Fishery management needs to be reworked to counter effects of climate change

It has been projected that by 2025 climate change will have altered the productivity of many of the planet's marine and freshwater fisheries. This according to a new analysis and modelling report released by the UN's Food and Agriculture Organisation (FAO) and more than 100 collaborating scientists who anticipate that it will affect the livelihoods of the poorest people across the globe.

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While the productive potential of fisheries in exclusive marine economic zones (EEZs) – those 200-mile wide swathes of land-adjacent ocean territory that every coastal nation has special rights to exploit – could decline less than 12% on average, this masks more significant fluctuations of productive potential at a regional level, models suggest.

According to the report, the planet's critical but often-overlooked inland water systems, which include five of the world's least-developed countries among its top 10 fish producers and provides 11.6 million tonnes of food for human consumption each year, will also be affected.

These impacts are linked to changes in water temperature and pH levels, shifts in ocean circulation patterns, rising sea levels and altered rainfall and storm patterns causing species to change their distributions and productivity, corals to bleach, and aquatic diseases to become more common, among others.

The report includes both new research as well as the unique synthesis of the most current scientific information on how a changing climate is altering the world's oceans, lakes and rivers and reshaping the lives of the communities who rely on them. If appropriately implemented, the impacts of climate change can be minimised.

Speaking at the report's launch FAO's director-general, José Graziano da Silva appealed to the international community to provide adequate support to help countries adapt. In particular, he urged governments on the board of the UN's Green Climate Fund to resolve their disagreements over funding. The failure of the board during its meeting last week to agree on any big-ticket decisions, and in particular on the replenishment of the fund, means it could run dry next year, Graziano da Silva said, and warned that: "We are running the risk of having the most powerful element of the Paris Climate Agreement completely exhausted."

"When we signed the Paris Agreement, it was a sina qua non-condition that if we don't help poorer countries to adapt then we will not be successful in implementing the agreement," added Graziano da Silva.

Scenarios of ocean change

In one modelling exercise, based on the IPPC's RCP2.6 "strong mitigation" scenario, fisheries production in marine EEZs would drop by between 2.8 and 5.3& by 2050. Under another, the RCP8.5 "business as usual model," the decrease could range from 7% to 12.1% by 2050. The biggest decreases are expected in the EEZs of countries in the tropics — mostly in the South Pacific, while in higher latitude regions catch potential will likely increase.

The report points out that even in areas where productivity will be negatively affected, catches of fish could still grow – that is, if countries implement adequate adaptation measures and effective fisheries management regimes.

Changes in catch levels will occur in part as a result of fish species changing their geographic distributions to respond to climate change. This has already been well documented in the Northeast and Northwest Atlantic, and also for high-value tuna. Changes in the distribution and migration patterns of this wide-ranging fish could significantly impact the national incomes of tuna-dependent countries, particularly Pacific region small island developing states.

As distribution shifts play out, new arrangements between fishers within national fishing fleets as well as between countries will be needed to allow for coordinated responses, the report notes.

Inland waters and aquaculture at risk

Productive impacts to inland water systems will vary from place to place, but no world region will be untouched. The report provides estimates on how climate, water use and population stress in 149 countries will change, and explores the future evolution of the Yangtze, Ganges, and Mekong rivers in Asia; the Congo River Basin and the Great Lakes system in Africa; in Europe, Finland's inland lakes; and in South America, the La Plata and Amazon River Basins.

In the case of freshwater aquaculture, Viet Nam, Bangladesh, Lao PDR and China are estimated to be the most vulnerable countries, while for marine aquaculture, Norway and Chile, due to the scale of their marine fish farming systems and their reliance on just a few species, are most vulnerable.
Options for adaptation

A range of fisheries management tools already exist that can be used to respond to climate change, but many will need to be retooled to respond to specific needs in specific contexts. To ensure adaptations are synergistic and do not lead to maladaptation, FAO groups these into three categories: institutional and management responses; strengthening and diversifying people's livelihoods; and mitigating risk and supporting resilience.