Food and Agriculture Organization of the United Nations

EX-Ante Carbon-balance Tool for blue carbon and fisheries

Assessing the climate mitigation potential of coastal wetlands, aquaculture, and fisheries management

Environmental degradation, habitat destruction, overexploitation of fish stocks and loss in post-production processes are the primary factors contributing to the unsustainable exploitation of marine and coastal ecosystems and loss of the ecosystems services they provide.

Blue carbon is essentially the carbon stored, sequestered or released from coastal ecosystems of tidal marshes, mangroves and seagrass meadows.

The global fishing fleet generates 4 percent of the greenhouse gas (GHG) emissions from the global food production. Nearly 6 percent of anthropogenic N_2O-N emissions will result from aquaculture by 2030 at the current annual growth rate.

Efficient management measures within seafood values chains have therefore potential to reduce GHG emissions, as well as restore and conserve coastal wetlands.

EX-Ante Carbon-balance Tool (EX-ACT) is an Excel-based model from the Food and Agriculture Organization of the United Nations (FAO). It is based on the Intergovernmental Panel on Climate Change (IPCC) methodology (including the 2013 wetland supplement) and other peer-reviewed literature on GHG emissions in the fishery sector.

Objectives

Identify the climate mitigation impact of various investments projects and policies on management in coastal wetlands, fisheries and coastal-wetlands based aquaculture.

Support countries in accessing funds from international financial institutions and international mechanisms to support projects, programmes and policies.

CASE STUDY:
Comparative carbon footprint of shrimp farming systems in South Eastern Asia

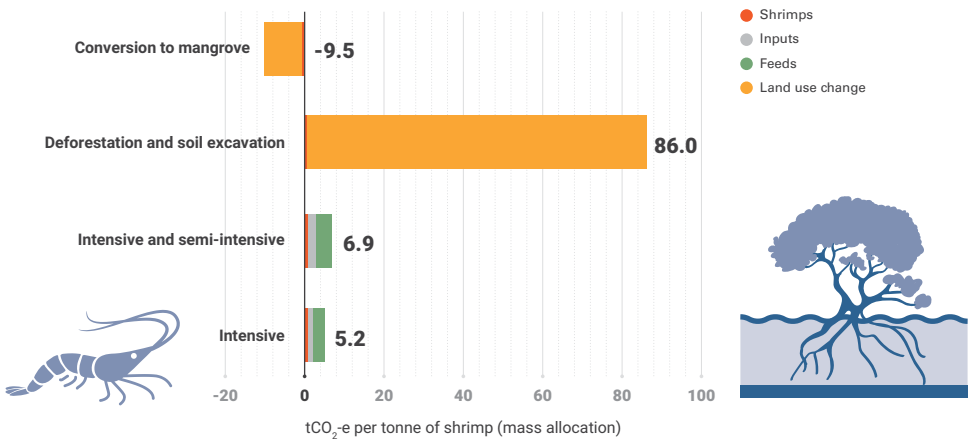
The study assessed the carbon footprint (CFP) of three types of shrimp farming systems: **intensive, mixed system** (intensive and semi-intensive) and **integrated mangrove shrimp farming systems developed on existing mangroves. Estimated CFPs can be used to compare the efficiency of these different systems on GHG emissions.**

While the positive CFP of intensive and mixed shrimp farming systems was driven by feeds and other inputs, the much larger CFP of integrated systems was determined by the land use change, i.e. the conversion of mangroves into shrimp ponds.

A hypothetical scenario of converting an abandoned mudflat into an integrated mangrove shrimp farm resulted in a negative CFP. This is due to the carbon sequestration of the restored mangrove biomass and soil.

The results highlight the severe environmental impact of mangrove deforestation and soil excavation on GHG emissions and the resulting CFP of aquatic product. Importantly, the hypothetical scenario showed that total GHG emissions resulting from the conversion of mangroves to shrimp ponds can only be marginally compensated by mangrove restoration efforts.

SHRIMP CARBON FOOTPRINT IN VARIOUS FARMING SYSTEMS



CONTACTS

Economic and Policy Analysis of Climate Change (EPIC)
Agricultural Development Economics Division (ESA)
Food and Agriculture Organization of the United Nations (FAO)
www.fao.org/in-action/epic | EX-ACT@fao.org