

Looking for a rational solution
for all along the cross-border gas supply chain

Alexey Semenov
Deputy Head of Directorate

Decarbonization

Indigenous Production Scenarios

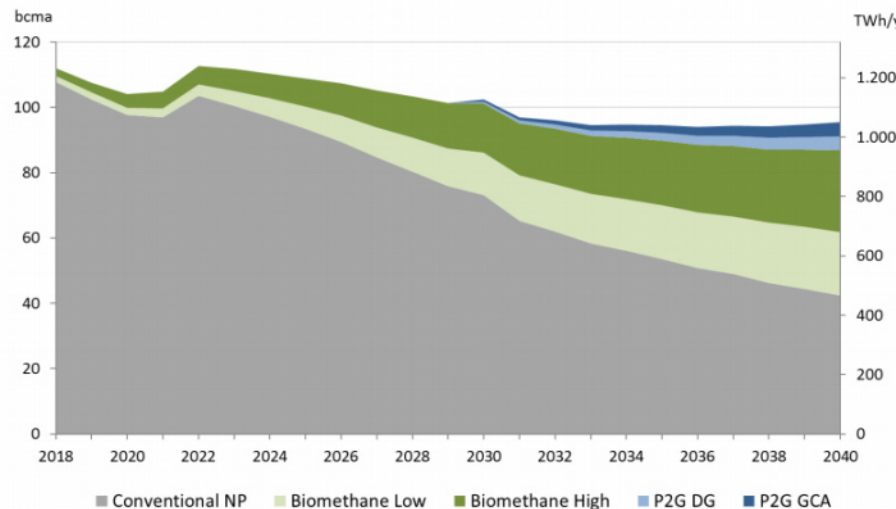
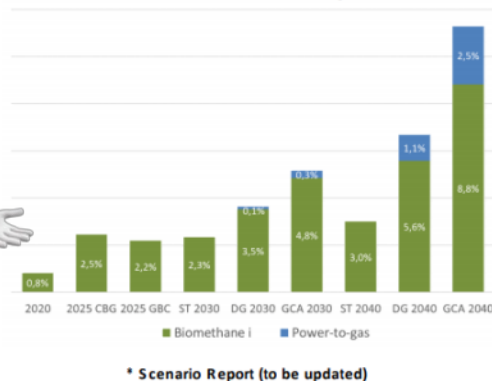


➤ Declining trend expected even in the best case scenario

Green Gases



% Green Gases over total demand from Draft Scenario Report



Decarbonization

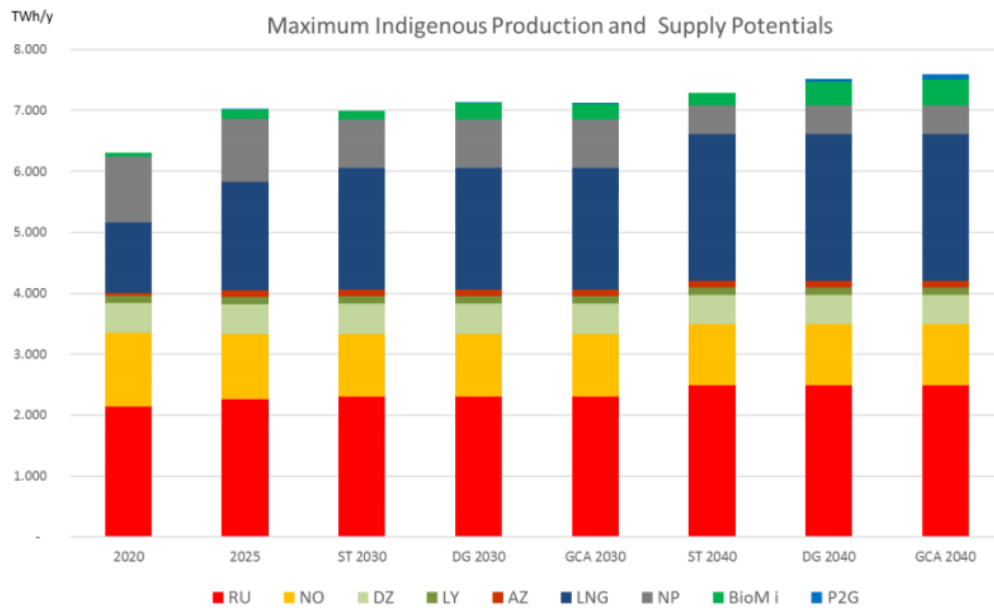


Green Gases

According to the Draft Scenario Report
ENTSOG TYNDP 2018 the share of
Green Gases over total demand will
not exceed 12% in 2040.



Indigenous Production and Supply Potentials



Decarbonization Pathways



Operational efficiency



RES

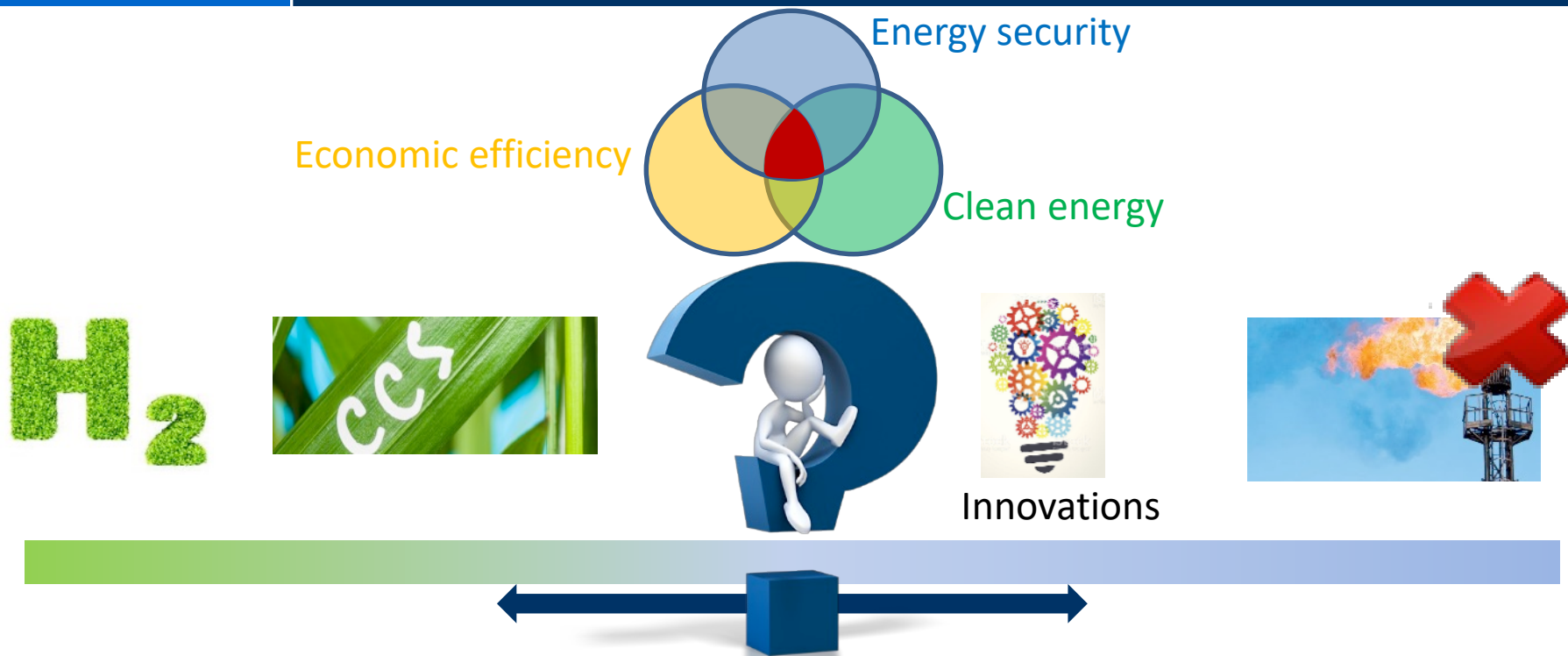


Technology innovations



Decarbonization Pathways

	Shell	Equinor	Total	BP
Operational efficiency	SmartFields, CCS, Flying Nodes, Shell MMLS Liquefaction technology	Sub-sea compression station, WS Seabed Rig, TAIL, Drill Plan, Cloud Data Storage, CCS	Pazlflor, CCS, Subsea-to-shore technology	WATS, Plant Operations Advisor Intelligent system
Development of RES	Airborne Wind energy (AWE) - Kite Power Systems, Bioethanol production	20% of CAPEX in RES by 2030, Hywind, Photovoltaic technology solutions, Biofuel technology	25% of investments in RES by 2022	Hydrogen plant, Solar's Mono2 silicon, Biofuel production
Ventures	Shell Technology Ventures, Engineering companies	Equinor Energy Ventures	Total Energy Ventures	BP Ventures

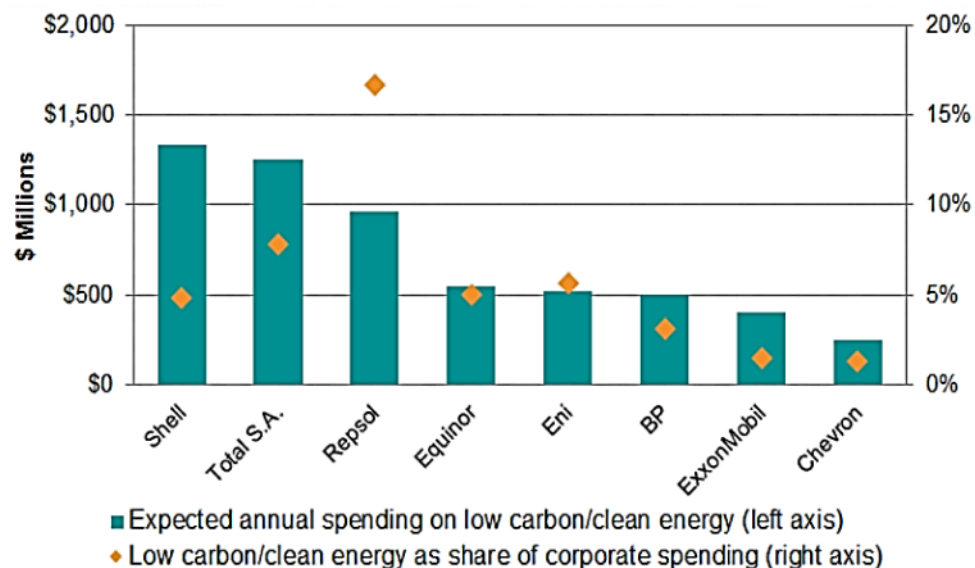


Low-Carbon Sector: the Majors activity

For the European-based companies the expected amount of investments in the low-carbon sector is 3–5% of corporate Capex in the near term.

While European companies are expanding their participation in the new energy technology segment through more diversified portfolios, a more conservative approach based on operational efficiency improvement will dominate in the corporate strategies.

Global Integrated: Annual low-carbon spending outlook (2018–2020)



Notes: Based on company statements and IHS Markit estimates. Low-carbon sector includes alternative energies (inc renewables and biofuels), storage, alternative transportation, gas in transmission and distribution, and emissions reduction from operations. Includes capex and R&D spending.
Source: IHS Markit

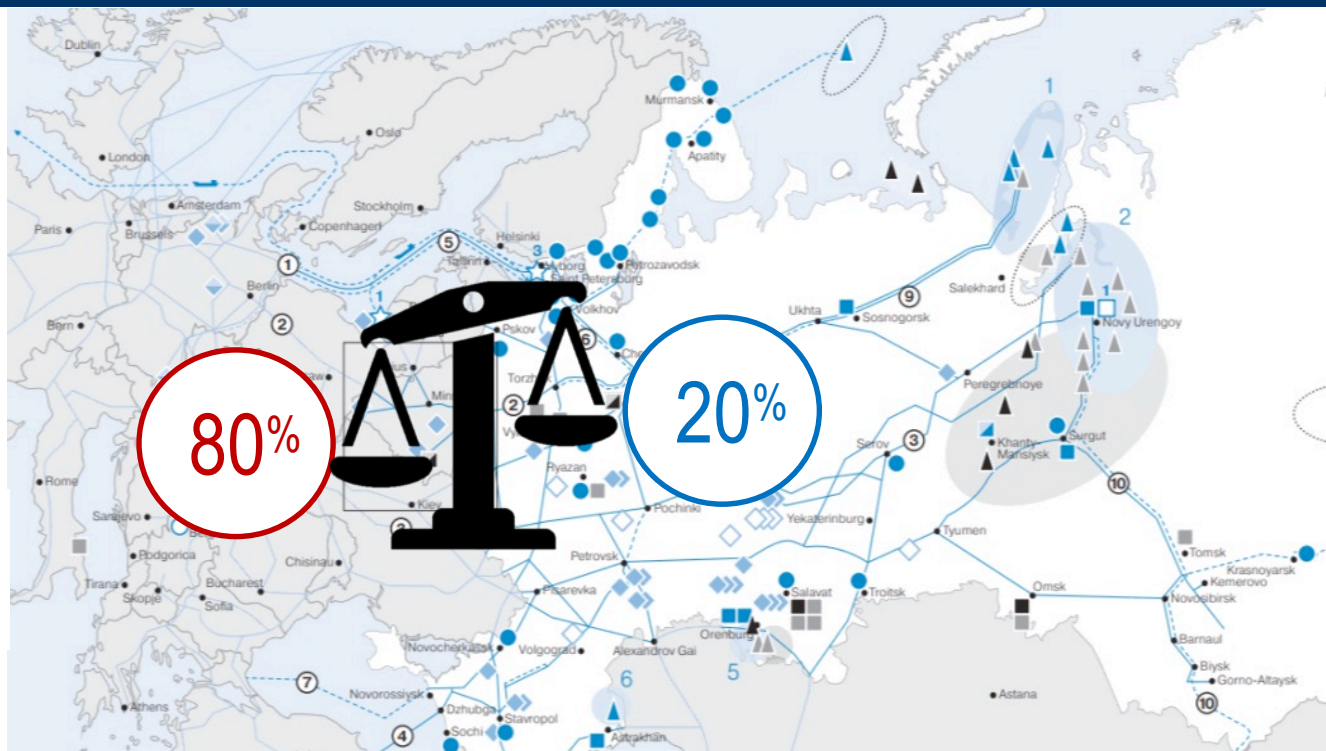
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GHG Emissions Ratio alongside the Natural Gas Supply Chain

The core GHG emissions alongside the gas supply chain attributed to the combustion/ final consumers stage



Industrial Power Consumers





Only by joint efforts we can find a rational solution that satisfies all the stakeholders



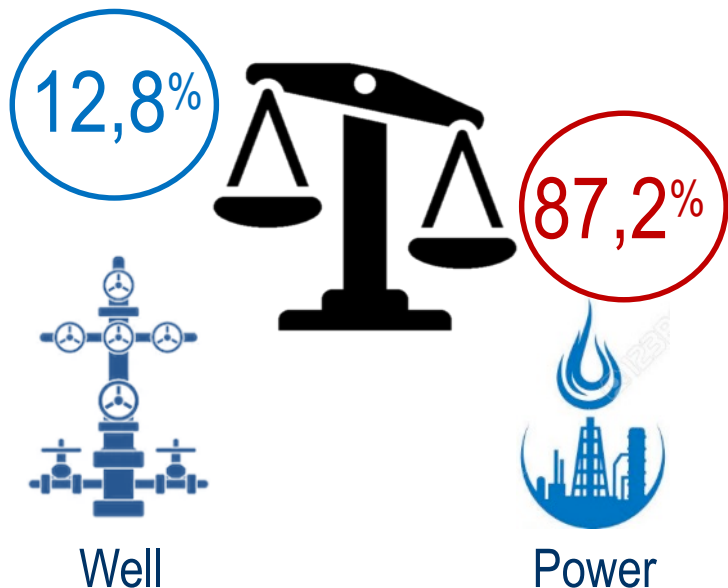


Thank You for Attention

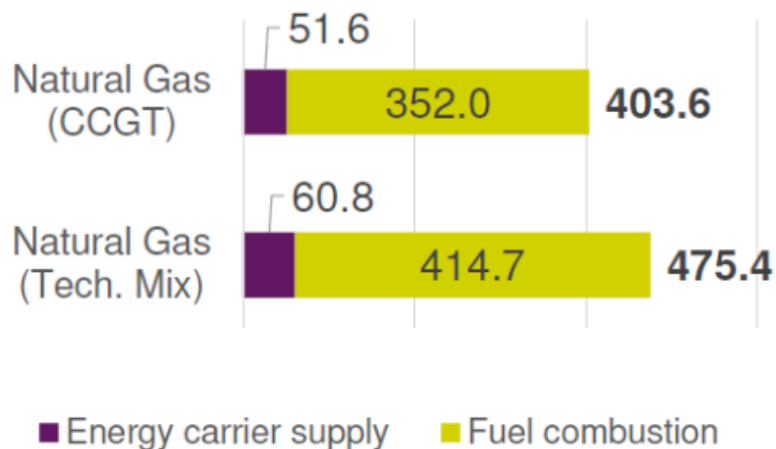
Unsubsidized Levelized Cost of Energy Comparison



Well-to-Electricity – GHG Emissions: Electricity Production Comparison for different Energy Carriers



Well-to-Grid - Electricity, at power plant - GHG (EU-28)
[g CO₂-eq/kWh]



Source: Greenhouse Gas Intensity of Natural Gas Report, Thinkstep AG, 2017