Methane Emissions
ACTION PLAN

Note: This action plan has been developed collaboratively by representatives from the entire gas chain. It shows the actions and projects defined by the gas industry to tackle the identified challenges and gaps in the report “Potential ways the gas industry can contribute to the reduction of methane emissions” (see table 3). The action list will be updated on frequent basis. Should you have updated information to be included and/or any question, please do not hesitate to contact Tania Meixús (tmeixus@enagas.es).
<table>
<thead>
<tr>
<th>Challenges and gaps</th>
<th>Actions</th>
<th>Who is involved</th>
<th>Timing</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness and knowledge on the methane emissions topic</td>
<td>Educational toolkit on methane emissions developed</td>
<td>MGP¹</td>
<td>Ready / 2019</td>
<td>Toolkit (a set of recommended Guides, Synopses and Tools, which support the uptake and implementation of the Reducing Methane Emissions: Best Practices) – Link</td>
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<tr>
<td></td>
<td>Educational Outreach Programme by Methane Guiding Principles</td>
<td>MGP</td>
<td>Ongoing</td>
<td>Educational programmes and training sessions – Link</td>
</tr>
</tbody>
</table>
|                     | Dissemination activities and training programmes for EU gas industry to share information on the main findings of the (present) GIE and MARCOGAZ report, ensuring involvement of all EU countries and utilisation | GIE MARCOGAZ | Ongoing     | Dissemination activities in 2019  
1. Publication of the report + Press release  
2. Leaflet/brochure on CH₄ emissions  
3. IGU Transmission and LNG Committees (3rd September in Korea)  
4. MEDGIO Meeting (25th September in Amman)  
5. Gas Naturally WS on CH₄ emissions (5th November in Brussels)  
6. EGATEC 2019 (6-8 of November in Groningen)  
Training Programme in 2019  
1. GIE&MARCOGAZ WS in Vienna (26-27 November) – Organised together with Energy Community and with the MGP  
Activities in 2020  
1. GIE&MARCOGAZ WS (September in Brussels)  
2. IGU IGRC 2020 (24-26 February, Oman) – Abstract accepted  
3. GMI - Global Methane Challenge (link) | |
|                     | OGCI outreach to national O&G companies (NOCs) on BAT implementation | OGCI | Ongoing     |                                                                                                                                               |
|                     | OGCI engagement in downstream activities in collaboration with the MGP | OGCI | Ongoing     |                                                                                                                                               |

¹ Methane Guiding Principles:  
https://methanequidngprinciples.org/
## CHALLENGES AND GAPs

<table>
<thead>
<tr>
<th>Challenges and gaps</th>
<th>Actions</th>
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</tr>
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<tbody>
<tr>
<td>Fragmented initiatives along the gas value chain</td>
<td>Measurement studies outside of onshore US, emission factors, verification of standards, best practices, technology</td>
<td>IPIECA</td>
<td>Ongoing</td>
<td>“IPIECA Methane Map”</td>
</tr>
<tr>
<td>Aggregation of methane emission data along the EU gas value chain</td>
<td>Gas operators seeking guidance to address methane emission reduction and urge the associations to take an active role in the global initiatives</td>
<td>Ongoing</td>
<td>GIE, MARCOGAZ, IPIECA, IOGP, IGU and Eurogas had joint the MGPs CEDEC, Geode</td>
<td></td>
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<tr>
<td>Ongoing</td>
<td>Industry meetings</td>
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<tr>
<td>Proper allocation of methane emissions to oil &amp; gas chains</td>
<td>Finalising a proposal for the aggregation of methane, including units</td>
<td>MARCOGAZ IOGP</td>
<td>2020</td>
<td>TBD</td>
</tr>
<tr>
<td>Harmonised definitions along the EU gas value chain</td>
<td>Oil &amp; gas producers to explore possible methodologies related to the allocation of methane emissions</td>
<td>IOGP</td>
<td>2020</td>
<td>TBD</td>
</tr>
<tr>
<td>Reporting</td>
<td>EU gas associations to collaborate based on the IPIECA Glossary (and IOGP report)</td>
<td>MARCOGAZ GIE IPIECA IOGP</td>
<td>2020</td>
<td>Set of definitions for the entire gas chain</td>
</tr>
<tr>
<td>Reporting</td>
<td>Methane emissions reporting framework (under development with involvement of EC)</td>
<td>CCAC/UNEP EDF EC GIE MARCOGAZ Eurogas Some upstream and</td>
<td>2020</td>
<td>Methane reporting guideline</td>
</tr>
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<tr>
<td></td>
<td>12 IPIECA-API-IOGP “Oil and gas industry guidance on voluntary sustainability reporting”</td>
<td>midstream companies</td>
<td></td>
<td>Sustainability Reporting Guidance <a href="#">Link</a></td>
</tr>
<tr>
<td></td>
<td>13 Methane reporting comparison study for upstream (UK, Norway, NL, US, Australia): compare monitoring and reporting methodologies and emission factors</td>
<td>IOGP</td>
<td>Ready / February 2020</td>
<td>Report “Comparison of Methane Reporting Requirements” <a href="#">Link</a></td>
</tr>
<tr>
<td></td>
<td>14 Update MARCOGAZ’ methane reporting template according to the “Assessment of methane emissions for Gas Transmission &amp; Distribution System Operators” <a href="#">Link</a></td>
<td>MARCOGAZ</td>
<td>2020</td>
<td>Methane emissions reporting template² (TSO, DSO, LTO and SSO)</td>
</tr>
<tr>
<td>Improve accuracy</td>
<td>15 Coordination between the gas industry and national authorities to improve quality of data</td>
<td>MARCOGAZ</td>
<td>2020</td>
<td>A recommendation to be circulated among GIE, MARCOGAZ, IOGP, CEDEC, Eurogas, GEODE’s members</td>
</tr>
<tr>
<td>and transparency</td>
<td>16 To explore how NIR could be based on Tier 3 approach for the entire gas chain in the future</td>
<td>MARCOGAZ</td>
<td>2020</td>
<td>A recommendation to be circulated among GIE, MARCOGAZ, IOGP, CEDEC, Eurogas, GEODE’s members</td>
</tr>
<tr>
<td>of national</td>
<td>17 Global Methane Science Studies (measurements)</td>
<td>UNEP EDF OGCI</td>
<td>Ongoing.</td>
<td>Reports</td>
</tr>
<tr>
<td>inventories³</td>
<td></td>
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</table>

² This action will be aligned with action 11 – OGMP 2.0 methane emissions reporting framework
³ OGMP 2.0 methane emissions reporting framework will also contribute to improve the accuracy and transparency of NIR
## Challenges and gaps

Methodologies, data accuracy and emissions reduction

### Actions

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>18</strong> “Global methane budget” (sources &amp; sinks)</td>
<td>OGCI (one of the supporting partners)</td>
<td>Multiyear program: next one in 2022</td>
<td>Website, documents, events.</td>
</tr>
<tr>
<td><strong>19</strong> Reducing Methane Emissions Best Practice Guides (summary of current known mitigations, costs, and available technologies as at the date of publication)</td>
<td>Methane Guiding Principles</td>
<td>Ready / 2019</td>
<td>Best Practices Guides⁴ (Link)</td>
</tr>
<tr>
<td><strong>20</strong> EC study “Limiting methane emissions in the energy sector” Workshop on 10 June 2020</td>
<td>EC Wood (+TNO, Carbon Limit, Sniffers) Industry</td>
<td>08/2020</td>
<td>Report</td>
</tr>
<tr>
<td><strong>21</strong> “LCA of gas value chain”  - Phase 1: LCA  - Phase 2: Mitigation potential</td>
<td>OGCI Imperial College London</td>
<td>Phase 1: 2020 Phase 2: 2020</td>
<td>Report</td>
</tr>
<tr>
<td><strong>22</strong> Collection of the data to the IOGP EPI Report edition 2020</td>
<td>IOGP</td>
<td>2020</td>
<td>Report</td>
</tr>
<tr>
<td><strong>23</strong> “Best practice guidance for effective methane management in the O&amp;G sector: monitoring,</td>
<td>UNECE GMI</td>
<td>Ready / 2019</td>
<td>Report (Link)</td>
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</tbody>
</table>

⁴ Eight Best Practices Guides published + two new guides under development (1. midstream activities; 2. detection, measurement and quantification technologies)
### Challenges and gaps

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<tbody>
<tr>
<td>24</td>
<td>“OGCI Annual report publication” on production</td>
<td>OGCI</td>
<td>Ready / 2019</td>
<td>Report <a href="#">Link</a></td>
</tr>
</tbody>
</table>
| 25                 | Project: measurement + modelling of impact of LNG carriers (not gas fuelled ships):  
- All emissions included across all phases of LNG shipping operations.  
- Pilot study.  
- 4 Work Packages defined. Methane slips from engines included | SIGTTO: supported by academia and industry | 2021 | Guidelines for LNG carriers to reduce their emissions + Current data on methane emissions |
| 26                 | Proposal for the reduction of methane slips from ships [Link](#) | SGMF IMO | Ongoing |  |
| 27                 | Guidance for reduction of methane emissions in LNG terminals | GIIGNL | Ongoing | Guidelines for operator to reduce their emissions |
| 28                 | Project: Assessment of existing tools/equipment’s for detection of CH₄ for TSO in transmission networks | GERG (project leader Gaz-System) | Ongoing, September 2020 | Recommendations for TSO’s |
| 29                 | Project “ME TSO”: New emission factors (EF) and activity factors (AF) determination for valve stations and compressors stations (= 2 priorities that are emitting the more). Only for German cases. | DBI | “AF”: finished “EF”: 2020 | Figures on emission factors |
### Challenges and gaps

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<tr>
<td>30</td>
<td>“Assessment of methane emissions for gas transmission and distribution system operators”</td>
<td>MARCOGAZ</td>
<td>Ready/Nov 2019</td>
<td>Guideline (<a href="#">link</a>) Ongoing discussion with CEN</td>
</tr>
<tr>
<td>31</td>
<td>Quantifying underground leakages measurements in gas distribution networks</td>
<td>GERG (project leader KIWA)</td>
<td>2020</td>
<td>Report</td>
</tr>
<tr>
<td>32</td>
<td>Project “ME DSO”: New emission factors (EF) and activity factors (AF) determination for pipelines and gas pressure regulating facilities. Only for German cases (but could be open for other EU countries).</td>
<td>DVGW DBI</td>
<td>From 8/2018 to 02/2021</td>
<td>Report + Figures on emission factors</td>
</tr>
<tr>
<td>33</td>
<td>Project “ME-Red DSO”: Guidelines for DSO operators for reducing CH₄ emissions from distribution grids in Germany.</td>
<td>DVGW DBI</td>
<td>To be published on website of DVGW</td>
<td>Guidelines for DSO operators</td>
</tr>
<tr>
<td>34</td>
<td>Joint initiative from associations to support coherent measurement campaigns by DSOs at the national and regional level to continuously improve data availability and quality</td>
<td>CEDEC Eurogas Geode</td>
<td>2019-2020</td>
<td>First projects (to be) set up in DE, AT, BE, NL + additional data availability (IT, …)</td>
</tr>
<tr>
<td>35</td>
<td>Project “EvEmBi” (biomethane): - Evaluation of biogas plant concepts concerning methane emissions - Estimation of emission factors of whole biogas</td>
<td>EBA (lead is DBFZ)</td>
<td>Ongoing</td>
<td>EBA workshop on EvEmBi project in January 2020 (<a href="#">Link</a>)</td>
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<tr>
<td>Plant inventory in the participating countries</td>
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<tr>
<td>- Implementation of emissions mitigation measures</td>
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<tr>
<td>- Cost-Benefit-Analysis (for single mitigation measures)</td>
<td></td>
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<tr>
<td>- Transfer of knowledge (workshops, position papers, voluntary systems)</td>
<td></td>
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<tr>
<td>Development of a methane emissions research roadmap</td>
<td>GERG</td>
<td>Ongoing</td>
<td>Roadmap on methane emissions research project</td>
</tr>
<tr>
<td>Set up of an Oil &amp; Gas database: “Methane Tracker”</td>
<td>IEA</td>
<td>Already existing. To be expanded</td>
<td>Database <a href="#">link</a> and insights <a href="#">link</a></td>
</tr>
<tr>
<td>Collaboration between NGOs, industry and academia will lead to further reduction of uncertainty between methodologies (some ongoing CCAC Methane Science Studies, but more work in this area is required)</td>
<td></td>
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</tr>
<tr>
<td>Gas utilisations: project including on assessment of methane emissions from gas utilisations in Europe. 2 projects + mitigation</td>
<td>DGC BDH EUROMOT (obs) EUTURBINE (obs)</td>
<td>2022 (forecast)</td>
<td>Intermediates deliveries + final report</td>
</tr>
</tbody>
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### Challenges and gaps

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<tr>
<td></td>
<td>Road transport: CH₄ emission is included in the validation process of the car (homologation process + during the lifetime of the vehicle). Threshold = 0,05 – 0,1% CH₄/CH₄ burned</td>
<td>DVGW</td>
<td></td>
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<td></td>
<td>Dispensing operations on LNG trucks</td>
<td>NGVA</td>
<td>Ongoing</td>
<td>Outcome will be in the legislation.</td>
</tr>
<tr>
<td></td>
<td>Gas turbines:</td>
<td>NGVA</td>
<td>Summer 2020</td>
<td>Procedure</td>
</tr>
<tr>
<td></td>
<td>- fuel venting: case study</td>
<td>NGVA</td>
<td>Summer 2020</td>
<td>Procedure</td>
</tr>
<tr>
<td></td>
<td>- fuel leakages: not a big issue → LDAR</td>
<td>NGVA</td>
<td>Summer 2020</td>
<td>Procedure</td>
</tr>
<tr>
<td></td>
<td>Remark: Check how many existing installations can be modified according to the case study.</td>
<td>NGVA</td>
<td>Summer 2020</td>
<td>Procedure</td>
</tr>
</tbody>
</table>

### Mitigation

<table>
<thead>
<tr>
<th>Mitigation</th>
<th>Establishment of methane emission reduction targets at company level</th>
<th>Who is involved</th>
<th>Timing</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guidelines for companies to set emissions reduction targets (from production to distribution)</td>
<td>GIE MARCOGAZ IOGP</td>
<td>April 2020</td>
<td>Guidelines for methane emissions target setting <a href="#">Link</a></td>
</tr>
<tr>
<td></td>
<td>Evaluation of the establishment of the emission reduction targets per segment at European level</td>
<td>GIE MARCOGAZ CEDEC Eurogas Geode</td>
<td>2020 - 2021</td>
<td></td>
</tr>
<tr>
<td>Challenges and gaps</td>
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<tr>
<td>Employees engagement on methane emission reduction</td>
<td>Once gas companies establish reduction targets, to evaluate the possibility to set up incentives for the employees (TBD)</td>
<td></td>
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<td></td>
<td>Gas companies to establish a methane emissions reduction culture (TBD)</td>
<td></td>
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<tr>
<td>Dissemination of BATs</td>
<td>Identify key BATs for transmission, LNG terminals, UGS, Distribution - Analysis and evaluation of the impact of the different BATs</td>
<td>MGP MARCOGAZ Eurogas CEDEC Geode</td>
<td>2020</td>
<td>Set of good practices per type of methane emissions</td>
</tr>
<tr>
<td></td>
<td>Identify key BATs for utilization</td>
<td>MARCOGAZ SC Utilisation EUROMOT (obs) EUTurbines (obs)</td>
<td>TBD</td>
<td>Set of good practices per type of methane emissions</td>
</tr>
<tr>
<td>Innovation on technologies</td>
<td>OGCI Climate Investment fund investment on technologies supporting “Towards zero methane emissions”</td>
<td>OGCI-CI</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Missing cross sectoral opportunities and exchange of views (i.e. innovative technologies, BATs) aimed at the reduction of methane emissions</td>
<td>Cross-sectorial platform bringing together EU sectors responsible for methane emissions</td>
<td>FSR</td>
<td>2020</td>
<td>Platform, roundtables, workshops, ...</td>
</tr>
<tr>
<td>Methane emissions data of natural gas imports</td>
<td>Enhance the collaboration with non-EU companies (suppliers)</td>
<td>TBD</td>
<td>TBD</td>
<td>Platform, roundtables, workshops, ...?</td>
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### METHANE EMISSIONS – ACTION PLAN

<table>
<thead>
<tr>
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<tr>
<td><strong>Potential overlapping with existing EU and national regulation on methane emissions</strong></td>
<td>Analysis of EU and national regulation, including its impact (gas industry to support this action) <em>(TBD)</em></td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td></td>
<td>Set up of a database on regulatory instruments</td>
<td>IEA</td>
<td>Ongoing</td>
<td>Database <em>(Canada publication)</em> Workshops <em>(Link)</em></td>
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</tbody>
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