

IOGP assessment of National Energy and Climate Plans



IOGP assessed the **National Energy and Climate Plans (NECPs)**¹ submitted by Member States to the European Commission in 2019/2020 to look at attitudes towards energy and decarbonisation solutions provided by the oil and gas industry.

The NECPs show that exploration and production of oil and gas is part of the solution in Member States seeking to ensure security of energy supply through the transition while keeping import bills in check. A switch towards the use of natural gas will be important to reach 2030 targets across various sectors of the economy. Member States have concrete plans in place to reduce their use of oil in transport, as well as for the phase-out of inefficient oil-based heat and power – whether it be a shift towards renewable solutions or cleaner-burning natural gas in order to lower emissions and meet targets on time. Carbon capture and storage (CCS) is high on the research agenda of several Member States, and some refer to concrete CCS strategies or large-scale projects in the pipeline. Hydrogen is on the radar of nearly all Member States as an energy carrier with great potential across sectors, and some refer to the possibility of producing low-carbon hydrogen from natural gas through pyrolysis technologies or in combination with CCS.

What are the NECPs?

The NECPs should set out the direction of national objectives and policies to align with the objectives of the Energy Union – in particular the 2030 targets. The NECPs should cover the period 2021-2030. Separate National Long-Term Strategies will provide a perspective until 2050 to ensure consistency with long-term objectives.

IOGP's assessment of NECPs shows an overview of Member States' attitudes towards:

1. Oil and gas domestic exploration and production (E&P)

2. The use of natural gas

3. The use of oil

4. Carbon capture and storage (CCS)

5. Hydrogen

¹ All NECPs available from:
<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans>

1. Oil and gas domestic exploration and production (E&P)



Attitude to domestic E&P in NECP

AT	
BE	
BG	POSITIVE
CR	POSITIVE
CY	POSITIVE
CZ	
DE	
DK	POSITIVE
EE	POSITIVE
ES	
FI	
FR	NEGATIVE
GR	POSITIVE
HU	POSITIVE
IE	POSITIVE
IT	POSITIVE
LI	
LT	
LU	
MT	POSITIVE
NL	POSITIVE
PL	POSITIVE
PT	
RO	POSITIVE
SE	
SK	POSITIVE
SL	

Positive aspects of E&P reflected in NECPs

- Delivers on Member States' **self-sufficiency, energy security** and **supply diversification** objectives
- Facilitates **a shift away from more polluting fuels**
- Makes **positive contributions to the economy**

Negative aspects of E&P reflected in NECPs

One Member State (France) refers to **a ban on domestic E&P** in its NECP



IOGP FACTBOX: Exploration & Production²

Europe consumes about 15% of the world's natural gas production, and produces around 45% of its own demand. Despite a slight rise in European production, imports reached a record high in 2017 as a consequence of **a rise in demand driven by industrial use, and higher demand in power generation** where gas replaces coal in parallel with the rise of renewable energies in response to climate change concerns.

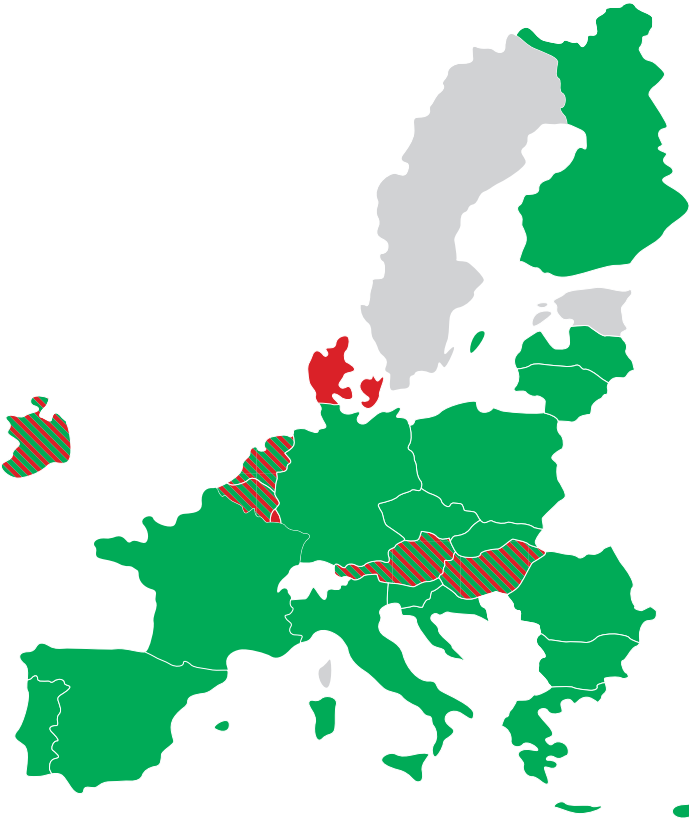
Looking at ten-year averages in demand, Europe's appetite for natural gas has risen constantly, rising from 290 billion cubic metres in the decade from 1978 to 1987 to an average of 520 billion cubic metres in the period from 2008-2017. To maintain a large share of domestic production and to offset natural production decline, **there is a need for keeping up strategic investment in natural gas E&P.**

With only 4% of the world's oil production but 15% of demand, Europe has long imported most of the oil it needs to maintain the region's prosperity and well-being. **For the last five years, Europe has produced around 23-25% of its own oil**, requiring the import of three quarters of its oil needs.

According to Wood Mackenzie, **Europe holds 32 billion barrels of recoverable oil in reserve.** This could sustain current production levels for another 12-25 years. Continuing development, however, would rely on **the industry's continuous improvement of the energy efficiency of its operations**, as well as **a responsive fiscal framework and strong cooperation between regulators and industry.**

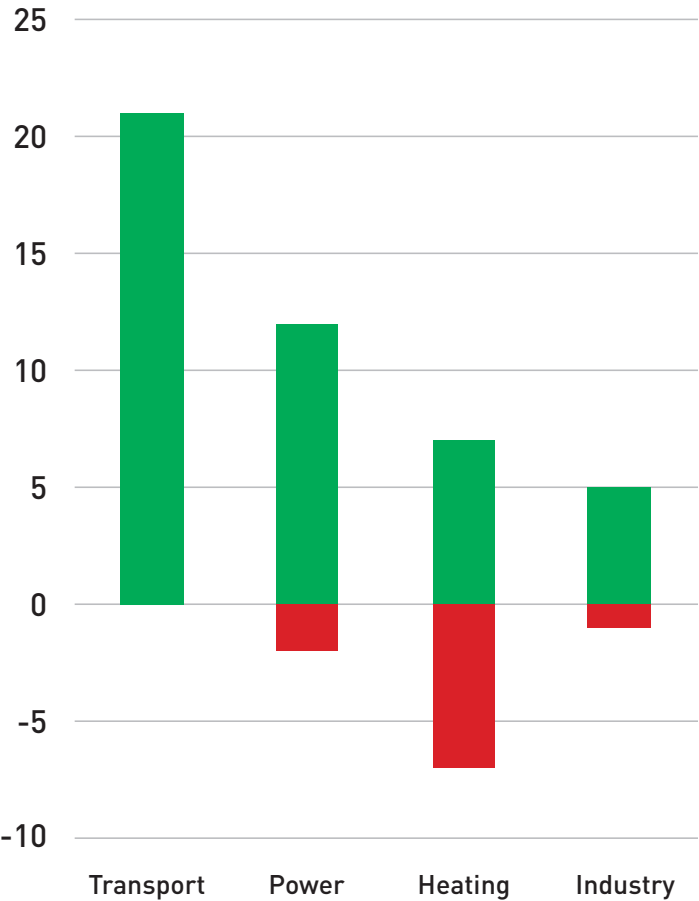
² Information from IOGP (2018). *Global Production Report 2018*.
Available from: <https://www.iogp.org/bookstore/product/global-production-report-2018/>

2. The use of natural gas



- 23 NECPs are positive to natural gas towards 2030 in one or several sectors
- Seven NECPs are negative to natural gas towards 2030 in one or several sectors

Number of NECPs positive and negative to the use of natural gas towards 2030, in four sectors



Positive aspects of natural gas reflected in NECPs	Negative aspects of natural gas reflected in NECPs
<ul style="list-style-type: none">Provides a viable alternative fuel for transport, reduces emissions from maritime and heavy and long-haul road transportFacilitates a shift away from coal in power generationDelivers flexible capacity to complement a growing share of renewablesProvides reliable supply of heat through the seasonsReduces air pollution from heating, used either directly or in highly efficient co-generation	<ul style="list-style-type: none">Plans to reduce emissions from heating include building new homes without connection to the gas grid, and basing district heating on energy sources other than coal, oil, or gasPlans to achieve a move to a 100% renewables share in electricity includes phasing out natural gas

Attitude to natural gas towards 2030 in NECP in four sectors

	Transport	Power	Heating	Industry
AT	POSITIVE		NEGATIVE	POSITIVE
BE	POSITIVE		NEGATIVE	POSITIVE
BG			POSITIVE	POSITIVE
CR	POSITIVE			
CY	POSITIVE	POSITIVE		
CZ	POSITIVE		POSITIVE	
DE	POSITIVE			
DK		NEGATIVE	NEGATIVE	
EE				
ES		POSITIVE	POSITIVE	POSITIVE
FI	POSITIVE			
FR	POSITIVE	POSITIVE		
GR	POSITIVE	POSITIVE	POSITIVE	POSITIVE
HU	POSITIVE	POSITIVE	NEGATIVE	
IE	POSITIVE	POSITIVE	NEGATIVE	
IT	POSITIVE	POSITIVE		
LI	POSITIVE			
LT	POSITIVE	POSITIVE	POSITIVE	
LU		NEGATIVE	NEGATIVE	NEGATIVE
MT	POSITIVE	POSITIVE		
NL	POSITIVE		NEGATIVE	
PL	POSITIVE	POSITIVE		
PT	POSITIVE	POSITIVE		
RO	POSITIVE	POSITIVE	POSITIVE	
SE				
SK	POSITIVE		POSITIVE	
SL	POSITIVE			



IOGP FACTBOX: The use of natural gas

Natural gas emits around **50% less CO₂** than coal when combusted for power generation, and using natural gas instead of coal can **improve air quality** due to lower NO_x emissions, no SO_x emissions and virtually no particulate matter. Between 2010 and 2018, coal-to-gas switching has **saved around a cumulative 500 million tonnes of CO₂ globally** – an effect equivalent to putting an extra 200 million EVs running on zero-carbon electricity on the road over the same period³. In Europe, a **switch to gas** can provide cleaner heating, enable cleaner transport, and make the energy system more efficient⁴.

With **compressed natural gas (CNG)** and **liquefied natural gas (LNG)**, a complete range of transport applications can be supported, from small passenger cars to long-haulage trucks, from small pleasure craft to larger cargo ships. **Technology maturity, availability, and competitive fuel costs** are key factors to boost the role of natural gas.

Today, **natural gas feeds a vehicle fleet smaller than 1% of all European vehicles**. However, over the last five years, the number of CNG stations grew from 2,600 to more than 3,600 units, while the number of LNG stations has increased by a factor of 6, to reach more than 200 stations today⁶.

³ IEA (2019). *The Role of Gas in Today's Energy Transitions*. Available from: <https://www.iea.org/publications/roleofgas/>

⁴ IOGP (2018). *Moving together, into tomorrow: Vision & policy recommendations from the upstream oil & gas industry in Europe*. Available from: <https://www.iogp.org/wp-content/uploads/2018/07/IOGP-Manifesto.pdf>

⁵ NGVA (2018). *G-mobility: Driving Circular Economy in Transport*. Available from: https://www.ngva.eu/wp-content/uploads/2019/07/circular-economy-leaflet_190718.pdf

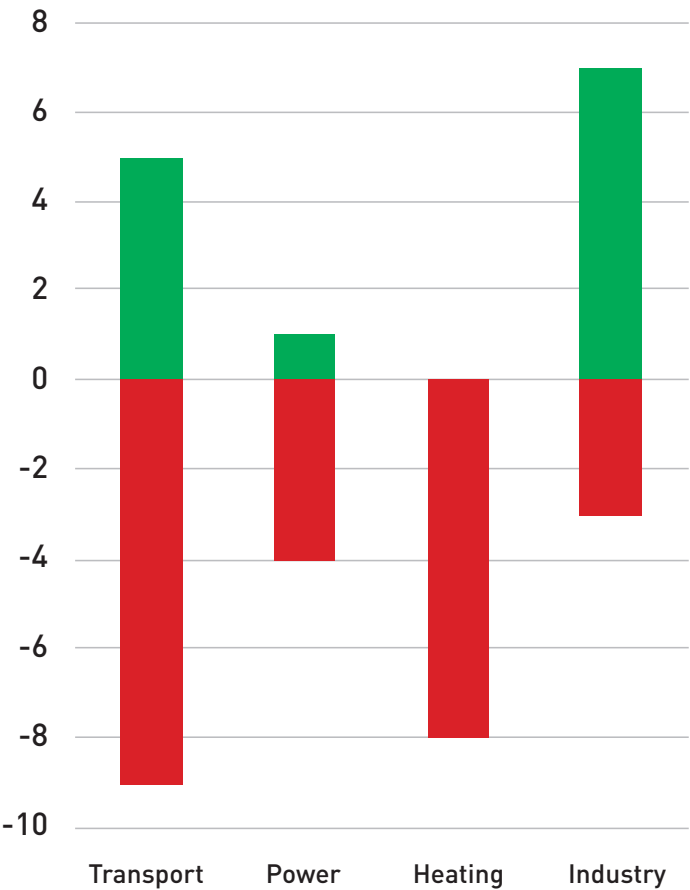
⁶ NGVA (2019). *Gas in transport manifesto: Policy recommendations*. Available from: https://www.ngva.eu/wp-content/uploads/2019/07/NGVA-Europe_gas-in-transport-manifesto_July2019.pdf

3. The use of oil



- Ten NECPs are positive to oil towards 2030 in one or several sectors
- 14 NECPs are negative to oil towards 2030 in one or several sectors

Number of NECPs positive and negative to the use of oil towards 2030, in four sectors



Positive aspects of oil reflected in NECPs	Negative aspects of oil reflected in NECPs
<ul style="list-style-type: none">Oil will be needed to fuel a fast-growing ground freight transport sectorEnvironmental impacts from using oil in transport can be reduced by using efficient combustion enginesA large and efficient refining capacity contributes to meeting domestic demand, guaranteeing the reliability, sustainability and security of necessary supplies	<ul style="list-style-type: none">Plans to reduce emissions from heating include meeting the heating demands of newly constructed buildings as far as possible without using fossil fuels, or achieving a phase-out of oil-fired boilers in the longer termMember States plan to reduce or phase out the use of oil in power generation, whether it be a shift towards renewables or cleaner-burning natural gasPlans to reduce emissions from transport include achieving a phase-out of sales of petrol and diesel cars, and ending CO₂ emissions and air pollution from buses

Attitude to oil towards 2030 in NECP in four sectors

	Transport	Power	Heating	Industry
AT	NEGATIVE		NEGATIVE	NEGATIVE
BE		NEGATIVE	NEGATIVE	POSITIVE
BG				
CR				POSITIVE
CY	NEGATIVE			
CZ				POSITIVE
DE				
DK	NEGATIVE	NEGATIVE	NEGATIVE	
EE	POSITIVE			
ES				
FI	NEGATIVE		NEGATIVE	
FR		NEGATIVE	NEGATIVE	POSITIVE
GR	NEGATIVE	NEGATIVE		NEGATIVE
HU	NEGATIVE			
IE			NEGATIVE	
IT	POSITIVE			POSITIVE
LI	POSITIVE			
LT	NEGATIVE			
LU				NEGATIVE
MT				
NL	POSITIVE			POSITIVE
PL				POSITIVE
PT	NEGATIVE			
RO	POSITIVE			
SE	NEGATIVE		NEGATIVE	
SK				
SL			NEGATIVE	

IOGP FACTBOX: The use of oil⁷

The refining of crude oil leads to a vast array of products that fulfil the needs of both citizens and businesses. About 65% of the crude oil processed in EU refineries is transformed into **transport fuels**, about 10% goes to **petrochemical feedstocks**, and about 25% is employed for **other products**.

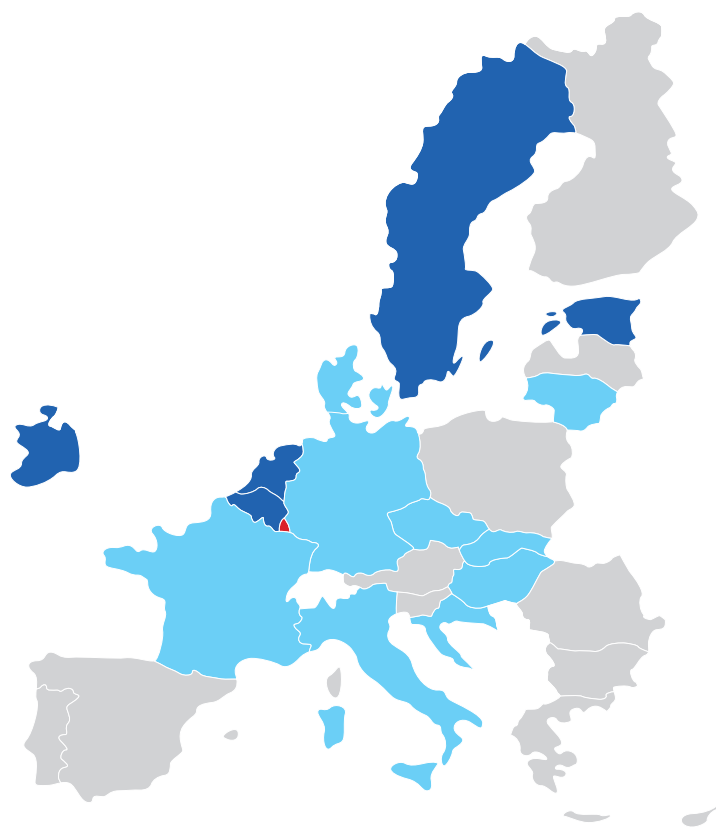
The evolution of oil demand will depend on a variety of factors. These include the speed at which **disruptive technologies**, **replacement products**, and **new business models** emerge in transport and other sectors.

Demand for oil products will also feel an impact from **policy measures** aimed at addressing **climate change** and risks linked to the emissions of **air pollutants**. For example, **fuel economy standards for cars and trucks** introduced in the EU will play a major role in the short-term in reducing or containing the growth of demand for liquid fuels.

In Europe, the IEA WEO 2017 assumes that EU oil demand will decrease from 13 million barrels per day in 2016 to between 5.7 and 8.7 million barrels per day by 2040. **The largest reduction will be in transport**, while there will be **smaller decreases for hydrocarbon feedstocks** (for petrochemicals, solvents, lubricants, waxes and bitumen).

⁷ Information from FuelsEurope (2018). *Vision 2050 – A pathway for the evolution of the refining industry and liquid fuels*. Available from: https://www.fuelseurope.eu/wp-content/uploads/DEF_2018_V2050_Narratives_EN_digital.pdf

4. Carbon capture and storage (CCS)



- 14 NECPs include plans for CCS R&D
- One NECP is negative to CCS
- Five NECPs also include plans for a CCS strategy and/or projects

	NECP plans for CCS R&D	NECP plans for CCS strategy and/or large-scale projects
AT		
BE	YES	YES
BG		
CR	YES	
CY		
CZ	YES	
DE	YES	
DK	YES	
EE	YES	YES
ES		
FI		
FR	YES	
GR		
HU	YES	
IE	YES	YES
IT	YES	
LI	YES	
LT		
LU	NO	NO
MT		
NL	YES	YES
PL		
PT		
RO		
SE	YES	YES
SK	YES	
SL		

Positive aspects of CCS reflected in NECPs

- Can deliver emission reductions in **industrial processes** where CO₂ emissions are difficult or even impossible to avoid
- Large-scale, low-cost, low-carbon hydrogen** can be produced from natural gas with CCS, and used as an energy source for transport and heating
- In combination with bioenergy, CCS enables the **removal of CO₂ from the atmosphere**

Negative aspects of CCS reflected in NECPs

One NECP (Luxembourg) states the intention to pursue a net zero emissions strategy without CCS.



IOGP FACTBOX: Carbon capture and storage

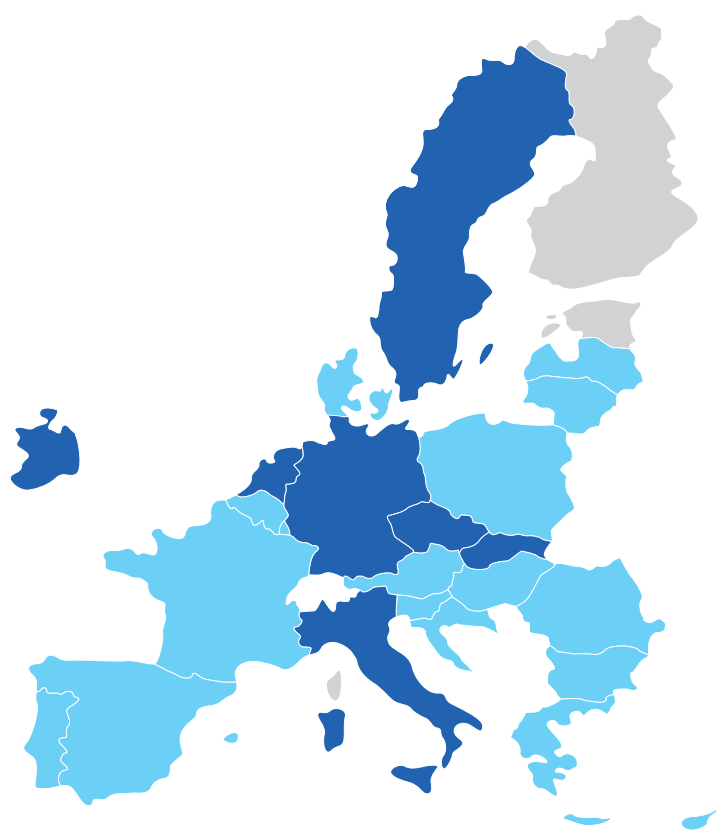
Pathways in the **IPCC Special Report on Global Warming of 1.5°C**, the **IEA's World Energy Outlook** and the European Commission's **2050 long-term strategy** all show that utilising CCS is essential to meet the 1.5°C target.

Today, there are three large-scale CCS facilities operating in Europe, capturing over 2 million tonnes of CO₂ per year for dedicated geological storage or enhanced oil recovery. **To be on track for 1.5°C, one CCS facility capturing 1.5 million tonnes CO₂ per year would have to be added every week from now and until 2050.**

As many as **20 large-scale CCS projects are planned or under construction in Europe⁸**, some of which are reflected in Member States' NECPs. Further, 12 Member States are participating in **research initiatives aimed at accelerating CCS technology in Europe**, including under the SET-Plan, ERA-NET CoFund and EEA-grants 2014-2021.

⁸ See IOGPs map of CCS projects in Europe: <https://www.iogp.org/bookstore/product/map-of-ccs-projects-in-europe/>

5. Hydrogen



- 25 NECPs are positive to hydrogen
- Seven NECPs are also positive to low-carbon hydrogen from natural gas

	Attitude to hydrogen in NECP	Attitude to low-carbon hydrogen from natural gas in NECP
AT	POSITIVE	
BE	POSITIVE	
BG	POSITIVE	
CR	POSITIVE	
CY	POSITIVE	
CZ	POSITIVE	POSITIVE
DE	POSITIVE	POSITIVE
DK	POSITIVE	
EE		
ES	POSITIVE	
FI		
FR	POSITIVE	
GR	POSITIVE	
HU	POSITIVE	
IE	POSITIVE	POSITIVE
IT	POSITIVE	POSITIVE
LI	POSITIVE	
LT	POSITIVE	
LU	POSITIVE	
MT	POSITIVE	
NL	POSITIVE	POSITIVE
PL	POSITIVE	
PT	POSITIVE	
RO	POSITIVE	
SE	POSITIVE	POSITIVE
SK	POSITIVE	POSITIVE
SL	POSITIVE	

Positive aspects of hydrogen reflected in NECPs

- Provides a **system solution**: low-carbon energy for mobility, energy production, transport and storage and raw materials
- Stabilises the energy system** by integrating an ever greater quantity of intermittent renewables thanks to its capacity for energy storage and transfer
- Reducing emissions and reusing existing infrastructure through **hydrogen blending in the natural gas grid**
- Powering public transport** in the city centres and decarbonising **rail and maritime transport**

Negative aspects of hydrogen reflected in NECPs

None



IOGP FACTBOX: Hydrogen

Hydrogen can be extracted from fossil fuels and biomass, or from water, or from a mix of both. **Natural gas is currently the prime source of hydrogen production**, accounting for around three-quarters of the annual global dedicated hydrogen production, or 6% of global natural gas use.

The dependence on natural gas means that **hydrogen production today generates CO₂**, most of which is emitted to the atmosphere. However, CCS and CCU can be applied to hydrogen production from natural gas, which can lead to **a reduction in CO₂ emissions of up to 90%**. Several CCS and CCU natural-gas-to-hydrogen plants are operational today, producing around **0.4 million tonnes of hydrogen per year** – about equivalent to the amount of hydrogen currently produced with renewable electricity.⁹

Hydrogen plays a negligible role in the power sector today, accounting for less than 0.2% of electricity generation. However, there is potential for this to change in the future. For example, hydrogen in the form of compressed gas, ammonia or synthetic methane could become a **long-term storage option** to balance seasonal variations in electricity demand or intermittent generation from renewables.¹⁰

An estimated **19% of greenhouse gas emission cuts needed to reach climate neutrality by 2050** could be delivered by a fuel-switch to hydrogen in Europe's power, residential, transport and industry sectors, provided the hydrogen is produced with a low carbon footprint. Hydrogen from different low-carbon sources, including renewable electricity and natural gas with CCS and CCU, can support the development of a large-scale market.¹¹

⁹ IEA (2019). *The Future of Hydrogen: Seizing today's opportunities*. Available from: <https://webstore.iea.org/the-future-of-hydrogen>

¹⁰ Ibid.

¹¹ SINTEF & IFPEN (2019). *Hydrogen for Europe: Final report of the pre-study*. Available from: https://www.sintef.no/globalassets/sintef-energi/hydrogen-for-europe/hydrogen-for-europe-pre-study-report-version-4_med-omslag-2019-08-23.pdf

The International Association of Oil & Gas Producers (IOGP) currently has around 80 members globally, of which around 30 members are in Europe. IOGP represents most of the world's leading publicly traded, private and state-owned oil and gas companies, industry associations and major upstream service companies. Our Members produce 40% of the world's oil and gas, and 90% of Europe's indigenous supplies.

IOGP's mission is to provide a forum for sharing experiences, debating emerging issues and establishing common ground to promote cooperation, consistency and effectiveness in every aspect of health, safety, the environment, security, social responsibility, engineering, efficiency and operations.

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