World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:17, No:10, 2023

Marine Fishing and Climate Change: A China's Perspective on Fisheries Economic Development and Greenhouse Gas Emissions

Authors : Yidan Xu, Pim Martens, Thomas Krafft

Abstract : Marine fishing, an energy-intensive activity, directly emits greenhouse gases through fuel combustion, making it a significant contributor to oceanic greenhouse gas (GHG) emissions and worsening climate change. China is the world's second-largest economy and the top emitter of GHG emissions, and it carries a significant energy conservation and emission reduction burden. However, the increasing GHG emissions from marine fishing is an easily overlooked but essential issue in China. This study offers a diverse perspective by integrating the concepts of total carbon emissions, carbon intensity, and per capita carbon emissions as indicators into calculation and discussion. To better understand the GHG emissions-Gross marine fishery product (GFP) relationship and influencing factors in Chinese marine fishing, the relationship between GHG emissions and economic development in marine fishing, a comprehensive framework is developed by combining the environmental Kuznets curve, the Tapio elasticity index, and the decomposition model. Results indicated that (1) The GHG emissions increased from 16.479 to 18.601 million tons in 2001-2020, in which trawlers and gillnetter are the main source in fishing operation. (2) Total carbon emissions (TC) and CI presented the same decline as GHG emissions, while per capita carbon emissions (PC) displayed an uptrend. (32) GHG emissions and gross marine fishery product (GFP) presented an inverted U-shaped relationship in China; the turning point came in the 13th Five-year Plan period (2016-2020). (43) Most provinces strongly decoupled GFP and CI. Still, PC and TC need more effort to decouple. (54) GHG emissions promoted by an industry structure driven, though carbon intensity and industry scale aid in GHG emissions reduced. (5) Compare with TC and PC, CI has been relatively affected by COVID-19 in 2020. The rise in fish and seafood prices during COVID-19 has boosted the GFP.

Keywords : marine fishing economy, greenhouse gas emission, fishery management, green development
Conference Title : ICFA 2023 : International Conference on Fisheries and Aquaculture
Conference Location : Lisbon, Portugal
Conference Dates : October 30-31, 2023

Open Science Index, Marine and Environmental Sciences Vol:17, No:10, 2023 publications.waset.org/abstracts/172786.pdf