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Introduction

In December 2021, against the backdrop of the *European Green Deal* and the *European Strategy to Reduce Methane Emissions*, the Commission published its highly anticipated proposal (COM proposal) for a *Regulation on Methane Emissions Reduction in the Energy Sector* (“EU Methane Regulation”).

Methane is a powerful greenhouse gas, 82.5 times more potent than carbon dioxide over a 20-year time frame, and responsible for 25% of the global warming of the planet.¹ Atmospheric methane concentrations are at their highest ever, having risen by almost 10% in the past twenty years.² Given the high climate impact of methane, urgent and ambitious action on reducing methane emissions while at the same time planning a phase-out of fossil fuels is imperative to stay within 1.5°C.

Anthropic methane emissions come from three main sectors: energy, agriculture, and waste. The energy sector comprises oil, fossil gas and coal. For fossil gas, which is itself predominantly methane, emissions occur along the entire supply chain during exploration, production, gathering, processing liquefaction, regasification, transmission, storage distribution and use. For oil and coal, for which methane is a co-

product or by-product, methane emissions occur primarily at or around the oil pad or coal mine during exploration, production, gathering and processing. This briefing first reviews the context of the COM proposal before outlining critical improvements needed to ensure that the EU Methane Regulation is fit for purpose and delivers on the EU's international climate commitments.

Context

In the build up to the COM proposal, methane was front page news. As this decade is our last chance to stay within 1.5°C, reducing methane emissions swiftly has become a priority:

- I. **Global Methane Assessment (May 2021).** UN Environment and Climate and Clean Air Coalition (CCAC) publish their *Global Methane Assessment (GMA)*, finding that currently available measures could reduce methane emissions across all sectors—energy, agriculture, waste—by as much as 45% by 2030. Nearly half come from “fossil fuel sector in which it is relatively easy to reduce methane at the point of emission and along production/transmission lines” with “a majority at negative or low cost.”³
- II. **Sixth Assessment Report (August 2021).** The Intergovernmental Panel on Climate Change (IPCC) publishes its *Sixth Assessment Report (AR6)*, finding that “deep reductions” in anthropogenic methane emissions are needed by 2030 to stay below 1.5°C.⁴
- III. **Global Methane Pledge (September 2021).** The EU and US co-announce the *Global Methane Pledge (GMP)*, setting out a collective commitment to reduce global anthropogenic methane emissions across all sectors—energy, agriculture, waste—by 30% by 2030, with the energy sector expected to produce most of these reductions.⁵ During the announcement, Executive Vice-President Frans Timmermans states that “before the end of this year, we will follow up with a legislative framework to reduce methane emissions across the whole energy supply chain in the EU and in partner countries which export fossil fuels to the EU.”⁶
- IV. **Curtailling Methane Emissions from Fossil Fuel Operations (October 2021).** The International Energy Agency (IEA) releases its report *Curtailling Methane Emissions from Fossil Fuel Operations: Pathways to a 75% Cut by 2030*, finding that “curbing [methane] emissions is the most effective means available for limiting global warming in the near term,” which “is particularly true in the oil and gas sector, where it is possible to avoid more than 70% of current emissions with existing technology, and where around 45% could be avoided at no net cost.”⁷
- V. **Emission Gap Report (October 2021).** UN Environment releases its Emissions Gap Report, *The Heat Is On: A World of Climate Promises Not Yet Delivered*, finding that methane reductions from fossil fuels “can contribute significantly to closing the emissions gap and reduce warming in the short term” and “strong abatement potential exists at net-negative and low costs..., especially in the fossil fuel sector, even without accounting for the avoided costs of environmental damages.”⁸
- VI. **Glasgow Climate Pact (November 2021).** For the first time, at the 26th Conference of the Parties (CoP26) to the United Nations Framework Convention on Climate Change (UNFCCC), methane receives specific reference in the *Glasgow Climate Pact*, which invites Parties “to consider further actions to reduce by 2030 non-carbon dioxide greenhouse gas emissions, including methane.”⁹ Executive Vice-President Frans Timmermans states that the EU “will rapidly attack methane emissions in the oil and gas and coal sectors” and that the EU “will be looking along supply chains to reduce emissions,” noting that “for the EU most emissions that are associated with our consumption occur outside our borders.”¹⁰

Against this backdrop, to say that the COM proposal was a disappointment is an understatement. It was expected that the Commission would meet the moment by submitting a proposal that meaningfully addressed both domestic sources of methane emissions as well as those associated with imports given the

pledging and pontificating in Glasgow. Instead, the COM proposal suffers from fundamental flaws and general lack of ambition, requiring significant amendment to restore EU climate leadership.

Recommendations

The framework of these recommendations cannot be separated from the urgency of phasing out fossil fuels as soon as possible. Fossil fuel extraction processes for energy and petrochemical production have devastating effects not only on the environment, but also directly on our health, severely harming our water resources, air quality and communities. To address all this, and over the longer-term climate change, we need to tackle the root cause of methane emissions with the managed phase-out of fossil fuels and immediate halt to EU support for fossil fuel infrastructure and petrochemical industry expansion. The following recommendations are made on the EU Methane Regulation.

I. Adopt Monitoring and Mitigation Measures on Imports

The most significant shortcoming in the COM proposal is its failure to include any meaningful measures to monitor and mitigate methane emissions in third countries that are associated with imported oil, gas and coal consumed in the EU.

While measures on EU segments of the supply chain are vital, the benchmark for the EU Methane Regulation has always been—and will always be—how it addresses the upstream segments of the supply chain. The reason is simple: the EU relies on imports for “70% of its hard coal consumption, 97% of its oil consumption and 90% of its fossil gas consumption.”¹¹ As most of the fossil fuels consumed in the EU are imported, the Commission found that “75-90% of the methane emissions associated with these fuels are emitted before reaching the EU’s borders.”¹² According to IEA, imports of oil and fossil gas contribute around 9,000 kilotonnes of methane emissions each year, equivalent to 252 Mt CO₂e,¹³ surpassing the CO₂ emissions from 56 coal-fired power plants.¹⁴ This compares to 1,033 kilotonnes of methane emissions from oil and fossil gas in the EU,¹⁵ equivalent to 25.8 Mt CO₂e. It should be noted that these figures are reflected in GWP₁₀₀; in GWP₂₀ the impacts on current warming are far greater, making methane emission reductions critical to staying within 1.5°C.¹⁶ Remarkably, the EU imports over half of all globally traded fossil gas, meaning the EU is the major driver of global methane emissions in this sector.¹⁷ Addressing imports of fossil gas are particularly urgent for an additional reason: the Commission confirmed that, “due to the higher global warming potential of methane, as little as 3% leakage along the [fossil] gas supply chain can cancel out the greenhouse gas emission benefits of [fossil] gas vs. coal in power generation.”¹⁸ Recent estimates of methane emissions from exporting countries of fossil gas, including Russia and the United States, show significant underreporting with some estimates higher than 3% along many supply chains.^{19, 20, 21, 22} Indeed, in 2021, the IEA estimated that emissions from the energy sector were about 70% higher than reported by national governments.²³

During preparation of the COM proposal, the issue of imports took center stage. The European Parliament’s Committee on the Environment, Public Health and Food Safety (ENVI) “call[ed] on the Commission to make all fossil fuel imports into the Union conditional on their compliance with EU regulations on MRV and LDAR and the rules on venting and flaring, applicable to the entire fossil fuels supply chain, up to and including production.”²⁴ Major energy companies including Shell, BP and Total, among others, came out in support of introducing EU rules to all oil and gas consumed in the EU,²⁵ with Shell even publishing an op-ed titled “EU Methane Rules Must Cover the Entire Gas Supply Chain, Including Imports.”²⁶ Environmental organizations long called for such measures²⁷ to apply across the supply chain as well.

The motivations that led the Commission to forego measures on imports are unknown. Commission bureaucrats likely saw rises in gas prices and took the path of least resistance, proposing the bare minimum on imports despite the international momentum and broad stakeholder support to address the issue. In Article 27(1)-(2) of the COM proposal, the Commission simply proposes to require importers to report annually the information contained in Annex VIII, which boils down to: (i) “whether the exporter is undertaking measurement and reporting of its methane emissions” along with the “name of the entity that

performed independent verification of the reports, if any;” and (ii) “whether the exporter applies regulatory or voluntary measures to control its methane emissions.”²⁸

In the *Impact Assessment*, the Commission offers two excuses for its failure to propose measures on imports. The Commission first argues that it considers the “environmental and social benefits are uncertain, as the enforcement and verification of emission reductions outside the EU would be challenging.”²⁹ The EU has, however, frequently adopted mandatory measures on imports accompanied by enforcement and verification frameworks – for example, for goods produced using modern forms of slavery and forced labor, illegal harvested timber and unsustainable biofuels or in recent legislative proposals on deforestation and carbon border adjustments, to name a few. Given these precedents, it is unclear why a similar approach was not taken here. The Commission then argues that mandatory measures on imports “could entail security of supply risks for the EU with potential direct economic impacts.”³⁰ This argument should be rejected, not least because the EU is an especially important market for fossil fuels that trading partners have a strong interest in supplying to the EU. Moreover, measures on imports do not have to cut off market access, as the Commission suggests, but can be crafted to promote compliance without supply risks. Such measures could be designed as penalties on importers that increase per violation or as progressive limits on the authorisation to place oil, fossil gas or coal on the market in subsequent years. In fact, ironically, reducing leakage along the supply chain would actually increase the available fossil gas for import, not decrease it. Nor would mandatory measures on imports result in significant increases of energy prices, as most methane reductions can be achieved at no net cost.³¹ Finally, it is worth noting that any measures on imports would likely only come into effect after 2025, at the earliest.

The Commission’s inclusion of a review clause is insufficient to overcome the lack of measures on imports. In Article 27(3), the Commission will examine the application of Article 27 by 31 December 2025 and, where appropriate, propose amendments “to strengthen the requirements applicable to importers with the view to ensure a comparable level of effectiveness with respect to measurement, reporting and verification and mitigation of energy sector methane emissions.” This is nowhere near enough to incentivise the EU’s fossil fuel importers to tackle their methane emissions. Given the timeframes of EU legislative processes, this amounts to abandoning any meaningful action this decade. Since the COM proposal was made in December 2021 and, assuming a first-reading agreement in two years followed by translation and publication in the Official Journal of the European Union (OJEU), the EU Methane Regulation would only come into force around mid-2024 at the earliest. Specific provisions would take even longer. For example: (i) under Article 27(1), importers must only submit the information in Annex VII by 9 months after the date of entry into force; (ii) under Article 28, the methane transparency database must only be established by 18 months after the date of entry into force; and (iii) under Article 29, the methane emitters global monitoring tool must only be established two years after the date of entry into force. Even if the Commission were to submit a legislative proposal to revise the EU Methane Regulation by 31 December 2025—almost immediately after its entry into force and upon what new informational basis is unclear—such a proposal would undergo another legislative process, taking us to mid-2028 at the earliest before entry into force, after which additional time would again be afforded for specific provisions. In short, with its proposal, the Commission is squandering this critical decade of action with respect to imports, almost single handedly undermining any hopes of remaining within 1.5°C if the science is to be believed.

For these reasons, the COM proposal must be amended to address imports. **First**, this can be done simply by extending the regulatory framework on monitoring, reporting, verification (MRV), leak detection and repair (LDAR) and limits on venting and flaring (LVF) across the supply chain, imports included, up to the point of production. In tandem, policymakers should also consider establishing a process whereby importers can rely on alternative measures when deemed comparable in effectiveness or when a country has achieved regulatory equivalence via an approval process administered by the Commission. Such flexibility would resolve concerns about compliance with the World Trade Organization (WTO). **Second**, detailed reporting should be required and a certification and verification framework established to support implementation and compliance. **Third**, and importantly, non-compliance need not result in an immediate ban on placing fossil gas and oil on the market, rather penalties can be crafted without threatening supply risks, as noted above, while otherwise ensuring implementation, compliance and enforceability.

II. Adopt a 2030 Methane Emissions Reduction Target

The European Climate Law (ECL) requires a domestic reduction of net GHG emissions by at least 55% by 2030 compared to 1990 levels. The 2030 Climate Target Plan (CTP) highlights methane emissions abatement as a cost-effective way of cutting GHG emissions in the EU and “all 2030 CTP and Fit for 55 mitigation scenarios achieving at least 55% GHG reductions include abatement potential for EU methane emissions at low costs.”³² In the *Impact Assessment*, the Commission finds that 43% of projected methane emissions can be abated at zero cost by 2030, 63% can be abated at less than low cost (€18/CO₂e tonne) and 77% can be abated at less than the sum of social benefits (€130/CO₂e tonne).³³ For its part, the *Global Methane Assessment* found “low-cost abatement potentials” for available targeted measures range from 60-80% for oil and fossil gas and 55-98% for coal – with over 50% having negative costs, meaning the measures pay for themselves quickly by saving money.³⁴

The lack of a methane emissions reduction target is a major gap in the EU climate target architecture, and the COM proposal does not rectify this. It should therefore be amended to include, at a minimum, a 75% methane reduction target by 2030 for several reasons. **First**, in addition to the environmental benefit, it would capture the social benefits of methane mitigation at less than their cost. Social benefits include reductions in premature deaths, asthma-related accidents, emergency room visits and other hospitalizations and work losses due to extreme heat and come with significant economic benefit.³⁵ **Second**, two recent flagship IEA reports have shown that a 75% cut in methane emissions in the energy sector by 2030 is needed to limit warming to 1.5°C, namely *Curtailing Methane Emissions from Fossil Fuel Operations: Pathways to a 75% Cut by 2030* and *Net Zero by 2050: A Roadmap for the Global Energy Sector*.^{36, 37} **Third**, it would restore some of the lost climate leadership to the EU on this issue following the release of the COM proposal, matching Canada who announced their own 75% methane emissions reduction target by 2030.³⁸

III. Advance Timeframe for OGMP 2.0 Level 5 Reporting for Oil and Fossil Gas

OGMP 2.0 Level 5 requires direct measurements of source-level methane emissions, complemented by measurements of site-level methane emissions, the level required under Article 12(3) and (5). While this level of granular reporting is needed, especially given chronic and significant underreporting, the COM proposal envisions too prolonged a timeframe for reaching OGMP 2.0 Level 5: 36 months for operated assets (likely around mid-2027) and 48 months for non-operated assets (around mid-2028). In comparison, participating companies in OGMP 2.0 will have already achieved OGMP 2.0 Level 5 for operated assets by around 2023 and for non-operated assets by around 2025 – a significant difference.

For several reasons, the timeframe for achieving OGMP 2.0 Level 5 should therefore be advanced by two years. **First**, no new technologies and methodologies are required to leap to OGMP 2.0 Level 5. Companies can reasonably undertake direct measurements of source-level methane emissions, complemented with measurements of site-level methane emissions, within two years. Those site-level measurements would also benefit from being announced and occurring on every site at least once a year. **Second**, advancing the timeframe for achieving OGMP 2.0 Level 5 aligns with leak detection and repair (LDAR) obligations under Article 14(2). There, companies are required to undertake an initial survey within six months and then to survey every three months thereafter. In other words, at least three LDAR surveys (and associated repairs where leaks are found) will have taken place within the first year alone, meaning source- and site-level information will be readily available. **Third**, the earlier emissions are measured, the earlier they can be managed – and swift action is needed to contribute meaningfully towards 2030 targets.

IV. Improve Leak Detection and Repair in the Oil and Gas Sectors

Leak detection and repair (LDAR) is the basis for leak prevention, the frequency of which directly correlates to leak reduction. According to US regulators, the potential methane emission reductions due to the periodicity of LDAR surveys are as follows: 40% for annual surveys, 60% for semi-annual surveys, 80% for quarterly surveys and 90% for monthly surveys.³⁹ Leaks are unpredictable and widespread, with several

causes including improperly fitted connection points, deteriorated seal and gaskets, pressure changes, mechanical stresses, poor maintenance or operating practices.⁴⁰ Regular and frequent surveys are therefore a key strategy for reducing methane emissions.⁴¹ As soon as the technology becomes commercially available, continuous emissions monitoring should be deployed.

The COM proposal for LDAR therefore requires improvement in several areas. **First**, the frequency of checks should be increased to monthly, not quarterly, unless continuous monitoring is undertaken. This conforms to the gold standard for LDAR programmes and would capture an additional 10% of methane emissions. **Second**, all components found to be leaking methane during a survey should be repaired or replaced as soon as possible but no later than five days after detection (unless a facility shutdown is required), not just leaks above 500 parts per million (ppm). Although an optical gas imaging (OGI) camera is capable of viewing leaks at 500 ppm—presumably the basis for the threshold—it is unclear why any detectable leak is not required to be fixed immediately, especially since small leaks can quickly become big leaks.⁴² **Third**, the Commission should detail the minimum requirements that LDAR programmes must meet via a delegated or implementing act, ensuring harmonisation and comparability across the EU and beyond. **Fourth**, the obligation in Article 7(9) for Member States to ensure that certification and accreditation schemes are available is poorly drafted and vague and will likely produce a patchwork of certification and accreditation schemes across the EU with unclear requirements and effectiveness. Other EU legislation provides ample inspiration for how to construct an EU-wide certification and accreditation framework—examples include the Renewable Energy Directive and EU Timber Regulation—and a similar approach should be taken here.

V. Improve Limits to Oil and Gas Venting and Flaring

Limits on venting and flaring (LVF), in particular bans with carefully prescribed exceptions, are a key element to methane emissions mitigation in the energy sector. In Article 2(18) of the COM proposal, venting is defined as “the release of uncombusted methane into the atmosphere either intentionally from processes, activities or devices designed for such a purpose, or unintentionally in the case of a malfunction or geological constraints.” This definition therefore includes equipment designed to vent—*i.e.* venting by design—but then, in Article 15(2)(b) and (3)(a), the COM proposal creates an exception for venting that is “unavoidable and strictly necessary for the operation... of components or equipment” or “during normal operations of certain components, provided that the equipment meets all the specified equipment standards and it is properly maintained and regularly inspected to minimise methane losses.” In other words, the Commission creates an exception that swallows the rule, allowing equipment designed to vent to vent despite the ban on venting.

VI. Adopt Technology Standards

In addition to LDAR and limits on routine venting and flaring, the other main type of measures to reduce methane emissions from oil and fossil gas infrastructure in use is to adopt technology standards. Technology standards reduce methane emissions associated with the normal operation of certain equipment, such as compressors, ship engines and pneumatic devices, by mandating the use and replacement of higher-emitting components with lower-emitting alternatives. IEA has found that a “range of alternative technologies can perform the same function as these components, but with lower or zero emissions” and therefore “regulations that limit emissions from certain types of equipment or that require their replacement with lower- or zero-emitting alternatives can reduce emissions significantly.”⁴³ However, the Commission envisions no such technology standards being adopted via delegated acts—in fact there is no mention of technology standards anywhere in the COM proposal—which is completely at odds with the approaches to methane mitigation in other jurisdictions.

VII. Adopt Timeframes for Addressing Inactive Wells

Inactive wells continue to emit methane long after use unless properly remediated, reclaimed or plugged. In the US, a recent Reuters Special Report found 3.2 million inactive oil and fossil gas wells, which together emitted 281 kilotons in 2018 or the equivalent of 6.3 MT CO₂e (although US regulators note that figure could be as much as three times higher).⁴⁴ To date, the EU has not undertaken a comparable inventory of its inactive wells and their methane emissions—although the absolute numbers are likely much lower—despite the fact that, in addition to climate impact, inactive wells contribute to air and groundwater pollution, continually leaking toxic substances and posing a risk to local communities and the environment.

The COM proposal sets out a series of measures to address inactive wells in Article 18. However, following the initial inventory in Article 18(1), installation of measurement equipment in Article 18(2) and submission of reports in Article 18(3), the COM proposal contains no date by which Member States shall develop and implement a mitigation plan to remediate, reclaim or permanently plug inactive wells nor a date when such implementation should be completed.

VIII. Improve Methane Mitigation from Coal Mines

The COM proposal is a first step to address coal mine methane but needs improvement in several areas. **First**, it would be far more impactful to require mines to mitigate methane emissions rather than just mandating monitoring, reporting and verification. The proposed bans on venting and flaring are progressive but it remains to be seen how they would work in practice. Coking coal mines should be included in the ban on venting as it can be many times more methane-emitting than thermal coal mines.⁴⁵ Furthermore, specifying methane “concentration measurements” can be irrelevant if the flux is unknown (*i.e.* a small amount of high-concentration methane might be less damaging than a large flow of medium-concentration emissions). The proposed “sensitivity threshold” is also not aligned with the reality that the distance of the measurement instrument from the emission source would determine the needed level of sensitivity.⁴⁶ Methane is both a super-pollutant and a potential fuel, so coal mine methane can be utilised for heat or electricity generation at a financial profit.⁴⁷ The technologies for ventilation air methane oxidation and methane capture and utilisation are well established, so there is no reason for the EU to not push these solutions forward. **Second**, the COM proposal should strengthen the rules to tackle methane in abandoned mines. On-site assessment at already closed mines can proceed rapidly. For mines which are set to be abandoned, methane management policies must be an essential part of closure plans. The EU can also help Eastern Partnership countries such as Ukraine which are phasing down their coal industries to deal with abandoned mine methane as the EU has rich experience on this topic. **Third**, as with oil and gas, imports are a major weakness of the proposal. The EU imports a large majority of the hard coal it uses,⁴⁸ so if action within the EU is set along a moderate timeframe and action on imports will only follow that, it would be highly unlikely that coal mine methane can achieve the required reduction to keep within 1.5°C. This would be a missed opportunity considering that the technologies to mitigate coal mine methane exist today and can be rolled out in a cost-effective way.

IX. Remove Barriers to Public Participation in Implementation and Compliance

As an invisible and odourless gas, methane emissions escape detection. However, recent satellite, aerial, and ground-based technologies are now shedding light on the scale of leaks and venting at oil and gas infrastructure and coal mines, with non-profit organisations, for-profit companies and international entities playing a key role in bringing methane emissions out of the shadows. Non-governmental oversight and participation should be encouraged by lodging substantiated complaints of a breach of the EU Methane Regulation as this reduces the administrative burden on competent authorities and promotes implementation and compliance. However, in the COM proposal, the Commission unnecessarily includes an “injury” requirement to lodge a substantiated complaint. Under Article 6(4)(a), “competent authorities shall carry out non-routine inspections... to investigate substantiated complaints referred to in Article 7 and occurrence of non-compliance as soon as possible.” Thereafter, under Article 7(1), only by a “natural or legal person *which considers that it has suffered injury* as a result of the breach of the requirements of

[the EU Methane Regulation] ... may lodge a written complaint with competent authorities.”⁴⁹ It is unclear why an “injury” requirement has been included, in particular when breaches of environmental law—especially those related to climate change—are commonly considered as injurious to all. Moreover, other EU legislation has similarly promoted public participation in implementation and compliance by allowing substantiated complaints without an “injury” requirement.⁵⁰

X. Enhance the Role of the International Methane Emissions Observatory

The International Methane Emissions Observatory (IMEO) is a data-driven, action-focused initiative by UN Environment, intended to catalyse dramatic reductions of methane emissions in the energy sector. It will provide near real-time, reliable and granular data on locations and quantity of methane emissions targeting strategic mitigation, and purports to “revolutionize the approach to methane reduction by interconnecting data with action on research, reporting and regulation.”⁵¹

Under Article 10(1), the COM proposal envisions the IMEO playing a supportive verification role with the performance of five tasks: (i) aggregation of methane emissions data; (ii) verification of methodologies and statistical processes; (iii) development of data aggregation and analysis methodologies; (iv) publication of aggregated company reported data by core source and level of reporting; and (v) reporting on findings of major discrepancies. While the verification role for the IMEO is a positive contribution, the IMEO could—and should—support implementation and compliance in additional ways. **First**, the IMEO should assist in reducing super-emitters with an early detection and warning system (coupled with obligations on operators to have protocols in place to address super-emitting events). **Second**, the IMEO should assist Member States with the identification of inactive wells under Article 18 and closed and abandoned coal mines under Article 25. **Third**, the IMEO should measure and quantify methane emissions along specific fossil gas supply chains into the EU, particularly focusing on those where leakage exceeds 3%.

XI. Require Fossil Fuel Phase-Out Plans and End EU Policy Support for Fossil Gas

Methane emissions associated with oil and fossil gas can never be fully eliminated. All gas infrastructure is prone to leaks and the clearest pathway to reduce methane emissions is by phasing out fossil gas and stopping the development of new fossil gas infrastructure, such as import pipelines and liquefied natural gas (LNG) terminals. Member States should be required to develop comprehensive plans with timelines and intermediate targets to reach the objective of a phase-out of fossil gas by 2035,⁵² detailing supply- and demand-side measures to transition away from fossil gas to keep the methane in the ground. On the supply side, this should include immediate cessation of new exploration and production and prompt phase out of existing production in line with the objectives of the Paris Agreement. Such a phase-out could take a worst-first approach, for example retiring a quarter of global coal mine capacity with the highest intensity of leaks would halve coal mine methane emissions,⁵³ and hydraulic fracturing (fracking) is a particularly methane-intensive practice tied to the spike in atmospheric methane concentrations.^{54, 55} On the demand side, this should include comprehensive sectoral plans to phase out fossil fuel consumption, tailored to each consumption sector (*e.g.* electricity, heating, transport, industry) and deployment strategies for alternatives (*e.g.* renewable electricity, heat pumps, green hydrogen, electric vehicles). Such plans would likely best be linked to the National Energy and Climate Plan (NECP) framework and, though focused on the methane angle, should seek to align national policies in other frameworks to prevent and unwind fossil gas lock-in, *e.g.* Gas Package, Taxonomy, TEN-E, FuelEU Maritime and AFIR.

XII. Address Methane Emissions from LNG

Proposed targets in the Alternative Fuels Infrastructure Regulation mandate EU core ports to install LNG infrastructure by 2025,⁵⁶ which poses high risks of stranded assets. LNG already accounts for 6% of European shipping demand, and the COM proposal for shipping fuels, FuelEU Maritime, risks to drive it up to a quarter of that demand by 2030.⁵⁷ This is despite many studies demonstrating that the use of LNG as a maritime fuel has limited or even negative climate benefits, and therefore has no significant role to play in shipping’s decarbonisation, including as a transitional fuel.⁵⁸ In shipping, methane emissions occur all

along the gas value chain in the form of leakages during transport, but also slippage from ship engines. It is estimated that up to 3% of LNG consumed slips in the form of unburnt methane.⁵⁹ Thus, depending on the type of engine, the use of fossil LNG in shipping can even generate higher lifecycle GHG emissions than the conventional marine fuels it replaces. For those reasons, the following recommendations to address methane emissions from LNG are made. **First** accelerate the phase-out of fossil LNG, while supporting the uptake of sustainable and scalable fuels, *i.e.* green hydrogen-based fuels. **Second**, extend the MRV framework on LNG shipping by including methane to the existing emissions reporting framework for ships as proposed by the European Parliament.⁶⁰ **Third**, as many components leak by design, technology standards should be applied to ship engines to promote the use of more efficient machineries such as two-stroke high pressure.⁶¹

XIII. Include the Petrochemical Sector

According to the International Energy Agency, petrochemicals account for 14% and 8% of total primary demand for oil and fossil gas, respectively, and will become the world's biggest driver of oil demand – ahead of trucks, aviation and shipping.⁶² Given that oil and fossil gas production and processing constitute significant contributors to methane emissions—and the naphtha and natural gas liquids found in the oil and fossil gas are considered co-products used to produce petrochemicals—the petrochemical sector should be subject to the same measures under consideration for the energy sector, such as MRV, LDAR and LVF. Importantly, addressing methane emissions from petrochemical production is a critical first step toward reducing the overall climate impact from plastics, which estimates predict will generate 56 gigatons (Gt) of carbon-dioxide equivalent (CO₂e) emissions by 2050, corresponding to 10-13% of the global carbon budget to stay within a 1.5° warming scenario.⁶³ For these reasons, the petrochemical sector should be included in the EU Methane Regulation.

Conclusion

EU policymakers have the responsibility to ensure that the EU regulatory framework on methane is coherent and in tune with promises made at the international level, especially given the prominence with which the EU has promoted action in Glasgow and beyond. Unfortunately, the COM proposal represents a half-hearted and feeble attempt at methane regulation, requiring significant improvement by the European Parliament and the Council to ensure EU credibility on the international stage and give humanity a shot of staying within 1.5°C.

For more information:

Tim GRABIEL

Senior Lawyer & Policy Advisor
Environmental Investigation Agency (EIA)
timgrabel@eia-international.org
+33 6 32 76 77 04

Enrico DONDA

Gas Campaigner
Food & Water Action Europe (FWAE)
edonda@fweurope.org
+32 485 18 75 23

Constantin ZERGER

Head of Energy & Climate Department
Deutsche Umwelthilfe (DUH)
zenger@duh.de
+49 160 4334014

Anatoli SMIRNOV

Head of Coal Mine Methane
Ember
anatoli@ember-climate.org
+33786921312

Delphine GOZILLON

Sustainable Shipping Officer
Transport & Environment (T&E)
delphine.gozillon@transportenvironment.org
+32 478 10 00 88

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