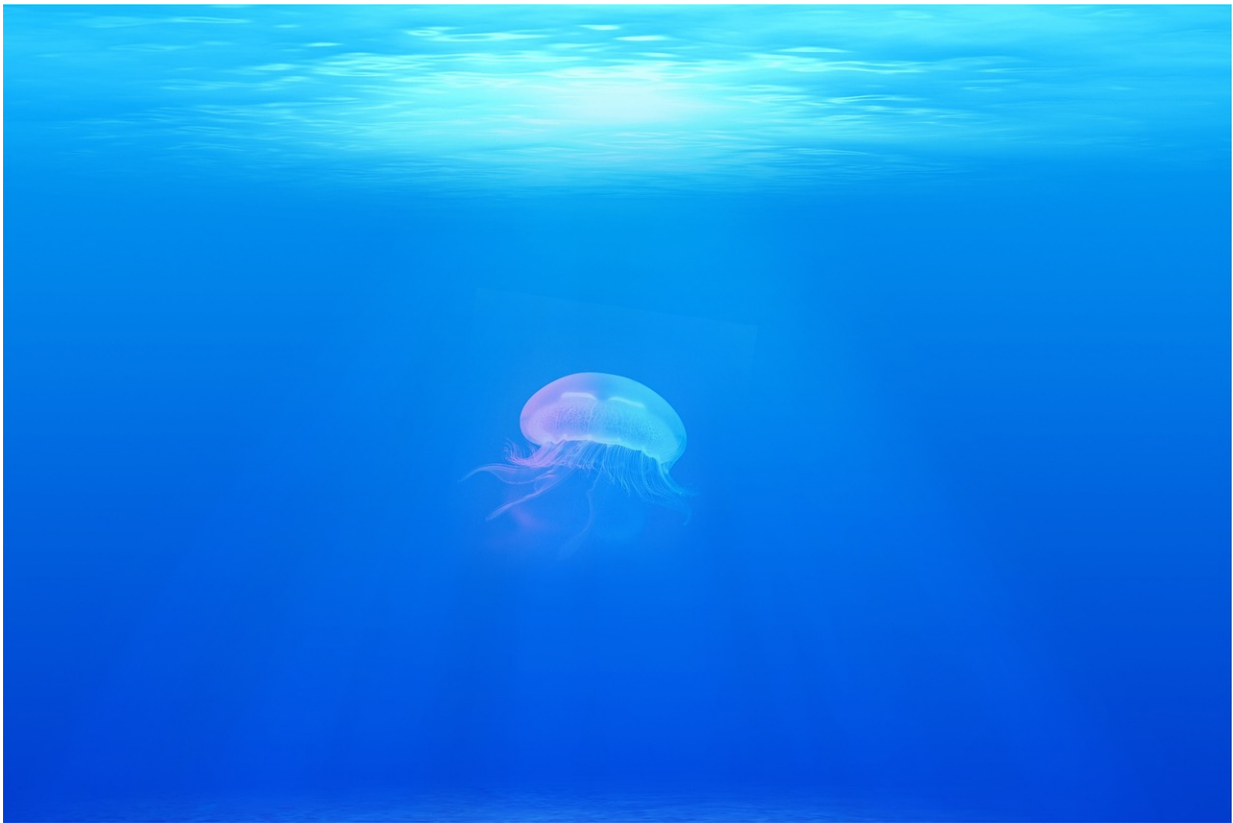


# Marine incentives programs may replace 'doom and gloom' with hope

November 28 2016

---



Credit: CC0 Public Domain

Incentives that are designed to enable smarter use of the ocean while also protecting marine ecosystems can and do work, and offer significant hope to help address the multiple environmental threats facing the

world's oceans, researchers conclude in a new analysis.

Whether economic or social, incentive-based solutions may be one of the best options for progress in reducing impacts from overfishing, climate change, ocean acidification and pollution, researchers from Oregon State University and Princeton University say in a new report published this week in *Proceedings of the National Academy of Sciences*.

And positive incentives - the "carrot" - work better than negative incentives, or the "stick."

Part of the reason for optimism, the researchers report, is changing awareness, attitudes and social norms around the world, in which resource users and consumers are becoming more informed about environmental issues and demanding action to address them. That sets the stage for economic incentives that can convert near-disaster situations into sustainable fisheries, cleaner water and long-term solutions.

"As we note in this report, the ocean is becoming higher, warmer, stormier, more acidic, lower in dissolved oxygen and overfished," said Jane Lubchenco, the distinguished university professor in the College of Science and advisor in marine studies at Oregon State University, lead author of the new report, and U.S. science envoy for the ocean at the Department of State.

"The threats facing the ocean are enormous, and can seem overwhelming. But there's actually reason for hope, and it's based on what we've learned about the use of incentives to change the way people, nations and institutions behave. We believe it's possible to make that transition from a vicious to a virtuous cycle. Getting incentives right can flip a disaster to a resounding success."

Simon A. Levin, the James S. McDonnell distinguished university professor in ecology and evolutionary biology at Princeton University and co-author of the publication, had a similar perspective.

"It is really very exciting that what, until recently, was theoretical optimism is proving to really work," Levin said. "This gives me great hope for the future."

The stakes are huge, the scientists point out in their study.

The global market value of marine and coastal resources and industries is about \$3 trillion a year; more than 3 billion people depend on fish for a major source of protein; and marine fisheries involve more than 200 million people. Ocean and coastal ecosystems provide food, oxygen, climate regulation, pest control, recreational and cultural value.

"Given the importance of marine resources, many of the 150 or more coastal nations, especially those in the developing world, are searching for new approaches to economic development, poverty alleviation and food security," said Elizabeth Cerny-Chipman, a postdoctoral scholar working with Lubchenco. "Our findings can provide guidance to them about how to develop sustainably."

In recent years, the researchers said in their report, new incentive systems have been developed that tap into people's desires for both economic sustainability and global environmental protection. In many cases, individuals, scientists, faith communities, businesses, nonprofit organizations and governments are all changing in ways that reward desirable and dissuade undesirable behaviors.

One of the leading examples of progress is the use of "rights-based fisheries." Instead of a traditional "race to fish" concept based on limited seasons, this growing movement allows fishers to receive a guaranteed

fraction of the catch, benefit from a well-managed, healthy fishery and become part of a peer group in which cheating is not tolerated.

There are now more than 200 rights-based fisheries covering more than 500 species among 40 countries, the report noted. One was implemented in the Gulf of Mexico red snapper commercial fishery, which was on the brink of collapse after decades of overfishing. A rights-based plan implemented in 2007 has tripled the spawning potential, doubled catch limits and increased fishery revenue by 70 percent.

"Multiple turn-around stories in fisheries attest to the potential to end overfishing, recover depleted species, achieve healthier ocean ecosystems, and bring economic benefit to fishermen and coastal communities," said Lubchenco. "It is possible to have your fish and eat them too."

A success story used by some nations has been combining "territorial use rights in fisheries," which assign exclusive fishing access in a particular place to certain individuals or communities, together with adjacent marine reserves. Fish recover inside the no-take reserve and "spillover" to the adjacent fished area outside the reserve. Another concept of incentives has been "debt for nature" swaps used in some nations, in which foreign debt is exchanged for protection of the ocean.

"In parallel to a change in [economic incentives](#)," said Jessica Reimer, a graduate research assistant with Lubchenco, "there have been changes in behavioral incentives and [social norms](#), such as altruism, ethical values, and other types of motivation that can be powerful drivers of change."

The European Union, based on strong environmental support among its public, has issued warnings and trade sanctions against countries that engage in illegal, unregulated and unreported fishing. In the U.S., some of the nation's largest retailers, in efforts to improve their image with

consumers, have moved toward sale of only certified sustainable seafood.

Incentives are not a new idea, the researchers noted. But they emphasize that their power may have been under-appreciated.

"Recognizing the extent to which a change in incentives can be explicitly used to achieve outcomes related to biodiversity, ecosystem health and sustainability . . . holds particular promise for conservation and management efforts in the ocean," they wrote in their conclusion.

**More information:** From doom and gloom to hope: The role of incentives in recent ocean sustainability successes, *PNAS*, [www.pnas.org/cgi/doi/10.1073/pnas.1604982113](http://www.pnas.org/cgi/doi/10.1073/pnas.1604982113)

Provided by Oregon State University

Citation: Marine incentives programs may replace 'doom and gloom' with hope (2016, November 28) retrieved 23 April 2024 from <https://phys.org/news/2016-11-marine-incentives-doom-gloom.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.