

Who will pick up the bill? Possible job cuts and revenue loss as a result of ocean acidification

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Ocean acidification, a direct result of increased CO₂ emission, is set to change the Earth's marine ecosystems forever and may have a direct impact on our economy, resulting in substantial revenue declines and job losses.

Intensive fossil-fuel burning and deforestation over the last two centuries have increased atmospheric CO₂ levels by almost 40%, which has in turn fundamentally altered [ocean](#) chemistry by acidifying surface waters. Fish levels and other sea organisms such as planktons, crabs, lobsters, shrimp and corals are expected to suffer, which could leave fishing communities at the brink of economic disaster.

Published today, Monday, 1 June, in IOP Publishing's *Environmental Research Letters*, the paper 'Anticipating ocean acidification's economic consequences on commercial fisheries' suggests a series of measures to manage the impact that declining fishing harvests and revenue loss will have on a wide range of businesses from commercial fishing to wholesale, retail and restaurants.

Ocean acidification and declining carbonate ion concentration in sea water could directly damage corals and mollusks which all depend on sufficient carbonate levels to form shells successfully. Subsequent losses of prey such as plankton and shellfish would also alter food webs and intensify competition among predators for nourishment.

As harvesting levels drop, job losses are likely to follow. The seafood industry is big business, bringing in large revenues and employing thousands. Seafood sales at New York restaurants supported around 70,000 full-time jobs in 1999 alone, while US domestic fisheries provided a primary sale value of \$5.1 billion in 2007. In 2007, there were almost 13,000 fishermen in the UK that harvested £645 million of marine products, 43% of which was shellfish.

As the team of researchers from Massachusetts points out, "The worldwide political, ethical, social and economic ramifications of ocean acidification, plus its capacity to switch ecosystems to a different state following relatively small perturbations, make it a policy-relevant "tipping element" of the earth system."

"Preparing for ocean acidification's effects on marine resources will certainly be complex, because it requires making decade-to-century plans for fisheries, which are normally managed over years to decades, to respond to shorter-term economic and environmental factors."

In order to combat the likely future decline in ocean species, regional solutions such as flexible fishery management plans, studies of seawater chemistry and support for fishing communities must be implemented now to absorb inevitable changes in the future.

More information: 'Anticipating ocean acidification's economic consequences on commercial fisheries' (Cooley S R and Doney S C 2009 Environ. Res. Lett. 4 024007) will be published in *Environmental Research Letters* on 1 June 2009. stacks.iop.org/ERL/4/024007

Source: Institute of Physics ([news](#) : [web](#))

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