GAS INFRASTRUCTURE INVESTMENTS TO MEET ENERGY AND CLIMATE OBJECTIVES IN CENTRAL-EASTERN EUROPE

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Geneva, 25 March 2019
GAZ-SYSTEM – INTRODUCTORY INFORMATION

- Certified gas TSO in PL, certified ISO (Yamal-Europe pipeline in PL)
- Company with strategic significance for the economy and energy security in PL
- Key integrator and facilitator of market development in the CEE and Baltic regions
- LNG terminal in Świnoujście operated by its SPV, Polskie LNG
- Developing infrastructure and mechanisms to enable increased consumption of natural gas as an environmentally-friendly fuel
REGIONAL DEMAND FORECASTS UNTIL 2040
► Current gas demand in the CEE and Baltic regions amounts for approx. 76 bcm/y
► Demand expected to increase up to 99 bcm/y in 2040
► Climate and environmental considerations – switch to lower emitting sources
► Power generation and heating

POLAND AS THE BIGGEST AND GROWING REGIONAL MARKET
► Positive outlook for gas demand in Poland in recent years
► Significant increase in demand since 2015 (25% increase)
► Infrastructure providing new sources and routes of supply (LNG terminal in Świnoujście) as major contributors to the market development
ENERGY SECTOR IN POLAND – CURRENT OUTLOOK

Gross inland consumption
► The structure of energy consumption closely linked with significant resources of raw materials (coal and lignite) that are located in Poland
► The bulk of input provided by solid fuels (47.4%) and oil/petroleum products (28.6%)
► Increasing - yet still limited - share of natural gas (14.7%)

Electricity generation
► Overwhelming majority of electricity produced from solid fuels (77%)
► Dynamic development of renewables in Poland in the last decade (3.8% in 2007, 14.4% in 2017)
► Limited but increasing share of gas-fired generation (7.2%)
► Structure of installed capacities (major sources): solid fuels – 29.6 GW, RES – 6.3 GW, natural gas – 2.3 GW, hydropower – 2.3 GW
Ensuring stable supplies of electricity (e.g. via the capacity market)

Reduction of pollutant emissions from the electricity generation sector (modernisation of existing units, decommissioning of old, promotion of RES and low-emission sources)

Impact on gradual reduction of the role played by solid fuels in the electricity generation sector

In the longer run new units to be mostly based on renewables (offshore wind and PV), nuclear power plants, gas-fired power plants

The energy sector as the most important demand growth factor from the perspective of the gas sector

Approx. 5.6 GW of new gas fired power plants by 2025 according to eTYNDP
AIR QUALITY IN EUROPE

European Environment Agency’s report on the air quality
► Concentrations of air pollutant emissions continue to exceed the EU limit values in large parts of Europe
► Air pollution continues to have significant impacts on the health of the European population, particularly in urban areas
► Considerable economic impacts, cutting lives short, increasing medical costs and reducing productivity through working days lost across the economy

Air quality in Poland and the CEE region
► Air pollution resulting from burning high emission and low-quality fuels, especially in the winter period
► Mitigation of air pollution with a wider use of natural gas in households, the heating and the power generation sectors
► Natural gas as an affordable, time- and cost efficient solution
BALTIC PIPE PROJECT DRIVERS

ENERGY SECURITY
► Diversification of supply sources, routes and counterparts
► Reduction of dependence on a single supply source
► Mitigation of exposure to supply disruptions from the East

COMPETITIVENESS
► Enhanced competition between suppliers
► Price convergence
► New trading opportunities

AFFORDABILITY
► Reduction of gas prices
► Low transmission tariffs

SUSTAINABILITY
► Promotion of natural gas as a low emission fuel in the economy
► Reduction of CO2 emissions
► Support for the integration of renewable energy sources
► Enhancing air quality
MAJOR COMPONENTS

1. THE NORTH SEA OFFSHORE PIPELINE
2. ONSHORE DENMARK
3. COMPRESSOR STATION IN DENMARK
4. THE BALTIC SEA OFFSHORE PIPELINE
5. ONSHORE POLAND

Project cofinanced by the European Union
Trans-European energy networks (TEN-E)
BALTIC PIPE PROJECT – BASIC INFORMATION

- bi-directional connection
  - Norway - Denmark - Poland

- 2 project promoters
  - GAZ-SYSTEM and Energinet

- Capacity
  - 10 bcm/y (DK->PL)
  - 3 bcm/y (PL->DK)

- Start of gas transmission
  - 2022

- EU support under the CEF Program
  - EUR 266.8 mln

- Estimated total length of gas pipelines
  - 900 km

- Compressor stations
  - 4

- Duration of construction works
  - 2 years

- Operating pressure
  - 6.7 – 12 MPa

- Planned gas pipelines lifetime
  - 50 years
BALTIC PIPE PROJECT – TIMELINE

2017
- Capacity reservations
- Concept studies
- Surveys studies
- Environmental Impact Assessment studies

2018
- Detailed engineering
- Surveys end
- Environmental Impact Assessment continued
- Business case
- Signing Construction Agreement

2019
- Engineering continued
- Environmental Impact Assessment end
- Permits
- Procurements Procedures

2020
- Contract awards
- Construction
- Permits continued

2021

2022
- Commissioning
- Operation
- Transmission services
- Additional allocation of remaining 10% of the capacity

SYSTEM
DEVELOPING LNG INFRASTRUCTURE

Regasification Capacity
- 5 bcm/y – currently
- 7.5 bcm/y – following extension

Storage
2 storage tanks with capacity of 160,000 cm each

Small scale services
Track loading available
Other services following the extension (bunkering, rail loading, trans-shipment)

Capacity booking
Current capacities booked

Commercial operations
High utilisation rate (2018):
- Almost 2 million tonnes of unloaded LNG
- 1794 tank trucks loaded with LNG (1523 in 2017)
LNG TERMINAL IN ŚWINOUJŚCIE
## PROVIDING NEW POSSIBILITIES TO THE CEE REGION

### PL-CZ INTERCONNECTION
- **Capacities:**
  - 5 bcm/y towards CZ
  - 6.5 bcm/y towards PL
- **Commissioning:** 2022
- **Status:** design/permitting completed, discussion on FID ongoing

### PL-SK INTERCONNECTION
- **Capacities:**
  - 4.7 bcm/y towards SK
  - 5.7 bcm/y towards PL
- **Commissioning:** 2021
- **Status:** FID taken, design/permitting completed, tendering ongoing

### PL-LT INTERCONNECTION
- **Capacities:**
  - 2.4 bcm/y towards LT
  - 1.9 bcm/y towards PL
- **Commissioning:** 2022
- **Status:** FID taken, design/permitting/tendering

### PL-UA INTERCONNECTION
- **Capacities:**
  - 5 bcm/y – both directions
- **Commissioning:** 2021
- **Status:** non-FID, permitting completed, design ongoing
CONCLUSIONS

CHALLENGES

Relatively immature and fragmented markets in the CEE compared to North-West Europe

Strongly dominated by Russian supplies, largely based on oil-indexed pricing formula

Transformation of power generation and heating sectors (emission reduction, deployment of RES)

Enhancing air quality and providing affordable and efficient sources of energy

REMEDIES

Enhancing direct access to new supply sources such as LNG and Norwegian Continental Shelf

Development of proper and flexible natural gas infrastructure

Integration of transmission systems between the Baltic and CEE region

Exploring new market opportunities for LNG (small scale, bunkering, LNG in transport)

EXPECTED RESULTS

Creation of a regional market with secure and diversified supply portfolio

Fostering competition and liquidity on the markets

Improvement of competitive position of natural gas via-a-vis other sources of Energy (natural gas in power generation supporting RES)

Creation of conditions for further development of the regional gas market
THANK YOU FOR ATTENTION