SUMMARY

Medium and Long Term Natural Gas Outlook 2018

CEDIGAZ, June 2018





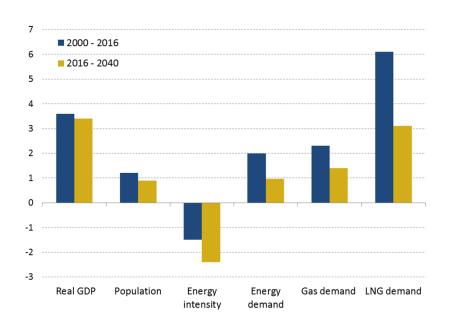






CEDIGAZ Reference Scenario: Main characteristics

Main trends (%/year)



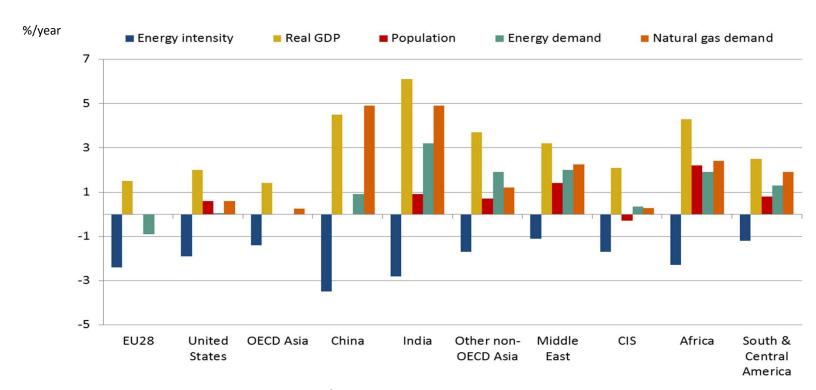
Main assumptions

Economy	Global GDP growth of 3.4%/year
Demographics	Population growth of 0.9%/year
Environment	INDC commitments
Policy	Announced National Energy Plans*
Geopolitics	Mitigation of current conflicts post -2025
Technology	 Only current and approved technologies Rapid improvements of economics of REN Energy intensity is improving across regions
Pricing	Growing influence of spot pricingOil indexation still in force in Asia

^{*}Some National Energy Plans are viewed with caution and key targets can be delayed when considered too ambitious.

- Projections on global primary energy demand are based on assumptions on the evolution of the world economy, population, energy and environmental policies and technology.
- Falling energy intensity implies a deceleration of global energy demand.
- In CEDIGAZ Scenario, price developments enable natural gas to expand its role in the energy mix and also stimulate sufficient investment in E&P and infrastructures to meet rising gas demand.

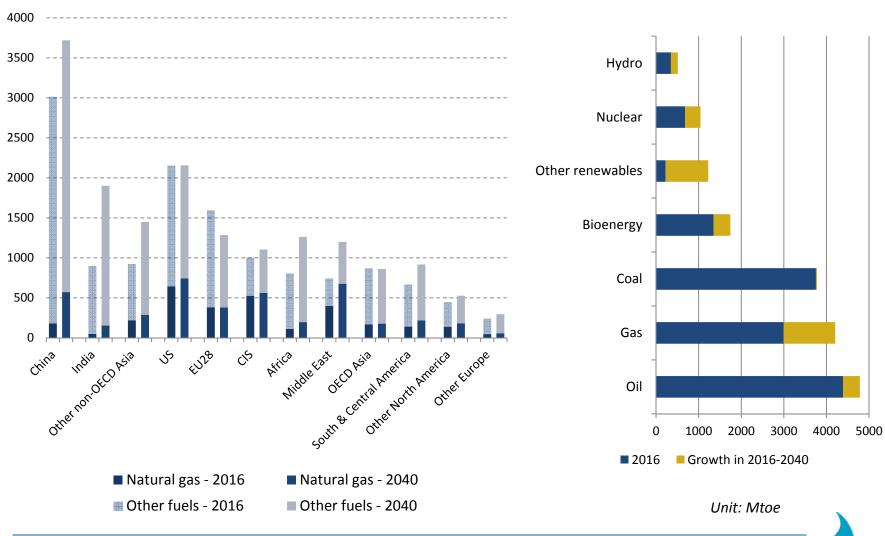
CEDIGAZ Reference Scenario: Main trends (2016 – 2040)



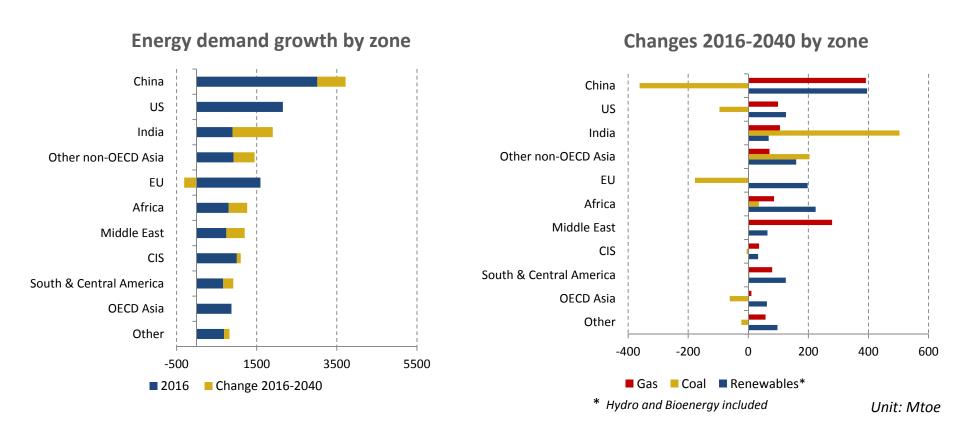
- Population and economic expansion fuel energy demand growth.
- India will record the largest volumetric growth in energy demand over the projection period.
- No energy demand growth in OECD Asia and a significant reduction in energy consumption in Europe.
- Virtually all the growth in world energy demand comes from fast-growing emerging economies.
- Emerging economies account for around 85% of gas demand growth.



Primary regional energy demand growth and contribution of natural gas



Primary energy demand by fuel and region

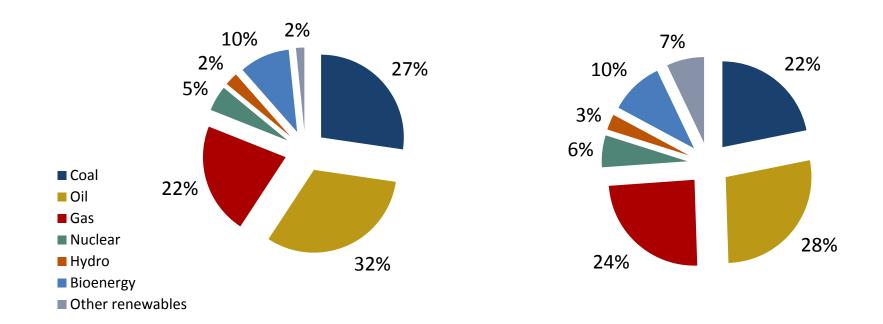


- The two countries accounting for the majority of energy demand growth India & China both start with coal-intensive fuel mixes but will experience total opposite trends in coal consumption over the outlook period.
- China alone accounts for a quarter of the growth of renewables (bioenergy and hydro included).
- The EU leads the transition to a lower carbon economy.



Prospects for the global energy mix

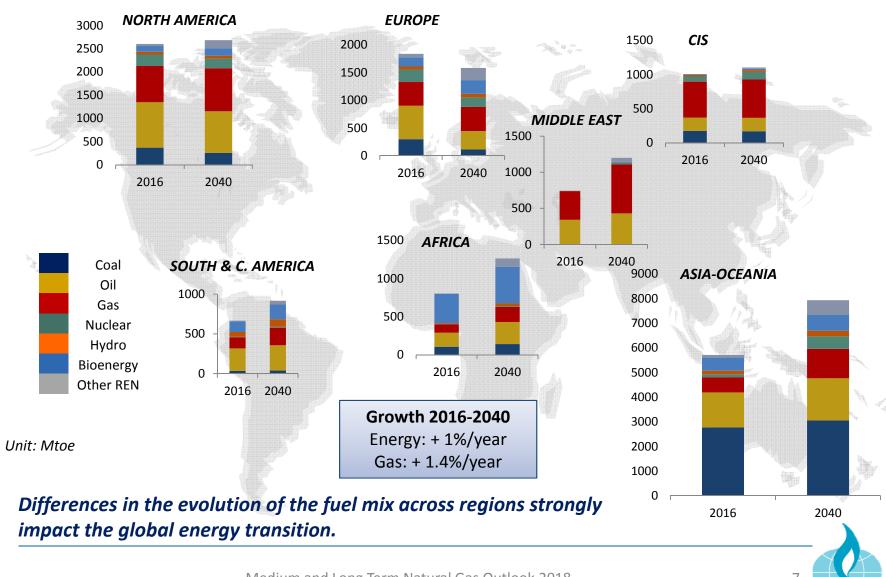
2016: 13.7 Gtoe 2040: 17.3 Gtoe



The declining shares of coal and oil are offset by increasing use of renewables and gas

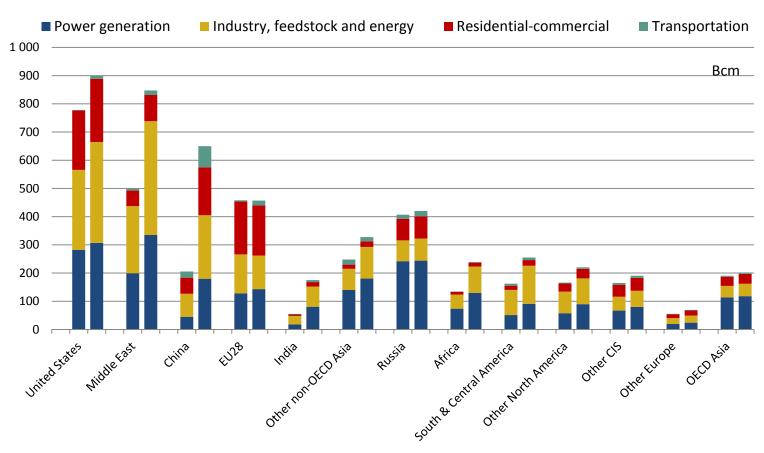


Prospects for energy balance by region

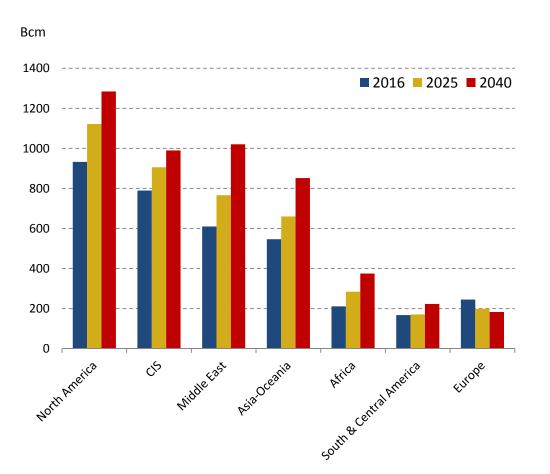


Natural gas demand prospects by sector

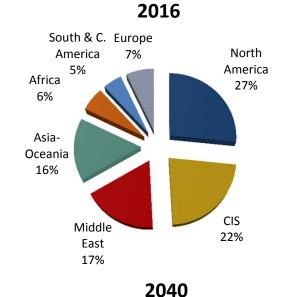
Natural gas demand in 2016 and 2040 by sector

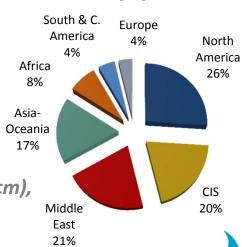


Natural gas production prospects

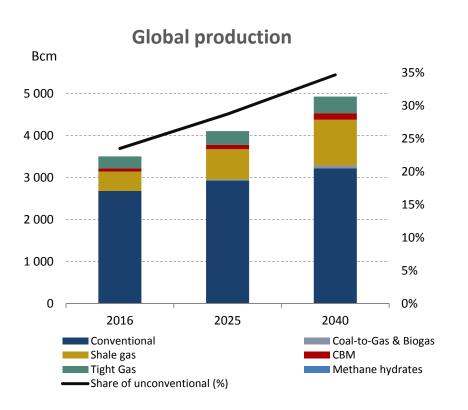


The largest production gains are expected in the Middle East (+ 411 bcm), North America (+ 352 bcm) and Asia-Oceania (+ 305 bcm).

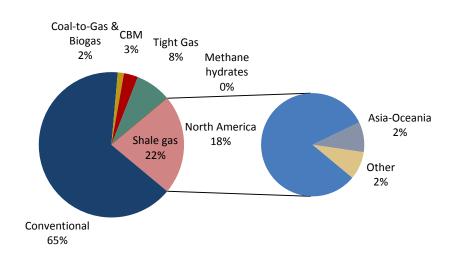




Unconventional natural gas prospects

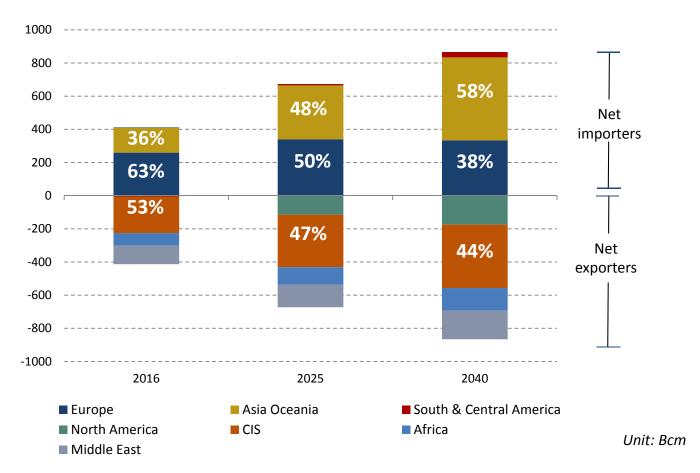


Total 2040 = 4927 bcm



- Non-conventional gas (coal-to-gas and biogas included) provides 62% of supply growth, rising from 823 bcm in 2016 to 1707 bcm in 2040.
- The bulk of projected unconventional gas production is in the form of shale gas.

Prospects for interregional natural gas trade

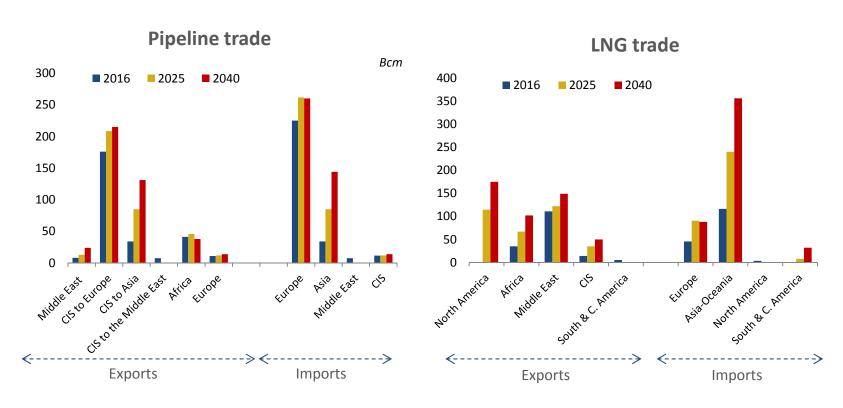


Note: Total net flows between the seven CEDIGAZ regions (North America, South & Central America, Europe, CIS, Africa, Middle East, Asia Oceania), not including trade within CEDIGAZ regions.

Positive numbers denote net imports, negative numbers net exports.



Interregional net flows by pipeline and LNG



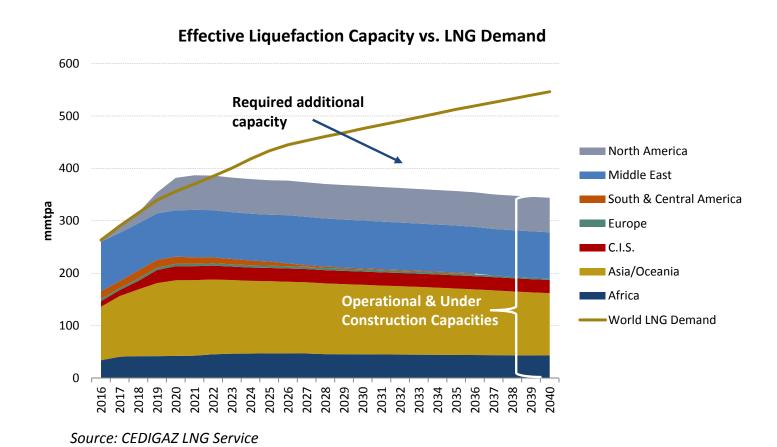
Note: Pipeline exports from the Middle East and Central Asia to Asia (Iran-Pakistan-India pipeline & TAPI) are envisaged post 2025 in Cedigaz Outlook.

Russia's pipeline exports to China via the Western Route have not been included as the Altai project has been postponed indefinitely.

- The largest growth in interregional pipeline flows is represented by CIS' exports to China.
- The largest growth in interregional LNG flows is represented by US LNG exports to Asian markets.

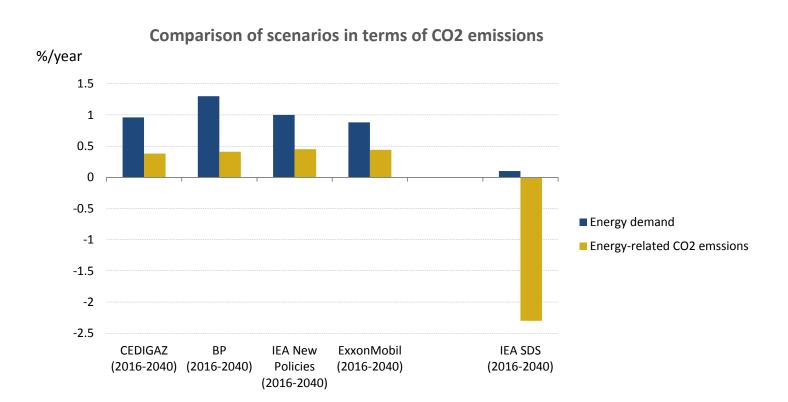


Global LNG Supply Demand Gap



Delays in the second wave of LNG supply bring a risk of tighter markets in the early 2020s.

Prospects for global energy-related CO2 emissions



- In CEDIGAZ Scenario, CO2 emissions increase by almost 0.4%/year to peak at 35.2 Gt to 2035-2040.
- The growth of global emissions declines more strongly in the long term.
- This scenario remains well above the 2°C path despite the deployment of renewables and efficiency, as well as coal to gas switching.

CONCLUSION

- Natural gas demand will grow by 1.4%/year from 2016 to 2040 and gas will expand its role in the energy mix, according to CEDIGAZ Gas Outlook 2018.
- Cedigaz Scenario assumes a deceleration of natural gas demand growth over the 2025-2040 period, due to a stronger push for renewables and energy efficiency, especially in OECD countries.
- The growth of natural gas will be backed by the abundance of competitive conventional (Middle East, Russia) and unconventional gas resources (US).
- A large part of the future natural gas demand growth is driven by China's political support for gas use in power and industry.
- The strong expansion of LNG supply will help gas to expand in the energy markets, especially in Asia.
- The growing importance of LNG trade will accelerate the integration of natural gas markets and will
 result in a closer linkage between international prices.
- Global peak demand for gas is not expected in the foreseeable future.
- Due to its environmental advantages natural gas is a key pillar of a gradually decarbonising energy and electricity system.
- New low carbon technologies are both sources of risks and opportunities for gas demand growth.
- A more rapid deployment of wind and solar and stronger energy savings could further reduce gas demand growth in the long term.

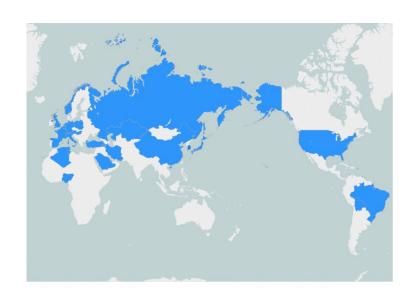
CEDIGAZ Publication « Medium and Long Term Natural Gas Outlook 2018 » is available online:

http://www.cedigaz.org/members/gas-market-analysis.aspx

CEDIGAZ



CEDIGAZ, the International Association for Natural Gas



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About CEDIGAZ

CEDIGAZ is an international association with members all over the world. Dedicated to natural gas information, CEDIGAZ collects and analyses economic information on natural gas, LNG and unconventional gas in an exhaustive and critical way. CEDIGAZ data has been the industry's reference since its foundation in 1961.









