



GECF Global Gas Outlook 2050: security of gas supply and UN SDG's attainment

Galia Fazeliyanova, Energy Economics Analyst, GECF

23-24 March 2023, UNECE 10th session of the Group of Experts on Gas, Geneva



UNECE

**SUSTAINABLE
DEVELOPMENT GOALS**

Key drivers of the 2022 Reference Case Scenario (RCS)

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Geopolitics

- Deterioration of global geopolitical order
- Russia-Ukraine conflict
- United States-China geopolitical tension inflamed

Energy security

- Record energy prices
- Concerns over energy supply security
- Shifts in global gas and LNG trade flows

2022 RCS

Economic shocks

Uneven post-COVID recovery:

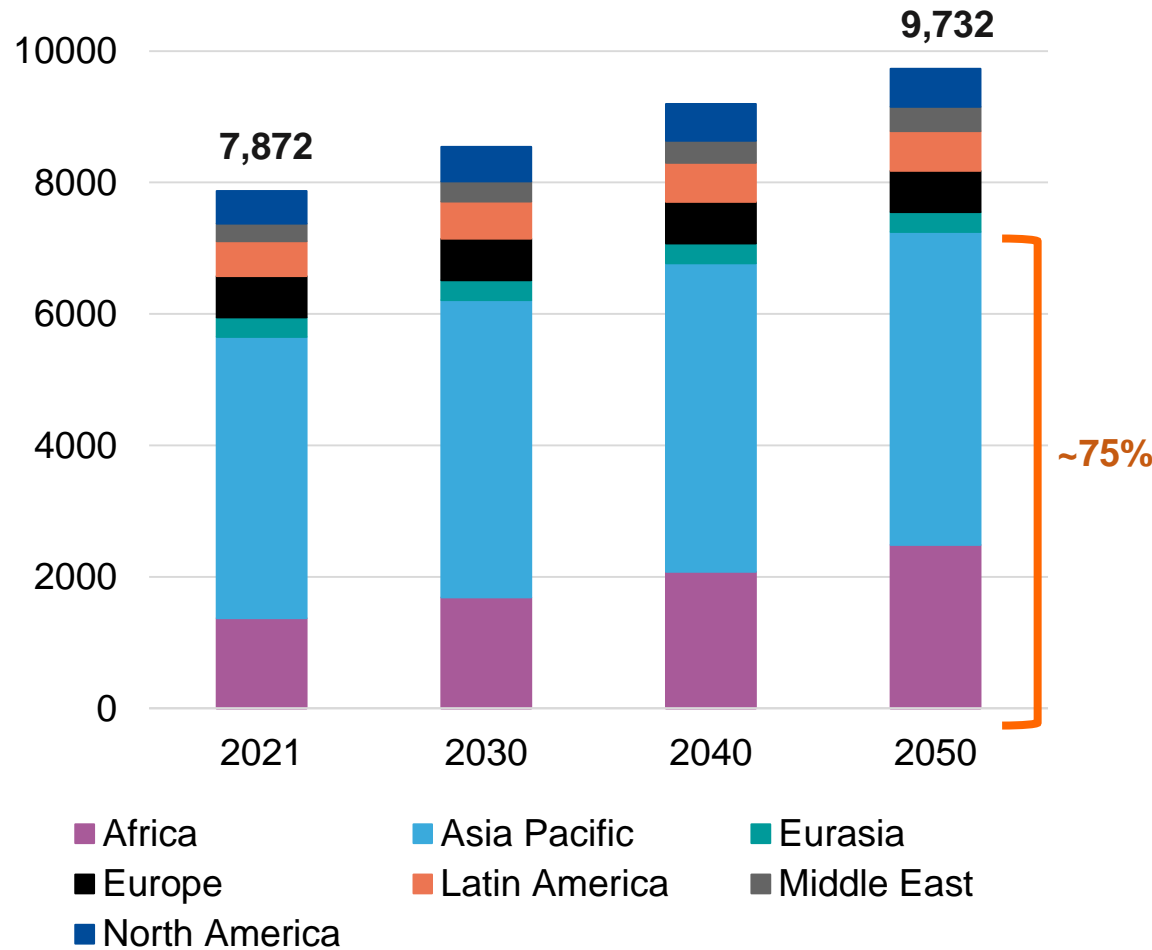
- Disrupted supply chains
- High inflation
- Fiscal and monetary tightening
- Global recession around the corner

Climate change

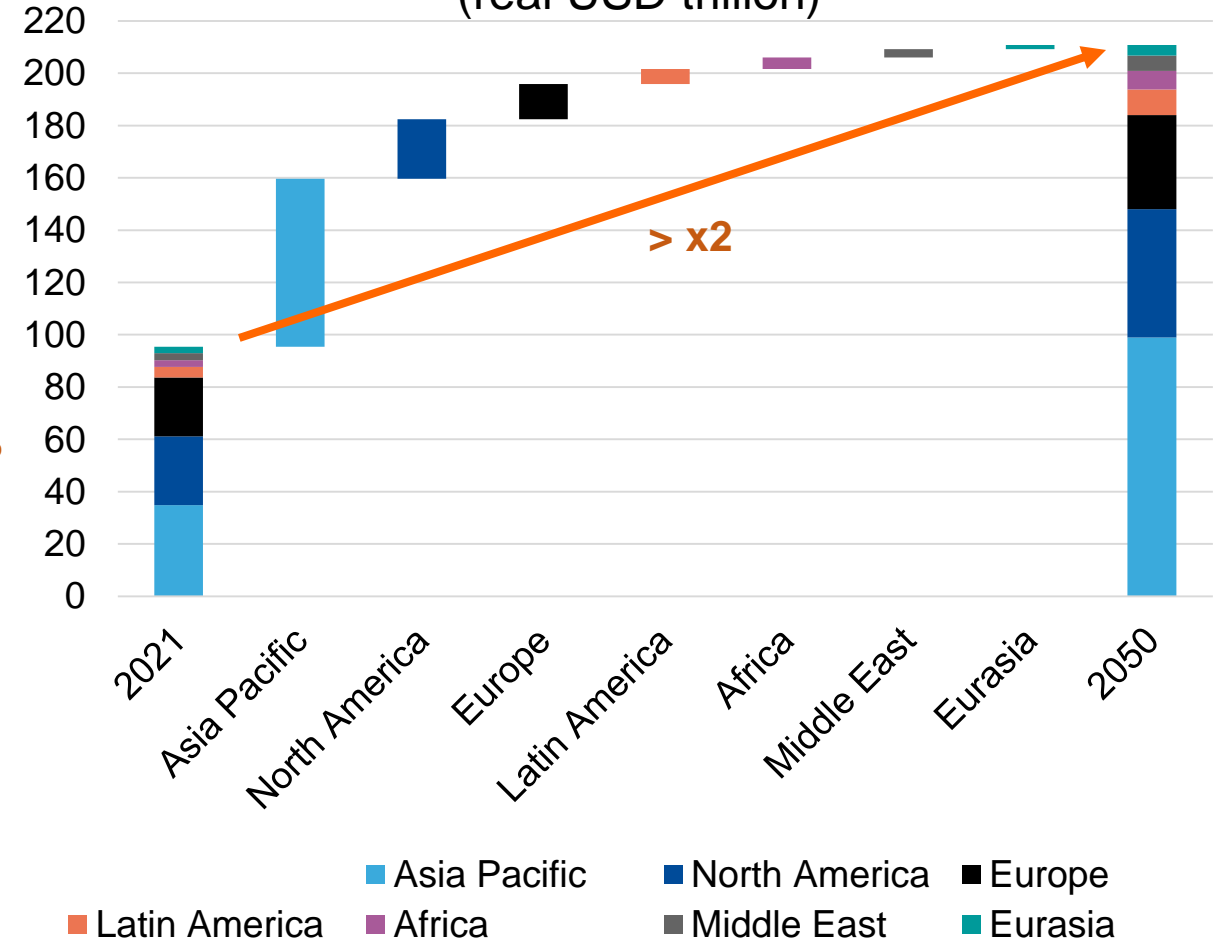
- Global GHG emissions increase of 6% in 2021: Back to pre-pandemic levels
- Growing net zero ambitions by countries and companies
- COP 27 and road to COP 28

Demographic and economic trends are shaping the future of global energy demand

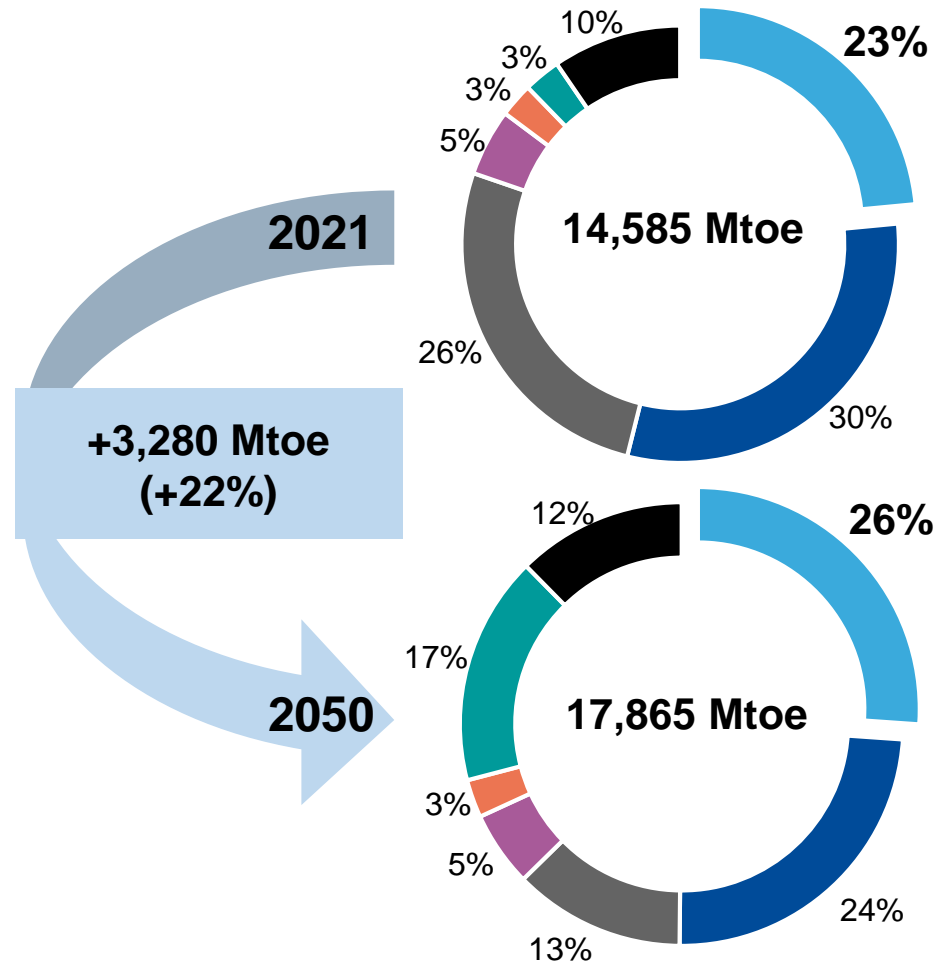
The world's population (million)



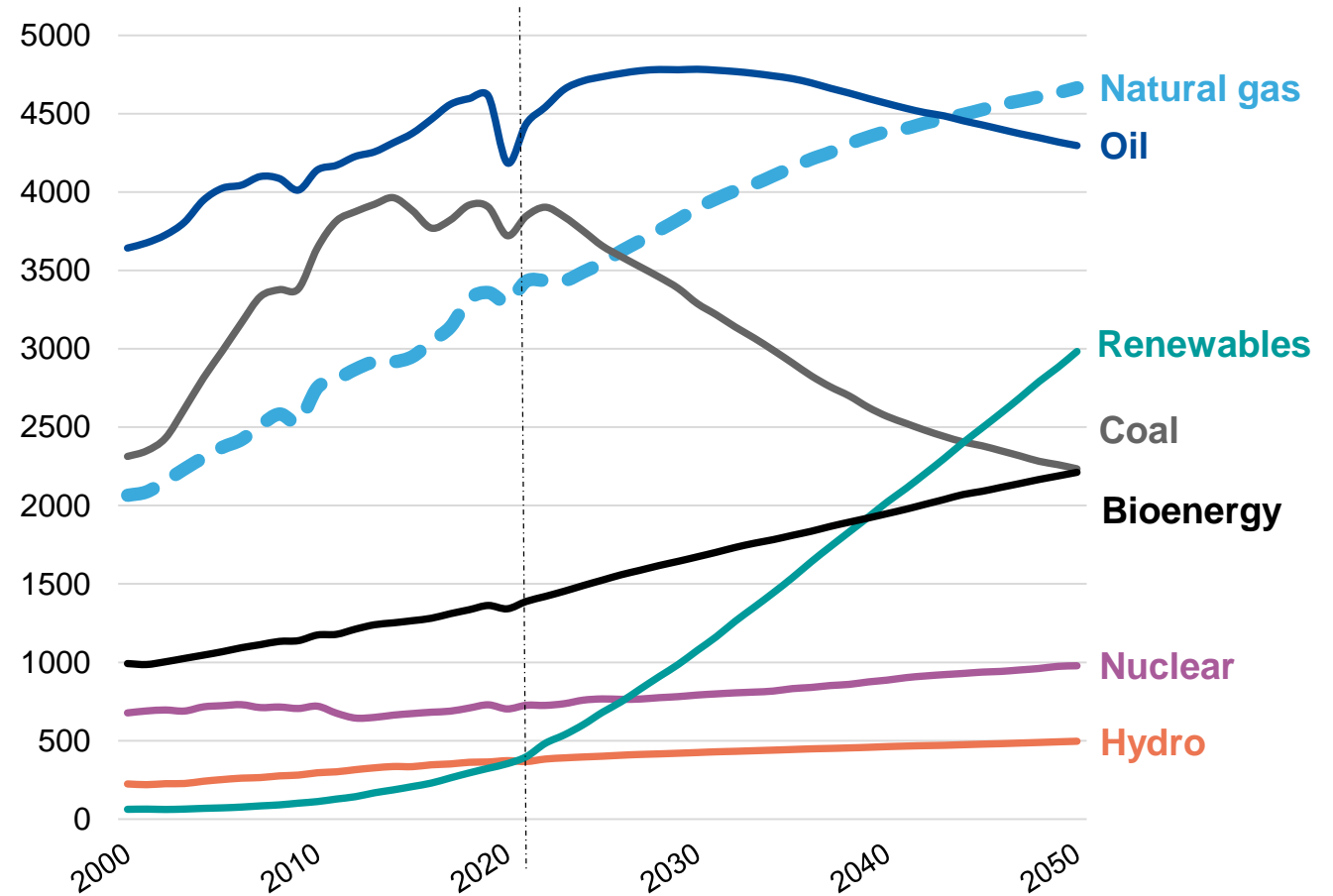
GDP growth composition by region to 2050 (real USD trillion)



Global energy demand will grow by 22% with natural gas as the top source



Energy demand trends by fuel type (Mtoe)

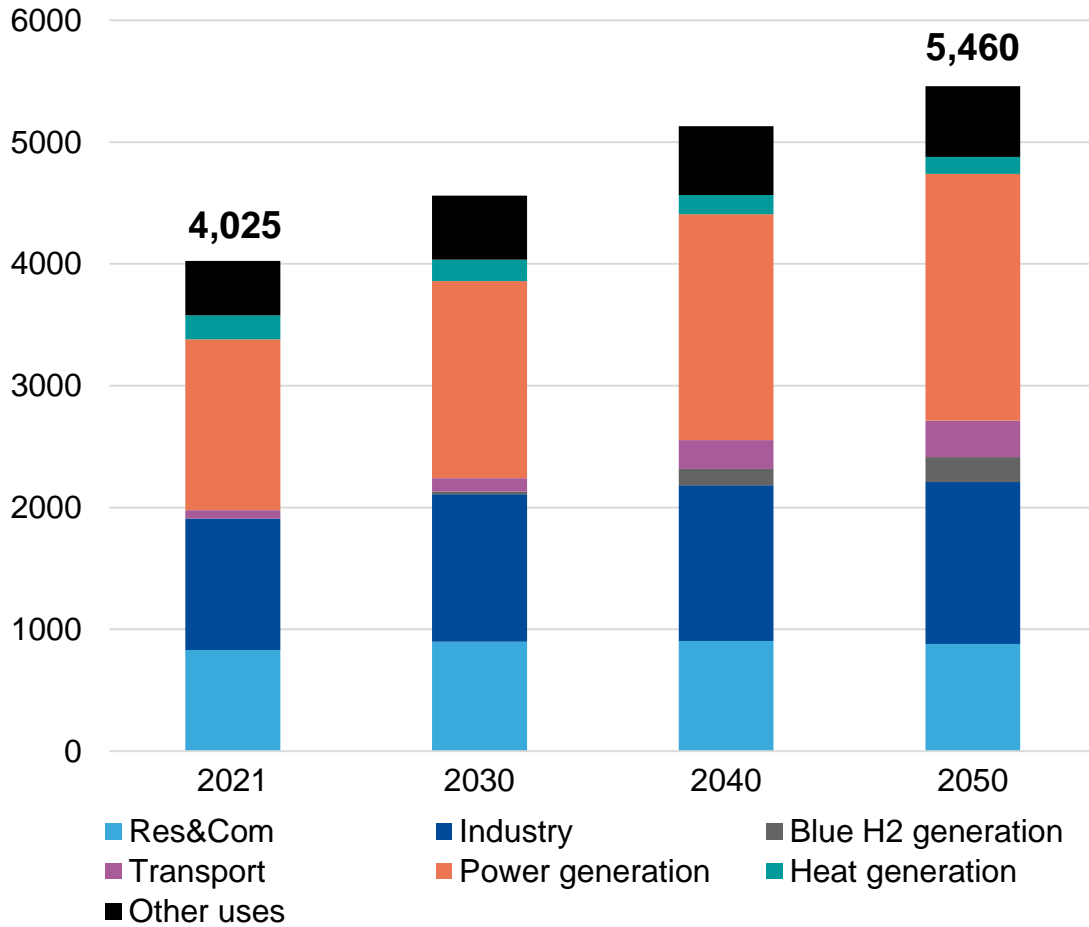


■ Natural gas ■ Oil ■ Coal ■ Nuclear ■ Hydro ■ Renewables ■ Bioenergy

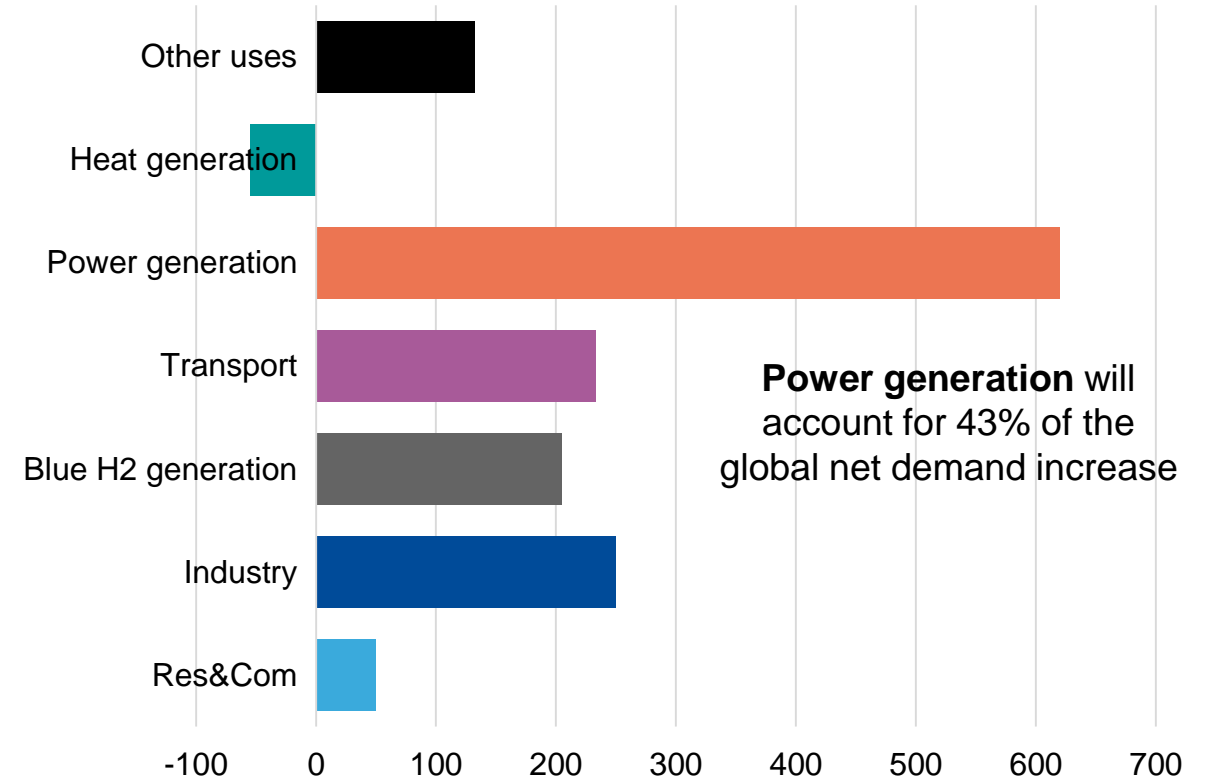
Note: Bioenergy includes traditional and modern bioenergy. Renewables include solar, wind, tidal, and geothermal energy.

Global natural gas demand will rise by 36% to 5,460 bcm by 2050

Global natural gas demand trends by sector (bcm)



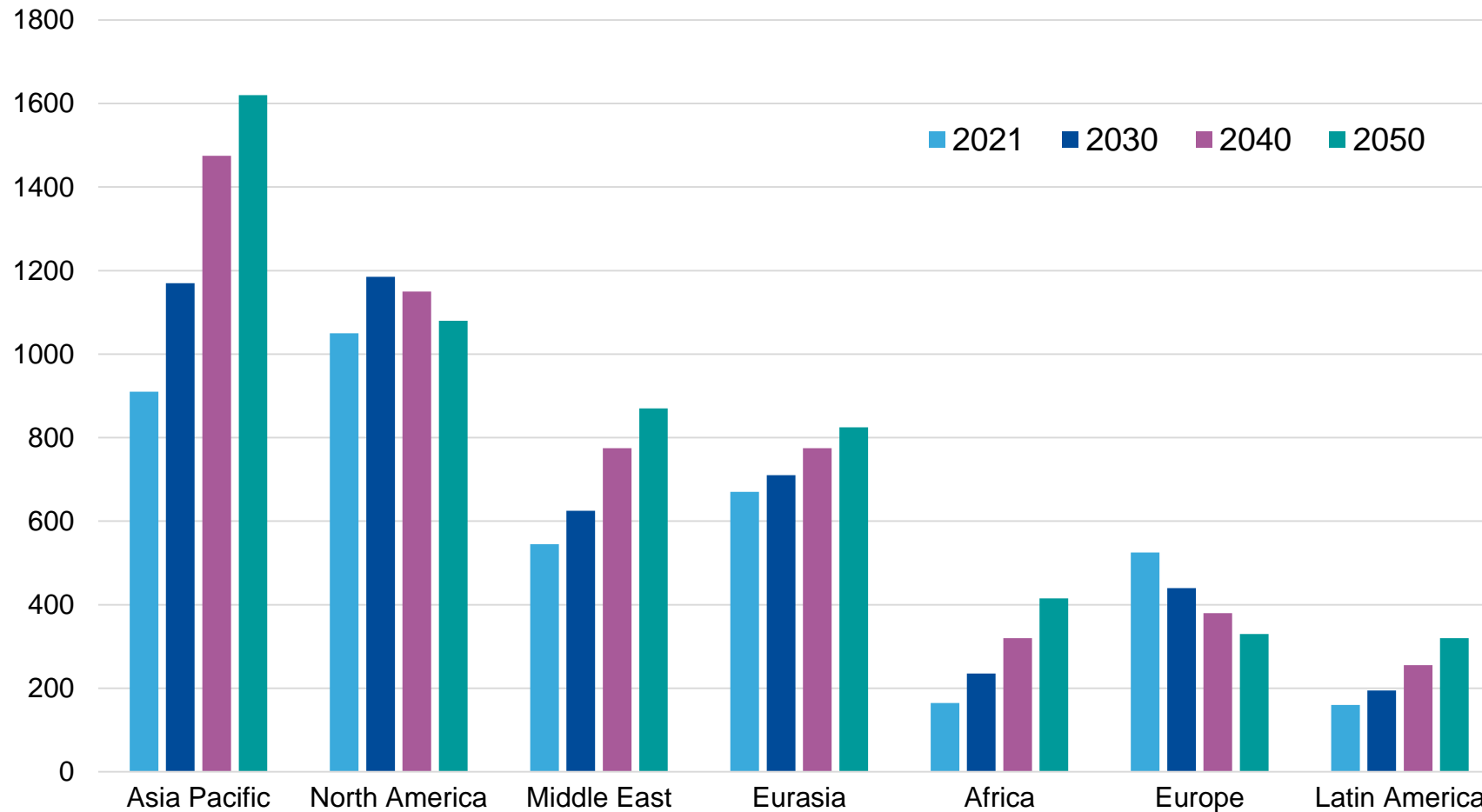
Contribution to the growth over the period 2021-50 (bcm)



Note: Industry includes gas used as energy fuel and feedstock as well as for grey hydrogen generation and the production of liquid fuels. Transport includes road transport and marine bunkers. Other uses include gas demand for energy industry own use, rail and pipeline transport.

Asia Pacific, the Middle East and Africa will account for most long-term demand increase

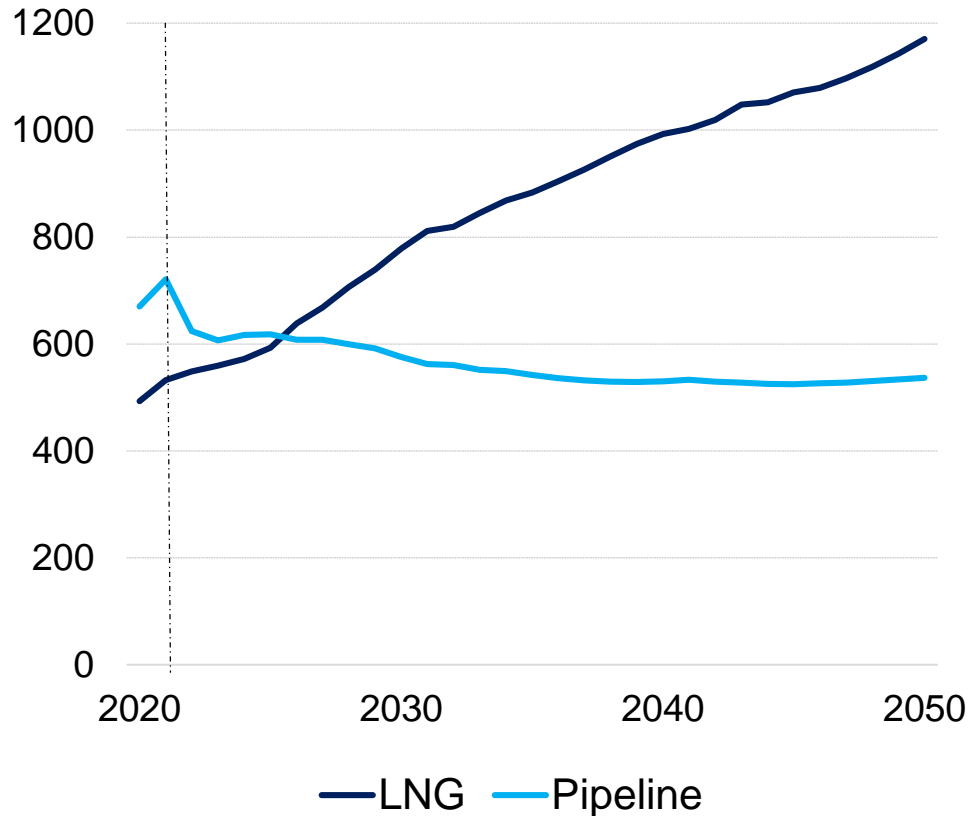
Global natural gas demand trends by region (bcm)



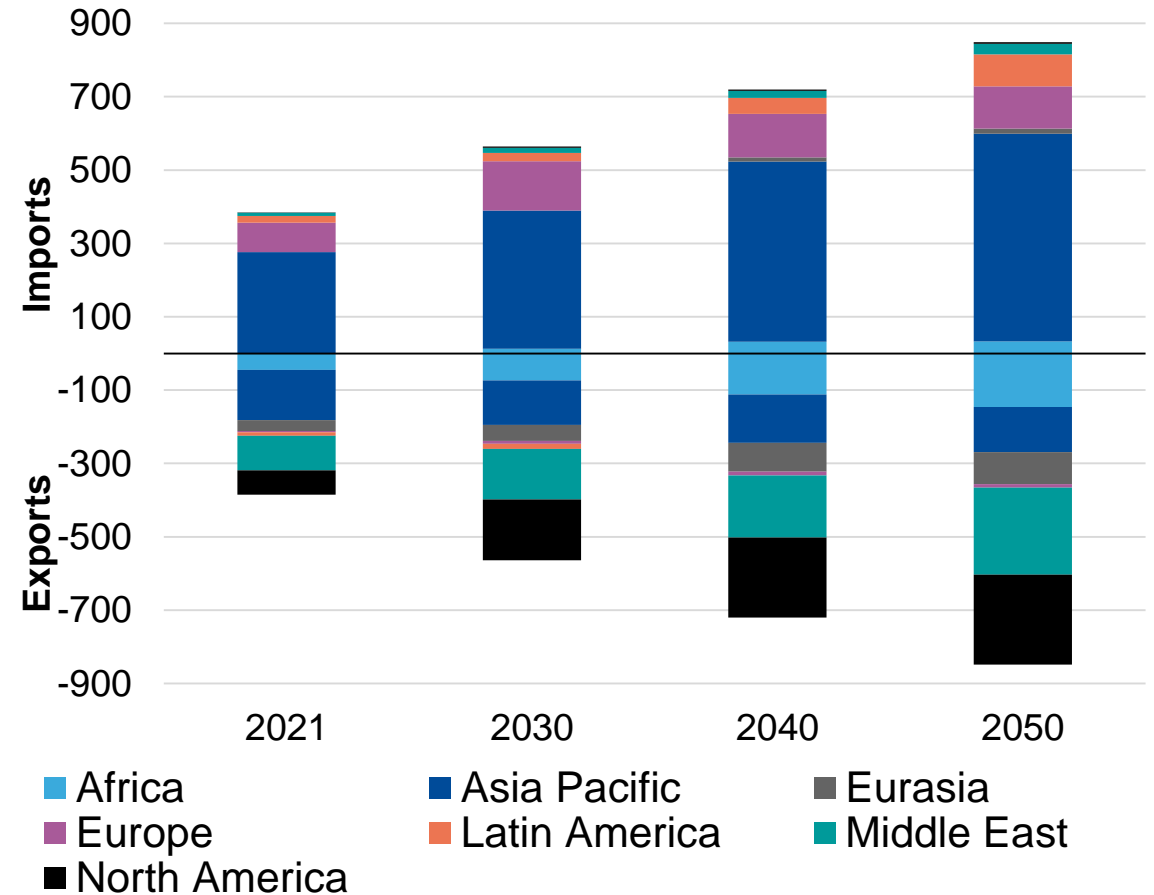
- Asia Pacific will provide half of additional global volumes between 2021 and 2050.
- Africa will have the fastest growth rate.
- European demand will decline, driven by REPowerEU plan implementation.

LNG trade accelerates further, with Asia Pacific retaining over 2/3 of LNG global imports by 2050

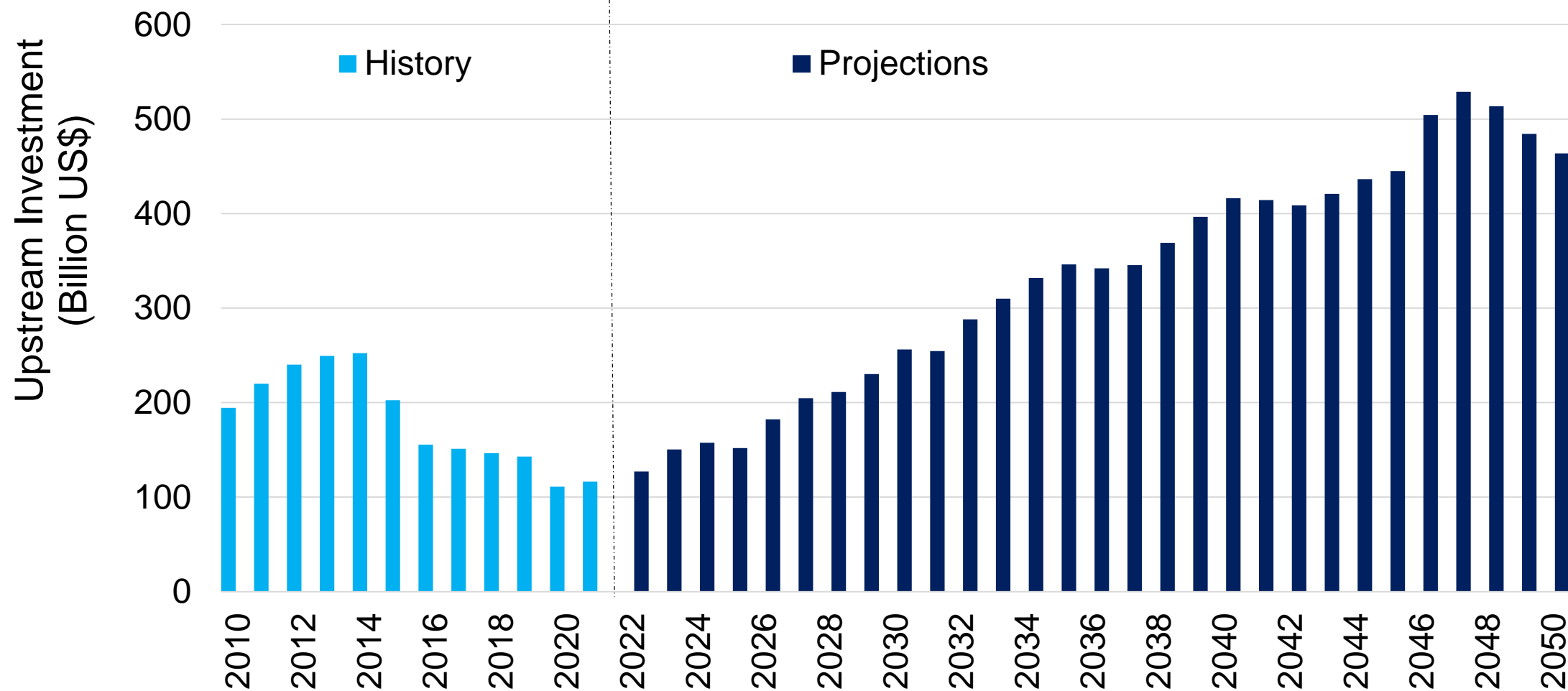
Global natural gas trade by flow type (bcm)



LNG imports and exports by region (mt LNG)

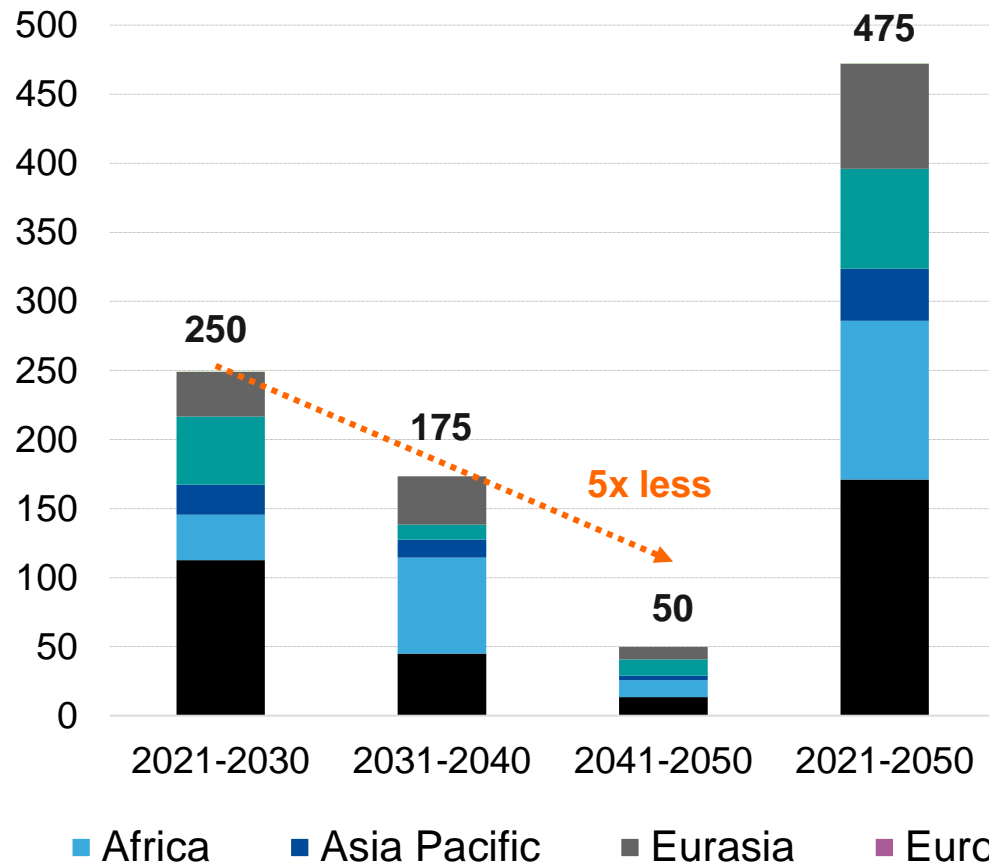


The natural gas industry would require investment of US\$9.7 trillion to supply 5.5 tcm in 2050

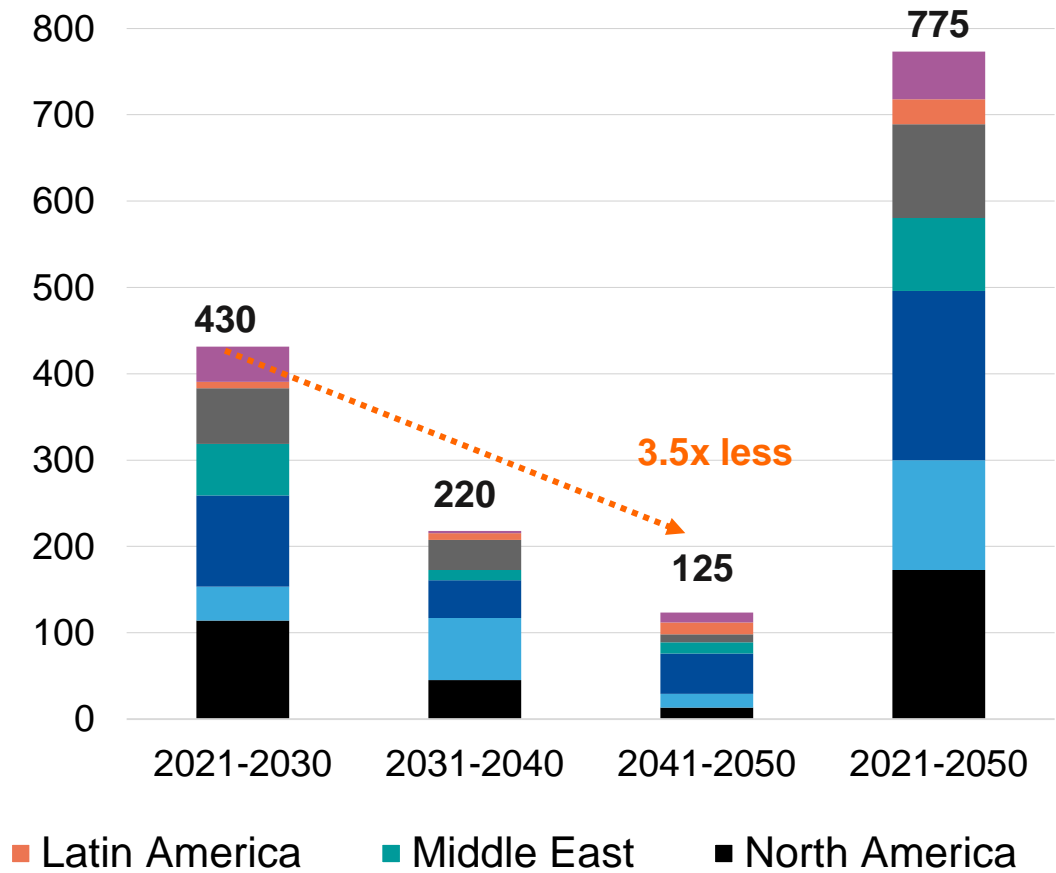


USD775 billion global midstream gas investment by 2050 will be dominated by liquefaction CAPEX

LNG liquefaction CAPEX by region (real USD billion)

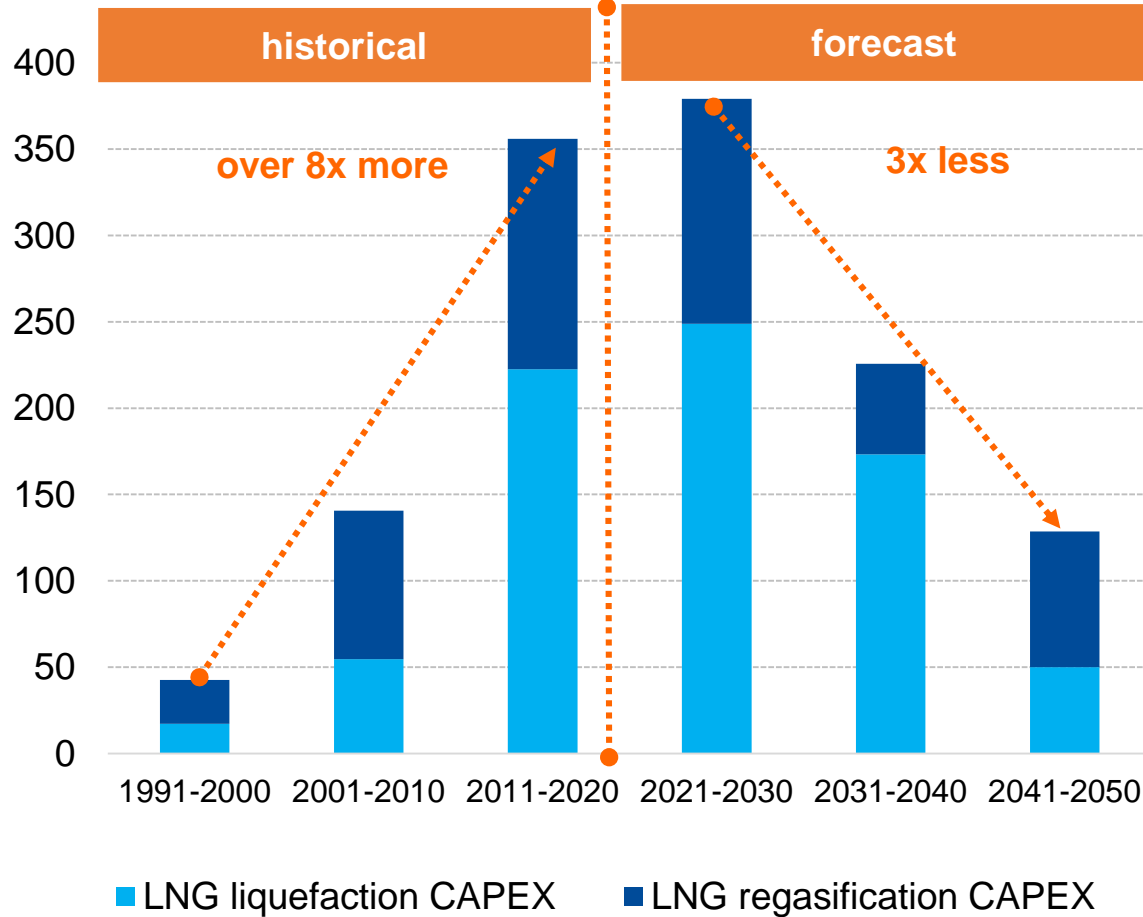


Global midstream CAPEX by region (real USD billion)

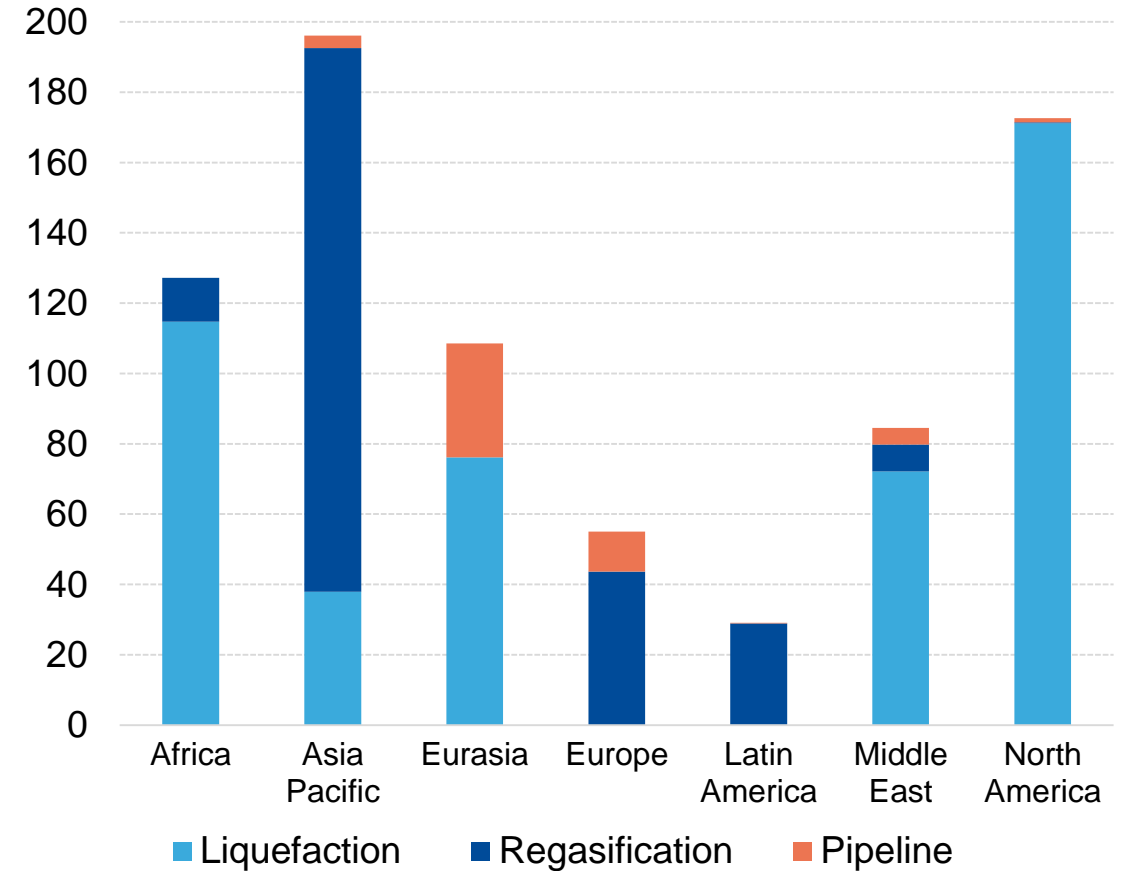


Asia Pacific will be home to around 25% of global midstream investment

Historical and future LNG investment trends
(real billion US\$)



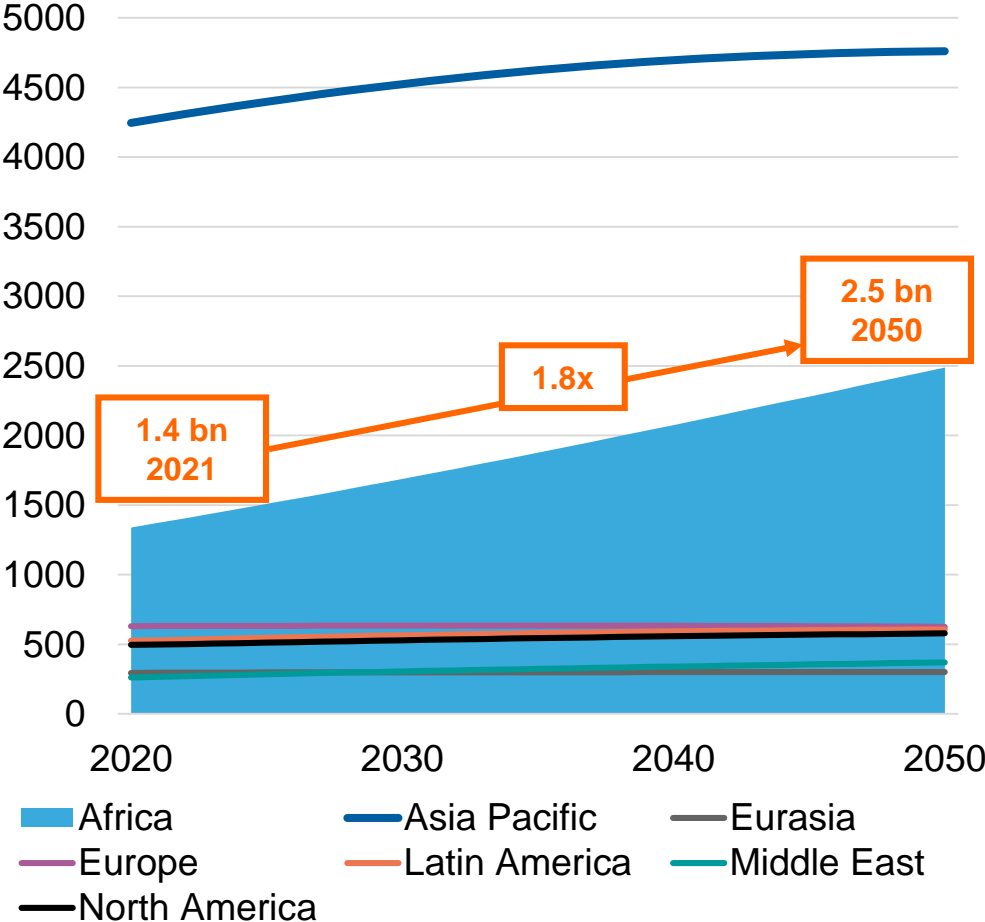
Midstream gas investment by region 2021-50
(real billion USD)



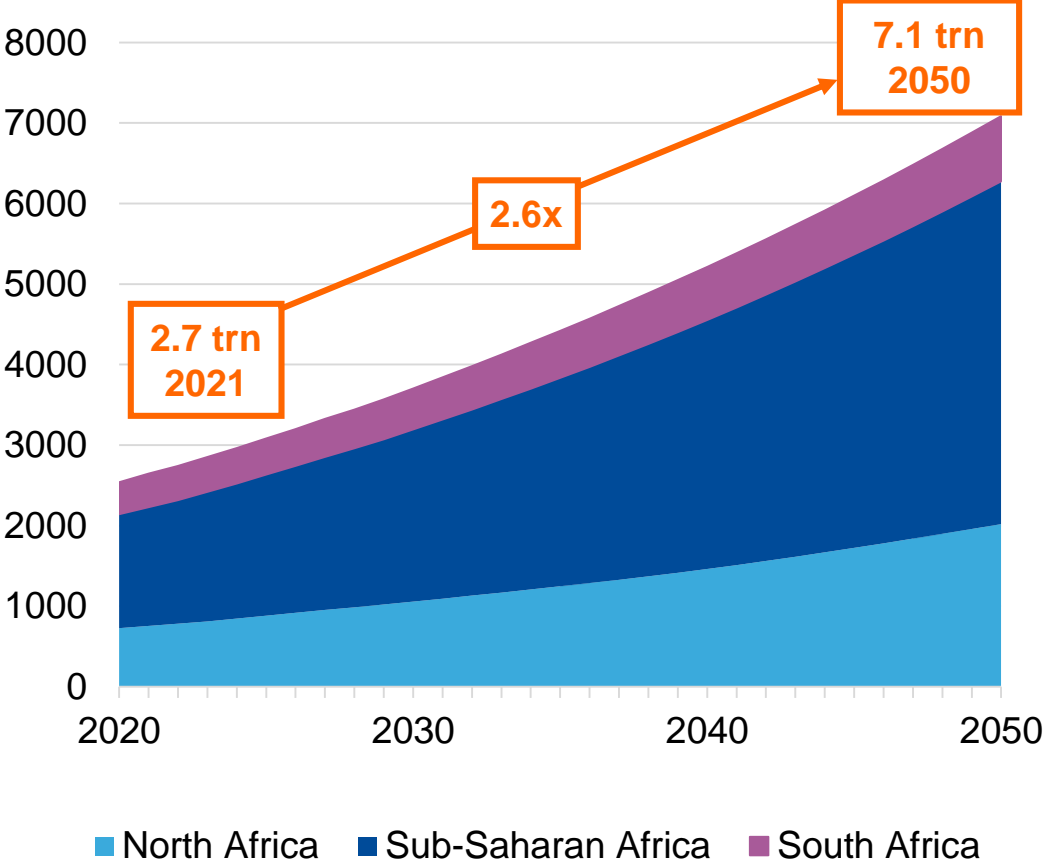
GECF Global Gas Outlook 2050: Focus of Africa

Balancing Africa's youngest and fastest-growing population with sustainable economic growth – key challenge

African population (million)

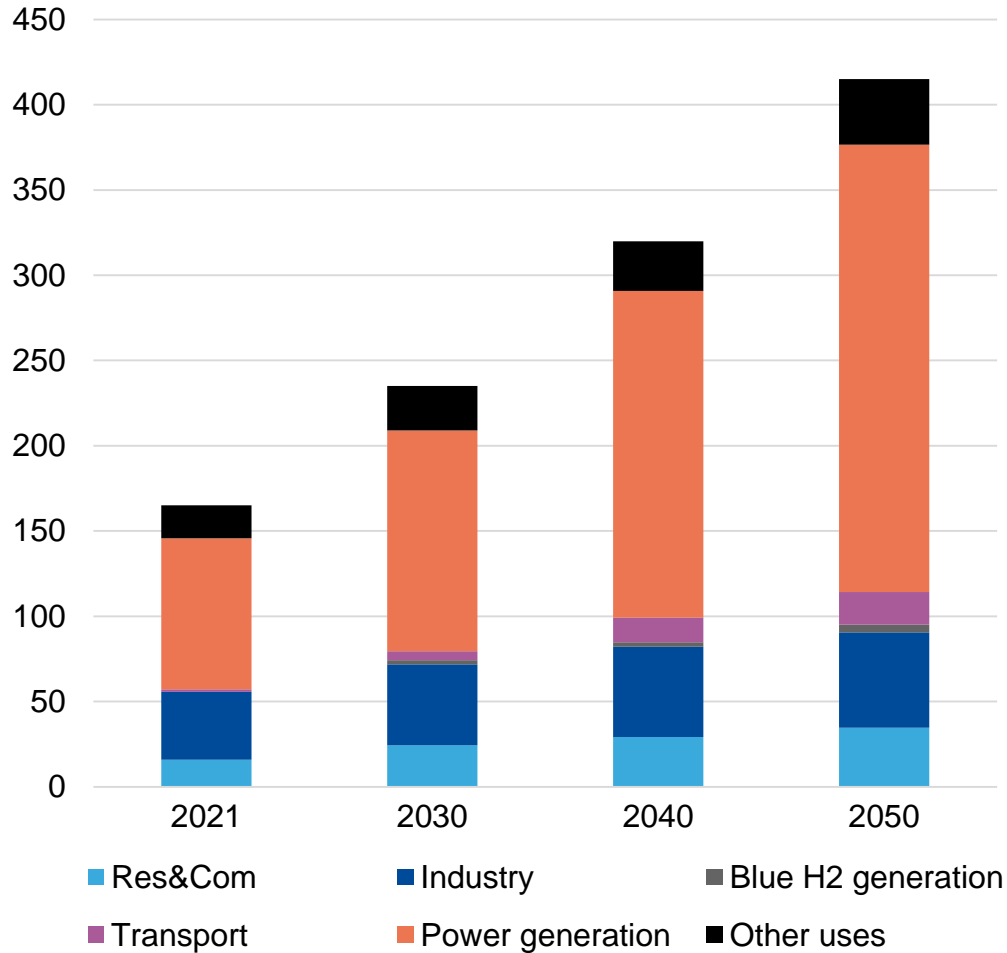


Africa's GDP composition by sub-region (real billion USD)

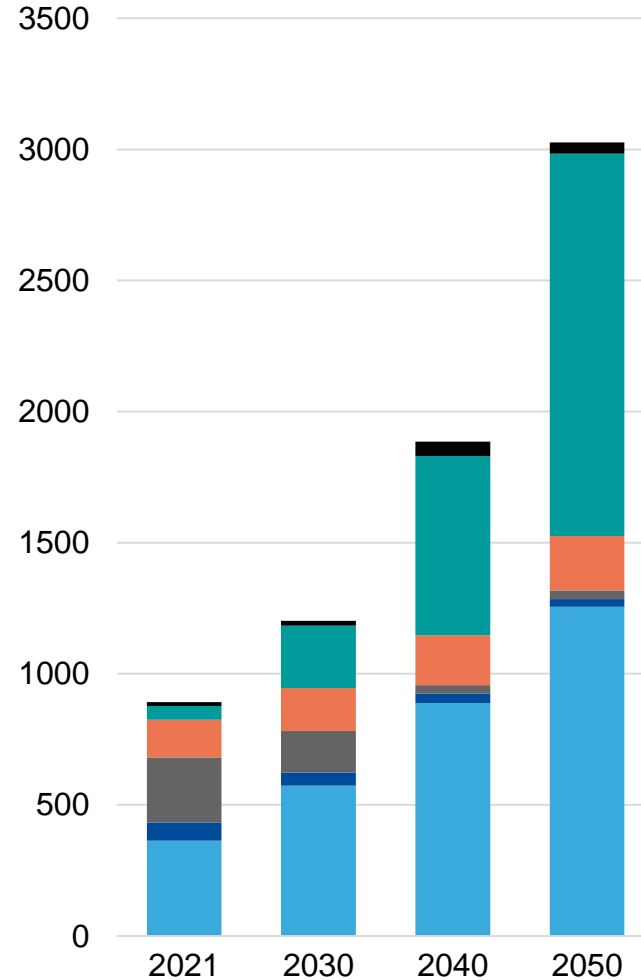


Africa: 70% of gas demand increase will be attributable to power generation

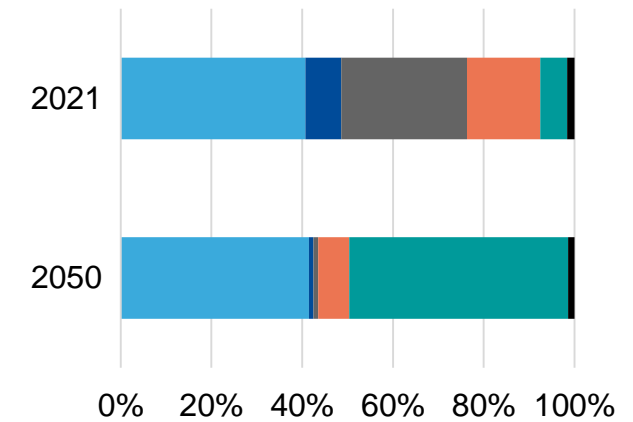
Africa natural gas demand by sector (bcm)



Africa power generation growth (TWh)



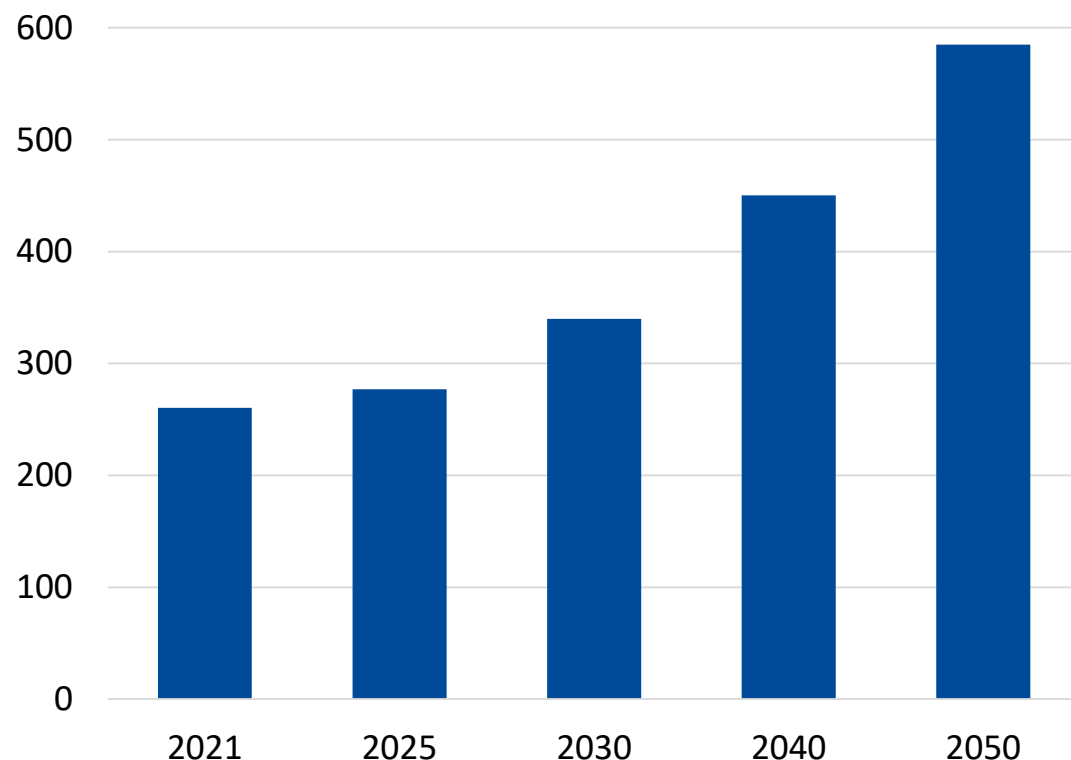
Fuel mix (%)



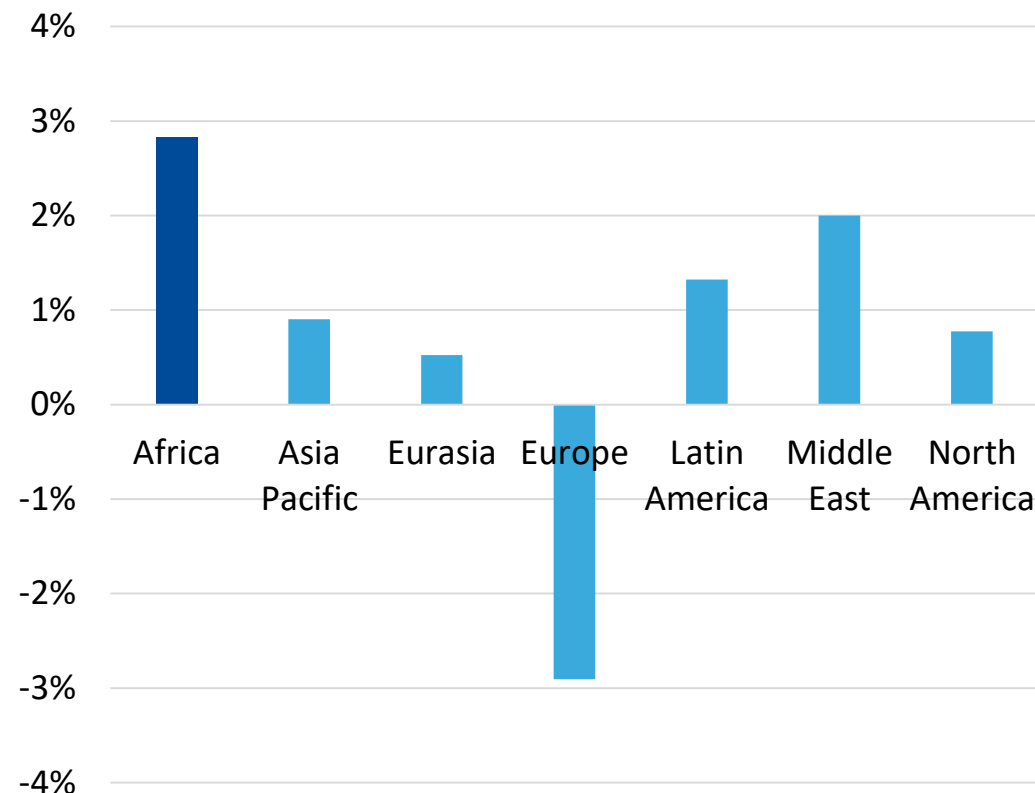
Note: Others include bioenergy, nuclear and hydrogen

Gas production in Africa will be more than double by 2050

Natural gas production in Africa (bcm)

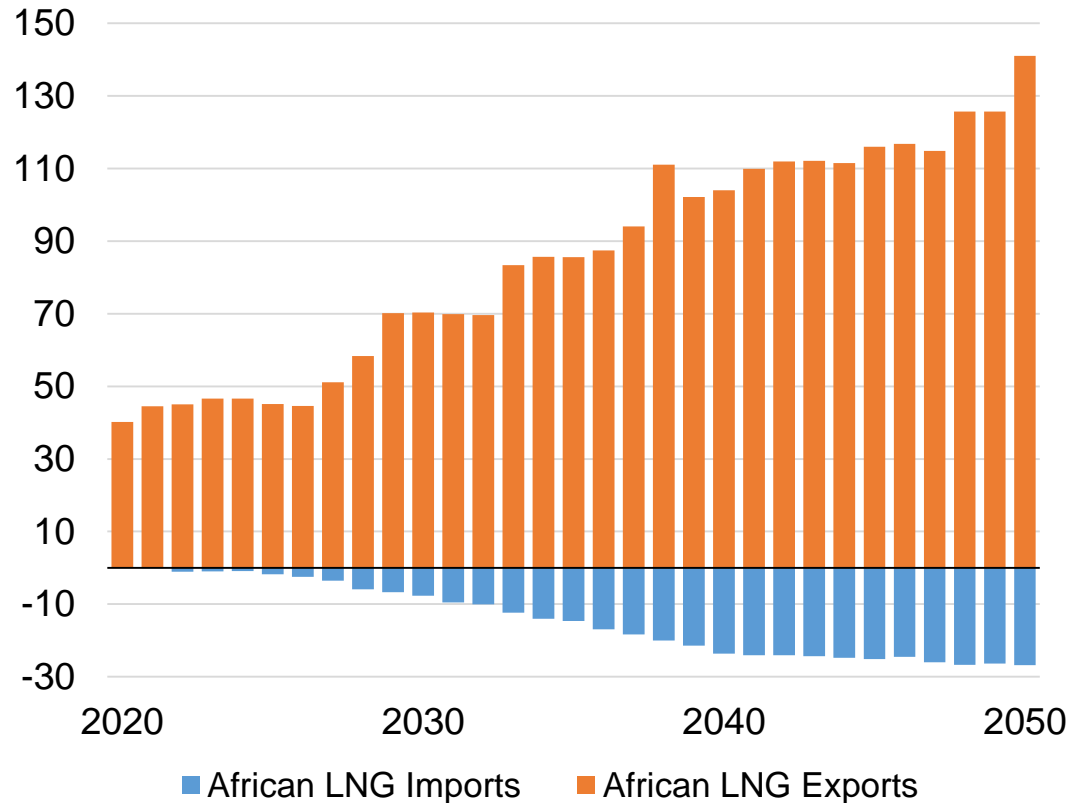


Regions' average annual growth rate

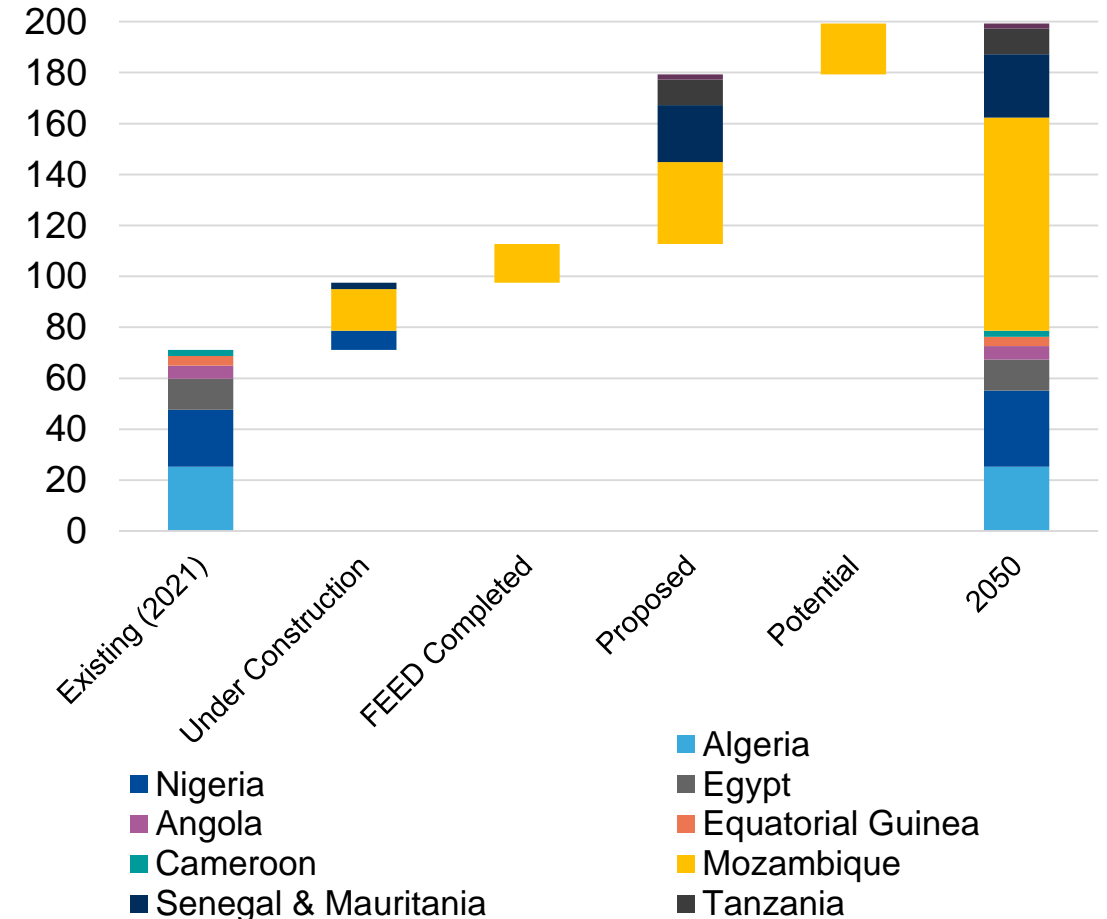


The long-term future for LNG exports in Africa is promising, with LNG exports forecast to reach 140 mt by 2050

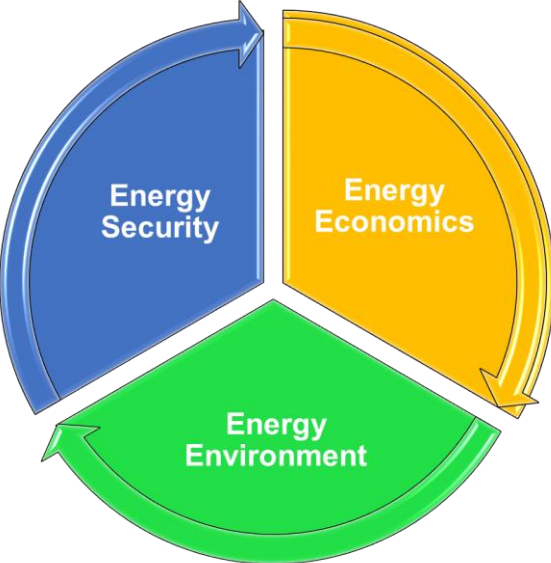
Africa LNG exports and imports by country (mt)



Africa LNG liquefaction capacity (mtpa)



Energy Sustainability Scenario (ESS)



Energy Economics

- SDG1: No Poverty
- SDG2: Zero Hunger
- SDG3: Good Health
- SDG4: Quality Education
- SDG5: Gender Equality
- SDG17: Partnerships

Energy Environment

- SDG6: Clean Water and Sanitation
- SDG11: Sustainable Cities and Communities
- SDG13: Climate Action
- SDG14: Life Below Water
- SDG15: Life on Land

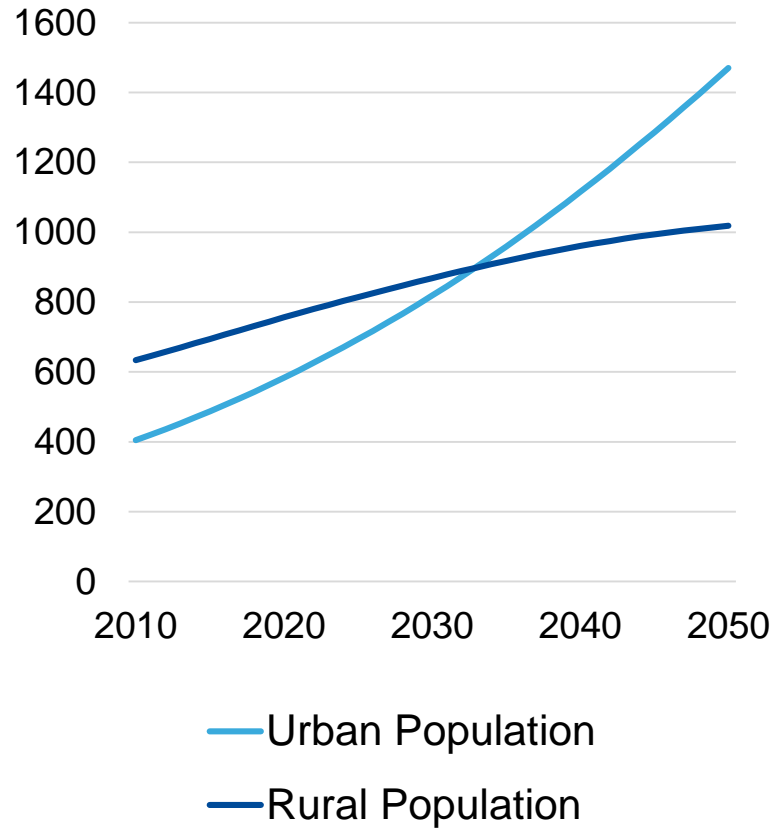
Energy Security

- SDG8: Decent Work & Economic
- SDG9: Industry, Innovation & Infrastructure Growth
- SDG10: Reduced Inequalities
- SDG12: Responsible Consumption and Production
- SDG16: Peace, Justice & Strong Institutions

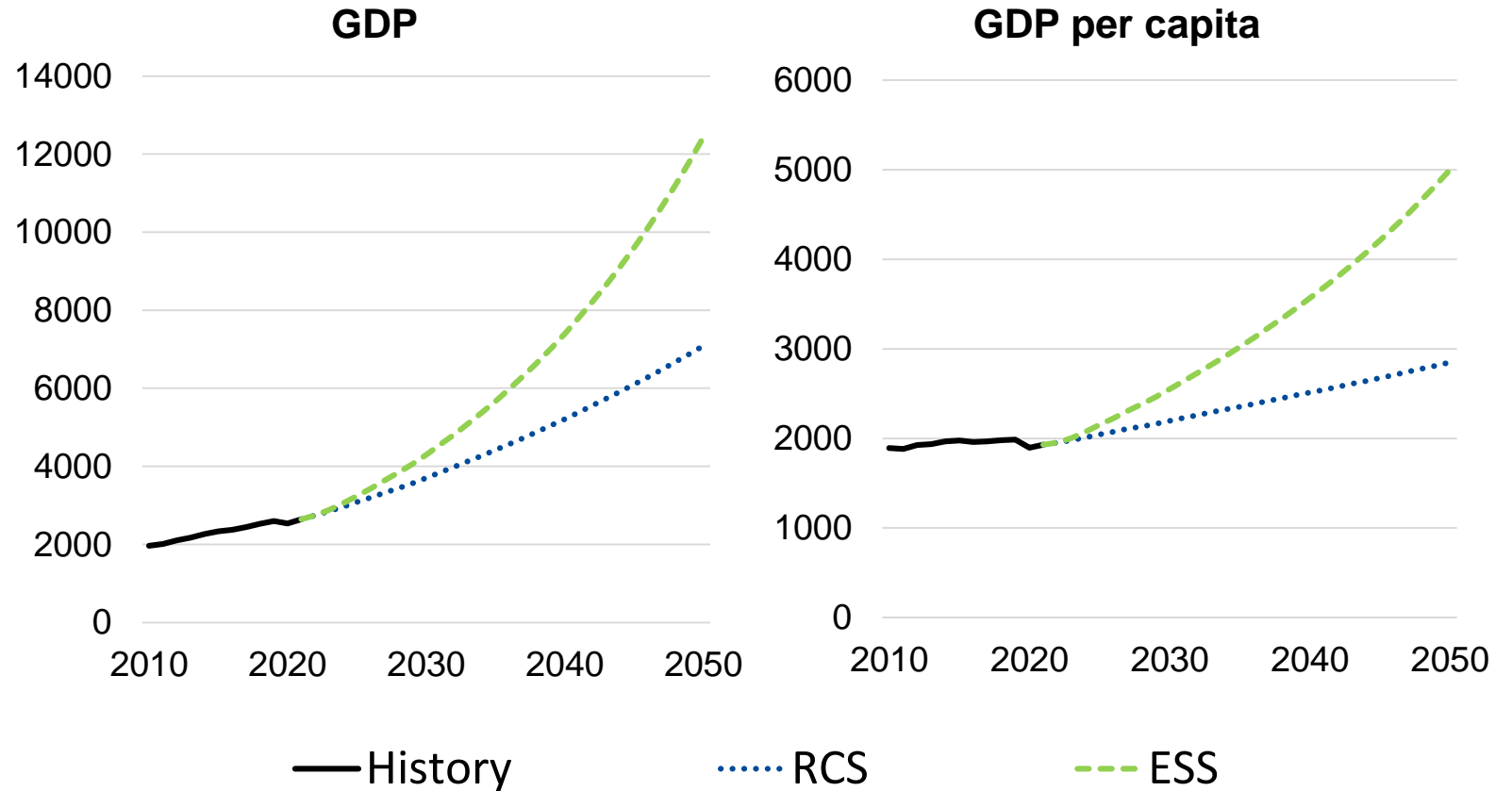
SDG7. Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All

Africa's GDP per capita assumed to be reached US\$5,000 by 2050

Africa urban and rural population (Million)

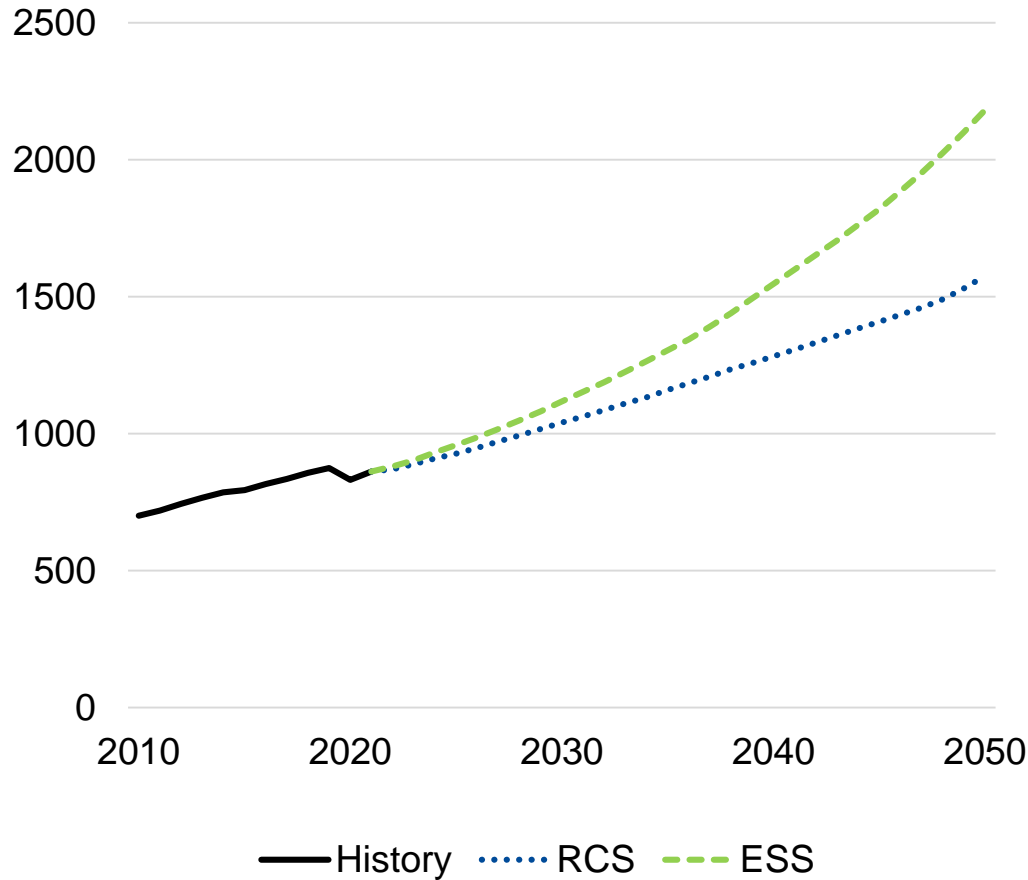


Africa GDP outlook (real billion US\$)

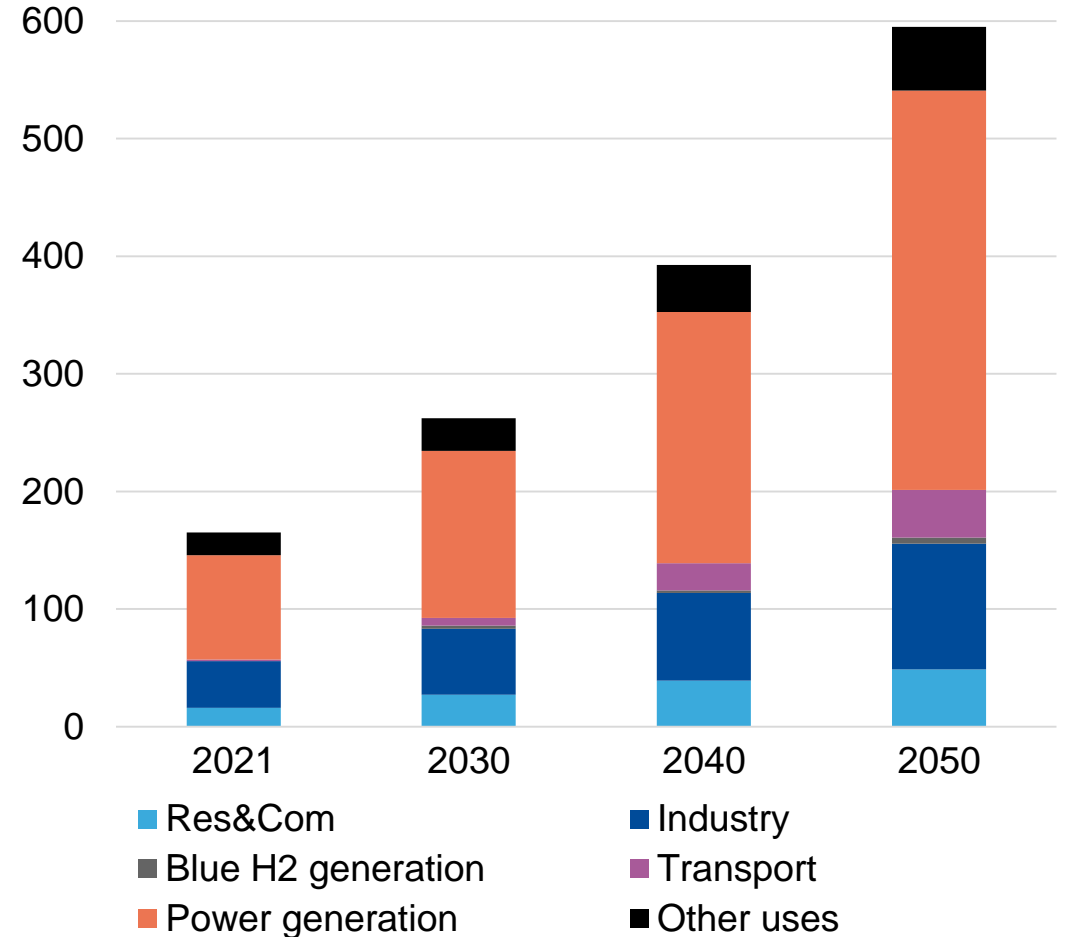


Expanding access to energy will alleviate energy poverty

Africa primary energy demand (Mtoe)



Natural gas demand by sector (bcm)





Thank You!

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