

Effect of Climate Change on Fisheries and Aquaculture

Shubi Raja*

Department of Veterinary Science, Addis Ababa University, Bishoftu, Ethiopia

About the Study

In marine regions model projections suggest decreases in maximum catch potential in the world's exclusive economic zones of between 2.8 percent and 5.3 percent by 2050 according to greenhouse gas emission scenario RCP 2.6, and between 7.0 percent and 12.1 percent according to greenhouse gas emission scenario RCP 8.5, also by 2050. While at the global scale this average is not particularly large, the impacts are much greater at regional scale, because projected changes in catch potential vary substantially between regions. Although estimates are subject to significant variability, the biggest decreases can be expected in the tropics, mostly in the South Pacific regions. For the high latitude regions, catch potential is projected to increase, or show less of a decrease than in the tropics. It is important to note that these projections only reflect changes in the capacity of the oceans to produce fish, and do not consider the management decisions that may or may not be taken in response. It is concluded that the interaction between ecosystem changes and management responses is crucial to minimize the threats and maximize the opportunities emerging from climate change. Production changes are partly a result of expected shifts in the distribution of species, which are likely to cause conflicts between users, both within and between countries.

The vulnerability of marine fisheries to climate change and existing and potential responses to adapt to the changes are examined in more detail for 13 different marine regions covering a range of ecological, social and economic conditions. It is concluded that adaptations to climate change must be undertaken within the multifaceted context of fisheries, with any additional measures or actions to address climate change complementing overall governance for sustainable use. It is recognized that some of these measures will require institutional adaptation.

In relation to inland fisheries the Technical Paper highlights that in the competition for scarce water resources the valuable contributions of inland fisheries are frequently not recognized or undervalued. This assesses country by country impacts and provides indications of whether levels of stress are expected to change and to what extent. Pakistan, Iraq, Morocco and Spain are highlighted as countries that

are currently facing high stresses that are projected to become even higher in the future. Myanmar, Cambodia, the Congo, the Central African Republic and Colombia, are among the countries that were found to be under low stress at present and are projected to remain under low stress in the future. The implications of climate change for individuals, communities and countries will depend on their exposure, sensitivity and adaptive capacity, but in general they can be expected to be significant. Some positive impacts are also identified, like increased precipitation leading to the expansion and improved connectivity between some fish habitats, but to take advantage of them, new investments as well as flexibility in policies, laws and regulations, and post-harvest processes are needed. It is recommended that adaptive management measures be within the framework of an ecosystem approach to fisheries to maximize success. Short-term climate change impacts on aquaculture can include losses of production and infrastructure arising from extreme events such as floods, increased risks of diseases, parasites and harmful algal blooms. Long-term impacts can include reduced availability of wild seed as well as reduced precipitation leading to increasing competition for freshwater.

In the case of brackish water production, emerged as having the highest vulnerabilities. For marine aquaculture, Norway and Chile were identified as being the most vulnerable, due to their high production, although China, Viet Nam, the Philippines and Madagascar were also considered to be highly vulnerable. Climate-driven changes in temperature, precipitation, ocean acidification, incidence and extent of hypoxia and sea level rise, amongst others, are expected to have long-term impacts in the aquaculture sector at multiple scales. Options for adaptation and resilience building are offered, noting that interactions between aquaculture, fisheries and agriculture can either exacerbate the impacts or help create solutions for adaptation.

How to cite this article: Raja, Shubi. "Effect of Climate Change on Fisheries and Aquaculture." *J Vet Sci Technol* 12 (2021) : 101.

*Address for Correspondence: Dr. Shubi Raja, Department of Veterinary Science, Addis Ababa University, Bishoftu, Ethiopia, Tel: 9845637231; E-mail: shubiraja@gmail.com