DA17 project by UNDESA and UNCTAD:

Using AIS and other sources for the monitoring of ocean-based activities in Caribbean SIDS

Onno Hoffmeister, David J Vivas Eugui, Daniel Hopp, Anu Peltola

UN trade & development
UNCTAD

The problem at stake

- International shipping is an enabler of international merchandise trade and responsible for 3% of global CO_2 emissions.

- Fishing is an important sector of production in many coastal economies, but motorized fishing vessels add 0.5% to global GHG emissions.

- Small island developing States (SIDS) are especially reliant on maritime transport and fishery.

- Many SIDS lack statistical and analytical capacities to monitor their ocean-based activities, their impacts on the economy, and their contribution to global GHG emissions and continuos impacts of climate change.

Policies for decarbonization of ocean-based activities

- Global decarbonization plans, policies and regulations under the International Maritime Organisation, FAO and UNCTAD

- The Antigua and Barbuda Declaration. SIDS-4 Conference Outcome document (2024)

- Pledges and commitments under National Determined Contributions (NDCs) by beneficiary countries under UNFCCC

- National development plans, ocean economy plans

- National regulations on emissions or marine fuels in beneficiary countries (e.g. restrictions on fuel types, fuel standards, taxes, and policies on refilling at sea or in third country ports)

- Fisheries national plans / coastal, port or species management plans

Project "Evidence-based Climate Action through Artificial Intelligence and Data Innovation for Caribbean SIDS"

Objectives:

- Reinforce the statistical, data science and analytical capacities of four SIDS in the Caribbean for timely monitoring and analysis of maritime transport, trade, fisheries and their GHG emissions, using AIS data and other novel and national data sources

- Enhance the analytical capacities for evidence-based policy formulation in the target countries, leading to relevant policy recommendations for the decarbonization of the maritime transport and fisheries sectors

UN trade & development
UNCTAD

What it needs to build efficient statistics production systems on ocean-based activities and their emissions

- Access to data (incl. AIS, national sources, innovative datasets)

- Skills for data compilation and estimation (incl. data science, econometrics, data wrangling)

- Subject matter expertise

- Methodological guidelines

- Smooth collaboration between statistical agencies

- Technical infrastructure

Methodological approach

Data sources

- Automatic Identification System (AIS)
- National fishing vessel registers
- Shipping manifests
- Bills of lading
- Port registers (cargo ports / fishery ports)
- Fuel delivery from fuel pumps at ports
- Fishing activity surveys
- Customs records
- UNCTAD-World Bank Trade-and-Transport Dataset
- Energy Balances

Main compilation steps

1. Link AIS voyage data with vessels' technical specifications
2. Estimate emissions per voyage
3. Allocate activity (international trade / fishery production) to individual voyages
4. Aggregate (to the level of trading partner pair by commodity / fishery subsector)
5. Reconcile with macro-level data on energy consumption

Underlying research

International Maritime Organization (2021). *Fourth IMO greenhouse gas study 2020*, London

G Spiliopoulos, M Vodas, G Grigotopoulos, K Bereta and D Zissis (2024). Patterns of life: global inventory for maritime mobility patterns, *EDBT,* 2024.67.

W Schim van der Loeff, J Godar and V Prakash (2018). A spatially explicit data-driven approach to calculating commodity-specific shipping emissions per vessel, *Journal of Cleaner Production,* 205, 895-908.

K Greer, D Zeller, J Woroniak, et al (2019). Global trends in carbon dioxide (CO_2) emissions from fuel combustion in marine fisheries from 1950 to 2016, *Marine Policy*, 107.

UN Trade and Development (2023). *Energy transition of fishing fleets: Opportunities and challenges for developing countries*.

UN Trade and Development (2023). Review of Maritime Transport 2023, special chapter on maritime decarbonization. Geneva

Food and Agriculture Organisation (2019). *Global atlas of AIS-based fishing activity: challenges and opportunities*.
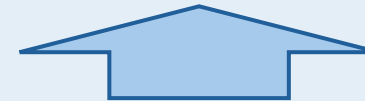
Outcomes and outputs of the project

Strengthened statistical capacities to produce and disseminate indicators on maritime transport, maritime trade and fishery and their emissions

Enhanced analytical capacities to formulate evidence-based policies for decarbonization maritime transport, maritime trade and fishery

- National stakeholder workshops and technical capacity missions to explain the objectives and explore the pre-requisites

- Methodological desk study

- E-learning on use of AIS data on the UN Global Platform

- Regional training workshops

- Data dissemination and visualization platform

- Regional dissemination workshop

- Cross-country analytical diagnostic study

- Cross-country roadmap with policy recommendations for decarbonization

- National stakeholder workshops and technical capacity missions to share knowledge and insights and to validate the findings

- Regional lessons learned workshop

UNCTAD

Thank you