EEMDL

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ENERGY EMISSIONS MODELING AND DATA LAB

LNG Shipping Emissions Estimation Tool

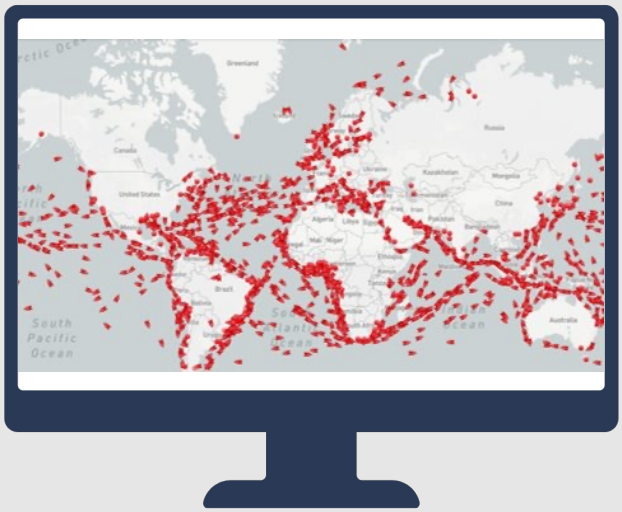
Worldwide trade in Liquefied Natural Gas (LNG) is on the rise, with more than 500 billion cubic meters of natural gas traded in 2021; in particular, Europe saw a 65% increase in the first 8 months of 2022 compared to 2021. As use of LNG has increased, interest in LNG's role in greenhouse gas emissions has also increased. Greenhouse gas emissions from shipping can be a significant fraction of total greenhouse gas emissions along LNG supply chains, but emissions can vary by more than an order of magnitude depending on the LNG carrier and the nature of the voyage. Propulsion technologies, the time spent underway, and the time spent maneuvering into port and the time spent in port, are all significant factors in determining emissions.

LNG Shipping Emissions Estimation Tool

Objective:
To provide a standardized analysis framework for estimating methane and carbon dioxide emissions from LNG shipping by carrier and trip characteristics.

Functionality:

- **Carrier database:** The tool provides information on propulsion technology and carrier capacity for more than 500 vessels.
- **Trip characterization:** Trips are divided into three modes: time spent underway, time spent maneuvering into port and the time spent in port The user identifies trip start and end points (or travel distance), and time spent maneuvering and in port.
- **Adaptability:** Current emission estimates are based on a very small number of voyages on which measurements have been made; the tool has been structured to allow users to input their own emission factors and for developers to update the tool as more data become available.



Use Cases

Single Cargo Analysis:

- Assess the shipping emissions associated with a particular cargo on a specific carrier

Multi-Cargo Deliveries:

- Utilize trip times and carrier capacity to calculate total shipping emissions to deliver a user specified volume of LNG between ports.

Status

Released:

- The tool is currently available in a user-friendly spreadsheet format, allowing for easy access and utilization by industry stakeholders. Ongoing development efforts focus on refining the tool's accuracy and expanding its functionality to cover a wider range of operational scenarios and technological configurations.

EEMDL is a joint research initiative of the **University of Texas at Austin**, **Colorado State University**, and the **Colorado School of Mines**.