The 2007 Autumn Gas Conference

View of RWE Transgas Net, s.r.o. on gas transit in Central and Eastern Europe

Thomas Kleefuß

Prague, 7th November 2007

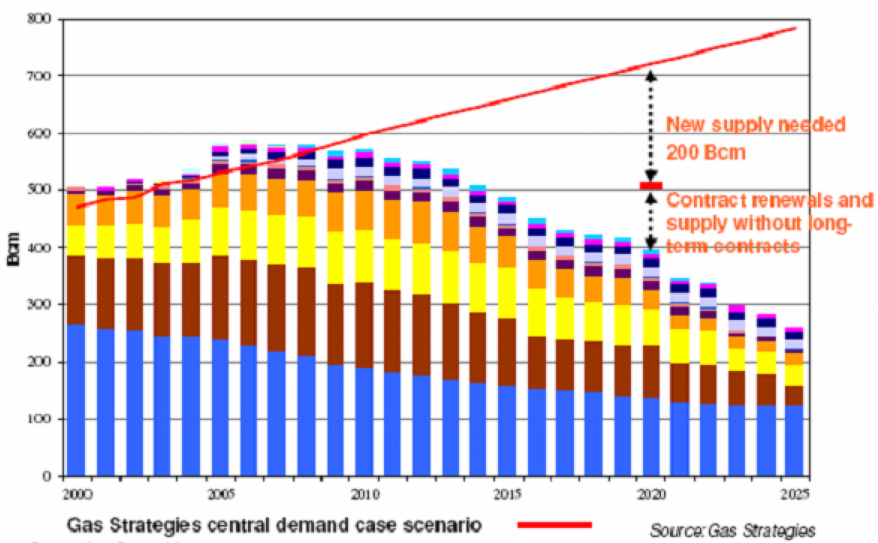
Agenda

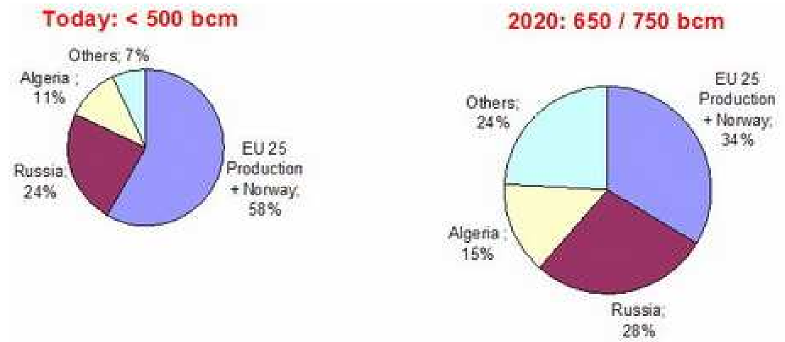
RWE Transgas Net

1. **Supply sources for Europe**
2. Infrastructure projects for Central and Eastern Europe
3. Conclusion

Additional gas infrastructure is needed to meet European's future gas demand

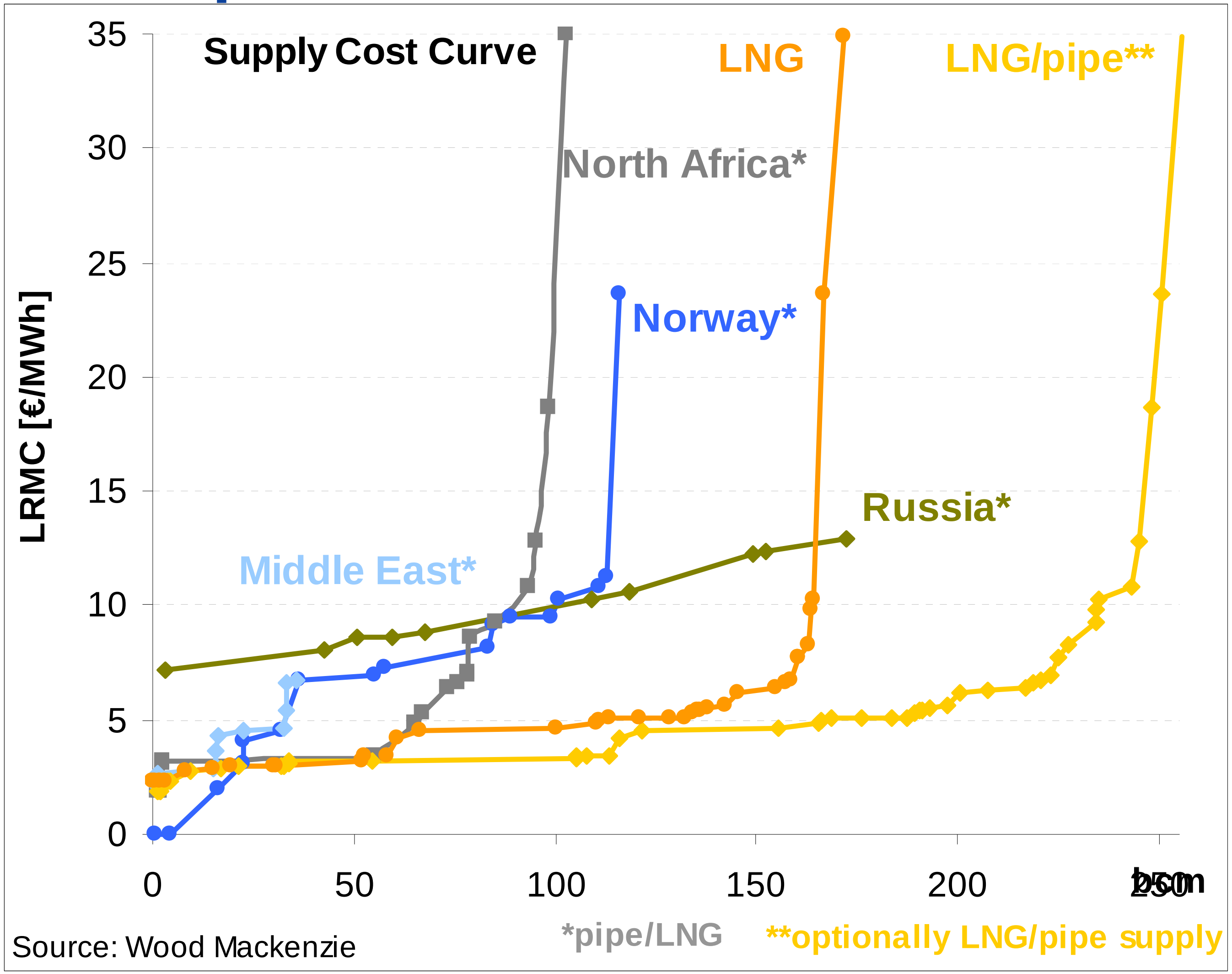
- The annual demand for natural gas in the European Union will constantly increase from app. 500 bcm today to app. 700 bcm until 2020
- Currently the European Union (including Norway) can cover 58% of its gas demand with domestic production. This will decrease dramatically in future to 34%.
- Russia and the caspian countries will become the major gas sources for Europe to bridge the supply gap of 200 bcm
- Current calculations show, that LNG will cover at least 32% (64 bcm) of the supply gap





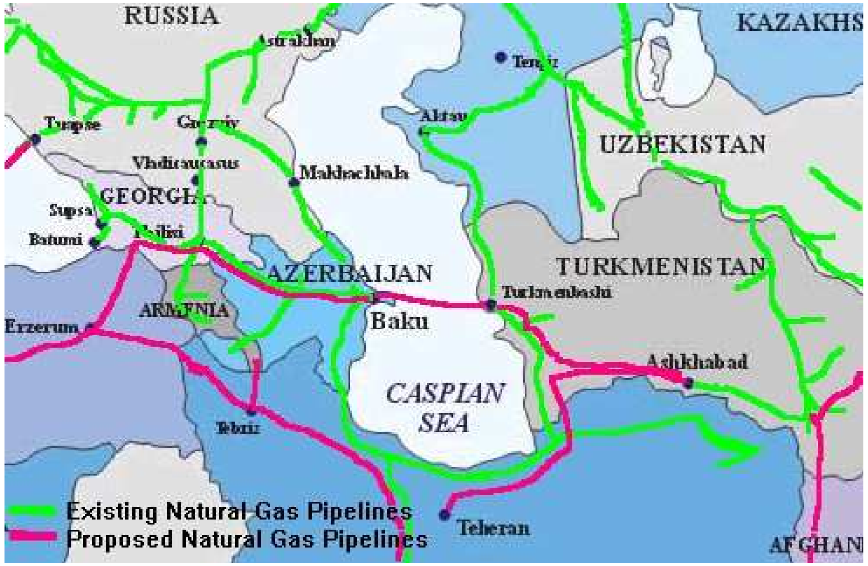
Additional pipeline capacity and LNG import terminals are needed to maintain the security of supply for Europe

Russian gas is needed but other sources are competitive



The Caspian Region should become the major driver for diversification of gas supply for Europe

- Proven reserves are estimated to be 7,3 TCM
- Resources are estimated to be 15,6 TCM
- Annual gas production in 2005: 84,6 BCM

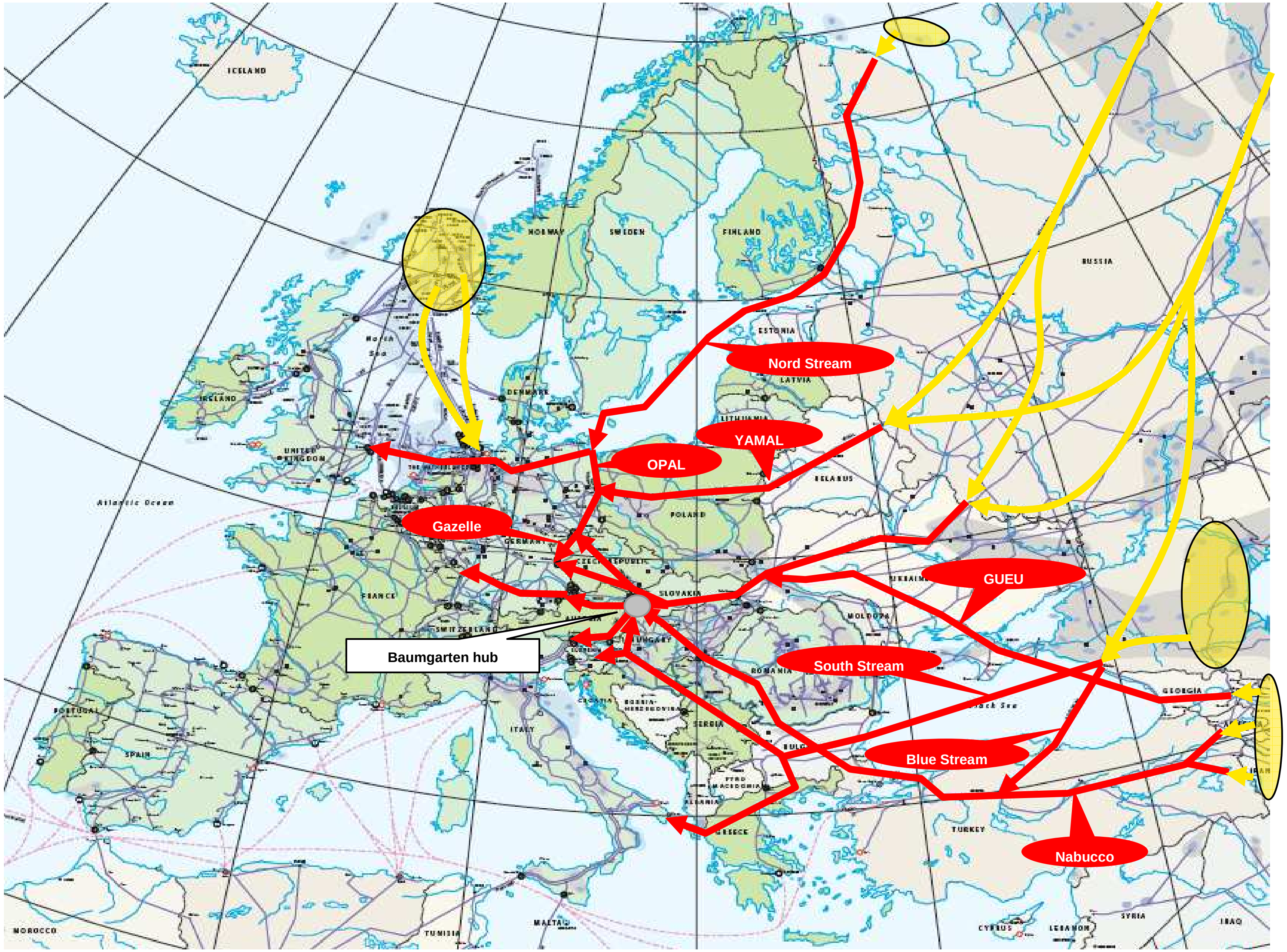


Agenda

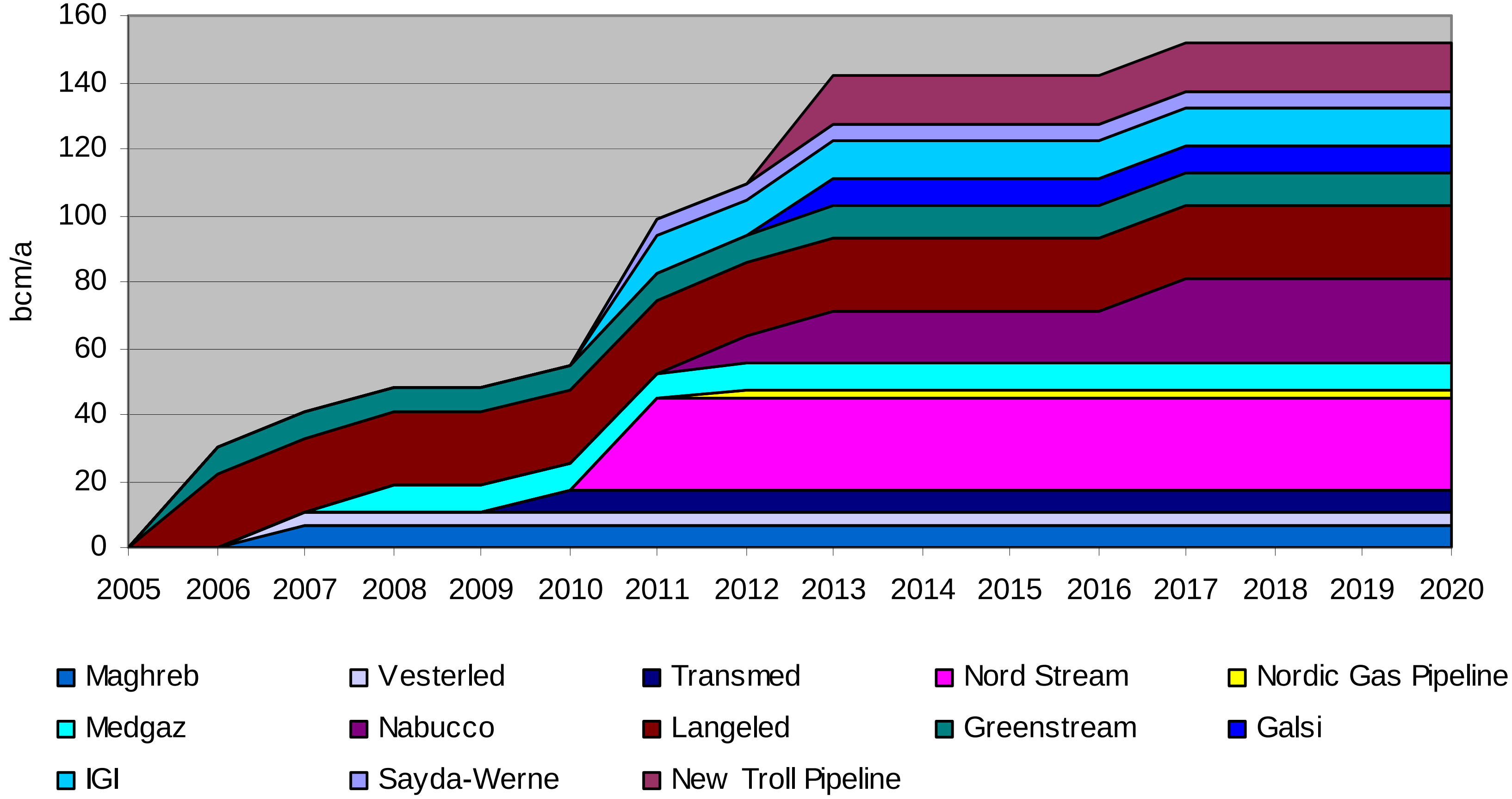
1. Supply sources for Europe
2. **Infrastructure projects for Central and Eastern Europe**
3. Conclusion

Main gas import infrastructure in CEE

RWE Transgas Net



All Regions: New pipe capacity emerge from all supply regions, especially from North Africa to Europe



RWE supports the Nabucco Pipeline Project

RWE Transgas Net

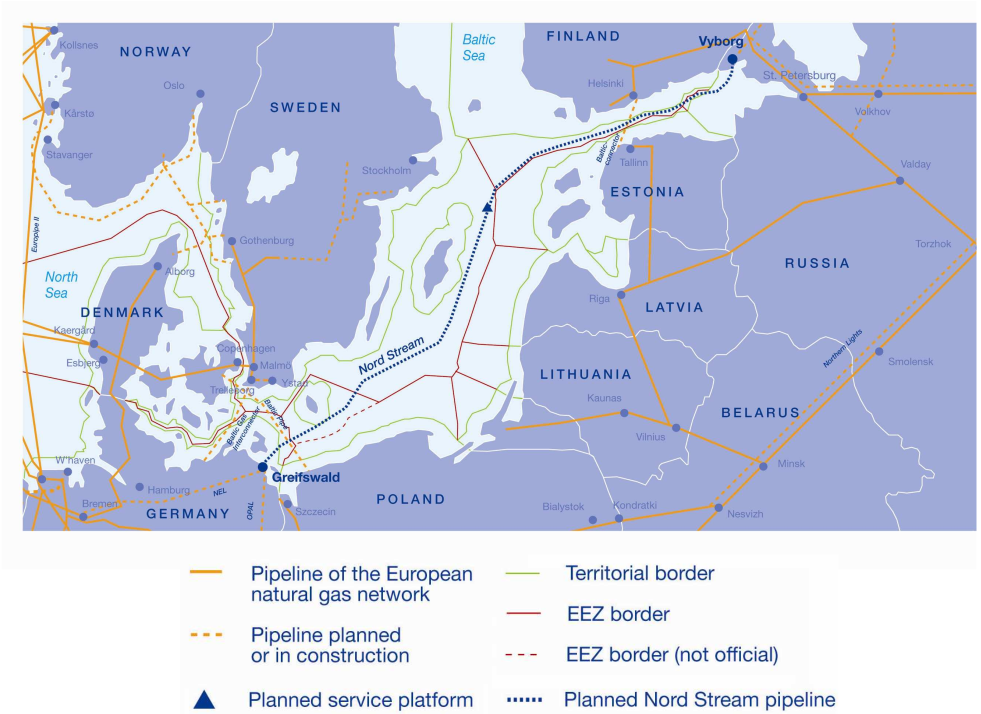
- Connection from Turkey to Austria via Bulgaria, Romania, and Hungary
- Max. capacity - 31 bcm/year
- Total length – 3300 km, diameter 1400 (56“)
- Expected construction starts in 2009, start of operation in 2012 from Ankara, from 2014 finished to Georgia border
- Investment - 5 billion €
- Shareholders: OMV (A), MOL (HU), Transgaz (RO), Bulgargaz (BG), BOTAS (TU) , RWE (D) (-subject to final approval)

Nabucco has the potential for competitive gas outside Russia, however the sourcing is the main obstacle for the project

RWE Transgas Net

Nord Stream pipeline project changes gas flows in CEE

- From Wyborg (Russia) to Greifswald (Germany)
- Capacity - up to 55 bcm/year (2 pipelines with 27.5 bcm capacity each), diameter 1220 mm
- Length - 1200 km off-shore pipeline
- Completion of the first line is planned in 2010, but delays are expected due to routing problems, a second line can still be speculated since Gazexport has now gained control in Belarus
- Estimated investment
  € 5 -7 billion
- Shareholders OAO Gazprom (51%)
  Wintershall AG (24.5%),
  E.ON Ruhrgas AG (24.5%)
  (GTS signed recently a MoU as a new partner)



OPAL and NEL pipeline projects are the extension of Nord Stream in Germany

RWE Transgas Net

- From Greifswald to Olbernhau (border with the Czech Republic) connecting Nord Stream with JAGAL, STEGAL and GAZELLE-Project in CZ

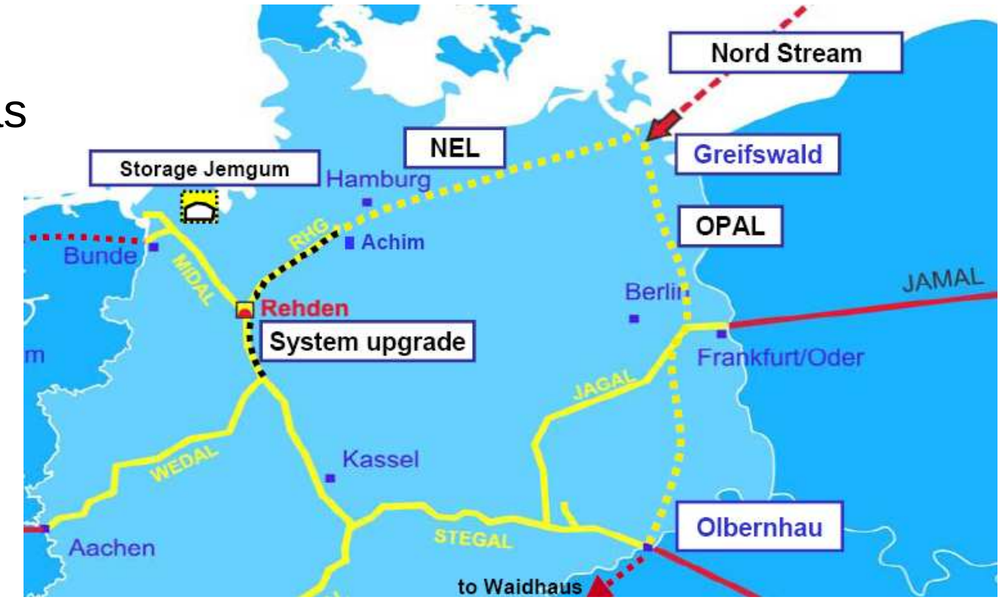
- NEL shall be developed towards NL as connection to BBL pipeline to the UK

- Total capacity - 37 bcm/year, diameter 1400 mm

- Maximum allowed pressure - 100 bar

- Total length - 480 km

- Shareholders - E.ON Ruhrgas
  - Wingas
  - (possibly Gasunie Transport for NEL)



RWE Transgas Net

Connection between RWE TGN (CZ) and Baumgarten hub (Austria)

Planned Pipelines

Existing Pipelines

- Total investments: est. 60 Mio €
- Total length: app. 40 km
- Supported by TEN-E
- Capacity: approx. 6 bcm/year
- DN: 800

Sayda-Werne-Eynatten pipeline project

- From Sayda(D, border with CZ) through Werne to Eynatten(B)
- Pipeline will connect RWE Transgas Net and RWE Transportnetz Gas, connection to Fluxys (Belgium TSO)
- Total capacity - 5 bcm/year
- Total length - 760 km
- Planned to be under operations by late 2011
- Expected construction costs: 1 billion €
- Early stage of project planning
- Covers approximately 5% of total gas demand of Germany

Gazelle project expands transit capacity from Olbernhau to Waidhaus

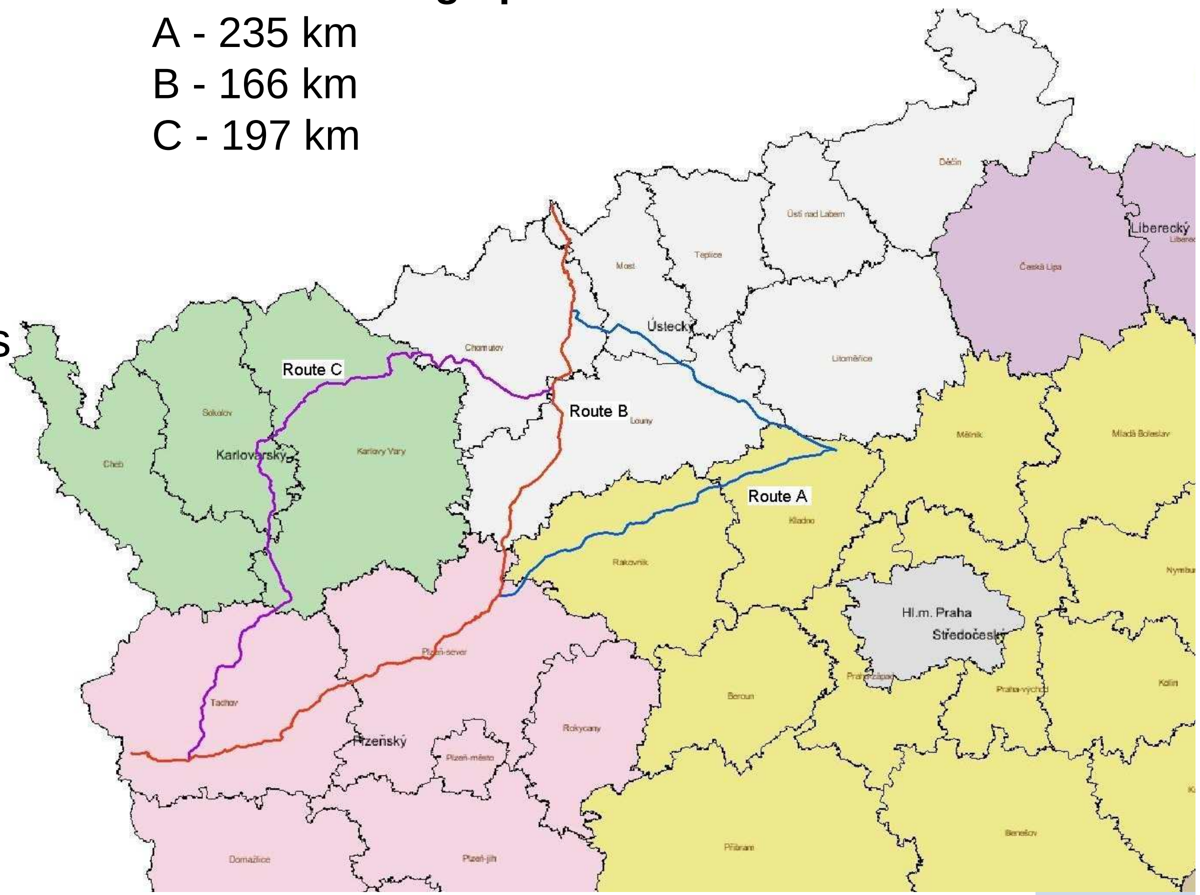
- Feasibility study is finished
  Routing alternatives are between 166km and 235km
- EIA in progress
- Land Permission Design was initiated, focusing on route B
- Currently preparing methodology for right of way negotiations
- Project budget is mainly determined by pressure and distance

Gazelle routing options

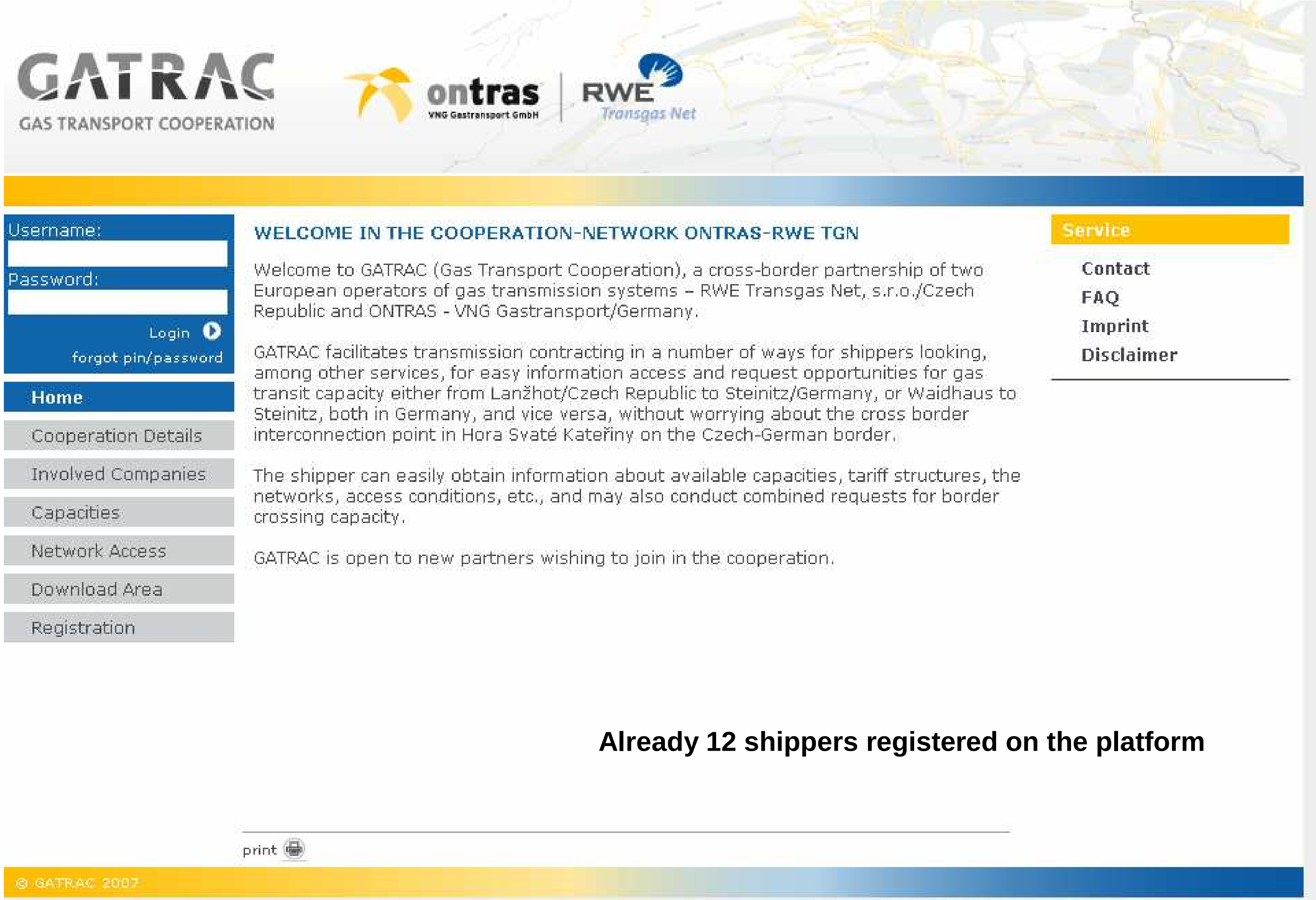
A - 235 km

B - 166 km

C - 197 km



GATRAC - cooperation between RWE Transgas Net and Ontras



Already 12 shippers registered on the platform

Extention of the partnership

- RWE Transgas Net and Ontras are considering extending their partnership by leaving the doors open for other transmission system operators to join the transit co-operation in the future.

Agenda

1. Supply sources for Europe
2. Infrastructure projects for Central and Eastern Europe
3. **Conclusion**

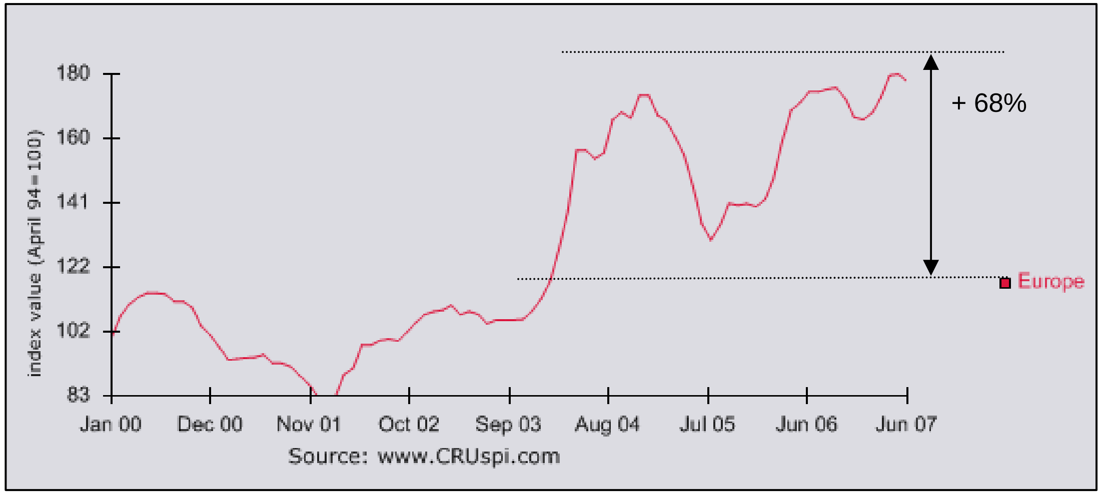
Projects are exposed to huge investment risks

- **Political risks**
  - crossing many countries
  - gas supplies from Iran, Iran , Turkmenistan uncertain

- **Licensing risk** - legal situation in many CEE countries uncertain and environmental issues gain importance

- **Price risks** – material costs i.e. make up to 40% of project costs (high steel prices and limited production capacities)

- **Regulatory risks** – exemption for transit pipelines becomes more and more difficult



Summary: Security of supply will be determined by the right supply mix

- **Additional imports of 230 BCM/a will be brought to market till 2020. Huge transportation and regas infrastructure projects are planned and under construction**
- **Decreasing share of indigenous production requires significant increase of baseload supplies from remote sources => Demand for storages is increasing significantly currently in the EU ~100 storage projects are discussed**
- **Dependency on Russia is increasing and opportunities for Caspian and Middle East Region are becoming increasingly important despite political risks**
- **If strict economic rational behaviour will take place not all projects will be build - however individual strategic decisions e.g. Nord Stream or LNG projects are setting the scene and cause different economics settings for the markets and its security of supply**
- **The Ukraine is a key player in securing the security of supply with a transit potential of some 160BCM/a and storage capacity of some 30 BCM – This potential and the direct connection to the Caspian region shall be captured in order to secure a wider supply mix**

Thank you for your attention!!