



# Accessing Third-Party Resources and Best Practices on Methane Emissions Measurement, Reporting, Measurement & Abatement

The Society of Petroleum Engineers  
22 March 2022

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## Who are we?



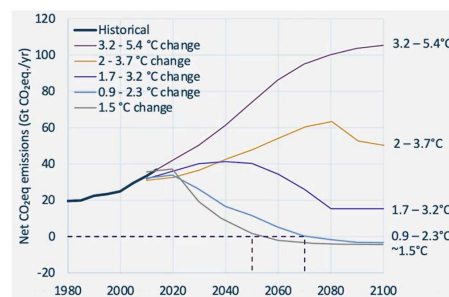
- Not-for-profit chartered professional membership body ~23,000 members
- Creating a better energy future for our members and society by accelerating a just global energy transition to net zero
  - Developing workforce of the future
  - Informing energy decision making
  - Enabling industry to make energy carbon lower, safer, sustainable, efficient
- Training and events
- Offers a unique number of professional Chartered titles, including some unique to the EI.
- Funded Technical work programme, funded by 52 Technical partners

# Curbing methane emissions



## Why should we reduce methane?

- Natural gas is a relatively low cost / easy access fuel
- But unburnt methane emissions are a potent greenhouse gas
- Methane emissions contribute ~25% global warming
- Parties agreed Global Methane Pledge to reduce methane emissions by 30% by 2030
- Crucial foundation to climate change mitigation and human health and agriculture
- Managing methane requires collaboration and knowledge sharing



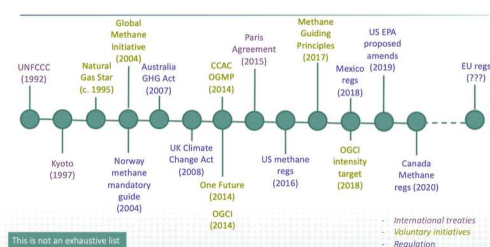
IPCC decarbonisation pathways to 2100  
(dramatic reductions in GhG emissions required to meet 2°C 1.5 °C!)

# Methane working group (MWG)



## Terms of reference and group objectives

- Conducting, or sponsoring, cost effective scientific and technical work related to the quantification and/or measurement of methane emission sources within the energy industry
  - Identification and analysis of feasible methane measurement and/or quantification techniques
  - Promote discussion and facilitate understanding of technical issues affecting methane measurement
  - Support the technical basis in meeting the global methane pledge



## MWG projects

Scoping guidance **to support operators with selecting the right quantification technologies** e.g., satellite, aircraft, drone, offshore mobile sensing, sniffers

Upstream/downstream focus with range of stakeholders e.g., operators, manufacturers regulator, policy



Table 5 - Future satellites overview table



| Name                   | Year | Pixel size   | Minimum detection level                     | Sensor performance over water                              | Share of installations covered (*) | Share of emissions covered (**) | Offshore site feasibility |
|------------------------|------|--------------|---------------------------------------------|------------------------------------------------------------|------------------------------------|---------------------------------|---------------------------|
| GHGSat-C1              | 2020 | < 50 x 50 m  | 70 - 250 kg/hr                              | Greatly reduced performance over water                     | 0 - 19%                            | 0 - 52%                         |                           |
| Bluefield technologies | 2021 | 20 x 20 m    | 70 kg/hr                                    | Greatly reduced performance over water (sun-glint capable) | 10%                                | 58%                             |                           |
| MethaneSat             | 2022 | 100 x 400 m  | 200 kg/hr                                   | Greatly reduced performance over water (sun-glint capable) | 3%                                 | 15%                             |                           |
| GeoCarb                | 2022 | 4 x 5 km     | 4000 kg/hr                                  | Greatly reduced performance over water                     | 0%                                 | 0%                              |                           |
| MERLIN                 | 2024 | Pencil track | Not able to estimate point source emissions | Reduced performance over water                             | 0%                                 | 0%                              |                           |

## MGP Methane Masterclass



**Oil and gas companies across all parts of the value chain to reduce methane emissions to meet their carbon reduction targets – 103 signatories of global methane pledge which requires them to reduce methane emissions**

- Designed to give asset, operations and HSE managers the tools they need to meet the methane mitigation challenge
- Developed by independent academics in collaboration with the MGP
- Presents the business case on methane, understanding of emissions through the supply chain, and the best practices for reducing those emissions.
- Programme is an adaption of the methane guiding principles masterclass course (just online!) and incorporates guidance in MGP best practice guides
- ~ 2 hours to complete



# Learning objectives



## Nine intended outcomes

1. The ability to construct a case for methane emissions reductions relevant to your organisation
2. Classify the types of methane emissions and differentiate emissions types in energy supply chains
3. Understand the distribution of methane emissions and its implications for abatement activities
4. List the types of methane emissions detection and quantification technology available and differentiate them in terms of the types of emissions they are intended for
5. Identify possible sources of fugitive emissions in gas supply chains, and their abatement and management approaches
6. Identify possible sources of venting emissions in gas supply chains, and their abatement and management approaches
7. Identify possible sources of incomplete combustion emissions in gas supply chains, and their abatement and management approaches
8. Understand when to address methane emissions in the lifecycle of an asset
9. Continually improve your organisations approaches to methane emissions management

# Course overview



## Modules split into 2 core sections

### Introduction to methane

- The methane emissions reduction business case
- Understanding emissions in gas supply chains

### Reducing emission best practice

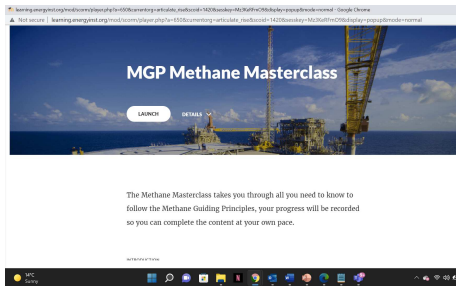
- Fugitive emissions
- Venting
- Incomplete combustion
- Transmission and distribution
- Design and construction
- Continuous improvement

### Additional resources

- Reading list
- Module assessment (3 attempts allowed)

|                             | Equipment Leaks | IDMIQ | Operational repairs | Venting | Pneumatic equipment | Flaring | Energy use | Transmission & Distribution | Engineering and construction | Continual improvement |
|-----------------------------|-----------------|-------|---------------------|---------|---------------------|---------|------------|-----------------------------|------------------------------|-----------------------|
| Fugitive emissions          | X               | X     |                     |         |                     |         |            |                             | X                            |                       |
| Venting                     |                 |       | X                   | X       | X                   |         |            |                             | X                            |                       |
| Incomplete combustion       |                 |       |                     |         |                     | X       | X          |                             | X                            |                       |
| Transmission & Distribution |                 |       |                     |         |                     |         |            | X                           |                              |                       |
| Design & Construction       |                 |       |                     |         |                     |         |            |                             | X                            |                       |
| Continual improvement       |                 |       |                     |         |                     |         |            |                             |                              | X                     |

Course modules are mapped to MGP best practice guides



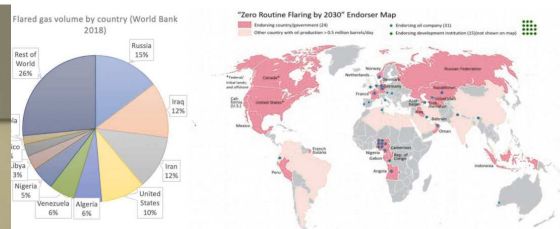
How are venting emissions from LNG terminals minimised? (select all that apply)

- ☐ Route boil-off for onsite use or sales
- ☐ Replacing gas-powered pneumatics
- ☐ Nitrogen purging
- ☐ Dry disconnection

**Fugitive emission or equipment leak** - an unintentional loss of process fluid, which could be past a seal, threaded or mechanical connection, valve seat, or flaw on equipment.

**LDAR: leak detection and repair.** Measurement campaign where all components and equipment in a facility is inspected for fugitives. All emission sources identified are logged (source, emission quantity, name of surveyor etc.) and repaired (if allowable)

**UAV: unmanned aerial vehicle** e.g. drone or light pilotless aircraft



## Collaboration is key!

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