



# **GECF Global Gas Outlook 2050: Natural gas for sustainable development**

Galia Fazeliyanova, Energy Economics Analyst, GECF  
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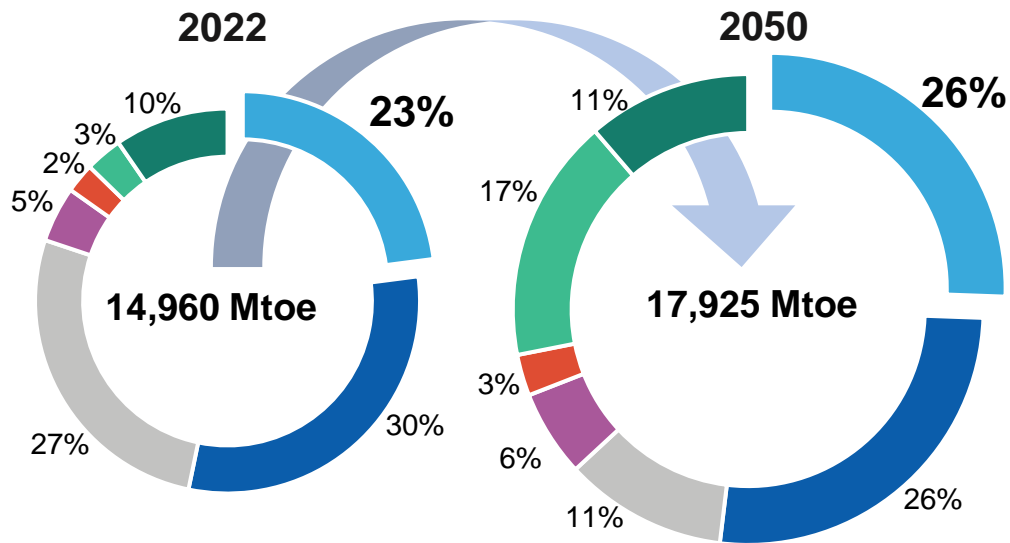


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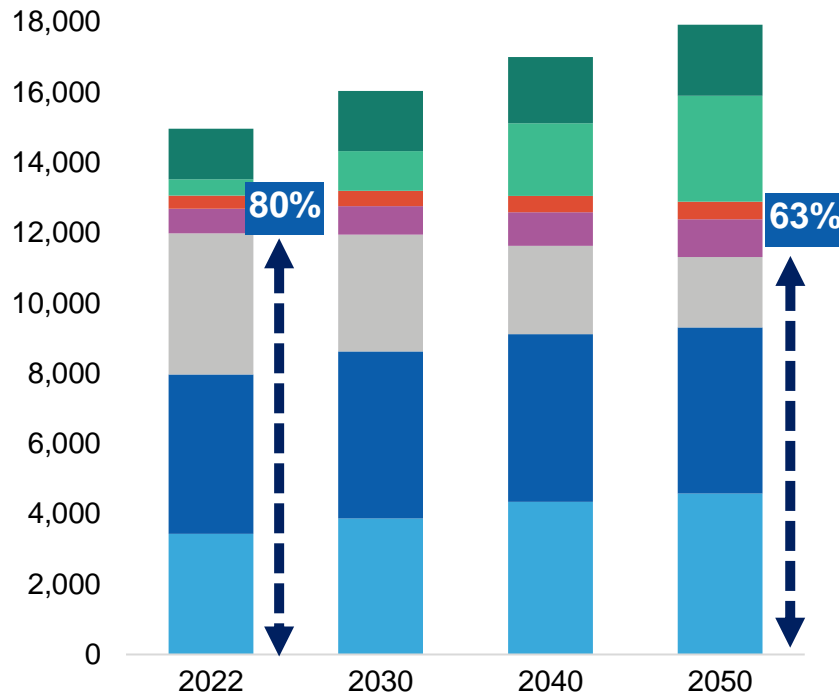
- 1. Global energy and gas demand, gas trade outlook**
- 2. Europe: natural gas demand and trade outlook**
- 3. Sustainable Energy Scenario**

# Natural gas is an essential element of the global primary energy mix: from 23% today to 26% in 2050

Global energy mix evolution



Energy demand trends by fuel (Mtoe)

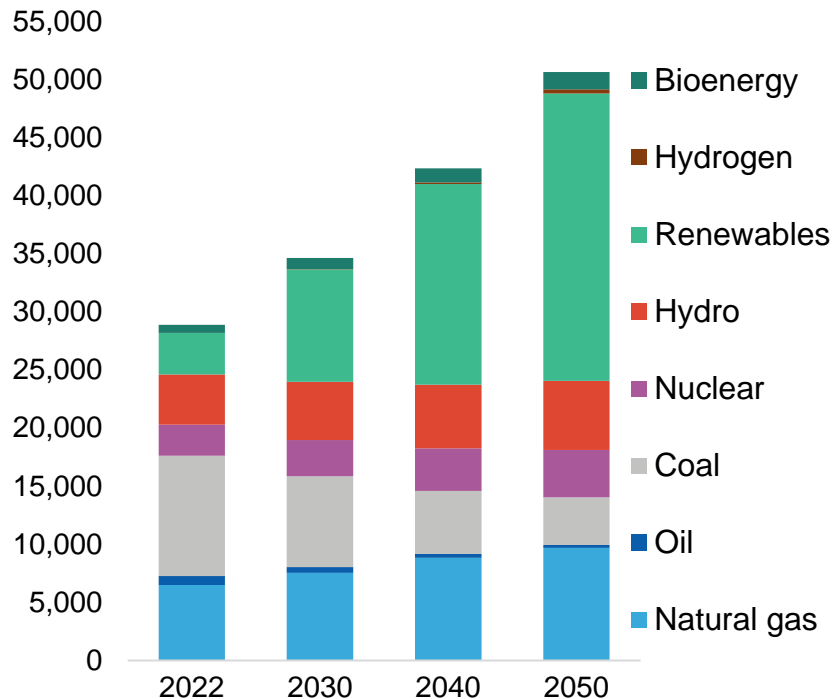


■ Natural gas ■ Oil ■ Coal ■ Nuclear ■ Hydro ■ Renewables ■ Bioenergy

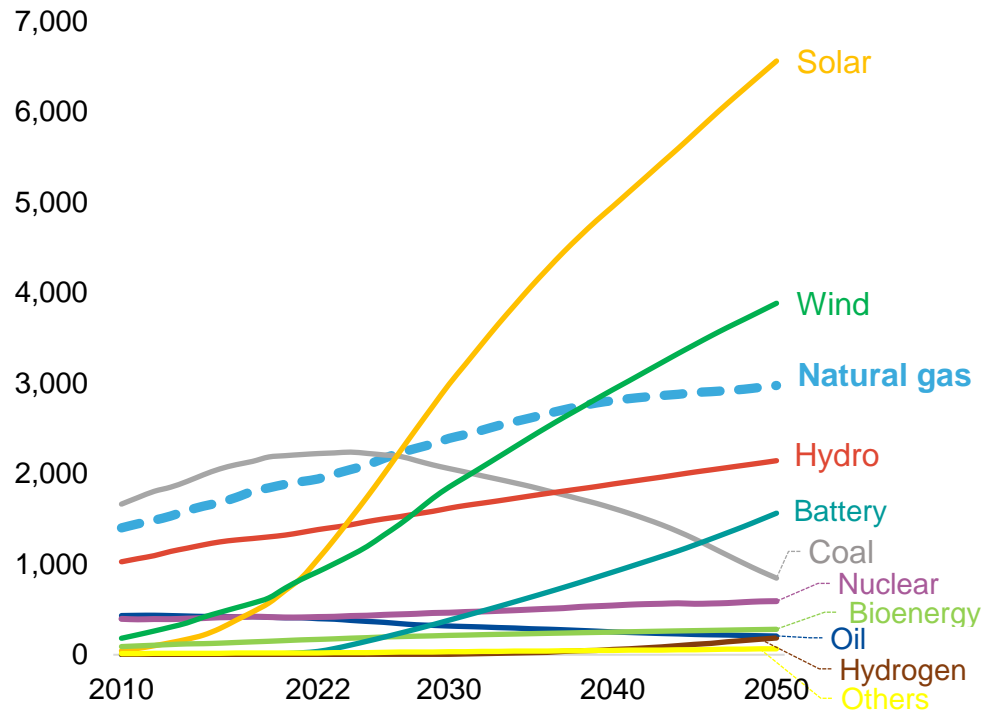
Note: Bioenergy includes traditional and modern bioenergy. Renewables include solar, wind, tidal, and geothermal energy.

# The power generation mix shifts towards low-carbon energy sources

Global electricity generation growth (TWh)



Trends in global power generation capacity (GW)

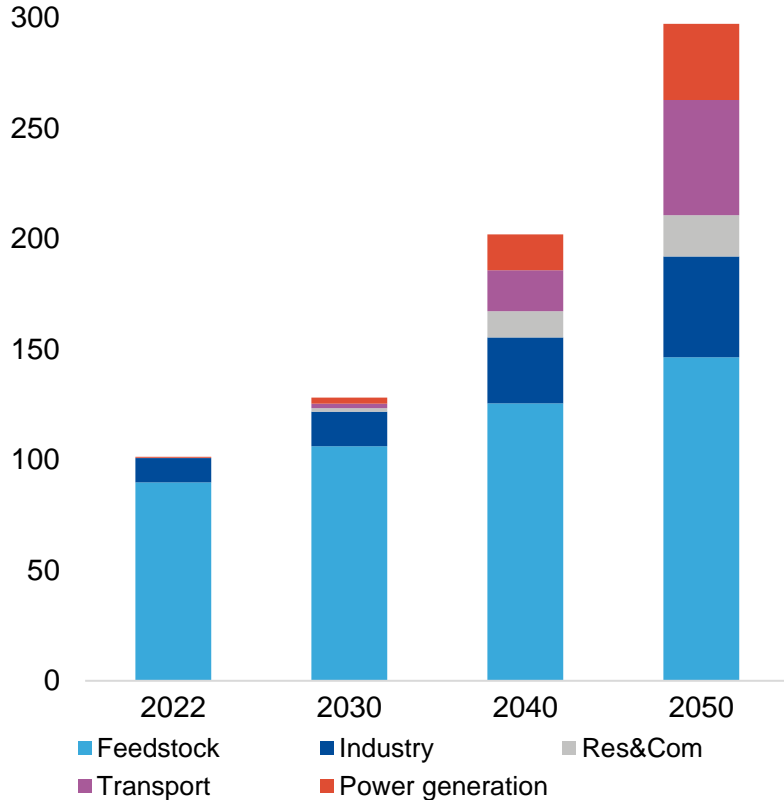


- In 2050, natural gas and renewables provides nearly 68% of the total electricity supply

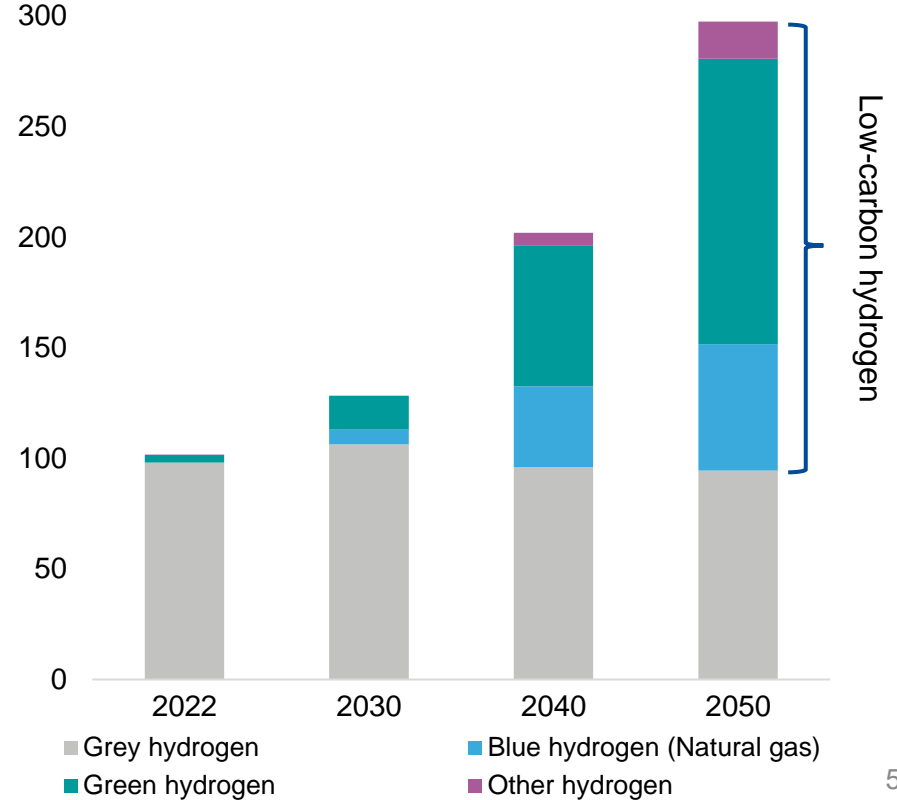
Note: Others include geothermal and tidal.

# Low-carbon hydrogen gains momentum with natural gas contributing to almost 30% of its generation in 2050

Hydrogen demand by sector (MtH<sub>2</sub>)

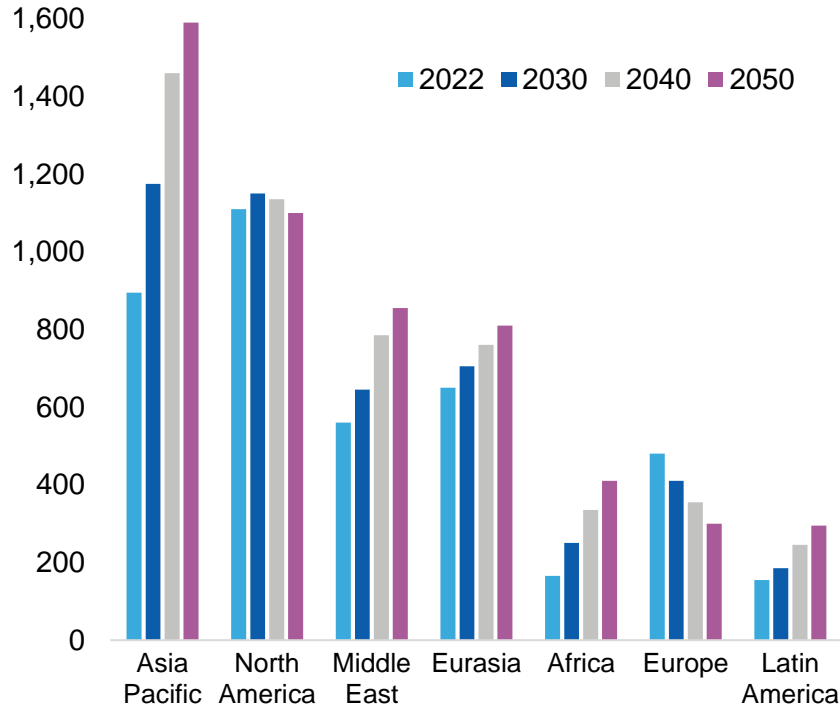


Hydrogen generation by technology (MtH<sub>2</sub>)

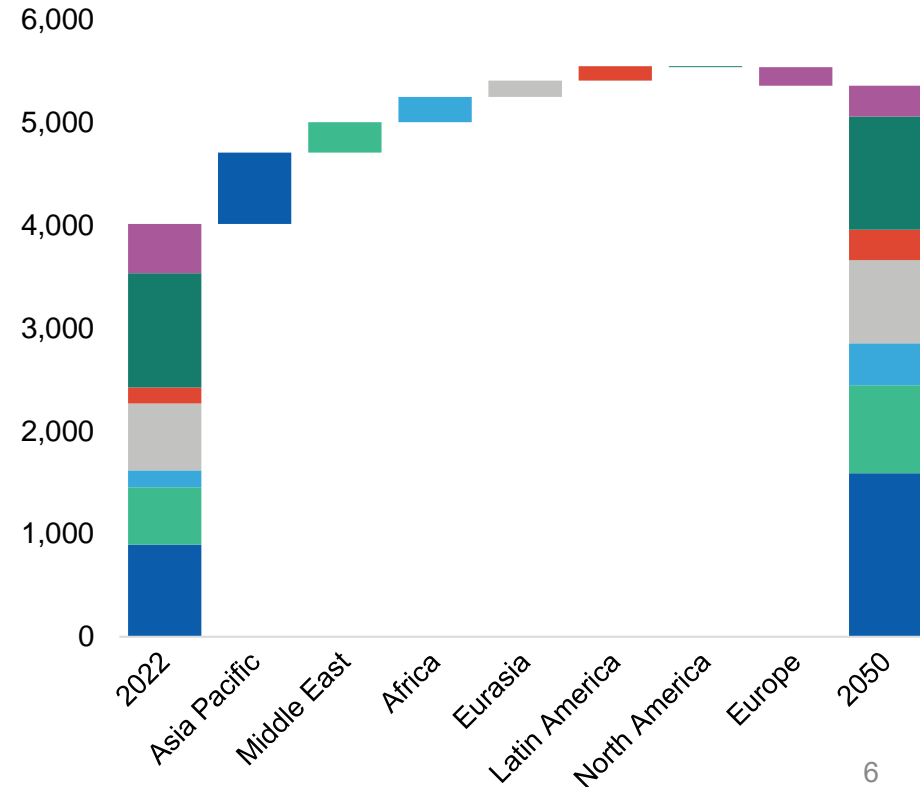


# Natural gas demand rises by 34% to 5,360 bcm by 2050 with the Asia Pacific region in the lead

Global natural gas demand by region (bcm)

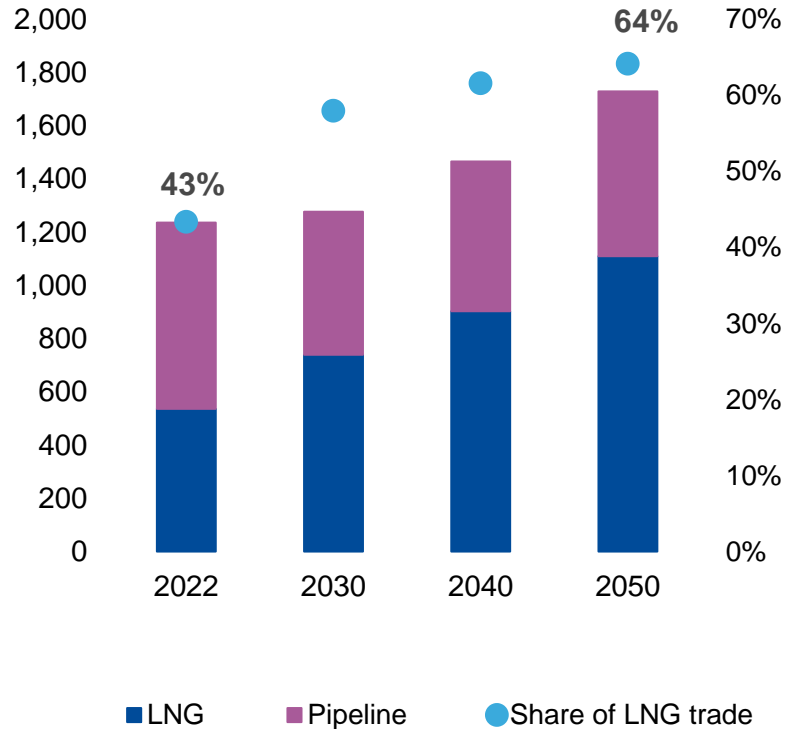


Incremental contribution 2022-2050 (bcm)

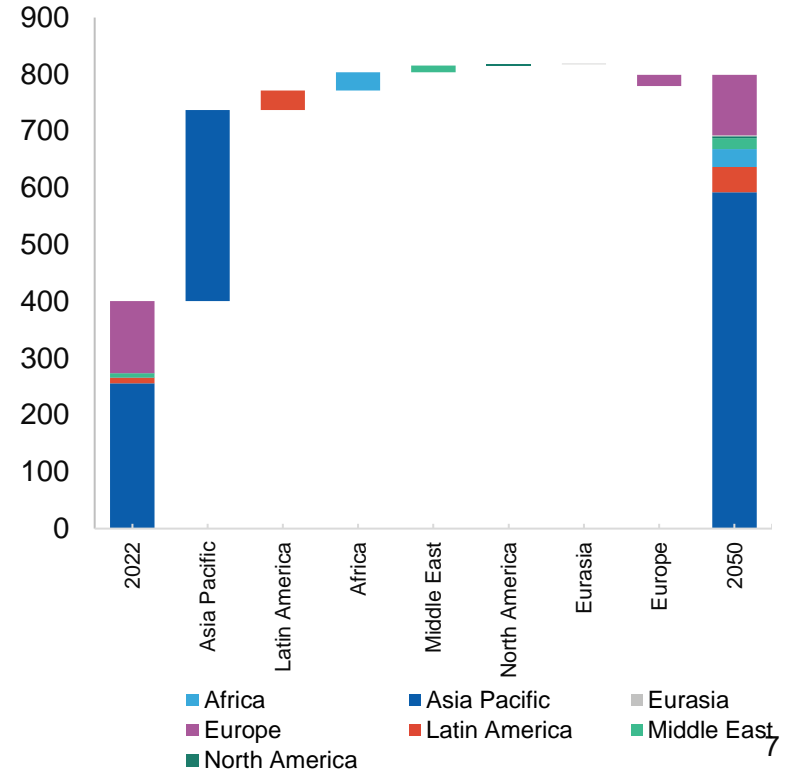


# Global natural gas trade to be dominated by LNG trade, which is expected to more than double by 2050 to reach 1,110 bcm or 805 Mt

Global natural gas trade outlook by flow type, 2022-2050 (bcm)

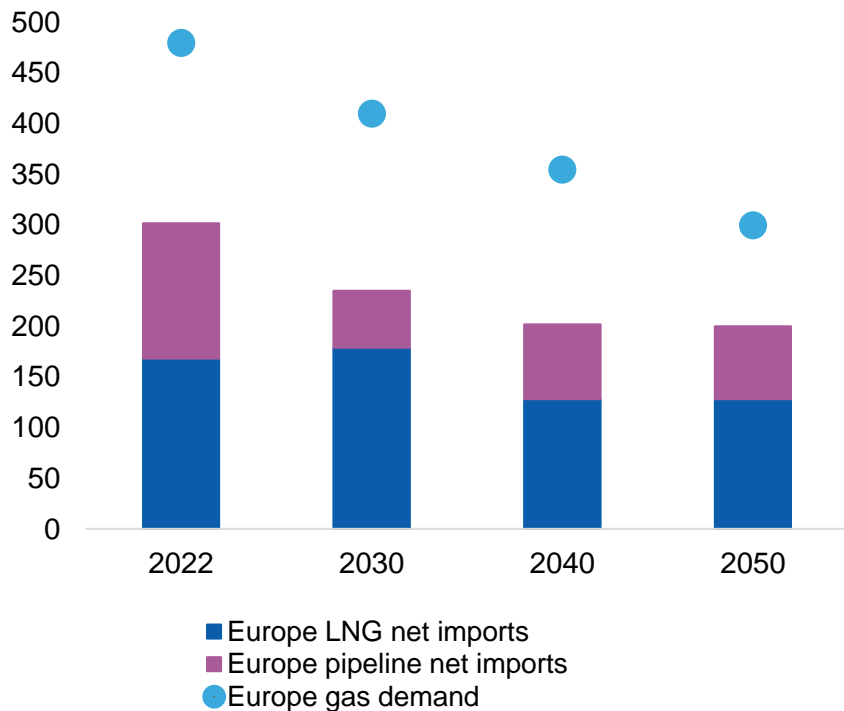


Regional contribution to LNG imports, 2022-2050 (Mt LNG)

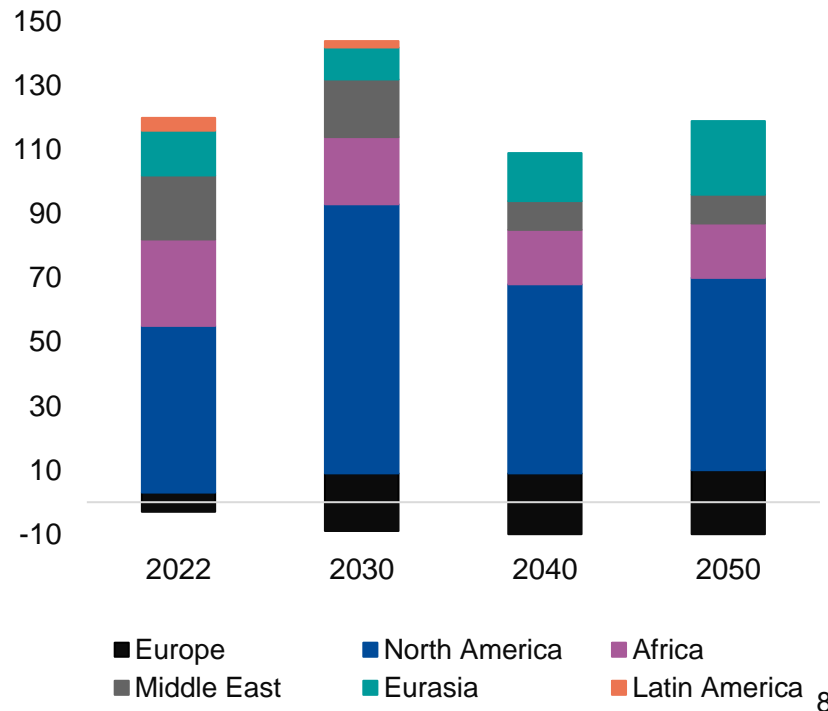


# Natural gas will continue to play a significant role in providing energy security for Europe in the long run

Europe natural gas demand and net imports by flow type, 2022-2050 (bcm)



Europe LNG imports (+) by origin and exports (-) by destination (Mt LNG)







## Sustainable Energy Scenario

# Sustainable Energy Scenario (SES) building blocks

## Energy poverty eradication

- Economic empowerment of low-income countries by 2050
- Reaching the upper-middle-income poverty line by 2050 for countries currently below the low-income poverty line
- Improved global energy consumption per capita inequality

## Substitution among energy sources within sectors

- Accelerated transitioning away from unabated coal
- Adjustment of LCOE to account for intermittency
- Increased low-carbon-hydrogen adoption
- Rapid transition from traditional biomass to LPG in Africa
- Accelerated adoption of heat pumps in Europe and North America

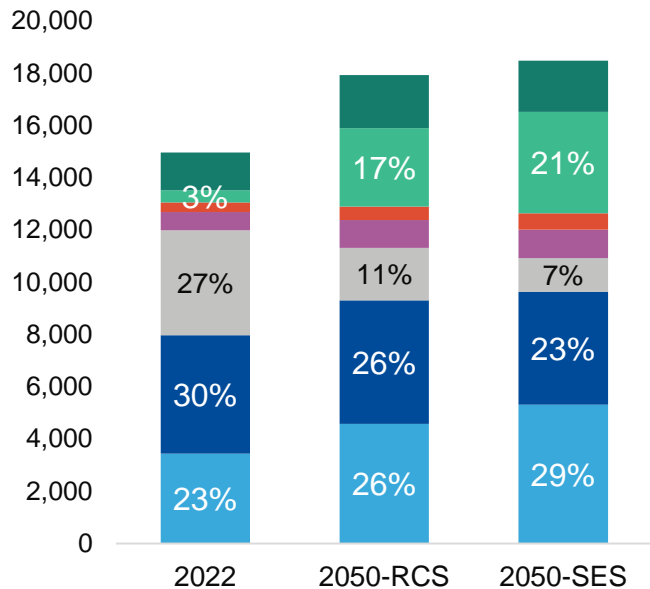
## Accelerated decarbonisation

- Accelerated CCUS upscaling
- Efficiency enhancement in the industrial and power sectors
- Rapid blue hydrogen adoption

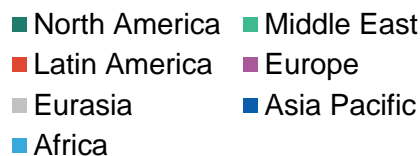
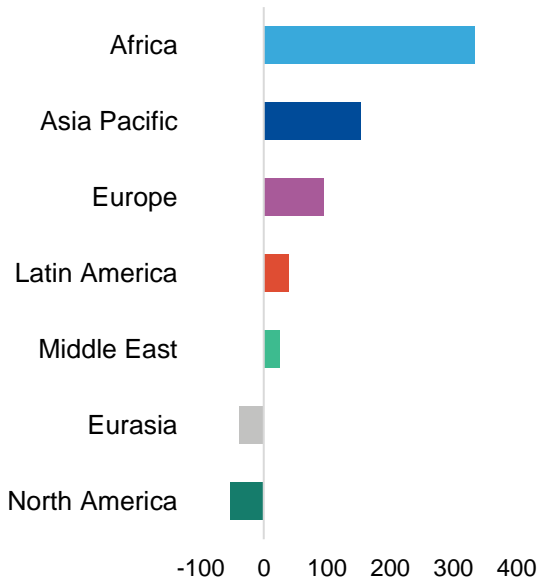


# The contribution of natural in global energy mix increases to 29% in SES compared to 26% in RCS

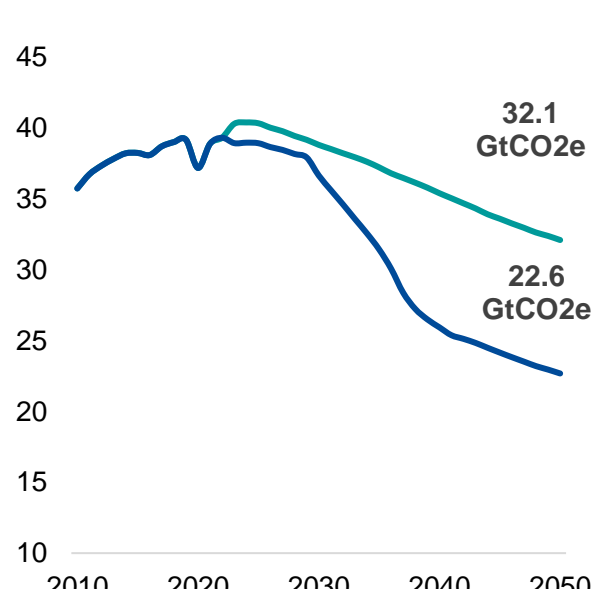
Primary energy demand by fuel (Mtoe)



Primary energy demand by region, difference between RCS and SES (Mtoe)

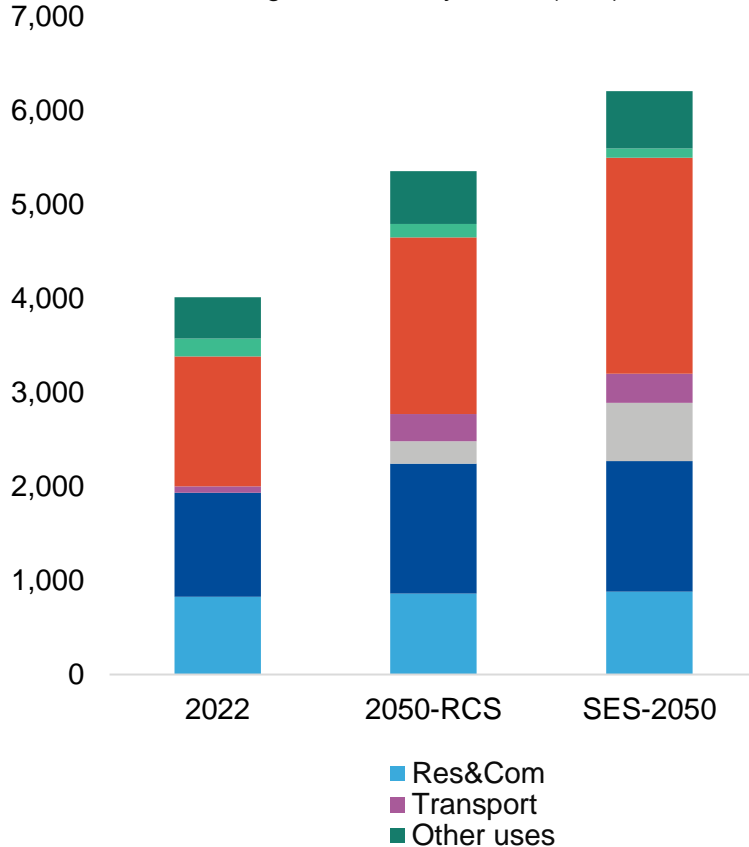


Energy-related CO<sub>2</sub> emissions (GtCO<sub>2e</sub>)

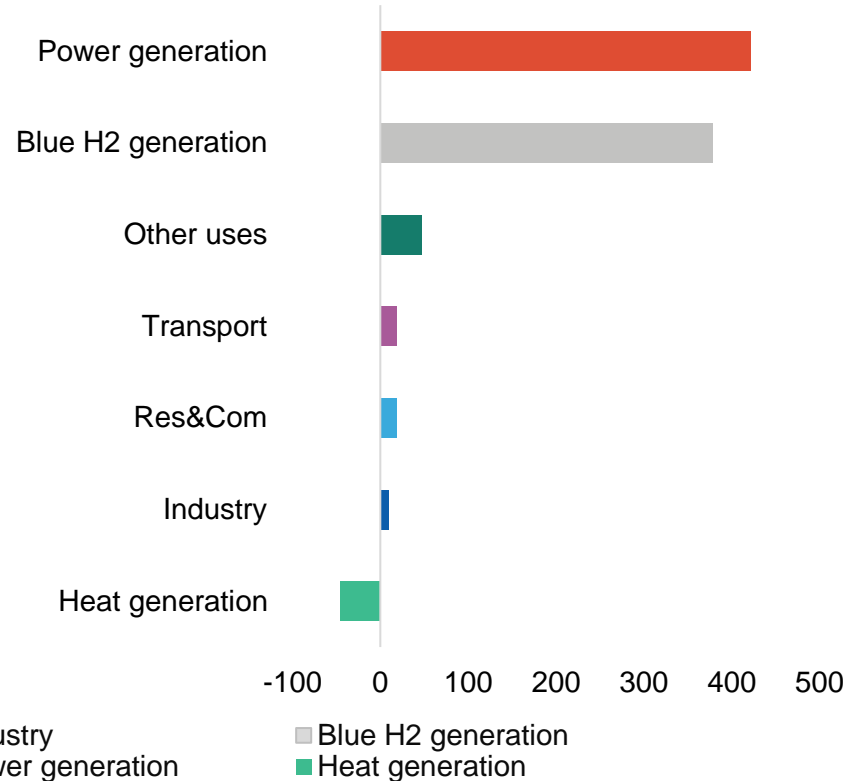


# Natural gas makes a substantial contribution to the global power and blue hydrogen generation

Natural gas demand by sector (bcm)



Difference between RCS and SES (bcm)



## Key messages

- Global primary energy demand **will grow by 20%** between 2022 and 2050.
- The global energy mix will undergo a significant transformation:
  - Natural gas will raise its share to **almost 26% by 2050**. Natural gas demand is **not anticipated to be peaking**.
  - Renewables will experience a promising increase and their share is projected to surge **from a mere 3% to over 17%**.
- Global **natural gas demand** will rise to about 5,360 bcm by 2050 – **34%** higher than the 2022 level.
- In the long run, global natural gas trade will be dominated by **LNG trade**, which is expected to double to reach **805 Mt by 2050**.
- Natural gas will continue to play a significant role **in providing energy security for Europe** – by 2050 net natural gas imports will stand at around 200 bcm, representing 20% of global gas imports.
- **SES emerges as a promising pathway**, assuming higher energy demand and **a higher share of gas in the energy mix – 29% - by 2050**, despite that **energy-related emissions are less** than in the RCS - **a 42% decline from the 2022 level**.



Thank you for your kind attention!

Tornado Tower, 47<sup>th</sup>, 48<sup>th</sup> Floor. West Bay, Doha, Qatar.  
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