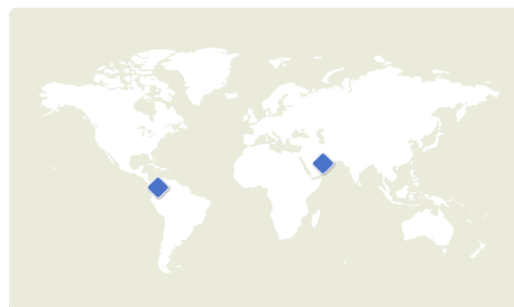


# BASELINING NATIONAL METHANE EMISSIONS WITH SATELLITE DATA



Leveraging satellite observations to quantify methane emissions and improve emissions inventories.



**DONOR:**  
Global Methane Hub  
and Bezos Earth Fund



**BENEFITTING COUNTRIES  
OR REGIONS:**  
Colombia, Oman



**SECTOR:**  
Multisector



Subsector, if applicable:  
—

**STATUS:**  
Project initiation

**TIMELINE:**  
Implementation started 2024



**IMEO SCIENCE  
OBJECTIVE:**

→ **Advance science studies in  
support of countries targeting  
methane mitigation**



## KEY FINDINGS

The overall objective of the project is to improve national emission inventories for the three focus countries with inversions of satellite methane data. The data collected through the studies will be integrated and reconciled with other sources of methane emissions data under IMEO's public methane data platform.

## RATIONALE

Inventories are instrumental in understanding country-level methane emissions. The goal of the studies is to address the critical lack of methane emissions measurement data which can better inform inventories in Colombia, Oman, and one additional country that will be identified as the study advances. The study will optimize national methane emission estimates at 12-km resolution using TROPOMI and supporting satellite data on emissions. The results will be used to identify major gaps in the bottom-up inventories and ultimately improve them.



## RELATED PUBLICATIONS

*In progress*



## CATALYZING ACTION

This study is part of the IMEO Baseline Studies and will collaborate with national scientists from the Baseline Study countries as data is provided to facilitate national emissions inventory improvements.



## SIGNIFICANCE FOR DECISIONMAKERS

The results of this study will support the improvement of emissions inventories of the selected countries and help prioritize company actions and government policies to mitigate methane emissions.



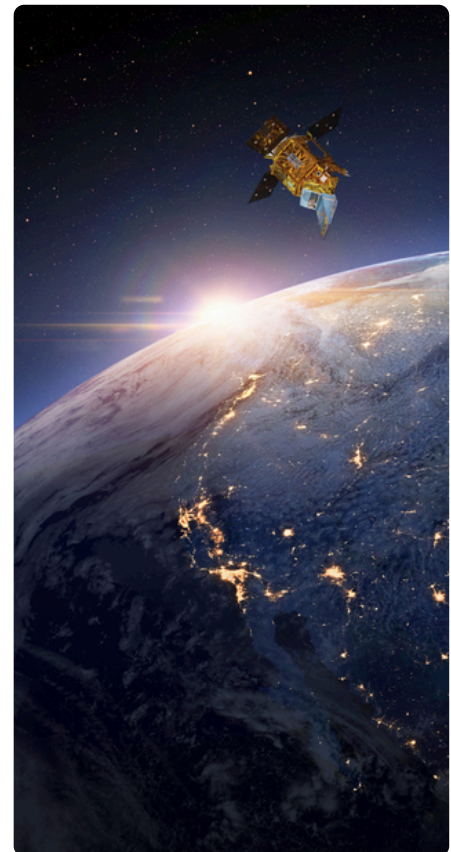
## STUDY APPROACH/ACTIVITIES

The study will have five key steps. First, preliminary coarse-resolution methane emission estimates (25-50 km) will be produced using TROPOMI satellite data, leveraging previously developed frameworks. Second, a regional inversion capability at a 12x12 km resolution will be developed, improving spatial accuracy. Third, improved bottom-up emission inventories will be constructed using updated global databases and satellite observations of point sources. Fourth, one-year inversions will be conducted using the analytical framework to optimize emissions in 12x12 km grid cells for each country. Fifth, the inversion results will be analyzed to guide improvements in existing emission inventories by correcting discrepancies and attributing correction factors to specific sectors. These adjustments will enhance the national emission reports of the focus countries.

## OTHER SUPPORTERS/STAKEHOLDERS

Principal Investigator: **Harvard University, US**

Revision History: **25 October 2024**



The UN Environment Programme's International Methane Emissions Observatory (IMEO) exists to provide open, reliable, and actionable data to the individuals with the agency to reduce methane emissions. IMEO does this by integrating and reconciling data across sources, including its global methane science studies. IMEO supports measurement and research studies around the world to close the knowledge gap on methane emissions and provide policy-relevant insights to decisionmakers.