a country, it would rank with the Netherlands as the world's 18th-largest oil consumer, a team of fisheries scientists is reporting.

In 2000, the scientists said, fisheries around the world burned about 13 billion gallons of fuel to catch 80 million tons of fish. And although the fish-per-gallon ratio varies widely from species to species, they said, it is getting worse over all because boats must venture farther and farther out to sea in search of dwindling stocks.

"This is the only major industry in the world that is getting more and more energy-inefficient," said Daniel Pauly, director of the Fisheries Center of the University of British Columbia and one of the report's authors. While other researchers have compiled fuel data for particular species of fish in particular regions, this report is the first to sum up the global picture, experts said.

As such, the new report "adds to the list of concerns about fishing as a destructive practice," said Ellen K. Pikitch, director of the Pew Institute for Ocean Science, who was not involved in the report.

But it also shows how vulnerable fishing is to increases in fuel costs, said Peter H. Tyedmers, an ecologist at Dalhousie University in Nova Scotia, who led the work. European experts predict that as much as 30 percent of Europe's fishing fleet may remain at the dock this winter because of fuel costs, he said, adding that the industry's sensitivity to fuel costs is alarming given the importance of fish in the world's [diet](#).

In the report, the scientists said fisheries accounted for about 1.2 percent of global oil consumption, and they use about 12.5 times as much energy to catch fish as the fish provide to those who eat them. Their report is in the current issue of *Ambio*, a journal of the Swedish Academy of Sciences.

Fattening beef in feedlots and even growing fish in aquaculture pens can be less energy efficient than fishing, Dr. Pauly said in an interview. But fishing is "a far-from-trivial player" in global oil consumption, the researchers wrote.

Dr. Tyedmers said in an interview that cost was not the only issue. "Yankee whalers did a pretty fine job of depleting many populations of whales just with sail and human power," he said. "But it's the wide application of fuel that has allowed fleets to expand and really has underpinned much of the overfishing of stocks and deterioration of aquatic ecosystems."

If global fishing efforts are reduced, Dr. Pauly said, stocks may rebound and fewer boats will probably bring in just as many fish. "You could catch the same amount for one-third the energy use," Dr. Pauly said.

Dr. Tyedmers said that researchers at Dalhousie showed that 60 or 70 years ago Nova Scotia fleets used only a quarter of the fuel they use today. The researchers based their conclusions on data from "a wide range of published and unpublished sources" on fishing vessels in use, the gear they typically carry, how much fuel they use and the size and composition of their catches. They concentrated on data from 20 major countries that account for 80 percent of the world's fish catch, Dr. Pauly said.

But the scientists said their overall fuel-use estimates were almost certainly low, because their data omit freshwater fisheries, illegal or unregulated fisheries and the cost of transporting fish on land.

The researchers also noted that people fishing for species like herring and menhaden, usually turned into fish oil, use less fuel per ton of catch than people fishing for high-value species like tuna, swordfish or even shrimp. Boats seeking those species often carry so much fuel "they leave the dock lower in the water than when they return with a hold full of fish," Dr. Tyedmers said.

Dr. Tyedmers said he thought fuel studies might one day be used to compare the effort required to catch different kinds of fish, whether it involves lines in the water or lobster traps or other methods. "It has always been a real challenge to compare," he said.

The new analysis, while striking, is still crude, Dr. Pikitch said. "It's a great starting point, but a starting point," she said. She added, "You have to start somewhere."