Written evidence from the Clean Air Task Force (MET0020)

Clean Air Task Force (CATF) is a global climate NGO working to safeguard against the worst impacts of climate change by catalysing the rapid development and deployment of low carbon solutions. CATF has been working on the issue of methane emissions reduction for over two decades, and we were the first environmental group to publicly sound the alarm about the dangers of methane pollution in the early 2000s.

Whilst the UK has made good progress tackling methane emissions from the energy sector, this has mostly been as a co-benefit of the closure of coal plants. The UK has an opportunity to build on the leadership role it played at COP26 with the launch of the Global Methane Pledge, to take forward both international and domestic commitments to accelerate action on methane across the energy, waste, and agriculture sectors.

Key recommendations for the UK:

Converting domestic action into international leadership

- Set a separate target for methane in the UK's updated Nationally Determined Contribution (NDC) to incentivise targeted action on methane emissions.
- Develop and implement a comprehensive, forward-looking Methane Action Plan across all sectors, that outlines sectoral objectives and targets to reduce methane emissions, along with corresponding policies and measures.
- Capitalise on the UK's role as COP Presidency during the announcement of the Global Methane Pledge and incorporate methane mitigation as a priority of UK climate diplomacy. Increase international engagement in and public financing of programmes to reduce methane emissions.
- Continue to support and drive international methane finance, including through multilateral development banks.
- UK Government action on methane would benefit from dedicated resource to coordinate the domestic implementation of international commitments such as the Global Methane Pledge, as well as to ensure that domestic implementation can be leveraged into international diplomacy efforts.

Oil and gas

- Bring forward a ban on routine venting and flaring and put this into law.
- Require quarterly leak detection and repair (LDAR) inspections by oil and

gas installations to reduce fugitive methane emissions.

- Improve equipment standards for use in the upstream and midstream oil and natural gas industry.
- Mandate source and site-level measurement of methane emissions, as well as reconciliation of discrepancies, in line with OGMP 2.0 level 4 and 5 reporting standards.
- Implement a Methane Intensity Performance Standard to incentivise necessary emissions reductions.

Agriculture

- Methane-reducing feed additives should be incorporated as a farm management practice, as well as improved manure management systems. Long-term solutions such as the development and implementation of breeding values for low methane emissions intensity in dairy cattle, reductions in young stock mortality for beef and dairy systems, and development of financing mechanisms for farmers to accelerate adoption of methane reducing practices should also be considered.
- Invest in research that advances agricultural methane monitoring and verification, data collection, and evaluation of the impact of technologies in reducing emissions.
- Prioritise research focused on the development of economically feasible, new technologies that can be used in confined and grazing UK livestock systems. Long-term, permanent solutions should be prioritised, for example, the development of a breeding value for low-methane intensity.
- Develop a roadmap that lays out the status of technologies to reduce agricultural methane emissions, the timeframe for them to be available commercially, the potential to reduce methane emissions, and a plan to finance deployment and adoption of technologies by farmers. Work with the productive sector to create market-based mechanisms, in addition to public funding, to accelerate adoption of these technologies.
- Create a streamlined process to approve new feed additives aimed at reducing methane emissions from livestock.
- Create guidelines on how feed additives should be used, and how measurement, monitoring, reporting and verification will happen.

Waste

- Divert and ban organic waste from landfills. Scotland will ban the landfilling of organic waste by 2025 and a similar ban should be replicated in England.
- Legislate requirements for leak detection and repair for anerobic digesters. Facilities producing biogas and biomethane should be well-managed and monitored to ensure they do not leak methane into the atmosphere.

- Improve landfill gas capture. Frequently review all permits and best available techniques (BAT) to guarantee landfills are maximising potential emission reductions.

Overview

What is the impact of methane on climate change and warming, and how does it differ from other greenhouse gases?

Methane is the second greatest contributor to climate change and over 80 times more potent than CO_2 for global warming over a period of 20 years.[1] Of the 1°C of global warming experienced by the 2010s, 0.5°C was due to methane pollution.[2] If methane emissions continue to rise, meeting almost any climate goal will not be possible, even under very optimistic CO_2 scenarios.

Furthermore, methane can contribute to reducing crop yields and the quality of vegetation, and poses multiple health risks for humans. Methane is an important contributor to ground-level ozone formation, a hazardous air pollutant and greenhouse gas, exposure to which causes an estimated 1 million premature deaths every year worldwide. Methane associated health impacts worldwide make compliance with health-based standards more challenging. Furthermore, methane emissions in the oil and gas sector are released together with toxic co-pollutants, such as benzene and volatile organic compounds (VOCs), amongst others. These pollutants have been linked to respiratory issues, disease, premature deaths, and low birth weight.

While methane is a potent pollutant, it is notably different than many other greenhouse gases because it can be harnessed as a form of energy and used to heat homes and power industries.

What are the main benefits of delivering methane reduction targets?

Rapid methane reductions can help cool the planet and will be critical to limiting warming to no more than 1.5°C. As methane has an atmospheric lifespan of around a decade, taking widespread action to decrease emissions could reduce warming by 0.3°C in the next 20 years.

Action to tackle methane emissions is vital to avoid dangerous climate tipping points - which happen where changes in a part of the global climate system become

[1] IPCC AR6 WGI Chapter 7, Table 7.15, in Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
[2] IPCC AR6 WGI Summary for Policymakers Fig. 2 Figure SPM.2 in IPCC, 2021: Summary for Policymakers.

self-reinforcing. Changes could result in "abrupt, irreversible, and dangerous impacts with serious implications for humanity".[3] Recent science has shown that the risk of tipping points is higher than previously thought, with some likely to be triggered below 2°C.[4] Average temperatures are now 1.1-1.3°C above pre-industrial levels.

Delivering methane reduction targets across the energy, agriculture and waste sectors can also support the UK's energy security. In the agriculture and waste sectors, the use of anaerobic digesters not only prevent manure and organic waste from releasing emissions to the atmosphere, but they also create biomethane, which can be injected into gas grids. In the energy sector, reducing fugitive emissions and banning routine venting and flaring of methane means more gas is available for consumption.

In the context of the energy crisis, cutting methane emissions would ensure that all the gas in the pipeline arrives to consumers. North Sea oil companies are currently wasting enough gas to supply 750,000 average UK homes each year.[5] A study by Princeton also found that the UK is severely underestimating its methane emissions, with as much as five times more methane being leaked from oil and gas production than reported.[6]

What trade-offs are there, if any, in tackling methane vs. CO or other greenhouse gases?

Aggressive reductions of both methane and carbon dioxide are needed to stabilise climate. While carbon dioxide is the most important driver of global warming (especially over the long run), as noted above methane is already causing 0.5°C of warming and levels of methane in the atmosphere are surging. Simply stated, neither pollutant can be neglected.

There is no reason to think that efforts to reduce methane pollution create a trade-off with efforts to reduce carbon dioxide pollution. Methane measures are often inexpensive and apply to particular industries. For example, there is no reason to believe that requiring energy companies or landfill operators to spend small sums to address their methane pollution would take away from investments in infrastructure needed for decarbonisation.

[3] D I Armstrong Mackay, et al, 2022, 'Exceeding 1.5°C global warming could trigger multiple climate tipping points', Science, vol 377, issue 6611
[4] D I Armstrong Mackay, et al, 2022, 'Exceeding 1.5°C global warming could trigger multiple climate tipping points', Science, vol 377, issue 6611
[5] https://www.bbc.co.uk/news/science-environment-63744757
[6] https://pubs.rsc.org/en/content/articlehtml/2022/ee/d2ee03072a

The idea that methane abatement efforts come at the expense of carbon mitigation ultimately arises from a notion that overall efforts at climate mitigation must be limited and focused. Given the scale of damage from climate change to society and essential natural systems, this notion is not appropriate. We do not think of efforts to prevent and cure cancer as decreasing efforts to prevent and cure heart disease, but rather as a clear priority to improve overall health. Likewise, efforts to reduce methane pollution are a clear priority for stabilising climate.

International commitments

1. What role could methane emissions reduction play in meeting the UK's domestic and international climate change targets?

Methane mitigation is one of the most cost-efficient methods to have a fast impact on the global warming process, slow down global warming, and avoid irreversible tipping points. It represents an important near-term opportunity to reduce warming, and many methane mitigation measures are low-cost (some are actually negative cost). The Sixth IPCC Assessment Report identified methane mitigation as a priority and stressed the need for rapidly reducing methane emissions.[7]

The UK does not currently have any legally binding targets in place for methane emissions reduction. It is currently included as one of the gases included as part of the UK's Carbon Budgets and Nationally Determined Contribution (NDC), rather than as a separate methane target. To incentivise specific action to tackle methane, the UK should set a separate target for methane in its updated NDC, which is due to be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) next year. By doing so, it would accelerate the reduction of the UK's methane emissions, which are estimated by the UK government to be 52 megatonnes CO_2e in 2020.

2. What is your assessment of the Global Methane Pledge: is the UK on track to meet it? If not, how could this be accelerated?

Methane emerged as a global climate priority at COP26, where the UK hosted and facilitated the launch of the Global Methane Pledge, endorsed by over 150 countries around the world. Signatories committed to collectively reduce global methane emissions by at least 30% by 2030, from a 2020 baseline. It remains one of the signature climate initiatives from the UK's tenure as COP Presidency, and as such, the UK has an interest in seeing progress towards Pledge commitments. Despite this important step forward in 2021, progress has since stalled, and few countries

[7] https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/

have delivered legislative commitments to guarantee significant emissions reductions. Some jurisdictions – such as the US and the EU – very recently adopted measures to cut emissions in the energy sector, however this represents a small percentage of the total signatories to the Global Methane Pledge.

The UK published a methane memorandum in November 2022, which outlines progress it has made on reducing methane emissions.[8] However, for the Global Methane Pledge to be realised, all signatories, including the UK, should develop and implement a comprehensive, forward-looking Methane Action Plan across all sectors. This methane action plan should meet the following ten criteria, and should be updated annually to reflect progress made.

1. Identify total national methane emissions, and total emissions per sector.
2. Highlight economy wide and sectoral progress to date in cutting methane emissions from a 2020 baseline.
3. Establish overall, as well as sectoral abatement targets.
4. Identify priority actions for mitigating methane that align with the UK's emissions profile.
5. Develop implementation programmes or plans with specific timelines, stakeholders responsible, and benchmarks for execution of priority actions.
6. Move towards measurement-based monitoring, reporting and verification (MMRV) for all sectors.
7. Seek to enhance transparency of emissions, and their reductions, across all methane emitting sectors.
8. Discuss specific plans to develop, improve, or revisit regulations on methane from key emitting sectors.
9. Commit specific financing to facilitate and implement methane mitigation measures.
10. Assess health and social impacts of methane emissions and consider actions to mitigate these impacts**.**

3. What are the implications of the separate Global Methane Pledge for overall UK efforts to reduce greenhouse gas emissions?

It is important to note that all Global Methane Pledge signatories commit to achieving a 30% reduction in global methane emissions by 2030, from 2020 levels. The pledge does not include country specific targets. However, as one of the leading countries spearheading the creation of the Global Methane Pledge, the UK should continue to play a leadership role in its achievement, most importantly

[8] https://www.gov.uk/government/publications/united-kingdom-methane-memorandum#:~:text=This%20methane%20memorandum%20demonstrates%20its,measures%20to%20secure%20further%20progress.

through aggressive action to quickly reduce domestic emissions. While every country's contribution to achieving the Global Methane Pledge will vary depending on its methane emissions profile, high-income countries such as the UK have disproportionate resources and capacity to drastically reduce emissions at home, as well as to support other countries in their abatement efforts.

4. Given UK progress in methane reduction in recent years (with notable reductions before 2020) what are the cost/benefit implications of meeting the pledge?

Much of the UK's methane reductions in recent years can be attributed to declines in oil and gas production. This means that while an estimated 30% reduction will be based off a lower baseline, and therefore a smaller net emissions reduction, a higher percentage will be in harder-to-abate sectors such as agriculture. While achieving these reductions may be more difficult, the UK's global leadership role in methane reduction demands rising to this challenge. Furthermore, in the midst of a climate crisis, continuing to reduce all anthropogenic methane emissions remains one of the fastest ways to slow global warming. The UK Department for Environment, Food and Rural Affairs (Defra) estimated that climate impacts will cost the UK economy 1% of GDP by 2045, or at least GBP 22 billion per year.[9] The UK's steadfast commitment to achieving the Global Methane Pledge, including through allocating new financial resources in hard-to-abate sectors, will deliver returns for UK citizens and people around the world.

5. How significant are UK methane emissions when compared to global emissions? What impact could UK efforts on reducing methane emissions have on total emissions?

Even though the UK's methane emissions represent a small fraction of global man-made emissions, the UK's efforts on methane emissions have the potential to abate not only local, but emissions generated outside its borders. The UK is one of the single largest gas importers in the world, at roughly 53 bcm in 2022, and it also imports a significant amount of oil. This means that if the UK were to introduce a methane import standard, which would limit the maximum amount of emissions per unit of imported oil or gas, it could produce a significant reduction in global emissions. If established in a similar manner to the European Union's forthcoming methane intensity standard, it would result in a combined reduction of 25,500 kt of methane, which represents more than 36% of global oil and gas emissions.

[9] UK Department for Environment, Food and Rural Affairs. "UK Climate Change Risk Assessment 2022." 2022. Available here.

Additionally, as one of the countries pioneering efforts to reduce methane in waste and agriculture sectors, the UK is well positioned to develop innovative ways to reduce methane emissions that can be scaled and applied globally. As a leader in methane reduction with considerable resources, the UK's regulatory and technological developments can provide practical blueprints for other jurisdictions to follow, illustrating how to meet methane challenges practically and effectively.

6. What is the UK doing to lead and facilitate international action on methane reduction? Could this be enhanced?

The UK has supported language on methane in both the G7 and the UNFCCC COP processes, where Parties have committed to take further actions to reduce methane emissions by 2030. It has also endorsed the World Bank's Zero Routine Flaring initiative, which commits governments and oil companies to end routine flaring no later than 2030.[10] The UK is a member of the Climate and Clean Air Coalition, a voluntary partnership of over 160 governments, intergovernmental organisations, and non-governmental organisations founded in 2012, and convened within UNEP.

As mentioned in question 2 above, the UK hosted and facilitated the launch of the Global Methane Pledge at COP26. The UK should capitalise on its role as COP Presidency during the announcement of the Global Methane Pledge and incorporate methane mitigation as a priority of UK climate diplomacy. It should secure dedicated capacity and a clear mandate to raise the issue of methane across major multilateral moments and during key bilateral meetings. The UK can leverage its position in multilateral fora such as the G7 and G20 to encourage action on methane, as well as further public and philanthropic contributions. Furthermore, the UK should increase international engagement in and public financing of programmes (like the Climate and Clean Air Coalition and the International Methane Emissions Observatory) to reduce methane emissions.

Furthermore, the UK should leverage its considerable economic strength to mobilise international finance for methane mitigation. According to the Climate Policy Initiative, $119 billion is needed each year across the agriculture, energy, and waste sectors to keep global temperature increases below 2 degrees Celsius. Current spending is at just 10% of that level, leaving a gap of $107 billion. Thus far, steps to close these financing gaps have been small. At COP28, the UK committed a humble $2.5 million to the Methane Finance Sprint, where funds will support cutting methane emissions across all sectors with a focus in low- and middle-income countries. In the future, the UK can take more ambitious measure to mobilise methane finance by:

[10] https://www.worldbank.org/en/programs/zero-routine-flaring-by-2030

- Leveraging its position as a shareholder in multilateral development banks to promote and champion methane abatement projects.
- In addition to prioritising abatement projects, encourage making methane mitigation a desired outcome in existing waste, agriculture, and energy projects, integrating the use of specific targets in reporting to ensure abatement is monitored and measured.
- Complementing these efforts with significantly increased annual contributions to the Methane Finance Sprint. While an initial $2.5 million contribution is welcome, it is a small fraction of what the UK could contribute as the sixth-largest economy in the world. As a global leader on methane reduction, the UK should match its political commitment with financial resources.

7. What lessons could the UK learn from abroad?

UK partners are moving forward with ambitious measures for methane from petroleum and natural gas: Canada is planning monthly Leak Detection and Repair (LDAR) at all oil and gas sites; the US adopted a methane tax fee and aggressive emissions standards requiring LDAR and limiting venting and flaring; and the EU agreed its first ever rules on reducing methane emissions in the energy sector. Many other nations have also adopted regulatory standards for oil and gas; we focus here on US and EU policies.

United States Waste Emissions Charge (aka "The Methane Fee")

The Methane Emissions Reduction Program (MERP) included in the Inflation Reduction Act establishes a Waste Emissions Charge (WEC) on gas wasted to the atmosphere and creates an incentive for operators to reduce their methane emissions.[11] The WEC is in effect as of 1 January 2024, so it incentivises immediate reductions in emissions. The WEC applies to all medium and large oil and gas facilities for all reported emissions above a segment-specific threshold set by the bill:

- Production: 0.20 percent of gas sent to sale *or*, for facilities that do not sell gas, 10 metric tons of methane per million bbl oil sent to sale
- Processing/Gathering and Boosting/LNG: 0.05 percent of handled gas
- Transmission and Storage: 0.11 percent of handled gas

The fee begins at $900/tonne in 2024, before increasing to $1,200/tonne in 2025 and settling at $1,500/tonne in 2026. Emissions are assessed based on reports to US EPA's Greenhouse Gas Reporting Program (GHGRP), which EPA is in the process of substantially improving in response to a legislative mandate. Sources in full compliance with the recently finalised EPA emission standards (see below) will then

[11] https://www.catf.us/2022/08/us-takes-big-step-forward-oil-gas-methane-reductions-passage-inflation-reduction-act/

be exempt from the charge. Emissions caused by a lengthy delay in permit approvals for infrastructure needed to remove gas from a facility can also be exempted.

U.S. Methane Standards for the Oil and Gas Sector were finalised in March 2024, establishing world class methane standards for sources in the production, processing, and transmission and storage segments. Of note, the US standards establish strong requirements for:

- **Leak detection and repair**, requiring operators for new and existing facilities to inspect every facility regularly, and the biggest sites at least four times a year using instrument-based technologies. The rule also allows operators to use advanced technologies provided they follow a specified inspection schedule that is based on the minimum detection threshold of that technology.
- **Routine flaring of associated gas**, prohibiting any new or modified oil wells from flaring associated gas after a two-year phase-in (2026). The rules also prohibit existing wells from such flaring *unless* the operator demonstrates a technical infeasibility that requires it.
- **Process/pneumatic devices**, requiring all controllers to be zero-emitting and most pumps as well.

Additionally, the US regulations address methane emissions on new and existing compressors, storage vessels, and liquids unloading events. Collectively, from 2024-2038 the US EPA estimates the rules will reduce 58 million short tons of methane pollution.

EU Methane Regulation

In November 2023, the EU agreed its first ever rules on reducing methane emissions in the energy sector. The regulation introduces new requirements for the oil, gas and coal sectors to measure, report and verify methane emissions, and put in place mitigation measures to avoid such emissions, including detecting, and repairing methane leaks and limiting venting and flaring. It also puts forward global monitoring tools to ensure transparency on methane emissions from imports of oil, gas, and coal into the EU.

Methane Import Standard

The regulation includes landmark obligations on importers of fossil fuels. These obligations will be implemented in a phased approach, with data and reporting obligations starting first, just nine months after the Regulation’s entry into force.

From 2027, importers will be required to demonstrate that they meet the same MRV standards as those adopted in the EU’s methane regulation. The Commission will set forth a methodology for a methane intensity standard, which will be adopted by 2030. CATF’s analysis with Rystad shows that a phased import standard

would have demonstrable emissions reduction benefits, with few negative impacts on EU energy security and the price of oil and gas.[12] This is due to the evolving oil and gas market and the low marginal costs for compliance, combined with the anticipated growth of carbon-free and clean energy.

With new energy supplies expected to drastically shift world markets starting in 2025, the import standard is expected to have a minimal cost for suppliers of gas, and even less impact on consumers, because many suppliers will be able to sufficiently reduce emissions enough to avoid paying a fee – leaving those that do need to pay the fee with little pricing power to pass the fee on to consumers. In CATF and Rystad's model, prices will therefore rise about 1% – at most – due to the import standard.

As detailed below in question 12, if the UK were to implement a methane performance import standard and a methane fee, it would have material impact on the UK's emissions, both at home and abroad.

Data measurement and monitoring

8. What is the status of methane accounting, monitoring, and reporting in the UK at present and how does it compare internationally? Is UK accounting and reporting considered to be accurate and robust? What improvements, if any, are possible and what benefits would these deliver?

Methane emissions inventories often demonstrate low bias, with global emissions up to 40% higher than what is reported. In the UK specifically, research has found that direct measurement of methane emissions from offshore oil and gas sites is overall five times higher than official reporting within the UK, with some platforms emitting 50-70 times more than reported[13,14]. To build a more accurate picture of emissions, and ongoing progress in reducing them, a robust and scientifically rigorous Measurement, Monitoring, Reporting, and Verification (MMRV) system is urgently needed.

While the UK currently does not currently have a compulsory legal MMRV framework in the energy sector, it has been successfully implemented in other countries and regional jurisdictions, including Canadian federal and provincial regulations, US state and federal regulations, Norwegian regulations, and Mexican regulations. An obligatory MMRV framework was recently agreed in the EU's Methane Regulation.

[12] https://www.catf.us/resource/impact-eu-methane-import-performance-standard/
[13] Pühl et al., 2024. Aircraft-based mass balance estimate of methane emissions from offshore gas facilities in the southern North Sea. https://acp.copernicus.org/articles/24/1005/2024/acp-24-1005-2024.pdf
[14] Riddick and Mauzerall, 2024. Likely substantial underestimation of reported methane emissions from United Kingdom upstream oil and gas activities. Energy Environ. Sci., 2023, 16, 295-304, DOI: 10.1039/D2EE03072A

The UK should consider new legislation mandating source and site-level measurement of methane emissions and reconciliation of discrepancies, in line with US GHGRP and OGMP 2.0 level 4 and 5 reporting standards. The US GHGRP and Level 4 of OGMP 2.0 requires emissions reported by detailed source type and using specific emissions factors and activity factors. Level 5 of OGMP requires emissions reporting similar to level 4, however with the addition of site-level measurements.[15] This requires the reconciliation of source and site-level emissions estimates. The UK could therefore set forth MMRV legislation that accomplishes this in a two-step approach. The first step would be to require a general emissions reporting that relies on a comprehensive survey of equipment; granular, detailed reports; measurement from many individual sources; and application of the most up-to-date emissions factors for the whole UK oil and gas supply chain. This would be similar to US GHGRP, which has been successfully implemented for over a decade. This can be achieved at limited costs with the scientific tools and methods already available and can be enforced shortly after the adoption of new legislation. As a second step, emissions measurement at the site level (using satellite, aerial, and ground-based technologies), should be required in less than two years.

This data should be reported to the government and made publicly available, including detailed emissions information and not just the overall aggregate emissions at the company or asset level. Again, the US GHGRP is a good model for this. The UK should also establish a third-party verification system to guarantee that reported emissions match what is measured, that the reporting methods respect the requirement, and that measurement data are based on an accurate methodology.

It should be noted that a comprehensive MMRV framework that meets this threshold will be required to export oil and gas to the EU as of 2027. Under the Methane Regulation (Article 27a),[16] importers must demonstrate that oil, gas, and coal produced outside of the EU is subject to monitoring, reporting and verification measures that are equivalent to those set out in the regulation. Equivalency can also be met if the UK sets measures equivalent to reporting at OGMP 2.0 level 5 and is also subject to third-party verification.

9. What progress is being made on methane monitoring and data collection in the UK using technologies such as satellite data and drones?

[15] For more information, see OGMP 2.0 Framework, available here.
[16] See, EU Methane Regulation, final compromise text available here.

Methane monitoring through satellite observations has increased in recent years, and more observations are expected as the UK's Space Agency funded satellite time to the International Methane Emissions Observatory (IMEO) by the end of 2023[17]. IMEO's goal is to identify leaks from various methane sources and notify operators and governments to accelerate leak repair times.

10. Are there significant methane leakages in the UK, and if so, where do they usually occur?

Reported emission fluxes from an active gas leak that lasted almost three months near Cheltenham, UK, in the spring and summer of 2023, were as high as 1.3 tonnes of methane per hour[18]. The total gas lost to the atmosphere could have provided gas to nearly 10,000 households in the UK over the same period.

Further research over the North Sea identified platforms where observations were up to 50-70 times greater compared to reported emissions in the UK's emissions inventory[19,20,21]. This confirms the need for improvements in MMRV in line with OGMP 2.0 level 4 and 5 reporting standards.

Furthermore, previous research monitoring biogas plants in the UK has demonstrated emissions rates between 0.1 and 58.7 kg of biomethane per hour, representing losses relative to the total biogas produced varying between 0.02% and 8.1%[22]. These emissions may account for up to 3.8% (average: 1.9%) of methane emissions in the UK (excluding sewage sludge biogas plants). These emissions come from a variety of sources (e.g., feedstock, biogas processing and upgrading, etc.), but digestate handling is the main source of methane emissions.[23]

11. What are the advantages and disadvantages of available metrics used to report and compare methane emissions including GWP100 and GWP*?

Although useful, all metrics aimed at comparing the harm from methane pollution to the harm from CO_2 have limitations and this is a topic of intense academic debate.

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[17] https://www.ghgsat.com/en/newsroom/uk-provides-high-resolution-greenhouse-gas-data-to-uneps-international-methane-emissions-observatory/
[18] Dowd et al., 2024. First validation of high-resolution satellite-derived methane emissions from an active gas leak in the UK. https://doi.org/10.5194/amt-17-1599-2024
[19] https://acp.copernicus.org/articles/24/1005/2024/acp-24-1005-2024.pdf
[20] Pühl et al., 2024. Aircraft-based mass balance estimate of methane emissions from offshore gas facilities in the southern North Sea. https://acp.copernicus.org/articles/24/1005/2024/acp-24-1005-2024.pdf
[21] Riddick and Mauzerall, 2024. Likely substantial underestimation of reported methane emissions from United Kingdom upstream oil and gas activities. Energy Environ. Sci., 2023, 16, 295-304, DOI: 10.1039/D2EE03072A
[22] https://www.sciencedirect.com/science/article/pii/S0956053X21000167
[23] https://www.cell.com/one-earth/fulltext/S2590-3322(22)00267-6?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332222002676%3Fshowall%3Dtrue

GWP is a fixed ratio which treats every emission as contributing to environmental pollution. It is calculated in a very simple way, and it is the metric used in international agreements. GWP* is based on the change in emissions over time, basically treating only *additional* pollution as harmful. Its calculation is *not* straightforward. GWP* was proposed to be used in the context of a global climate budget, i.e., focusing on a hypothesised trade-off between methane and CO_2 mitigation efforts. When used properly in this context, GWP* allows an analyst to correctly balance CO_2 and methane abatement within the confines of a model to ensure that a temperature target is met.

Therefore, the results of calculating CO_2e using GWP100 or GWP* can be very different. Importantly, with GWP*, when current methane emissions are constant (and sustained over time), it is essentially assumed that little or no additional effect on warming exists. Therefore, GWP* assumes a baseline of continued emissions, while other metrics such as GWP100 always compare to the case of not emitting. Current concentrations of methane in the atmosphere are too high, and the baseline to which reductions should be measured should not be the continuation of current (or recent past) emissions. Using GWP* to calculate CO_2e emissions for methane normalises high levels of anthropogenic methane emissions into its calculations, which is not appropriate.

For instance, consider two countries, A and B. A has had a stable population of cattle for several decades. In 2000, A's cattle emitted a million tons of methane. In 2020, the country's cattle still emitted a million tons of methane. The GWP* approach would estimate A's 2020 emissions to be equivalent to 8 million tons of CO_2.[24] B is a developing country that since 2000 has rapidly developed, with increases in demand for animal protein. In 2000, B had a smaller and less productive cattle herd, which only emitted half a million tons of methane back then, but in 2020, B's cattle emitted one million tons of methane (same as A). The GWP* approach would estimate the climate impact from B's 2020 methane emissions to be equivalent to 68 million tons of CO_2e. Therefore, GWP* analysis concludes that Country B's 2020 impact is eight and a half times higher than Country A's, because Country B only polluted half as much from cattle in 2000 as Country A. Setting policy using these calculations could be interpreted as unfair, unequal, and unethical.

GWP* has been used in a number of analyses to examine emissions from particular sectors (usually agriculture, but also landfills), but if used in this context, GWP* can lead to inappropriate conclusions, such as the notion that two countries with similar methane emissions from the agriculture sector have very different climate impacts, because the history of the countries differs. Another issue with the use of GWP* is the perceived creation of a "free pass" for methane. *Methane emissions today always create a warmer world over the next decades, compared to a world where those emissions don't occur.* Policies using GWP* may inaccurately "credit" emitters

[24] For this paragraph, we use the method to approximate GWP* proposed by the scientists who developed and promoted GWP* described here: https://www.physics.ox.ac.uk/research/our-research-action/impact-stories/measuring-methane-impact-climate-policy.

who merely hold steady or slightly reduce methane emissions, suggesting low or even "negative" emissions. This does not reflect the behaviour of methane in the atmosphere, which always warms the climate.

UK methane emissions and sectors

12. What progress has the UK made on reducing methane emissions and where is there room for improvement?

The UK has made significant efforts over the last few decades to reduce methane emissions. Between 1990 and 2020 UK methane emissions fell by 62%.[25] Methane accounts for approximately 13% of the UK's net greenhouse gas emissions.[26] Globally, methane emissions come mainly from three sectors: energy (40%), agriculture (40%), and waste (20%)[27]. In the UK, agriculture makes up the largest share (54%), followed by the waste sector (33%), with the energy sector accounting for 12% of the UK's methane emissions.

As noted in question 2, the UK should develop a robust Methane Action Plan within the framework of the Global Methane Pledge, which establishes clear objectives across the energy, waste, and agriculture sectors, along with corresponding policies and measures, and detailed timelines and benchmarks for execution.

As noted in question 7, one of the most meaningful contributions the UK could make to reduce its emissions – both at home and abroad – would be to implement a Methane Intensity Performance Standard. This standard would set a maximum threshold of emissions per unit of oil or gas, meaning any domestic producer or importer putting oil or gas on the UK market above this threshold would be faced with a financial penalty. In the UK alone, this could result in considerable savings by preventing valuable gas from being wasted. According to the IEA, the UK's oil and gas sector emitted over 222kt of methane in 2022, which corresponds to £2.4 million lost to the atmosphere (based on gas prices in the UK in October 2023). Implementing a methane fee and border adjustment mechanism would both bring in valuable government funding and help incentivise necessary emissions reductions. If this "methane intensity performance standard" was calculated at a 0.2% equivalent[i] – when combined with the planned implementation

[25] For more data on the UK's methane reductions between 1990 and 2020, see the UK's 2022 Methane Memorandum available here.
[26] UK National Atmospheric Emissions Inventory, 2020
[27] Saunois et al., 2020, The Global Methane Budget 2000–2017, Earth Syst. Sci. Data, https://doi.org/10.5194/essd-12-1561-2020

of the EU's standard – it could result in a reduction of up to 25,500 kt of methane, which represents more than 36% of global oil and gas emissions.

By moving quickly in establishing an import standard, the UK can capitalise on a crucial early-mover advantage: the opportunity to co-design how an eventual standard would be measured and implemented. While the OGCI has developed an industry best-practice intensity threshold for natural gas – set at 0.2% of methane emissions per unit of gas[ii] – jurisdictions establishing a regulatory intensity performance standard will need to adapt a more robust methodology that considers, for example, how the appropriate methane intensity threshold for oil is determined, how precisely intensity is calculated, and how MRV is performed for the import standard. Furthermore, roughly 58% of the UK's oil exports go to the EU, which will be subject to the forthcoming import standard in the EU Methane Regulation, and associated rules on MRV and methane intensity. Therefore, implementing a complete UK intensity standard for domestic production, guaranteeing a derogation from the EU's new import standard, would help ensure the UK's exports remain competitive on the EU market.

Agriculture is an area where the UK can make significant advancements in reducing methane emissions. Until now, the UK has used the Greenhouse Gas Action Plan for Agriculture (GHGAP - developed by an industry partnership in 2011 - to assess progress in reducing emissions from agriculture. However, more modern methane-reducing technologies are not part of this plan.

In the policy paper "Powering Up Britain: Net Zero Growth Plan" published in 2023, the UK Government acknowledged the urgency to develop an approach to improve emissions measurement from farms, as well as the need to accelerate uptake of new technologies such as feed additives by farmers with suitable production systems. However, adoption of other practices and technologies can be accelerated. For example, a 2020 report[28] indicated that improved manure management practices such as using solid/liquid separators and anaerobic digestion of manure or slurries has a GHG reduction potential of 1.5 Mt of CO_2e. By 2020, UK survey data indicated that the uptake of these mitigation methods represent an estimated reduction in GHG emissions by approximately 0.04 Mt CO_2e, i.e., less than 3% of total potential, with no improvement in the adoption trend (similar levels as to 2017 and 2018). Manure management and the use of anaerobic digestion with strong guardrails for adequate digestate management and leakage monitoring can be an important tool to reduce methane emissions from agriculture.

[28] ASCC report (publishing.service.gov.uk)

13. Which sectors are most promising for achieving further methane emissions reductions? And which are likely to be at least relative cost?

While methane emissions reductions are possible in all three sectors, the abatement opportunities in the energy sector may be the most straightforward to implement. According to the IEA, the UK can abate 69% of emissions in the energy sector, and 61% of those can be achieved at no net cost.[29] Suggestions for UK action to reduce emissions in the energy sector are outlined in questions 7, and 12 above, as well as in the questions specific to fossil fuels in questions 25, 26, and 27 below.

14. Are there sources that could be mitigated quickly and easily in the short term, and which would take longer or be more complex?

As noted above, the oil and gas sector is the largest source of the UK's methane emissions from the energy sector, where there is clear potential to quickly and cost-effectively reduce them. The IEA estimates that the UK has the potential to abate 69% of its energy sector methane emissions and almost 61% of those could be avoided at no net cost. In the waste sector, the US-EPA estimates that 53% of emissions can be reduced in the UK, and 18% for the agricultural sector within ~six years[30].

In the agriculture sector, the adoption of measures that mitigate emissions in the short term can be accelerated in the UK, as noted in Q12. For instance, methane-reducing feed additives can be introduced as a farm management practice, as well as improved manure management systems, such as solid/liquid separators, and anaerobic digesters, rapidly reducing methane emissions from agriculture. More long-term solutions such as development and implementation of breeding programmes for low methane emissions intensity in dairy cattle, reductions in young stock mortality for beef and dairy systems, development of financing mechanisms for farmers to accelerate adoption of methane reducing practices, among others, should also be strategically co-designed with farmers.

15. To what extent is there existing regulation in each emitting sector to mitigate methane emissions, and how well is this working?

The UK landscape and competencies for the mitigation of methane are divided across a number of Government departments and regulators (see figure 1).

[29] IEA. 2024 Methane Tracker. Available here.
[30] US EPA. (2019) Non-CO2 Greenhouse Gas Data Tool. https://cfpub.epa.gov/ghgdata/nonco2/ This report was published in 2019 and the abatement percentages quoted above were for 2025 (six years after publication).

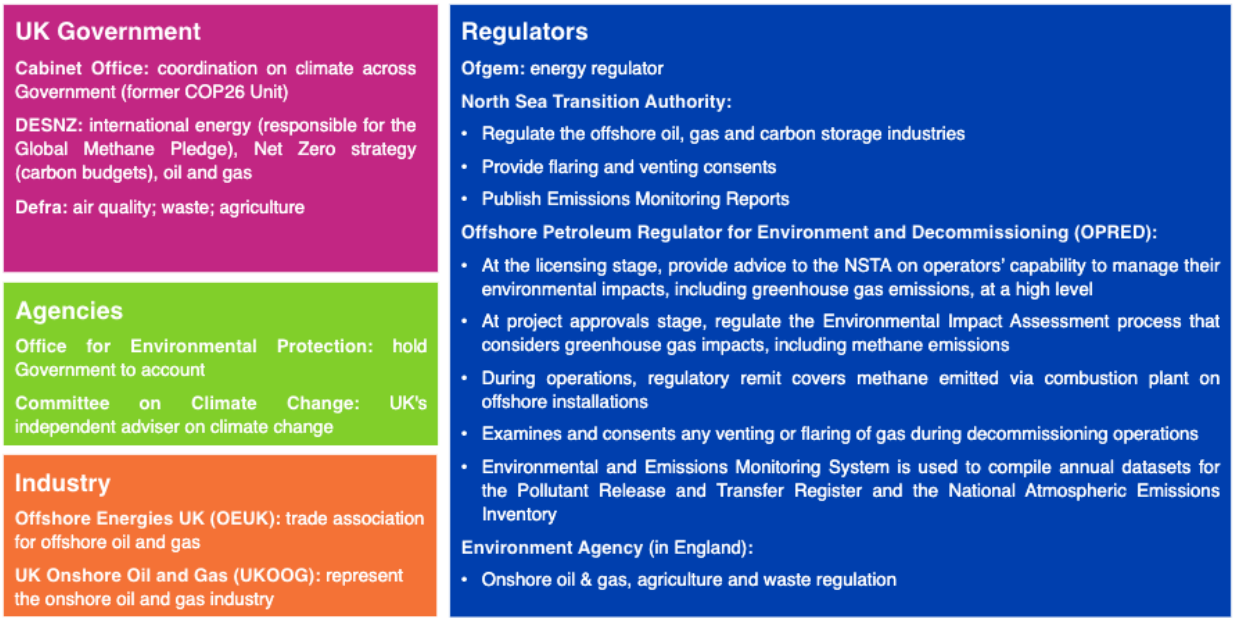

Figure 1: Methane landscape in the UK

As discussed above, methane is included as part of the UK's Carbon Budgets and NDC, where different Departments are responsible for implementation across different sectors of the economy. Whilst Carbon Budgets are coordinated cross-Government, there is no formal central coordination on the specific issue of methane mitigation. UK Government action on methane would therefore benefit from dedicated resource to coordinate the domestic implementation of international commitments such as the Global Methane Pledge, as well as to ensure that domestic implementation can be leveraged into international diplomacy efforts.

Agriculture

16. Are there emerging technologies, such as methane suppressant feed products or approaches to slurry management, that could aid with methane emissions reduction in agriculture? What impact could they deliver?

Emerging technologies offer promising approaches for farmers to reduce methane emissions from agriculture. Feed additives such as 3-NOP may reduce[31] approximately 30% of enteric emissions in cattle, and although options on the market today would carry a significant cost per cow, the impact on milk cost is minimal. Breeding[32] dairy cattle for low methane emissions intensity may reduce emissions 20-30% in the long term, with the added advantage that these

[31] Symposium review: Effective nutritional strategies to mitigate enteric methane in dairy cattle
[32] https://www.semex.com/us/i?lang=en&page=methane

reductions are permanent. Dairy farmers are already using artificial insemination; under this approach, they would be able to opt for low-methane bulls.

Manure management practices such as solid-liquid separators and manure anaerobic digestion can significantly reduce methane emissions, but effectiveness depends on systems type, systems management, digestate management, leakage control, and other factors, and should be designed with each livestock system and management characteristics in mind.

Other nascent technologies such as vaccines against methane-producing organisms in the animal's rumen are also promising. Vaccines' emissions reduction[33] potential has been estimated in research settings to be up to 70%, but real farm data is not available, as this technology is not yet commercially available.

17. How effective are existing policies and incentives, such as Slurry Infrastructure Grants, in driving methane reduction?

Manure management focusing on methane reductions is an important tool to reduce emissions from livestock operations. Although most of the focus given to the Slurry Infrastructure Grants has been on the improvement of water and air quality (through reductions in ammonia emissions), and not directed to methane reductions or capture, some of the new technologies in the scope of the grants have been demonstrated to decrease methane emissions, such as the screw press separator. The Slurry Grants should have their focus expanded to incorporate practices that reduce methane such as manure acidification and others that could be effective in the context of UK production systems.

In the UK, farmers have expressed concern regarding the short-term window for these grants, and the feasibility of investing in slurry infrastructure for tenant farmers. Such limitations must be addressed to increase the uptake of technology even when financial assistance is available. A research taskforce could be established to monitor the emissions reductions of these technologies across farm archetypes so these reductions can be correctly assessed. A well-designed policy with proper guardrails to accelerate implementation of practices focused on reducing methane emissions from manure in the UK may increase the uptake of practices and therefore reduce emissions. As noted in Q12, the UK can reduce approximately 1.5 Mt CO_2e emissions from manure sources, but less than 3% of potential mitigation is currently being employed.

[33] Are vaccines the solution for methane emissions from ruminants? A systematic review

18. What other policy tools, frameworks or incentives could be employed in agriculture to drive methane reduction?

- **Improving monitoring, reporting, and verification:** Monitoring methane emissions from agriculture is challenging. Current emissions estimates rely on bottom-up approaches and the use of emissions factors, and their accuracy is constrained by the limited availability of physical methods to directly measure agriculture emissions. Refining emissions factors and investing in the development of cost-effective, farm-level emissions measurement tools allow for more precise estimations of methane emissions from livestock and rice systems, and more importantly, allows for monitoring of emissions reductions once technologies are implemented.

    - The US National Strategy to Advance an Integrated US Greenhouse Gas Measuring, Monitoring, and Information System[34] focuses on a "*a multipronged approach to advance and improve the science, data, and measurement and modeling tools*". Similarly, it's important that the UK invest in research that advances agriculture methane monitoring and verification, data collection, and evaluation of the effectiveness of technologies and practices to reduce emissions.

    - Better MMRV systems in place would also potentially allow farmers to participate in carbon markets, increasing their income and further accelerating adoption of methane-reducing technologies.

- **Investing in research to develop and deploy technologies to reduce enteric emissions of methane:** Over 60% of all methane emissions from agriculture in the UK are from enteric fermentation, resulting from the digestive processes of livestock ruminants such as cows, sheep, and goats. Technologies that significantly reduce the emissions of enteric methane are currently limited or better applied in confined systems (see Q16), with many of them being in development stage[35].

    - Research focusing on the development of economically feasible, new technologies that can be used in confined and grazing UK livestock systems should be prioritised. Long-term, permanent solutions such as the development of a breeding value for low-methane intensity will be particularly valuable.

[34] National Strategy to Advance an Integrated Greenhouse Gas Measurement, Monitoring, and Information System (whitehouse.gov)
[35] Methane emissions in livestock and rice systems (fao.org)

- The development of a roadmap that lays out the status of technologies to reduce methane emissions, the timeframe for them to be available commercially, the potential to reduce methane emissions, and a plan to finance deployment and adoption of technologies by farmers would allow the UK to design, in collaboration with farmers, methane-reducing policies for the agriculture sector.

- Create efficient market-based mechanisms, in addition to public funding, to accelerate adoption of these technologies. For example, relying on government grants and subsidies to add methane-reducing feed additives to livestock diets is risky as the practice is dependent upon government funding. If a market-based financing mechanism is available in which farmers receive better prices for their products, or participate in carbon markets, long-term adoption of these practices may be more realistic.

- **Create a streamlined process to approve new feed additives aimed at reducing methane emissions from livestock:** new feed additives are being developed that should be usable by farmers as soon as they are commercially available. The UK should develop a process for approval of these new products that guarantees efficacy, animal welfare, environmental protections, farmer and consumer safety and acceptance, while allowing rapid incorporation of these technologies into UK livestock production systems. The US is headed in the same direction with the introduction of the Innovative Feed Act Bill[36].

- **Create guidelines on how feed additives should be used, and how MMRV will happen:** the efficacy of feed additives depends on their daily continuous use, dose per cow, and the type of feed cows receive. The UK should create guidelines on use and provide clarity on how the use of feed additives will monitored and verified, and how farmers will be paid, for example, using the Sustainable Farming Incentive within the Environmental Land Management Schemes.

- **Deployment of policies to support reduction in methane emissions from manure:** manure emissions account for ~16% of total agriculture methane emissions in the UK[37]. A previous report in the UK has shown that the adoption of manure management practices has the potential to reduce methane and nitrous oxide emissions from manure by ~1.5 million tons of CO_2e[38]. However,

[36] Innovative Feed Act Bill
[37] https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2021
[38] ASCC report (publishing.service.gov.uk)

by 2020, less than ~3% of this potential had been achieved (see Q12). Therefore, we recommend a detailed analysis on the most economically feasible, GHG-reducing manure management practices, use of manure as a feedstock for biomethane production availability, and barriers for adoption of these technologies.

19. How can efforts to mitigate methane emissions in agriculture be integrated into broader approaches to facilitate and incentivise climate and nature-friendly farming practices?

Any policy and research work related to agriculture should use a systems-based approach. Therefore, practices to reduce methane emissions should be part of a more comprehensive policy package that supports other aspects of agriculture production such as water use, water quality, pasture management, carbon lifecycle, soil quality, and biodiversity.

In the UK, there may be opportunities to link methane-reducing practices to farming payment schemes. Ideally, farmers who have the ideal production system to adopt a certain methane-reducing technology, e.g., feed additives, should do so, and this requirement could be linked to a well-defined MMRV framework and payment scheme. One concern that must be addressed is the economic health of farms. Many farmers may not decide to apply for a grant, for instance, due to long-term economic uncertainty.

Slurry management is a great opportunity to integrate multiple environmental benefits such as water quality, reduced ammonia emissions, improved soil management, and reduced methane emissions. The scope of the Slurry Infrastructure Grants should be expanded to incorporate practices that are well understood to reduce methane emissions.

Improved animal welfare is another area where the UK can advance. Improved health and reduced mortality decrease the number of animals needed to supply a certain amount of animal products. For instance, in the UK, mortality rates of young stock in both dairy (~10%) and beef (~25%) have not changed over time. This means that many animals are raised and wasted, and a larger young stock is needed for farmers to replace the mature herd. In addition, more manure is produced, more feed and water are consumed and wasted, and more labour is needed. Extending the productive life of dairy animals (which also results in fewer replacement animals needed) is also a practice that results in reduced herd size and decreased methane emissions.

20. How can efforts to reduce methane reduction be balanced against other important considerations in the agricultural sector, including food security?

Food insecurity is a complex issue mixing access to nutritious and healthy food, affordability of these products, and consumer habits. There is not and should not be a trade-off between implementing methane-reducing technologies and practices and food security, and therefore a well-designed programme to reduce methane emissions from agriculture in the UK should not have a direct impact on food security. Even if the full cost of using feed additives were to be paid by consumers, the impact would be minimal. Breeding schemes for low methane emissions may lead to improved feed conversion, meaning better productivity for the farmer, and no impact in the cost of dairy products for the consumers. Manure management practices, if supported by well-designed government environmental programmes, should also not have an impact on food prices.

Waste and waste management

21. What further progress could be made in the waste and waste management sector on reducing methane emissions? Are there interventions and/or technologies that could bring emissions down?

- **Diverting and banning organic waste from landfills:** Organic waste generates methane when it decomposes in a landfill. The UK requires local authorities to separately collect food waste from households and businesses. Implementation of these requirements is ongoing in Wales, but the UK Government has proposed that local authorities in England be given until March 2026 to implement these programs. A recent report by the National Audit Office cites concerns that the Department of Environment, Food, and Agriculture has not planned appropriately to meet this goal. Scotland will ban the landfilling of organic waste by 2025. A similar ban should be replicated in England. Separated organic waste can also then be used to produce biogas, biomethane, and compost through mechanisms including incentives and taxes.
- **Legislating requirements for leak detection and repair for anerobic digesters:** Sustainable biomethane production using organic waste and agricultural residues are efficient and cost-effective ways to both reduce methane emissions and create clean energy. However, facilities producing biogas and biomethane should be well-managed and monitored to ensure they do not leak methane into the atmosphere. The Environment Agency has announced plans to review LDAR reports for anaerobic digestion to develop consistent reporting requirements; this should be finalised as soon as possible.

- **Improving landfill gas capture:** In the UK, landfill gas capture is regulated through the 2016 Environmental Permitting Regulations, which require collection of gas from sites receiving biodegradable waste, using best available techniques for treatment (BAT). As these BAT standards are routinely updated to reflect the latest technically and economically viable solutions, it is essential to frequently review all permits to guarantee landfills are maximising potential emissions reductions.

24. To what extent will improved methane captured at landfill sites, remain necessary to reduce methane emissions after this date?

Landfills that have historically accepted organic waste must continue to implement improved methane capture at landfill sites, as the existing waste will continue to emit methane emissions. Depending on the composition of the landfill, and the concentration and composition of the existing organic waste, other options can be considered under certain conditions. For example, if landfills do not have a high concentration of organics, options such as a bio-cover can be a cost-effective option that can oxidise methane. This option can be more effective if the UK implements a treatment to mechanically biologically stabilise waste prior to landfilling.

Fossil fuels

25. Are there further methane reductions that could be made in the UK fossil fuels sector (e.g., oil, gas or other fossil fuels), or at a faster pace?

A. Bringing forward a ban on routine venting and flaring: The North Sea Transition Authority expects industry to adhere to zero routine venting and flaring by 2030. Parliamentarians are currently considering codifying the UK's pledge to zero routine flaring by 2030 as part of the Offshore Petroleum Licensing Bill. The Committee should investigate advancing the timeline of this ban. Numerous oil and gas producing jurisdictions have banned venting and flaring – Norway has had a ban in place since 1971. A number of jurisdictions have put in place standards and other policies (including the Waste Emissions Charge in the US) that significantly limit or penalise venting and flaring; the great majority of these rules have taken effect with periods of one to two years (or less). There is no need to wait until 2030.

B. Advancing new regulations on fugitive methane emissions in the oil and gas sector: the committee should investigate areas the UK can improve existing rules and regulations on methane emissions in the oil and gas industry, particularly in the area of reducing fugitive emissions. Evidence shows that monthly leak detection and repair (LDAR) inspections can reduce emissions from

leaks by 90%, and quarterly LDAR inspections can reduce emissions from leaks by 80%. These LDAR programs can also be extremely cost effective and are easy to start. The UK should develop LDAR legislation that would cover fugitive emissions and excessive venting from equipment that is designed to vent gas. The detection is based on the same methods and tools, and the additional cost to include venting equipment in the inspections will be low.

While LDAR programmes should be flexible to adapt and capitalise on new technologies, the UK should require quarterly LDAR inspections on upstream oil and gas installations, using optical gas imaging or a technology shown to be as effective. Repairs should be completed in no more than five days after the discovery of the leak. Differentiated LDAR frequencies for transmission and distribution should also be included, with minimum frequencies depending on the composition of material.

The UK should consider the LDAR regulations for the State of Colorado, one of the leading oil and gas producing states in the United States, which were initially implemented in 2014 (and have been tightened in the years since).[39] Those regulations address new and existing well sites and compressor stations, and they require monthly inspections at new facilities and larger existing facilities. The State of California also requires quarterly inspections,[40] as does the State of Wyoming for facilities within the Upper Green River Basin ozone nonattainment area.[41] Additionally, the regulations from Mexico provide examples of quarterly LDAR, while also allowing for innovative technologies in the future.[42]

C. Implementing a Methane Intensity Performance Standard and methane fee: see responses to questions 7 and 12.

D. Equipment Standards: Much of the common equipment in use in the upstream and midstream oil and natural gas industry is designed to release some amount of natural gas during normal operation. This includes several types of compressors with seals which are not designed to be hermetic; pneumatic equipment that uses pressurised natural gas to operate pumps or open and shut valves; tanks storing, at atmospheric pressure, liquids that contain significant amounts of natural gas, which vaporises during storage; and other equipment. This equipment is responsible for a significant portion of methane pollution from the oil and gas industry, and all jurisdictions which have put in place policies to reduce emissions from the industry have included policies to reduce emissions

[39] Colorado Regulation, § XVII.F.4.a
[40] CARB § 95669(g)
[41] Wyoming Nonattainment Area Regulations § (6)(g)(1)(a);
[42] ASEA § Chapter XI, Article 73.

from these types of equipment. In some important cases, the policies generally prohibit any emissions from some types of equipment, because all emissions can readily be captured, or it is feasible to use inherently non-emitting equipment in place of the emitting version.

These types of rules and standards are too complicated to describe here but the 2024 US EPA standards and those implemented by the US states of Colorado and New Mexico provide excellent precedents, and CATF would be happy to provide further information on these.

26. How can we ensure that reducing methane emissions in the oil and gas sector are not at the expense of reducing CO_2 emissions?

As described above, there is no inherent trade-off between measures to reduce methane pollution and measures to reduce CO_2. Nor do specific oil and gas methane measures come at the expense of reducing CO_2. Oil and gas methane pollution can be dramatically reduced in just a few years, much faster than the infrastructure for oil and gas will be decommissioned as energy systems transition to renewables and other forms of zero-carbon energy. Oil and gas methane measures are generally low-cost; they do not need to be justified by accounting which assumes a lifetime of more than a few years (that could conceivably be used to justify keeping infrastructure in service at some point).

Because of the urgency of methane reductions, we cannot wait for the energy transition to accomplish methane reductions. Measures to reduce methane emissions must be put in place as soon as possible.

27. What impact would bringing forward the ban on flaring and venting have on both emissions and the industry?

As the price of energy rises, cutting methane emissions has become more economically beneficial. Venting and flaring methane during oil and gas operations is a major economic loss. The International Energy Agency estimates that globally, nearly $60 billion was lost due to venting and flaring in 2021.[43] During the last decade, the UK has wasted £2.6 billion in lost gas sales due to flaring and venting and released 45 million tonnes of carbon dioxide into the atmosphere.[44] The IEA has shown that oil and gas operators in the UK can waste 72% less methane by tackling methane leaks, venting and flaring, with existing technologies, much of

[43] https://iea.blob.core.windows.net/assets/9414ec9a-bbba-4592-b005-4af05c894bdc/Theenergysecuritycasefortacklinggasflaringandmethaneleaks.pdf
[44] https://ieefa.org/resources/uk-offshore-flaring-and-venting

which would be profitable actions for companies.[45] This would cut UK methane emissions by 9%.[46]

[i] This threshold is set at 1.7 kilotonnes (kt) of methane emitted per million tonnes of oil equivalent (MTOE), which is equivalent to 0.2% on an energy basis.
[ii] See Oil and Gas Climate Initiative (OGCI), Methane Intensity Target, available here.

[45] https://green-alliance.org.uk/wp-content/uploads/2022/10/Global-methane-pledge.pdf
[46] https://green-alliance.org.uk/wp-content/uploads/2022/10/Global-methane-pledge.pdf