

Brussels, 8 October 2018

Moving Together, Into Tomorrow

IOGP input to the Smart & Inclusive Strategy for long-term EU GHG emissions reductions

Summary

The International Association of Oil & Gas Producers (IOGP) welcomes the opportunity to share its input to the public consultation on “Strategy for long-term EU GHG emissions reductions”.

With the following set of recommendations, we believe this Strategy can be successful and meet the EU GHG objective while staying in line with the Paris Agreement and providing affordable energy to citizens and the industry.

A cleaner & more efficient energy system

- By using flexible natural gas combined with variable renewables in power generation.
- By supporting economy-wide policies which will incentivise the most cost-efficient solutions to reduce GHG emissions, including carbon pricing mechanisms.
- By using LNG and CNG in road and maritime transport to allow public entities and businesses to improve air quality.

A more secure energy supply

- Support exploration & production of untapped domestic oil & gas resources.
- Foster collaboration between regulators and industry to remove operational and commercial barriers.
- Ensure the effective implementation of the existing Offshore Safety Directive, before developing new rules.
- Implement existing Internal Gas Market rules across all EU Member States
- Enhance diversification, security of supply and market interconnectivity through continuing the Connecting Europe Facility (CEF) and European Projects of Common Interest (PCIs).

A more prosperous & innovative energy union

- Expand Research, Development and Innovation programmes for all promising technologies with long-term carbon reduction potential. Include technologies such as natural gas-to-hydrogen, low-carbon liquids, and CCUS.
- Make CCUS development an EU energy & climate and industrial policy priority by setting up a CCUS Alliance.
- Focused support by the Commission and Member States is required to enable investment in full scale CCUS projects. This includes the deployment of the Strategic Energy Technology CCS and CCU Implementation Plan, the ETS Innovation Fund, and Horizon Europe.
- Establish a clear and inclusive definition of low-carbon hydrogen covering both electrolysis based on renewable electricity and steam methane reforming with CCS.

- The conversion and construction of hydrogen and CO₂ infrastructure should be facilitated through the Connecting Europe Facility, and the development of CO₂ capture, transportation and storage should be supported in the new gas market package.

A holistic approach to methane emissions

- The upcoming EU strategy on methane emissions should address all sectors emitting CH₄ and also take into account the oil & gas industry proactive efforts to address methane emissions.

Introduction

The International Association of Oil & Gas Producers (IOGP) currently has around 80 members globally, of which over 30 members are in Europe. Our Members account for 40% of the world's oil and gas production, and 90% in Europe. The European oil & gas industry supports 1.1 million direct and indirect jobs in Europe¹ and contributes around €420 bn per year to European government revenues, equivalent to 2.7% of EU GDP². Together, oil & gas make up for 57% of the EU's energy needs today³.

Our industry has welcomed the Paris Agreement as an important global step in addressing climate change and its challenges. Delivering on the Paris Agreement relies on supporting transitions to a low-emission or net-zero emission future while ensuring enough energy to meet the needs of the world's growing population. The task before our industry in Europe is to keep providing secure and affordable energy safely to sustain the growth and global competitiveness of the European economy, while helping the EU to reach its commitments under the Paris Agreement. Our industry is determined to continue its efforts to improve energy efficiency and further lower emissions, including those of methane by reducing venting and fugitive emissions, detecting and repairing leaks, and improving combustion efficiency.

In this context, IOGP welcomes the opportunity to share its input to the Roadmap “Strategy for long-term EU GHG emissions reductions” and to be involved in the debate on this important dossier. We strongly believe that the upcoming Strategy needs to be smart and inclusive to demonstrate to the world that a cleaner future can be delivered in a cost-effective manner benefitting all EU citizens and industry.

Affordability and efficiency need to be a central part of the 2050 Strategy if the EU is to retain the support of its citizens for significant emission cuts and incentivize, rather than discourage, other countries from following its lead as well as ensuring support at COP24.

The Strategy should also seek to consider the impacts of different ambition levels in the world on competitiveness of the EU industry sectors exposed to delocalization and that's why requiring carbon leakage protection. We are convinced that the following recommendations will make the Strategy robust and will contribute to creating a secure, prosperous, resilient and innovative European Union.

¹ Eurostat, EU Energy in Figures, Statistical Pocketbook 2017 and Poyry/IOGP calculations

² NERA report on energy taxation and expenditure, March 2018

³ IEA, World Energy Outlook 2017

Recommendations for:

1. A cleaner & more efficient energy system

Full electrification must not be an objective in itself: more cost-effective carbon emission reductions can be achieved by using oil & gas wisely in industrial processes, power generation, heating and transport. As the EU approaches its sub-target of generating 50% of all power from renewables, mostly from variable solar and wind, this will lead to a tripling of intermittent power generation capacity (wind and solar). **A power system relying on an increasing share of intermittent renewables needs the availability of power plants ready to dispatch at short notice, and gas-fired power plants are the affordable way to guarantee flexibility and reliability in the integrated power system, while meeting EU climate objectives.**

Similarly achieving certain levels of renewables or energy efficiency should not be the only EU's focus. Not only such targets pre-determine what the answer to the climate change challenge is, in a rapidly changing world of technological advancement, but they are also having an impact on the internal energy market, while creating an unnecessary burden for consumers to bear.

A recent report published by the International Renewable Energy Agency (IRENA) and the European Commission confirms a key role for natural gas in the ambitious REmap Scenario, under which the share of renewables in the power sector increases to 50% by 2030. Compared with their reference scenario, the installed natural gas power generation capacity grows compared with 2010 to accommodate for the increasing share of variable renewables⁴. An increasing number of authoritative studies, such as Poyry study "Fully decarbonizing Europe's energy system by 2050"⁵ or KPMG Report Analyses on the Long-term Role of Gas Network in the Future of Heat⁶, are confirming that full electrification would be substantially more expensive and disruptive.

Switching from coal to gas in the power sector, wherever possible, is a significant opportunity to reduce CO₂ emissions. Gas emits 50% less CO₂ than coal (and even more than 2/3rd less compared to lignite) when used in power generation⁷. Moreover, natural gas used in the transport sector - the second biggest contributor to CO₂ emissions in the EU⁸ - could significantly contribute to EU's efforts in enabling cleaner transport. Gas can also help the shipping industry meet more stringent emissions targets. Using LNG as a marine transport fuel will reduce SOx emissions by 100%⁹, NOx by 80-90% and CO₂ emissions by up to 20%¹⁰, while meeting the 2020 IMO regulations.

⁴ IRENA (International Renewable Energy Agency) and EC (2018), Renewable Energy Prospects for the European Union, pg. 54-55, www.irena.org/publications/2018/Feb/Renewable-energy-prospects-for-the-EU

⁵ http://www.poyry.com/sites/default/files/media/related_material/poyrypointofview_fullydecarbonisingeuropesenergysystemby2050.pdf

⁶ <http://www.energynetworks.org/news/press-releases/2016/july/kpmg-report-analyses-long-term-role-of-gas-network-in-the-future-of-heat.html>

⁷ International Energy Agency, CO₂ emissions from fuel combustion, page 53.
http://wds.iea.org/wds/pdf/documentation_co2_2012.pdf

⁸ Communication "Delivering on low-emission mobility: a European Union that protects the planet, empowers its consumers and defends its industry and workers", COM(2017) 575

⁹ <https://u-mas.co.uk/LinkClick.aspx?fileticket=yVGOF-ct68s%3D&portalid=0>

¹⁰ Jingjing Xu, David Testa & Proshanto K. Mukherjee (2015) The Use of LNG as a Marine Fuel: The International Regulatory Framework, Ocean Development & International Law, 46:3, 225-240, DOI: 10.1080/00908320.2015.1054744

Oil provides the raw materials (feedstock) needed to create products such as energy-saving insulation, the plastics used in cars to make them lighter and more fuel efficient, and the lubricants that enable wind turbines to spin and generate cleaner energy.

How to do it?

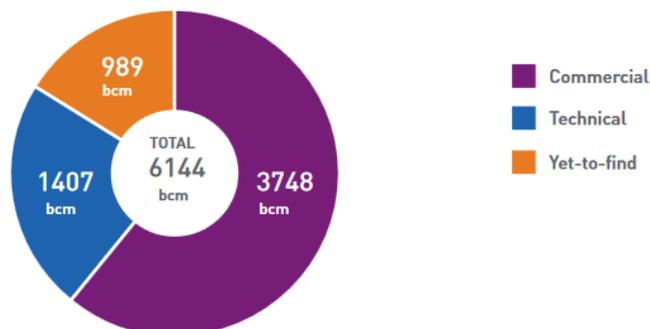
- By using flexible natural gas combined with variable renewables in power generation.
- By supporting economy-wide policies which will incentivise the most cost-efficient solutions to reduce GHG emissions, including carbon pricing mechanisms.
- By using LNG and CNG in road and maritime transport to allow public entities and businesses to improve air quality.

2. A more secure energy supply

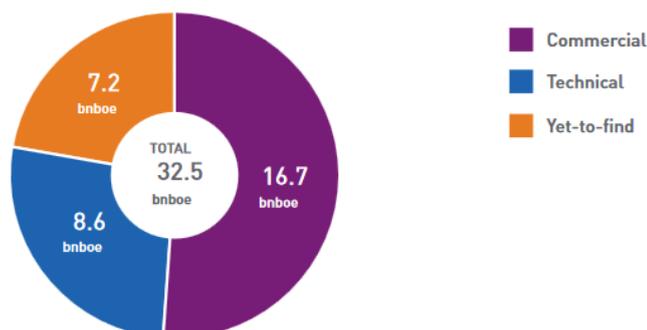
In the IEA World Energy Outlook 2017's most ambitious, Sustainable Development Scenario, in which Europe reaches its climate, air quality and access to energy objectives, 40% of EU energy demand will be met by oil and gas in 2040.

The responsible exploration and development of Europe's oil and gas resources has the potential to enhance security of energy supply, provide skilled jobs and generate significant government revenues for decades to come.

Europe's estimated remaining gas resources



Europe's estimated remaining oil resources



Currently, gas resources in the EU and Norway meet around 50% of the EU's gas demand. With 5100 billion cubic metres (bcm) of known remaining natural gas resources, Europe has enough gas to meet around half of its own demand for another 25 years¹¹.

Additional resources are being developed in the Caspian and Black Seas, as well as the Eastern Mediterranean. These, along with LNG from Africa and North America and Coalbed Methane (CBM) in Europe, will strengthen European energy security. Further, the completion of the internal gas market through adding missing links will enable cross-border gas flows within Europe.

¹¹ <http://www.iogp.org/wp-content/uploads/2017/11/IOGP-Woodmac-Factsheet.pdf>

As for oil, the EU and Norway together supply around 25% of the EU's oil demand. With 32.5 bnboe of existing and potential resources, Europe can sustain current oil production levels for 13 years to 26 years if it prioritises new technologies, cooperation among key stakeholders and new exploration¹². Significant continued investment by IOGP members will be required to deliver these resources, making the right investment climate a necessity.

How to do it?

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3. A more prosperous & innovative European Union

Innovation is a key driver to achieve the goals of the Paris Agreement as well as the objectives of the European Union. Technological development will significantly increase the options available and will, over time, bring down costs and ensure competitiveness.

According to the IEA, **Carbon Capture and Storage (CCS) could provide 14% of the cumulative emission reductions needed in the period to 2060 to limit future temperature increases to 2°C. CCS could provide 32% of the additional reductions needed for the Beyond 2°C Scenario (B2DS)**¹³. It is important to provide support to all innovative technologies, such as Carbon Capture Use and Storage (CCUS) and hydrogen. The oil & gas industry is currently supporting the development of future-oriented technologies, including large scale deployment of CCUS, a technology we are well-placed to develop with over 100 years of geological and engineering knowledge.

CCUS can help minimize the carbon footprint of energy-intensive industries such as the steel, cement refining, and chemical sector, and help retain their role in a lower carbon EU economy. CCS can also be applied to gas-fired power plants, turning them into carbon-free and flexible sources of electricity. In short, developing CCUS is more than a climate policy, it's an industrial policy: **developing such large scale CO₂ transport network and disposal facilities would allow the EU to take global leadership in retaining emitting industries while attracting new ones.** While CCUS technologies are proven and available, the access to CO₂ transport and storage infrastructure remains a barrier to deployment. European cooperation in this area is key, in particular via research projects that could focus on cost cutting and optimization of regional and cross-country CO₂ transport via ships and pipelines to storage locations. Additionally, appraisal of CO₂ storage locations should be addressed by the Connecting Europe Facility (CEF).

¹² <http://32zn56499nov99m251h4e9t8-wpengine.netdna-ssl.com/bookstore/wp-content/uploads/sites/2/2018/04/Woodmac-Oil-Factsheet.pdf>

¹³ Energy Technology Perspectives 2017, International Energy Agency.

We believe that CCUS can provide significant value for the economy in Europe. A study by SINTEF in 2018 demonstrated that a European CCUS industry could support up to 40,000 jobs by 2030 and up to 90,000 by 2050, both by retaining existing high-value jobs in process industries and creating new jobs through the development of a CCS industry¹⁴.

CCUS also enables growth in the production of clean hydrogen from natural gas. Today, hydrogen is produced at industrial scale by using steam methane reforming (SMR) to separate the carbon and hydrogen contained in natural gas. With CCUS, CO₂ emissions from the process are captured. Hydrogen from natural gas with CCUS has the potential to provide significant volumes of zero-carbon energy to the EU. Projects in the EU are currently looking at ways to convert gas turbines in power stations to run on hydrogen, as well as schemes to convert large heating systems and industrial clusters to use hydrogen. These projects can make a high impact on CO₂ emissions, and CCUS is indispensable to produce the required volumes of clean energy.

With technical adaptation, hydrogen can be transported in existing EU gas infrastructure, thereby using current gas infrastructure in a cost-effective way and avoiding the need to duplicate transmission and distribution lines with new expensive electric cables and intrusive overhead power lines.

As hydrogen is a key enabler for the decarbonisation of natural gas, industries and existing gas infrastructure, CEF and PCI can facilitate this transition by providing support to hydrogen transport infrastructure. CEF could be helpful in initiating: (i) process of repurposing part of natural gas infrastructure for hydrogen transport, (ii) development of strategic hydrogen storage locations in salt caverns and (iii) first hydrogen clusters. Hydrogen transportation projects should thus be also considered as candidates to future lists of European Projects of Common Interest. Adding the hydrogen component to the CEF would facilitate cost-efficient repurposing of existing infrastructure in the energy transition. We also recommend that CEF considers different forms of low-carbon hydrogen. This approach should be introduced in a sustainable manner in order to benefit from emissions reductions provided by natural gas usage.

Additionally, there is a need to clarify the definition of low-carbon hydrogen which should allow for both electrolysis based on renewable electricity and steam methane reforming with CCS to account for clean hydrogen origins.

The EU needs to recognise the potential of hydrogen from natural gas with CCUS in the Strategy for long-term EU greenhouse gas emission reductions and recommend Member States to include the deployment of natural gas, CCUS and hydrogen in their Integrated National Energy and Climate Plans required by the Regulation on the Governance of the Energy Union.

¹⁴ https://www.nho.no/siteassets/nhos-filer-og-bilder/filer-og-dokumenter/energi-og-klima/industrial-opportunities-ccs_english.pdf

How to do it?

- Expand Research, Development and Innovation programmes for all promising technologies with long-term carbon reduction potential. Include technologies such as natural gas -to- hydrogen, low-carbon liquids, and CCUS.
- Make CCUS development an EU energy & climate and industrial policy priority by setting up a CCUS Alliance.
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4. A holistic approach towards methane emissions

The upstream oil and gas sector is strongly committed to addressing methane emissions, including flaring and venting. The industry has been working for many years to reduce methane emissions through mandatory and voluntary programmes. Currently, we are working with DG Environment and Member States in the context of the EU Hydrocarbons Best Available Techniques (BAT) Guidance Document to develop best operational practice and techniques for mitigating methane from flaring, venting and fugitive emissions.

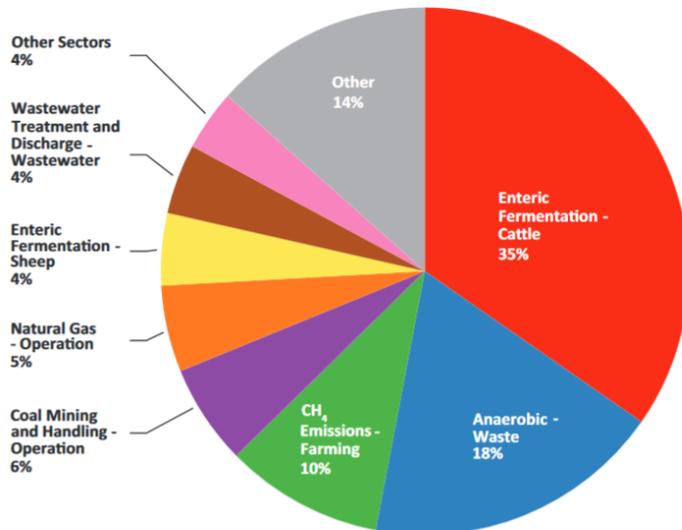
Other initiatives include the Natural Gas STAR Program, The World Bank's Global Gas Flaring Reduction (GGFR), the Global Methane Initiative, the Oil & Gas Climate Initiative, the Methane Guiding Principles and the Climate and Clean Air Coalition – Oil and Gas Methane Partnership. In particular, under the Methane Guiding Principles, IOGP and its members together with all signatories are finalising a report on Best Practices to reduce methane, due to be published soon and are working on a Methane Common Reporting Template to streamline reporting of methane emissions and to be used at global level.

In addition to collaborative initiatives, oil and gas companies have individual programmes and best practices to reduce methane emissions. These initiatives include leak detection and repair (LDAR) programmes. LDAR works to identify and repair equipment or infrastructure that can be a source of methane leaks. Whilst LDAR in certain jurisdictions can have a specific regulatory definition, it is more generally used to describe the processes and systems used to identify leaking equipment. This enables prioritization and repair. The LDAR programme uses a variety of techniques, including optical gas imaging.

The ability to lower the near-term rate of global warming through reducing methane emissions provides society with a valuable mitigation option for climate risk management. However, it is important to note that CO₂ remains the key focus for long-term climate change mitigation. According to the IPCC, the long-living gases (CO₂, for instance) would require immediate reductions in emissions from human activities of over 60% to stabilise their concentrations at today's levels. Methane would require a 15-20% reduction¹⁵. According to some estimates, about 40% of total methane emissions globally, come

from biogenic (natural) sources, such as wetlands, while the other 60% are anthropogenic, or man-made.

Share of largest source categories of methane emissions for EU-28 and Iceland in 2015.



Source: EEA - Annual European Union GHG inventory 1990–2015 and inventory report 2017

Based on the European Environment Agency (EEA) greenhouse gas inventory for the EU, published in 2017, total methane emissions have been reduced by 37% since 1990 and represent 11% of the total GHG emissions in the EU. The share of the methane emissions from the oil & gas industry is relatively low. In 2015, these stood at 5% of the total methane emissions – equivalent to 0.6% of the total EU GHG emissions¹⁶. Between 1990 and 2015, fugitive methane emissions from natural gas

activities decreased by 46%.¹⁷ This reduction is a result of the industry efforts to minimise methane emissions within the EU.

Indeed, oil and gas companies have significant incentives to prevent methane emissions. Such prevention assures the safety of their personnel and facilities and provides commercial stocks of methane where gas markets exist. The oil and gas industry will continue to look for new ways to reduce methane emissions and other greenhouse gases, as part of its role in addressing climate change.

How to do it?

- The upcoming EU strategy on methane emissions should address all sectors emitting CH₄ and also take into account the oil & gas industry proactive efforts to address methane emissions.

¹⁵ IPCC (2013). Climate Change 2013. The Physical Science Basis. Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), p. 436.

¹⁶ Annual European Union greenhouse gas inventory 1990–2015 and inventory report 2017: <https://www.eea.europa.eu/publications/european-union-greenhouse-gas-inventory-2017>

¹⁷ Idem.