The Global Methane Initiative: Support for Oil and Gas Methane Mitigation

24 April 2023

Energy Community Methane Monday

Global Methane Initiative

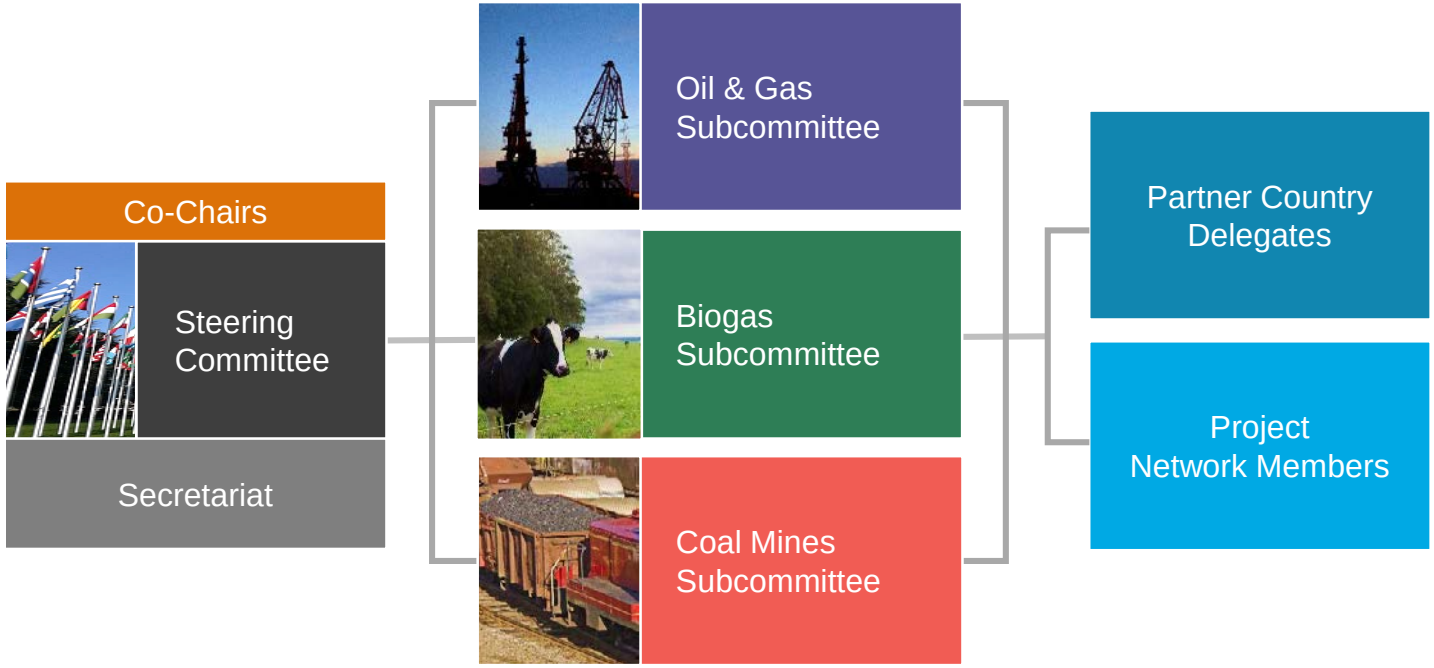
Agenda

- Global Methane Initiative (GMI) overview
- GMI Tools and Resources to Support Global Action on Methane
- Example of How GMI Works with Partners
- Upcoming resources and events

GMI Overview

Global Methane Initiative (GMI)

GMI is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a valuable energy source.



Global Methane Initiative

Since 2004

- 46 Partner Countries
- 700+ Project Network members
- Alliances with international organizations focused on methane recovery and use

CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

UNECE

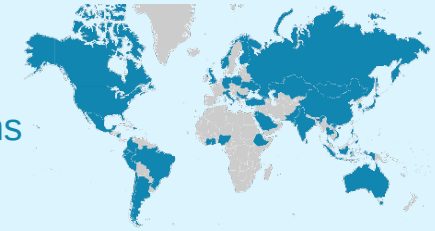
IEA

UN environment programme

THE WORLD BANK IBRD • IDA

Global Methane Hub

GMI Partner Countries represent approximately 75% of methane emissions from human activities.



Steering Committee and GMI Partner Countries

Canada (Chair)
India (Vice Chair)
United States (Vice Chair)

Steering Committee Members

China
Colombia
Ecuador
Finland
Ghana
Indonesia
Nigeria
Saudi Arabia
*Serbia (2010)
Turkey

Other GMI Partner Countries

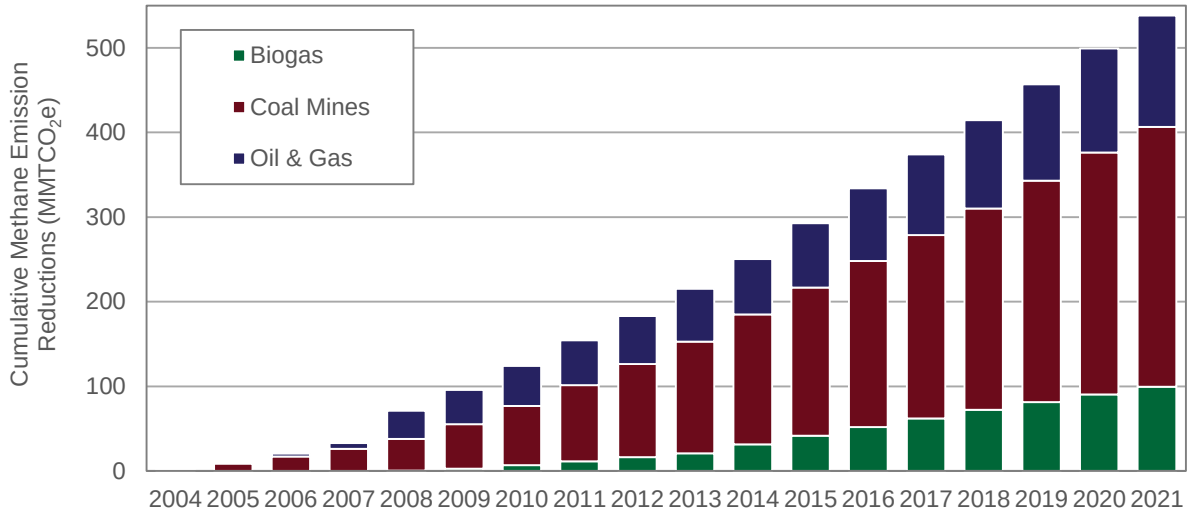
*Albania (2013)
Argentina
Australia
Brazil
Bulgaria
Chile
Cote d'Ivoire
Denmark
Dominican Republic
Ethiopia
European Commission
*Georgia (2009)
Germany
Israel
Italy
Japan
Jordan
Kazakhstan
Mexico
Mongolia
Nicaragua
Norway
Pakistan
Peru
Philippines
Poland
Republic of Korea
Russia
Sri Lanka
Thailand
*Ukraine (2004)
United Kingdom
Vietnam

* Contracting Parties to Energy Community, along with the year they joined GMI

GMI Accomplishments Since 2004

- Grown from 14 to 46 Partner Countries
- More than $650 million in leveraged funding for projects and training
- More than 700 Project Network members
- Conducted or developed nearly 2000 assessments, pre-feasibility studies, feasibility studies, study tours, publications, guidances and site visits
- Provided trainings for more than 50,000 people in methane mitigation
- Developed more than 60 tools and resources for methane mitigation

Since 2004, GMI has reduced CH_4 by approximately **540 $MMTCO_2e$,** including **almost 40 $MMTCO_2e$** achieved in 2021



538 $MMTCO_2e$ is approximately equivalent* to the CO_2 emissions from any one of the following:

230 Billion
liters of gasoline consumed

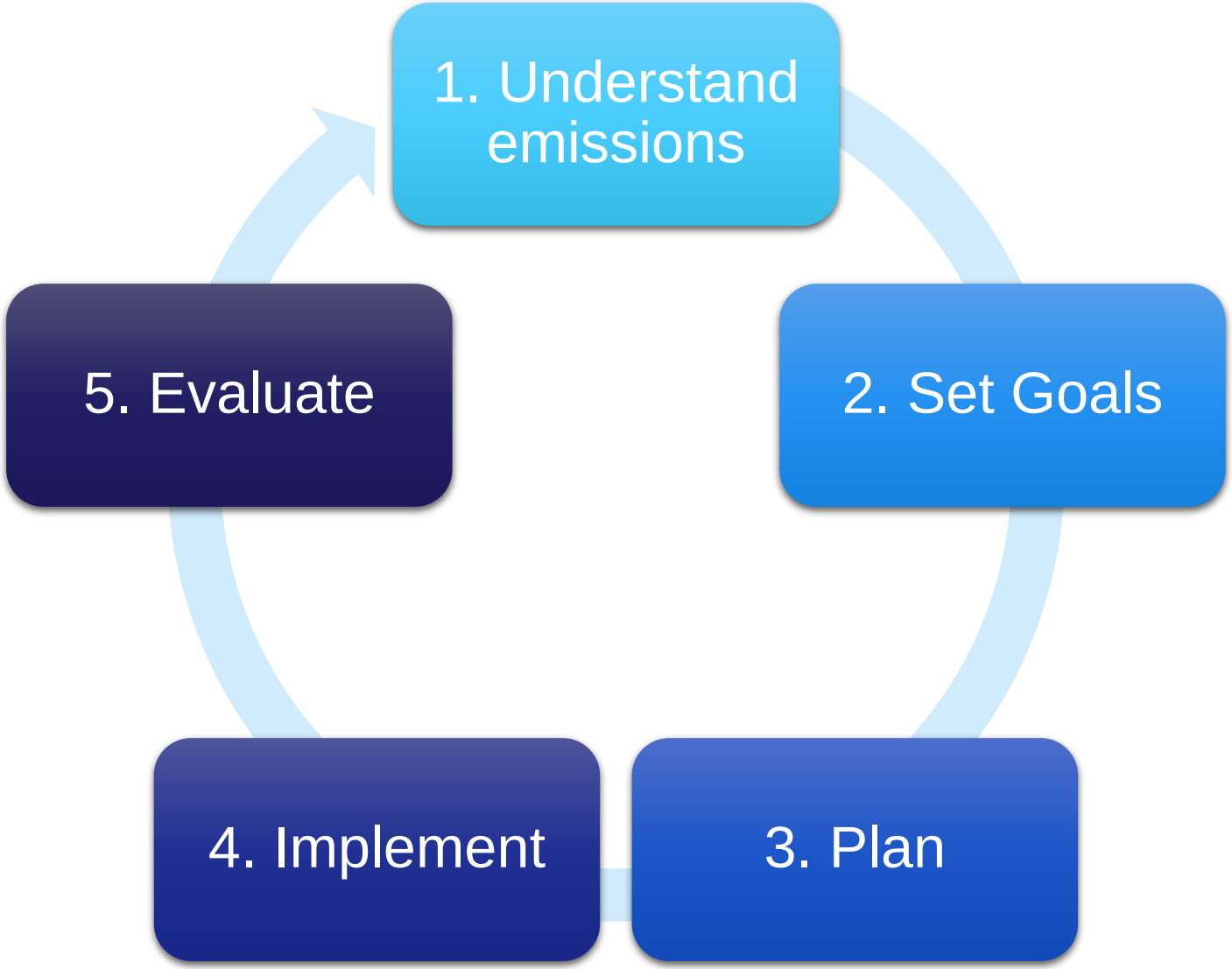
270 Billion
kilograms of coal burned

65.4 Trillion
smartphones charged

* epa.gov/energy/greenhouse-gas-equivalencies-calculator

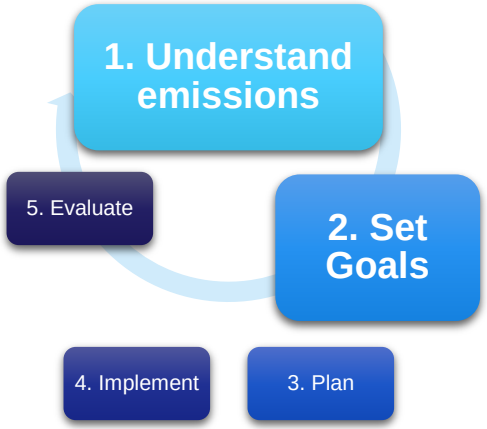
GMI Tools and Resources to Support Global Action on Methane

How countries can leverage GMI's expertise to reach climate goals



GMI empowers Partners by building capacity:

- Builds capacity on emissions measurement, reporting and verification
- Helps Partners assess needs and identify strategies
- Provides tools, guidance and resources to support action
- Shares best practices and fosters technical peer exchange



GMI Oil & Gas Support and Resource Examples

Steps 1& 2: Understand Emissions and Set Goals

- *Emissions Estimation Tool (BETA)*: Excel-based spreadsheet tool helps users quantify, compile and track methane emissions from oil and natural gas facilities, facilitating the identification of the largest sources of emissions and areas to target for mitigation

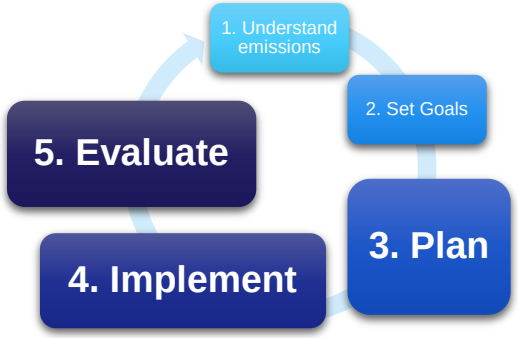
Data: Facility-level

Input: Activity data, infrastructure data, and gas composition data

Results: Can be screened by primary source category (e.g., leaks, venting, flaring, energy use) to identify potential mitigation opportunities.

Primary Source Category

Primary Source Category		CH4 (tonnes)	CO2 (tonnes)	N2O (tonnes)	CO2E (tonnes)
Fuel Combustion:					
- Solid Fuels	Included	0.00	477.79	0.00	477.79
- Liquid Fuels	Included	0.00	157.26	0.00	157.26
- Gaseous Fuels	Included	0.80	216.22	0.00	236.13
Acid Gas Removal	Included	3.65	204.15	0.00	295.41
Flaring & Venting (Hydrocarbon Gas)	Included	31.76	110.41	0.00	904.37
Fugitive Equipment Leaks	Included	20.45			511.37
Wells:					
- Casing Vents	Not Included	---			
- Workovers	Not Included	---			
Pneumatic Devices:					
- Pneumatic Controllers:	Included	87.33			2183.23
- Chemical Injection Pumps:	Included	9.59			239.78
- Compressor Starts	Included	0.76			18.89
Process Venting:					
- Dehydrators	Included	23.27			581.81
- Sweetening Units	Included	126.05			3151.35
- Tanks	Included	0.00			0.00
Inspection & Maintenance Activities:					
- Equipment Depressurization & Purging Events.	Included	0.10			2.41
Mishaps:	Included	24.09			602.26
Recycled and Utilized Emissions:	Not Included				
Indirect Emissions from Power & Heat Purchases:	Included	0.06	4,939.06	83.20	29734.82
Total	Included	**327.91**	**6,104.90**	**83.20**	**39,096.88**

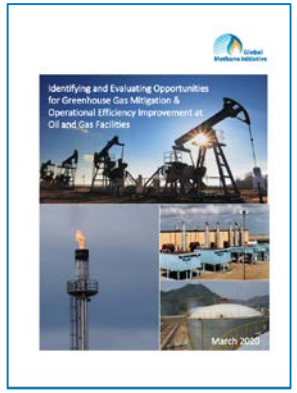


GMI Oil & Gas Support and Resource Examples

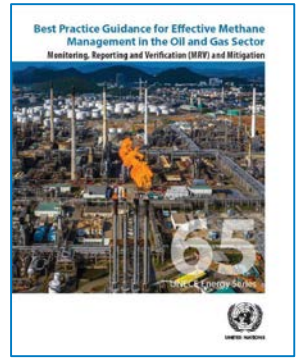
Steps 3, 4 & 5: Plan, Implement and Evaluate Mitigation Strategies

Capacity Building and Information Sharing	Assessments and Provide Tools	Partnerships and Peer Exchanges
• Workshops • Trainings • Analyses • Consultations • Webinars on Methane Policy and Technology Solutions	• Site Visits • Pre-Feasibility Studies • Scoping Missions • Reports/Technical Presentations/ Guidance • Tools/Models/ Databases	• Conferences • Presentations to Partners and Other Stakeholders • Subcommittee Meetings • Other Meetings

- *Identifying and Evaluating Opportunities for Greenhouse Gas Mitigation & Operational Efficiency Improvement at Oil and Gas Facilities* (GMI 2020)



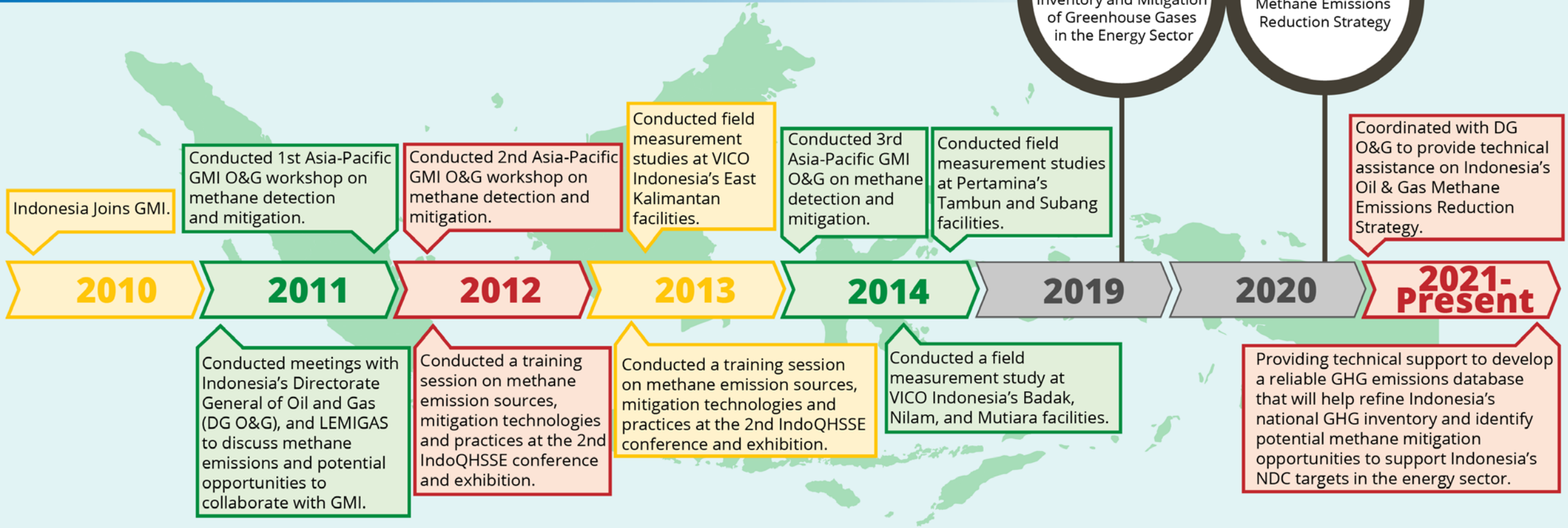
- *Best Practice Guidance for Effective Methane Management in the Oil and Gas Sector: Monitoring, Reporting and Verification and Mitigation (UNECE and GMI, 2019)*



Example of How GMI Works with Partners

GMI Activities and Methane Mitigation Actions by Indonesia.

Indonesia



Global Methane Initiative

VICO INDONESIA

PERTAMINA

star energy

ENERGI DAN SUMBER DAYA MINERAL

Current GMI Activities in Indonesia

National GHG Inventory Refinement: Emissions estimation approach

Stakeholders	Project	Output
• National Government: Ministry of Energy and Mineral Resources, Directorate General for Oil and Gas (DGOG) • State-owned company: Pertamina	• Collaborate with DGOG to assist oil and gas companies in compiling their GHG inventories • Develop and update a tool using US and Canada-specific emission factors to estimate methane emissions • Train DGOG and company staff to implement the tool	• Updated resource for DGOG to implement for collection and estimation of nationwide methane emissions from oil and gas facilities • Refined national GHG inventory using data from representative company facilities

Upcoming Resources and Events

Upcoming GMI Oil and Gas Sector Resources and Events

Resources

Policymaker framework and guidance document

Expected Summer 2023

Recommended technologies resource for mitigation of methane emissions from oil and natural gas systems

Expected Late Fall 2023

Events

GMI Oil and Gas Subcommittee virtual brainstorming sessions

Dates TBD

Global Methane Forum
Geneva, Switzerland

March 2024

Thank you!

Contact information:

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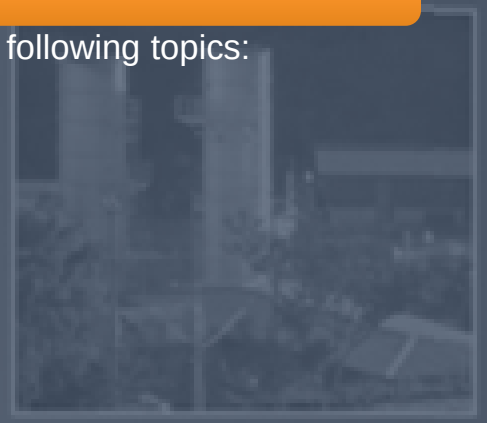
Appendix

Past EPA/GMI Support to Energy Community Contracting Parties

Coal Sector Workshop: 13 June 2019, Dnipro, Ukraine

- This one-day workshop on Best Practices in Coal Mine Methane (CMM) Capture and Utilization addressed the following topics:
  - Current State of the Ukrainian Mining Sector
  - Regulations and Enforcement
  - Safety, Degassing, Explosion Prevention, and Risk Assessment
  - Drainage and Mine Gas Utilization
  - Ventilation
  - Pre-Mine Drainage
  - International Centre of Excellence on CMM
  - Development and Financing of CMM/CBM Projects



Waste Sector Resource: Central-Eastern Europe Landfill Gas Model Version 1.0, 2014

- The Central-Eastern Europe Landfill Gas Model Version 1.0 (Model), for estimating landfill gas (LFG) generation and recovery from municipal solid waste disposal (SWD) sites in Ukraine, Serbia, Poland, and Bulgaria. The Model can be used to estimate landfill gas generation rates from SWD sites, and potential landfill gas recovery rates for disposal sites that have, or plan to have, gas collection and control systems and are located in Central or Eastern European countries. The Model also may be used for SWD sites in other countries which experience similar site conditions and climate, and have waste composition data.