

GECF GLOBAL GAS OUTLOOK 2050

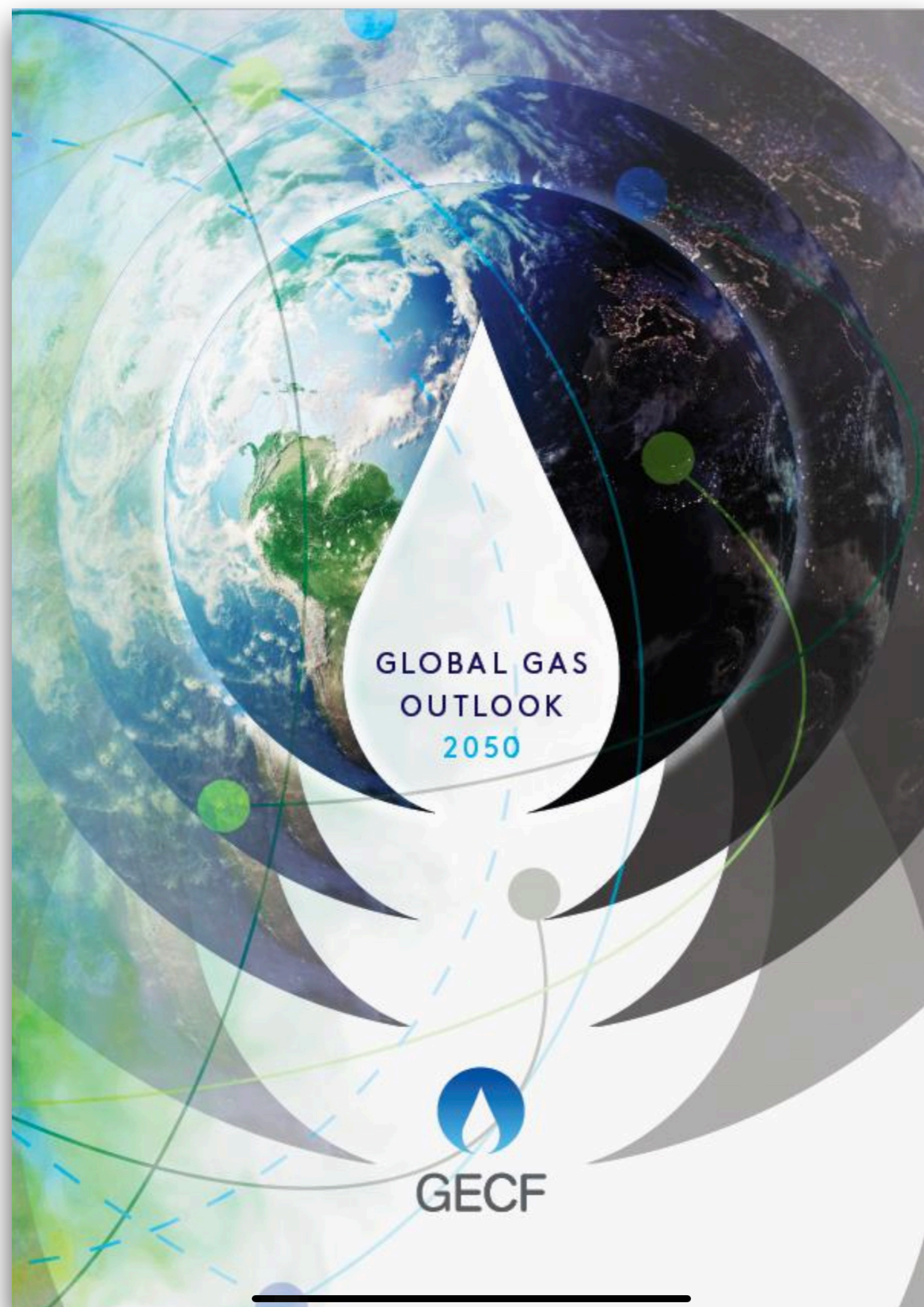
HE Dr. Yury Sentyurin
Secretary General

The 11th Session of the IEA-IEF-OPEC Symposium on Energy Outlooks
Virtual Event | Riyadh, Saudi Arabia | Wednesday 17 February 2021



GECF

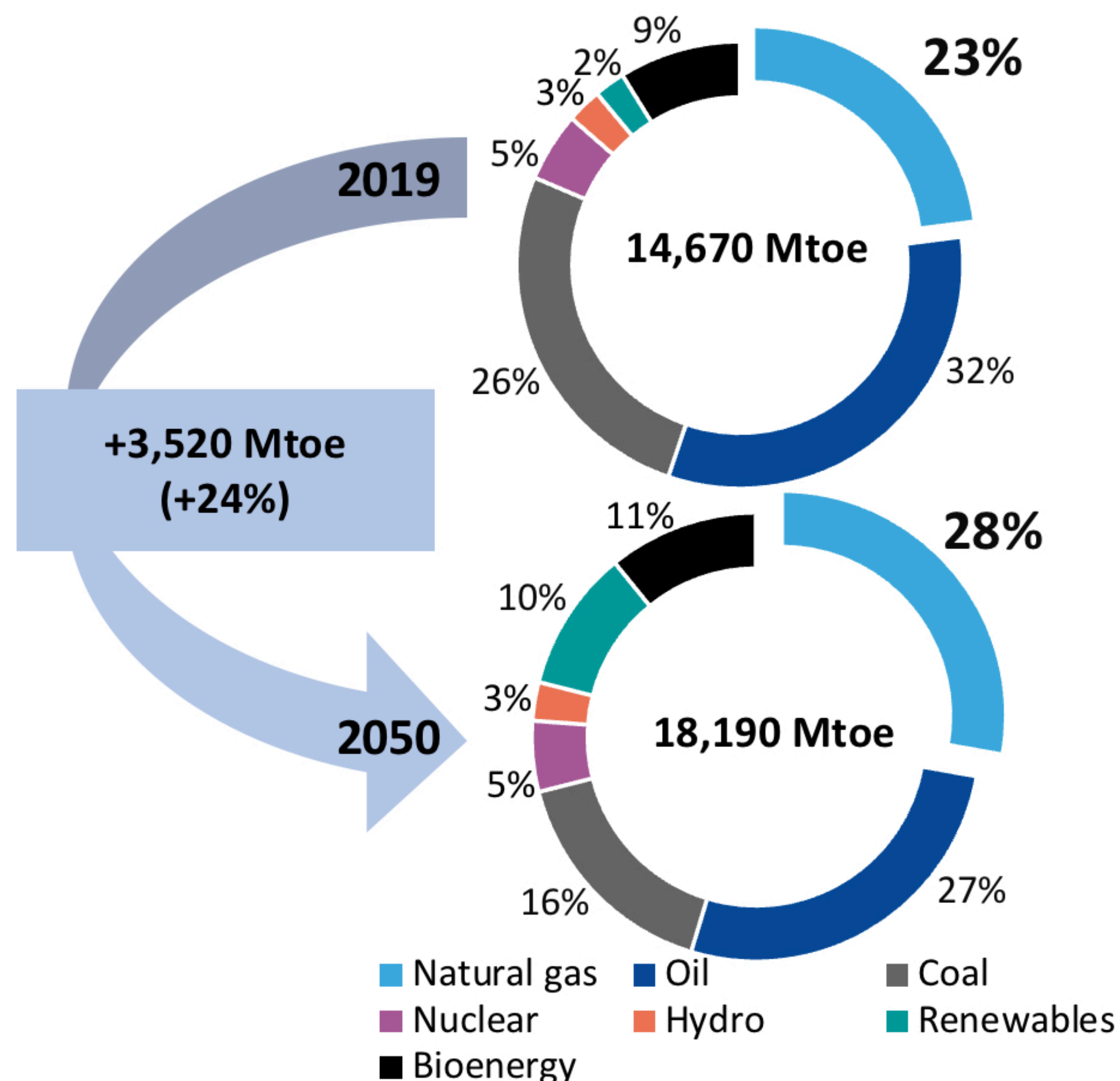
NEW QUALITIES AND FEATURES OF THE GGO2050



- Based on the GECF Global Gas Model - the **most advanced forecasting tool** incorporating AI and the latest digital technologies
- **In-house processed information** from primary data sources of 19 Member Countries' Intergovernmental coalition (70% of proven natural gas reserves, 42% of marketed gas production, 52% of pipeline gas exports, 51% of LNG exports)
- The **world's** largest commercially available **energy databases** with millions of data series
- Main drivers and assumptions with over 500 microeconomic and **price** indicators
- **Full energy balances**, economic and energy data with **30-years forecast** of 140+ countries and 60+ aggregations (GECF, OPEC, IEA, IEF, IRENA, G20, ASEAN, BRICS, OLADE etc.) covering over 30 sectors of the modern economy and 35 fuels
- **Alternative scenarios** on carbon mitigation and hydrogen
- Natural gas markets **insights and references**

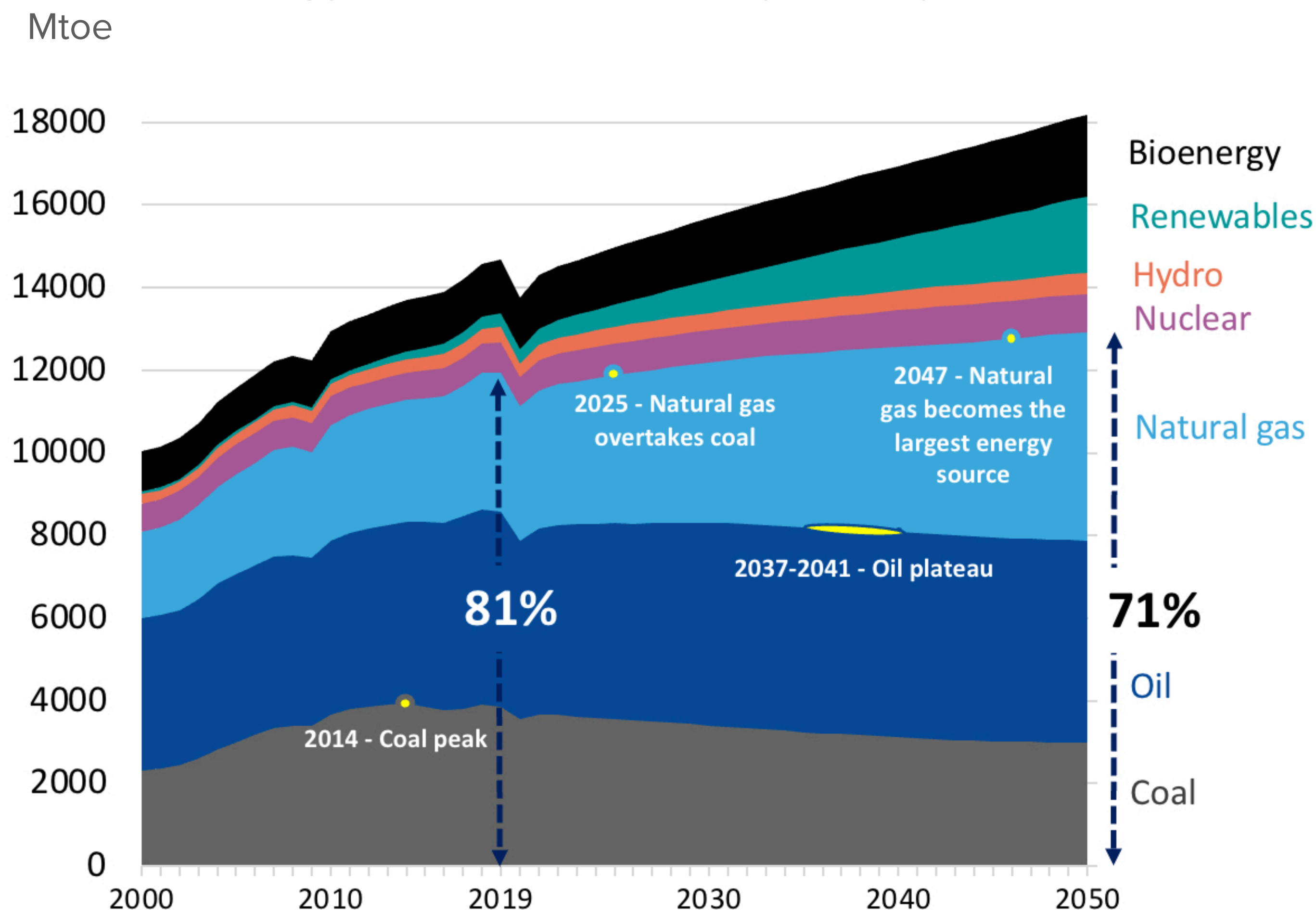
GLOBAL ENERGY MIX:

Global energy mix evolution



- Hydrocarbons will remain the leading source in the global energy mix for the foreseeable future
- Natural gas is a destination fuel, indispensable in the long run and complementing energy transition targets to a low-carbon economy
- Natural gas is number one in the global energy mix, its share will increase from 23% today to 28% in 2050

Global energy demand trends by fuel type

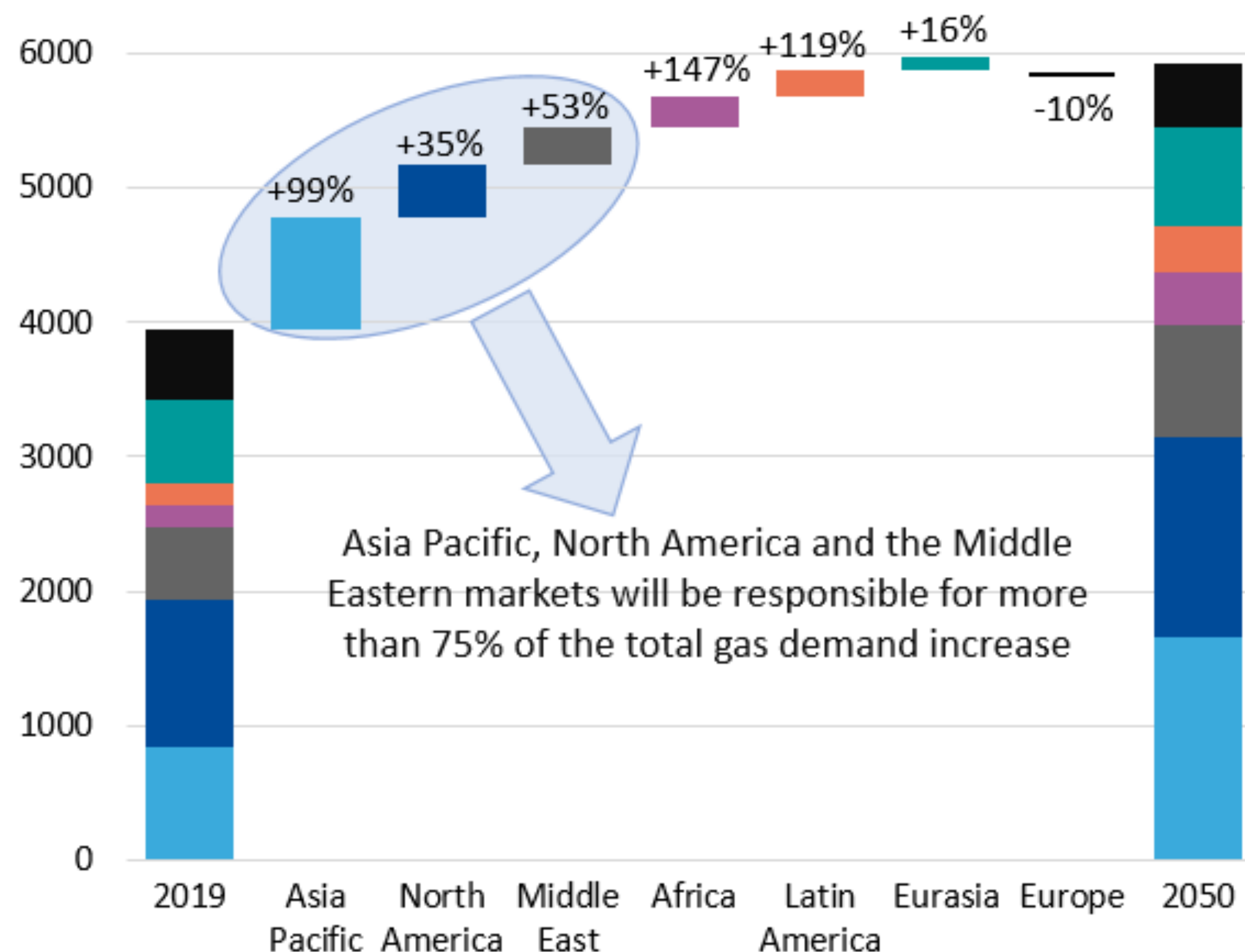


KEY DRIVERS OF NATURAL GAS DEMAND

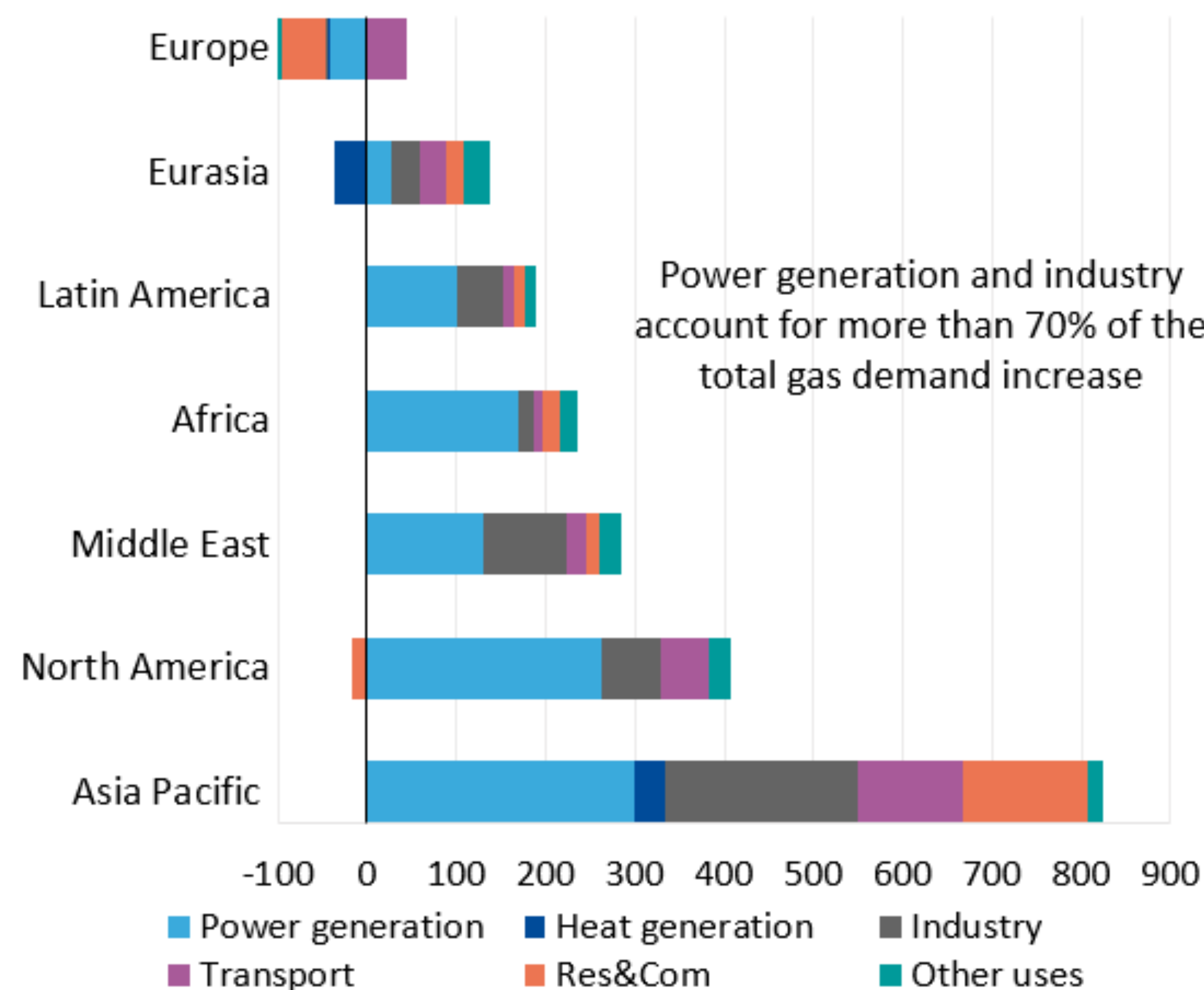
- Post-COVID-19 recovery electrification of industry and transport based on gas-fired generation
- The rise of gas usage in land and maritime transport

Global natural gas demand by region

Bcm



Sectoral contribution to regional growth 2019-2050



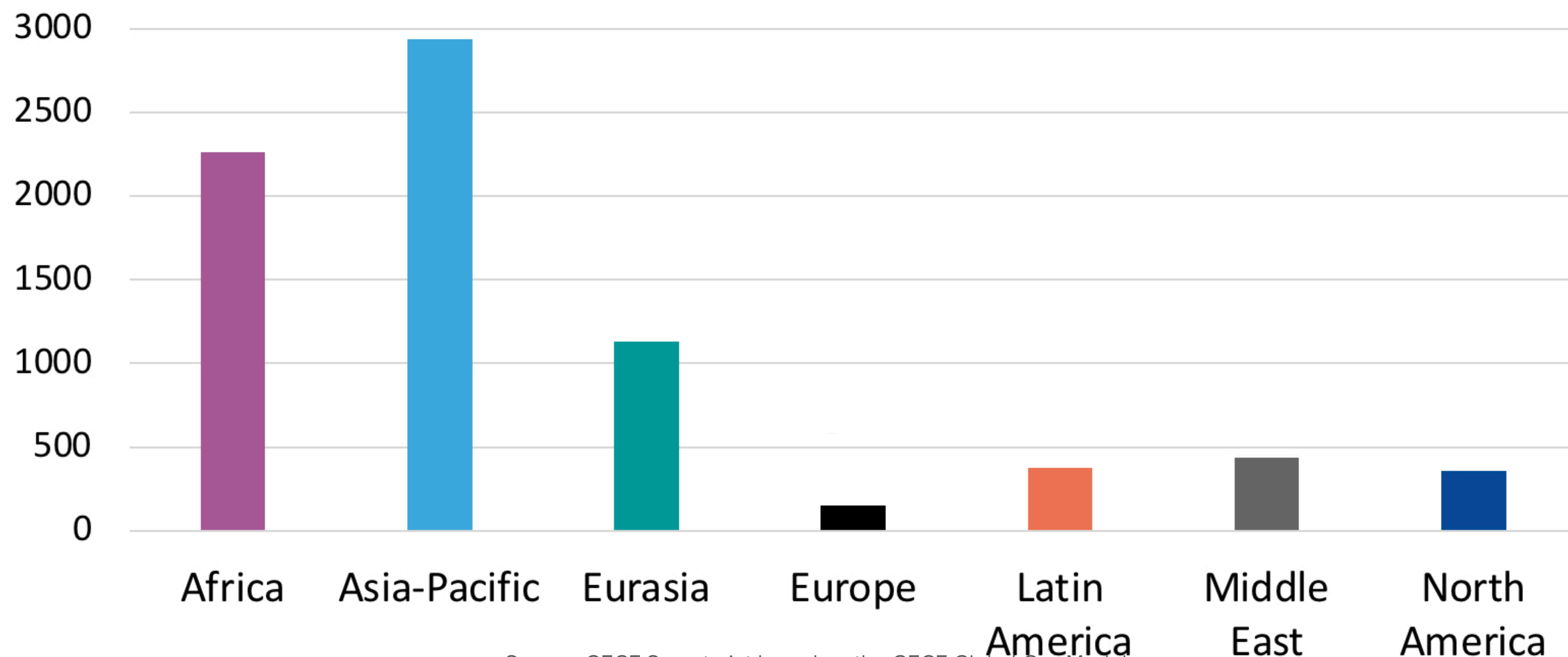
Source: GECF Secretariat based on the GECF Global Gas Model

Note: 1) Industry includes gas used as an energy fuel and feedstock as well as for hydrogen generation and the production of liquid fuels;
2) Other uses include gas demand for energy industry own use and for pipeline transport.

NATURAL GAS INVESTMENT

Upstream gas investment by region 2021-2050

Real USD billion



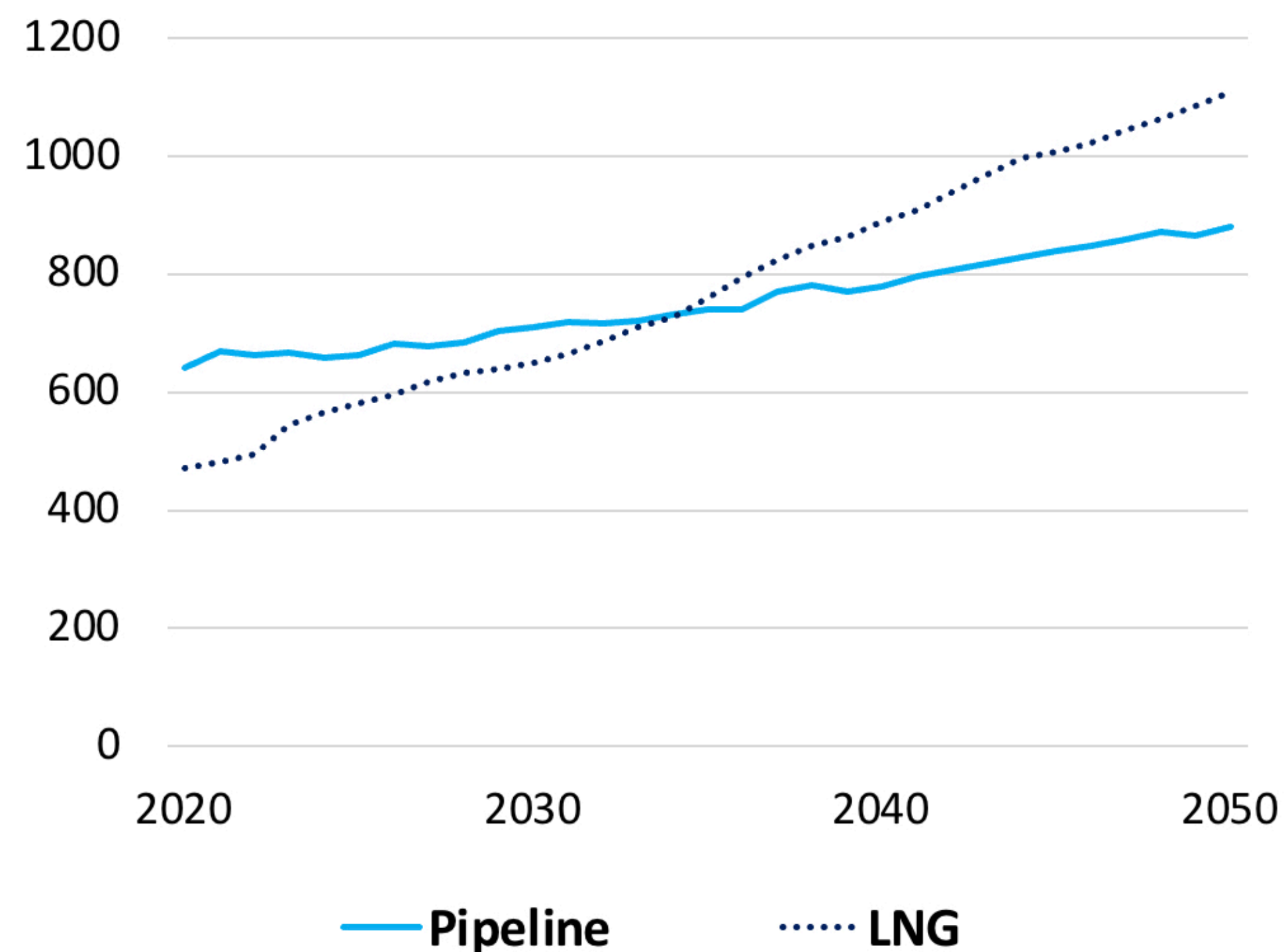
Source: GECF Secretariat based on the GECF Global Gas Model

- Total upstream gas investment by 2050 will reach USD 7.6 trillion
- Total gas investment (including upstream and midstream activities) between 2021 and 2050 will be about USD 10 trillion cumulatively
- Most of this investment will be in Africa, non-OECD Asia and Eurasia
- Tightened financial resources, especially due to decisions by banks and institutions to discontinue financing fossil fuel projects, including natural gas ones

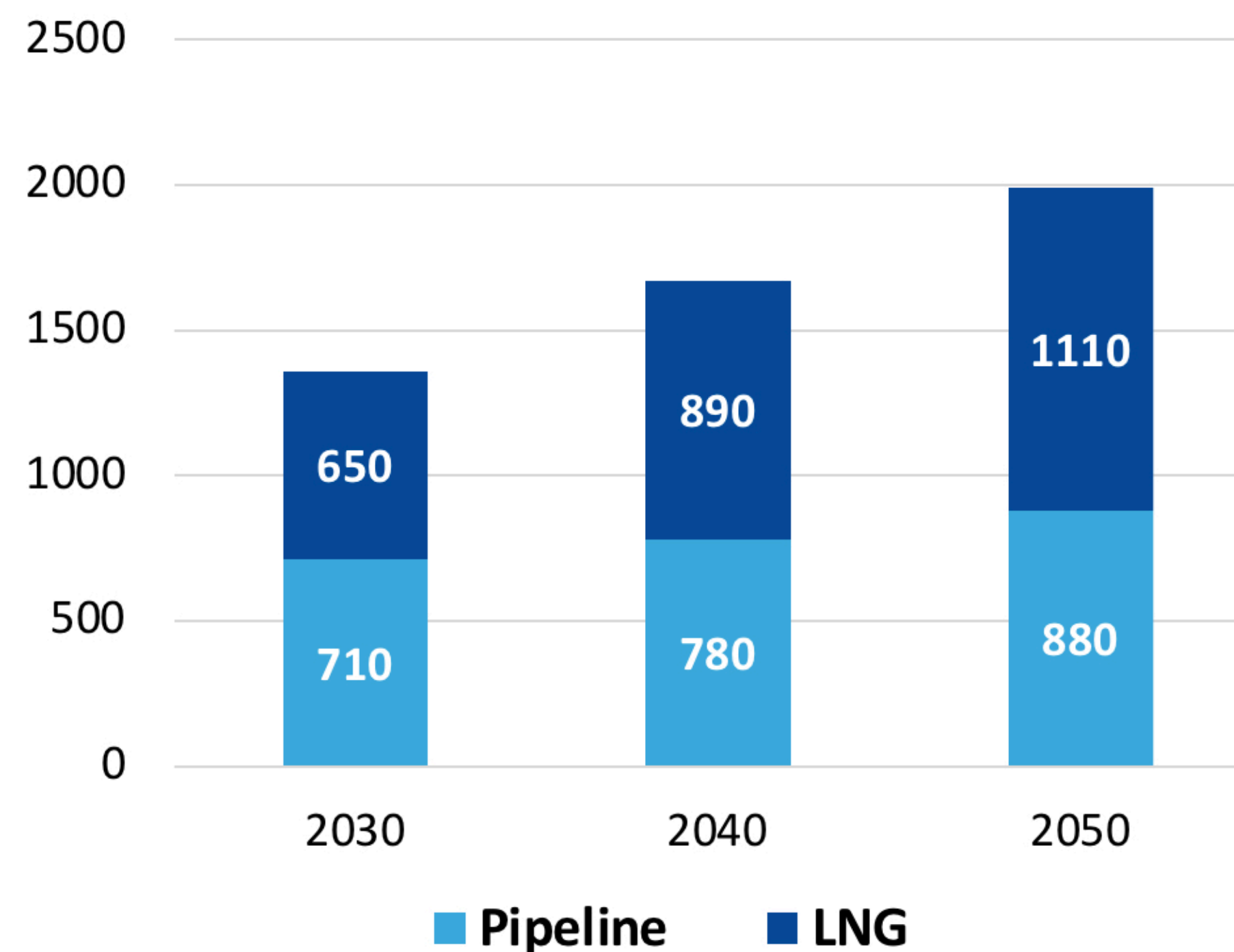
GLOBAL GAS TRADE

Global natural gas trade by flow type

Bcm



- Global gas trade will reach 1990 bcm by 2050
- LNG trade will overtake pipeline trade
- Introduction of “Green” LNG
- Annual LNG trade by 2050 is 820 mt (1110 bcm)

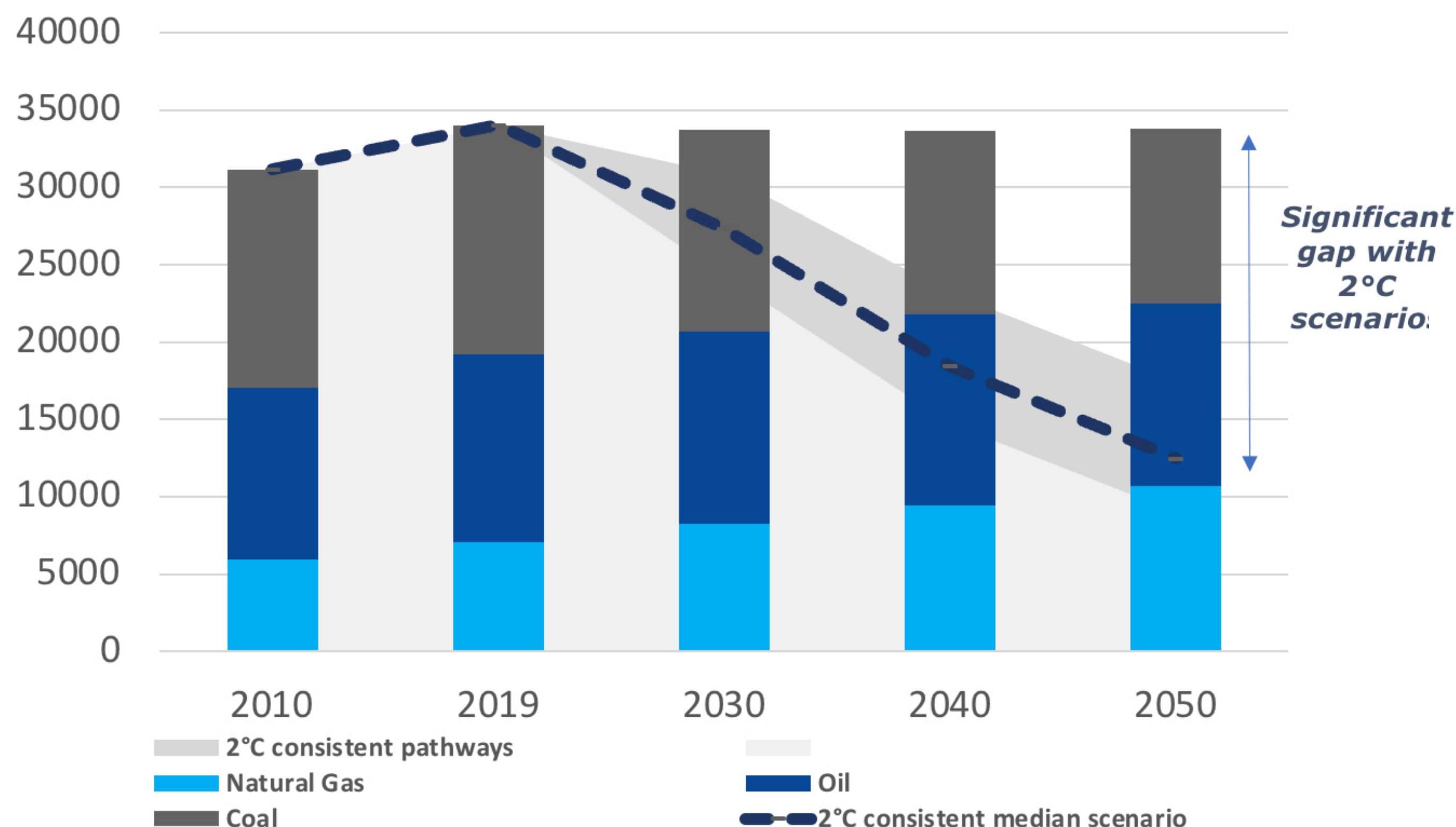


ENERGY-RELATED CO2 EMISSIONS

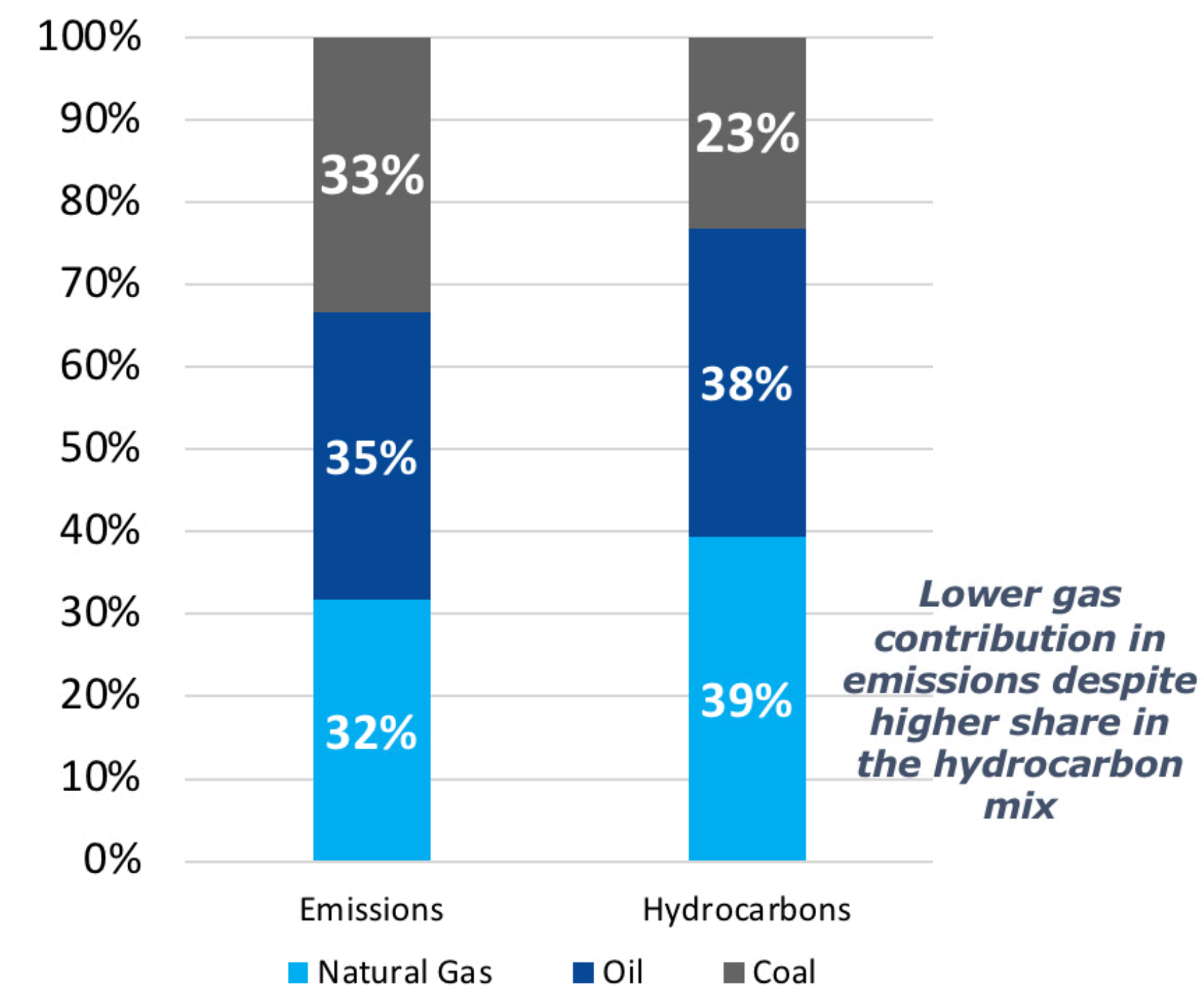
- Significant gap even with 2°C Scenario
- All technologies are needed to reduce the carbon-footprint of the industry

Emissions prospects by hydrocarbon fuel

MtCO₂



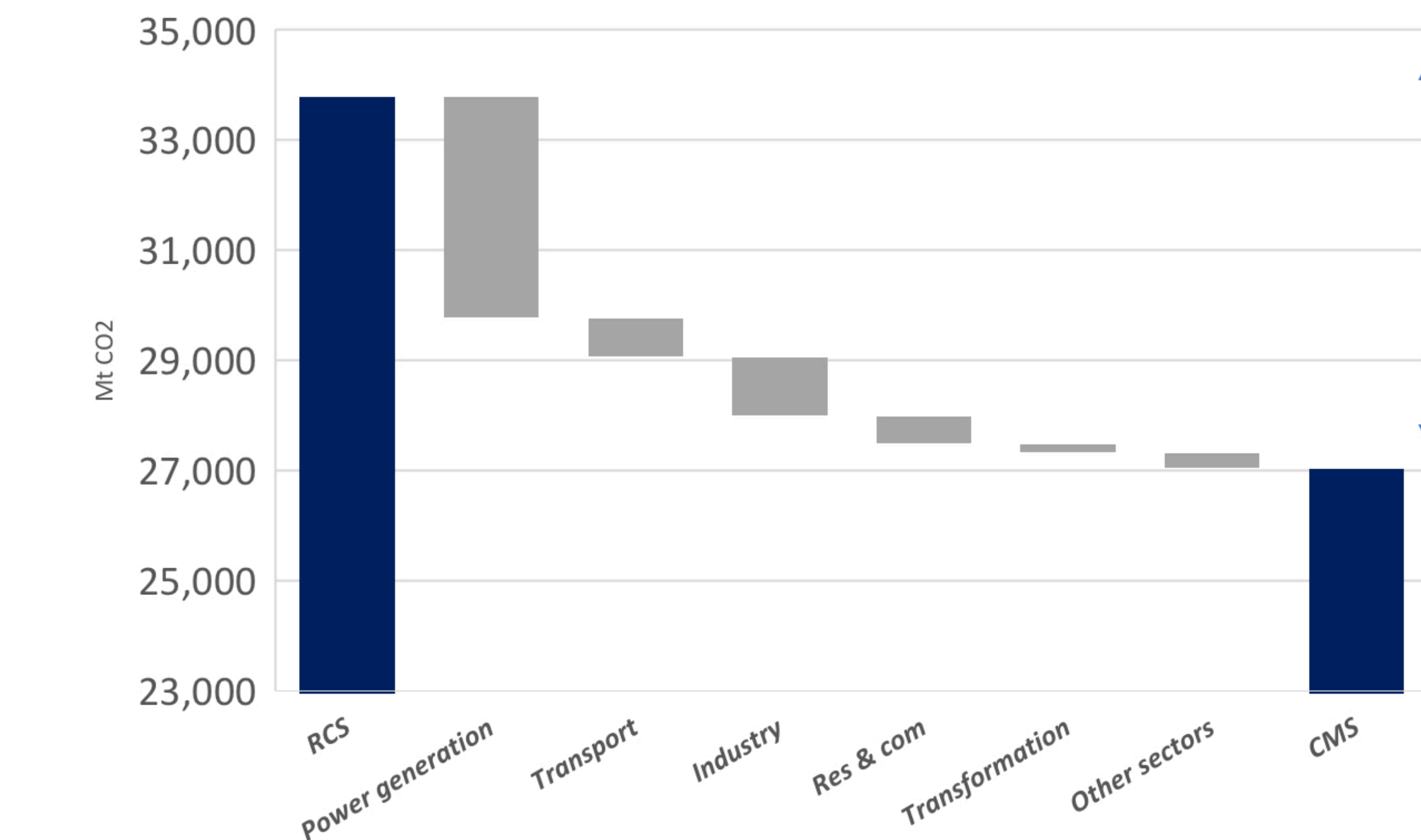
Fuel shares in energy-related CO2 emissions and hydrocarbon demand



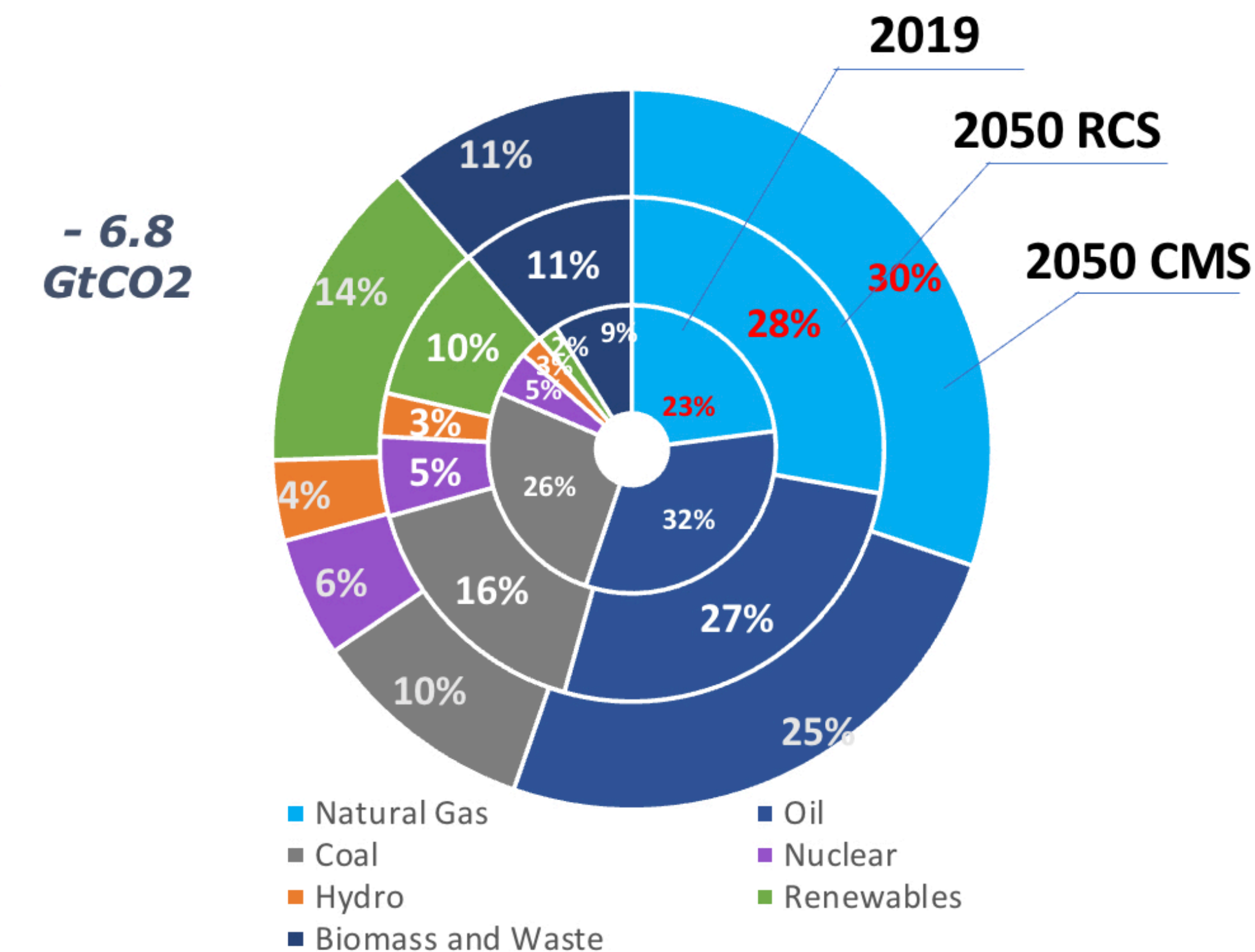
CARBON MITIGATION SCENARIO

- An alternative pathway to mitigate emissions with larger gas penetration in the energy mix

Emission abatement in the RCS compared to CMS



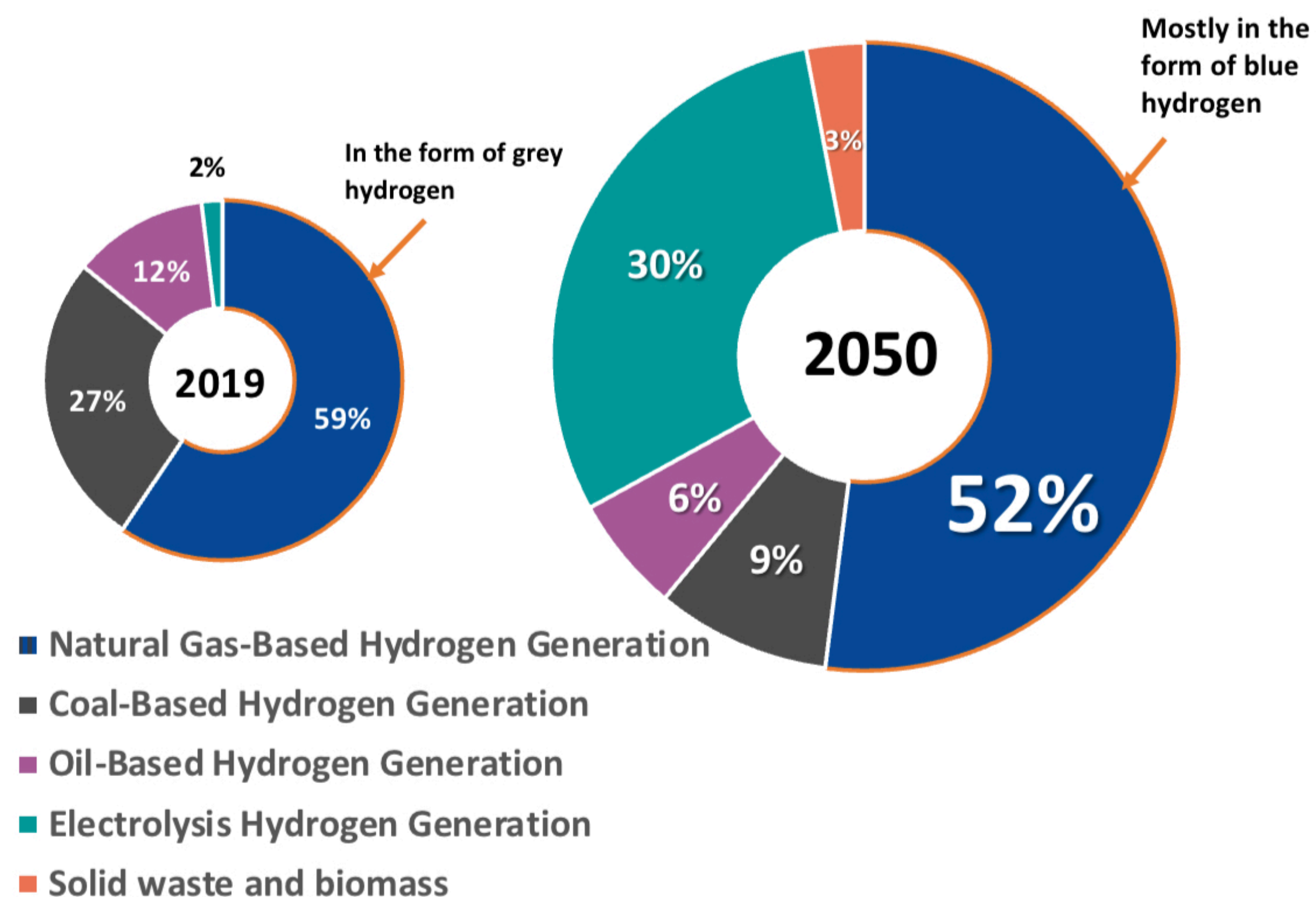
Primary energy mix in the RCS and CMS



Abbreviations : RCS: Reference case scenario and CMS: Carbon-Mitigation Scenario

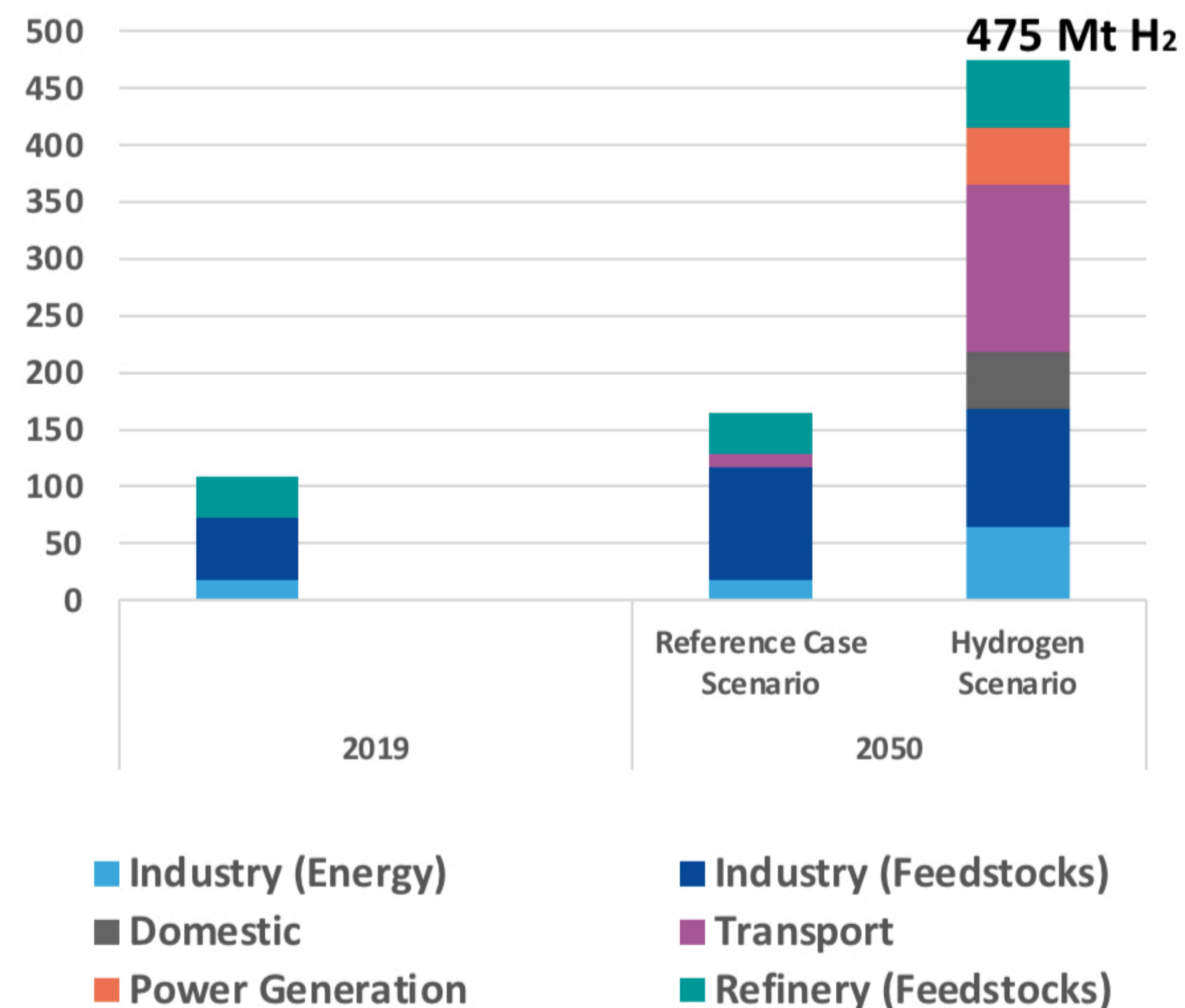
HYDROGEN SCENARIO

Hydrogen production share by source %



- Hydrogen demand in 2050 will reach 475 Mt
- Hydrogen is acting as a game changer with blue hydrogen taking a significant role

Hydrogen demand outlook by sector Mt of H₂



KEY TAKEAWAYS

- **Hydrocarbons** will remain the leading source in the global energy mix for the foreseeable future
- Natural gas is **an indispensable fuel**, complementing the energy transition. It will play an essential role in economic development and social progress, supporting the attainment of the **UN's Sustainable Development Goals**, in particular Goal 7, as an environmentally friendly, affordable, reliable, accessible and flexible natural resource
- **The vital importance of natural gas** in ensuring global energy security and more sustainable and resilient energy systems by 2050
- Contributing 48% to the global growth in energy demand, natural gas will overtake coal by 2025 to become **the largest energy source by the mid-2040s**
- **Asia-Pacific will become the largest gas demand region**
- **The indispensable contribution of natural gas** to the **protection of the environment** and, in particular, for mitigating and adapting to climate change in the coming decades

KEY TAKEAWAYS (2)

- Energy demand will grow along with the global economy and the increase in population. We will likely see **conventional and renewable energy sources** walking hand in hand, solving climate issues and meeting consumer needs for affordable energy
- As the great energy transition grows in intensity, it will be **natural gas, together with renewables**, which will provide almost **60% of the world's electricity supply by 2050**
- **Alternative scenarios analysis** highlights a **considerable carbon mitigation** potential for natural gas, with reinforced policy actions and technological progress. Further innovation and development of decarbonisation technologies, such as **CCUS and hydrogen**, can substantially improve this mitigation potential
- **The GECF Member Countries**, which have the largest share of natural gas resources in the world, in gas production and trade, will retain a leading position and develop natural gas resources for the benefit of producers and consumers during the energy transition. Main concerns are on unilateral economic restrictions
- Citing the **2019 Malabo Declaration adopted by the GECF Heads of State and Government**, GGO2050 proves that natural gas is the **core source of energy for global sustainable development**

THANK YOU

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