



Faculty of World Economy and International
Relations

Department of World Economy

Moscow, 2022

The role of natural gas in energy transition process

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Global energy balance

Share of natural gas grew from 22% in 2000 to 25% in 2020.

Developing countries consume the biggest amount (62%).

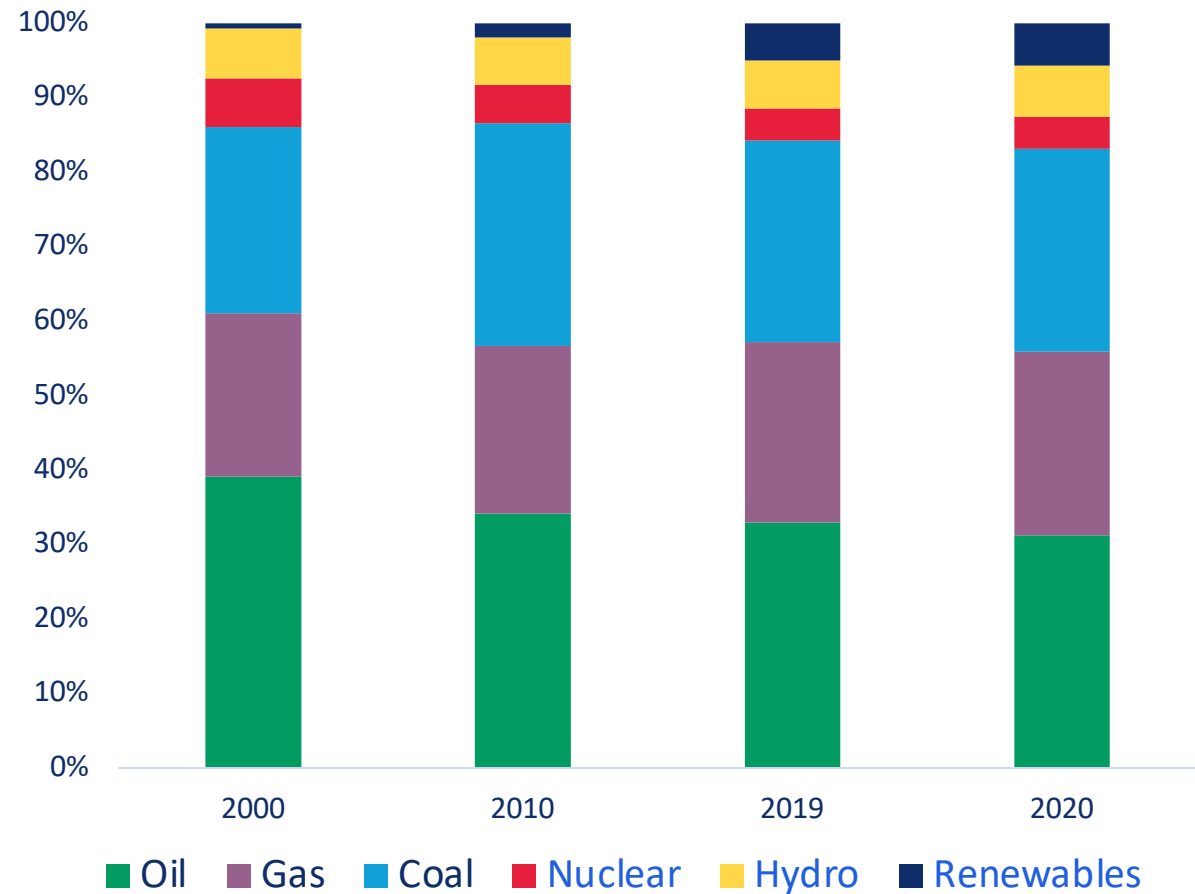
The average annual growth rate in 2000-2020 in

OECD countries: 1,7%

Non-OECD countries: 2,9%

Source: BP Statistical Review of World Energy, 2021

Primary energy consumption by fuel, %





Future roles of natural gas

A transition fuel: natural gas could serve as a bridge fuel from coal to renewables.

A back-up fuel: in addition to renewables in order to balance volatile electricity generation.

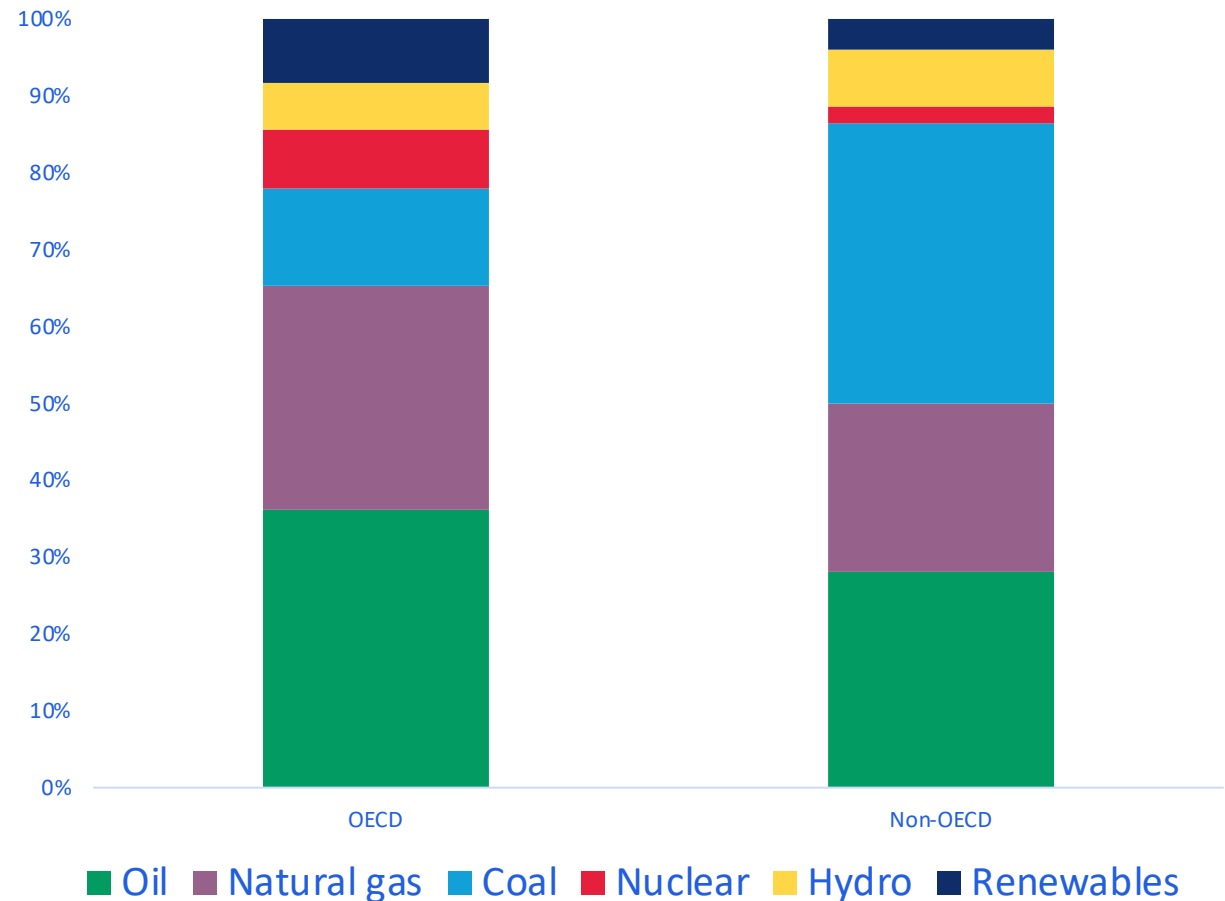
A fuel of a past-century: natural gas is to be replaced by “green hydrogen”.

Different roles in developing and developed countries, primarily based on the targets on carbon-neutrality.

The goal is the same – to cut the emissions and completely change energy balances.

Source: BP Statistical Review of World Energy, 2021

Primary energy consumption by fuel, %





How to de-carbonize natural gas?

- 1) Biogas / biomethane
- 2) Mix of biogas/ biomethane and natural gas
- 3) Hydrogen

Grey – produced from hydrocarbons

Blue – produced from hydrocarbons using CCUS

Green – produced using renewable energy sources

Source: J. Stern, 2020.

Key question: what will happen to the infrastructure?



The European gas market

The structure has significantly changed in 20 years, and the share of natural gas has increased to 25%.

However, the future is unclear, as the EU plans to reach carbon neutrality in 2050.

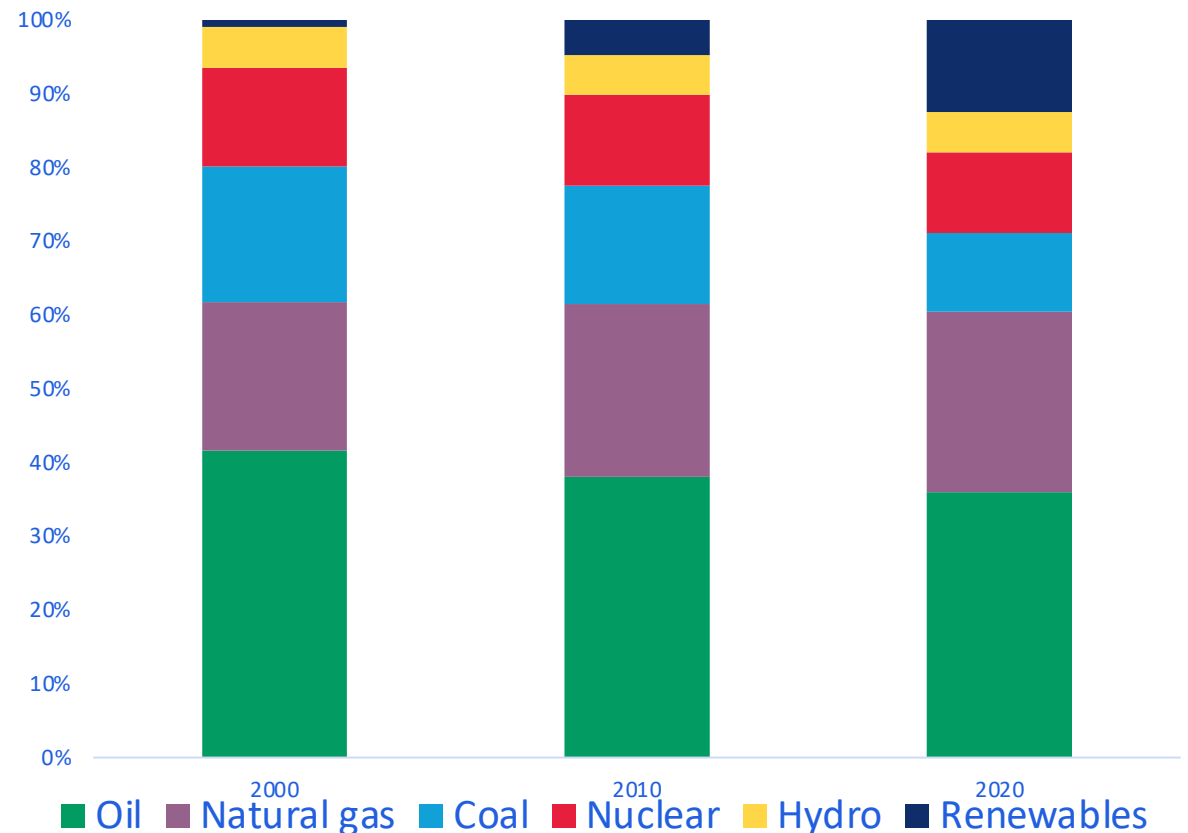
The issue of energy security.

For now, the plans are:

- To invest more in hydrogen market (60 bln euros till 2030).
- To raise the share of hydrogen to 24% till 2050.
- **To modernize (or rebuild) the infrastructure.**

Source: BP Statistical Review of World Energy, 2021

Primary energy consumption in the EU by fuel, %





The precedent

2011 – Germany decides to phase out nuclear energy completely in 2022

2016 – RWE, E.ON, Vattenfall went to court, as they didn't like the amount of the compensations suggested

The court obliged the government to pay more in order to compensate long-term investment.

The issue of irreversibility of assets (Pindyck, Bernanke).

De-specification of disqualification of assets – the process of turning assets, that prior had high level of asset specificity, into stranded assets due to non-market decisions.

Exception: if the assets could still be partly used, their level of specificity rises even higher (opportunistic behavior risks).



Concluding remarks

Gas demand in long-term perspective will continue to grow mainly in developing countries, which will be accompanied by the construction of infrastructure (both pipelines and LNG terminals).

Primary reason for infrastructure development is going to be the issue of energy security.

De-specification of assets will lead to changes in the mechanisms of governance, i.e. the relations between market participants (from market – to..?)

Energy transition will lead to significant changes on the gas market, and key actors should begin to consider the risks even now.

Thank you for the attention!