

27th Annual ATC/TAIK Conference
Energy Security & Global Warming

Energy Transmission Challenges - Pipelines

Global challenges to Energy Security

Regional Energy Projects

Multinational Pipelines

Construction Challenges

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Energy Security

- Domestic production of energy and relying less on imports
- Buying stakes and investing in foreign oil fields
- The restrictions on foreign investment in domestic oil and gas fields

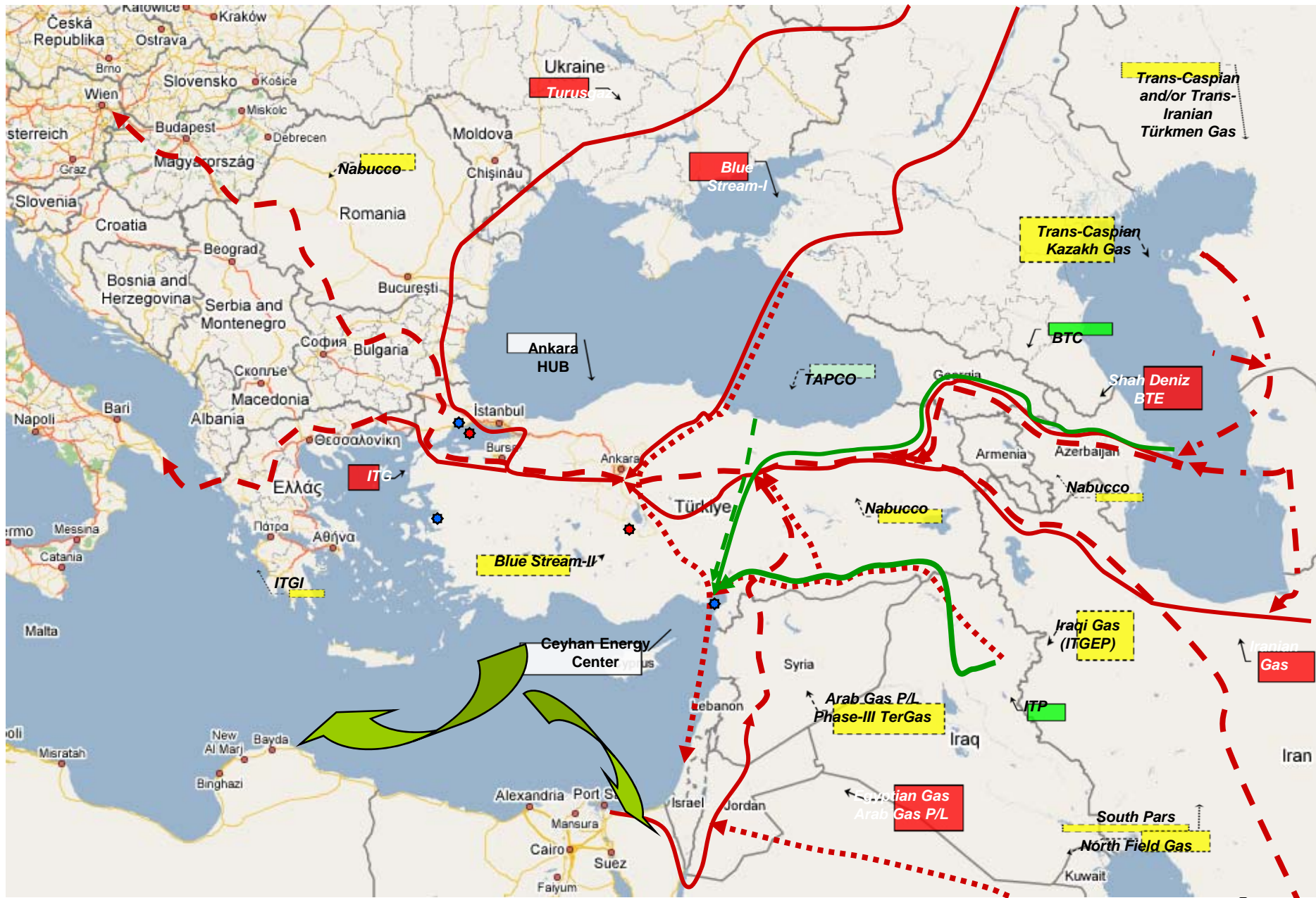
Energy security is a global challenge which requires global perspectives, global thinking, global solutions and innovation to provide abundant, clean and inexpensive energy for the global community.

Energy Security - Strategies

- No over-dependence on external suppliers,
- Diversity of supply,
- Well-functioning energy markets
- Sound infrastructure for energy generation, transmission and distribution
- Environmental sustainability

Energy Security – Key Challenges

- The global dependency on oil,
- The industrialization of developing countries,
- Energy as political currency
- The effect of human energy consumption on the environment

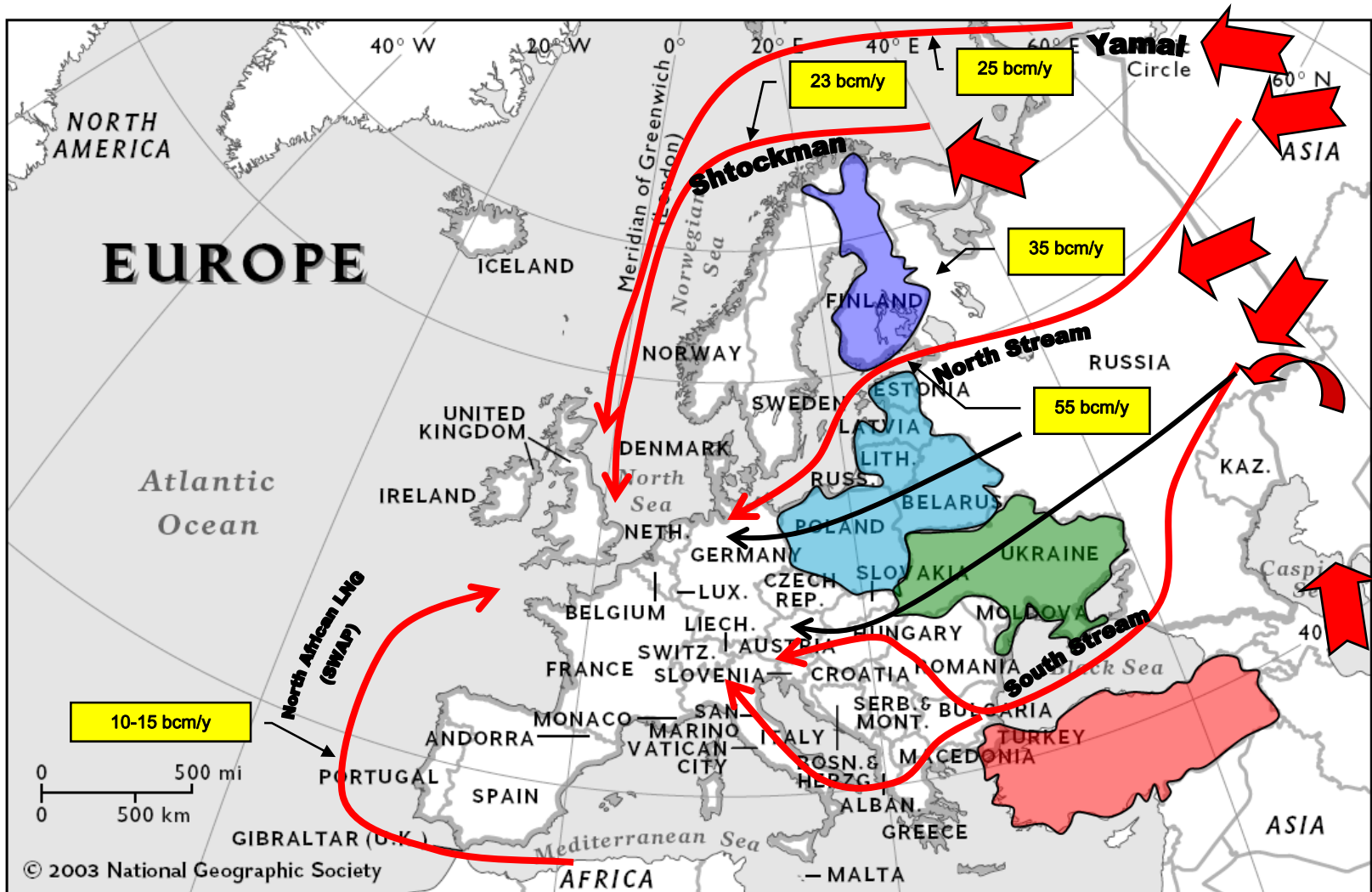


"An Energy Policy for Europe"

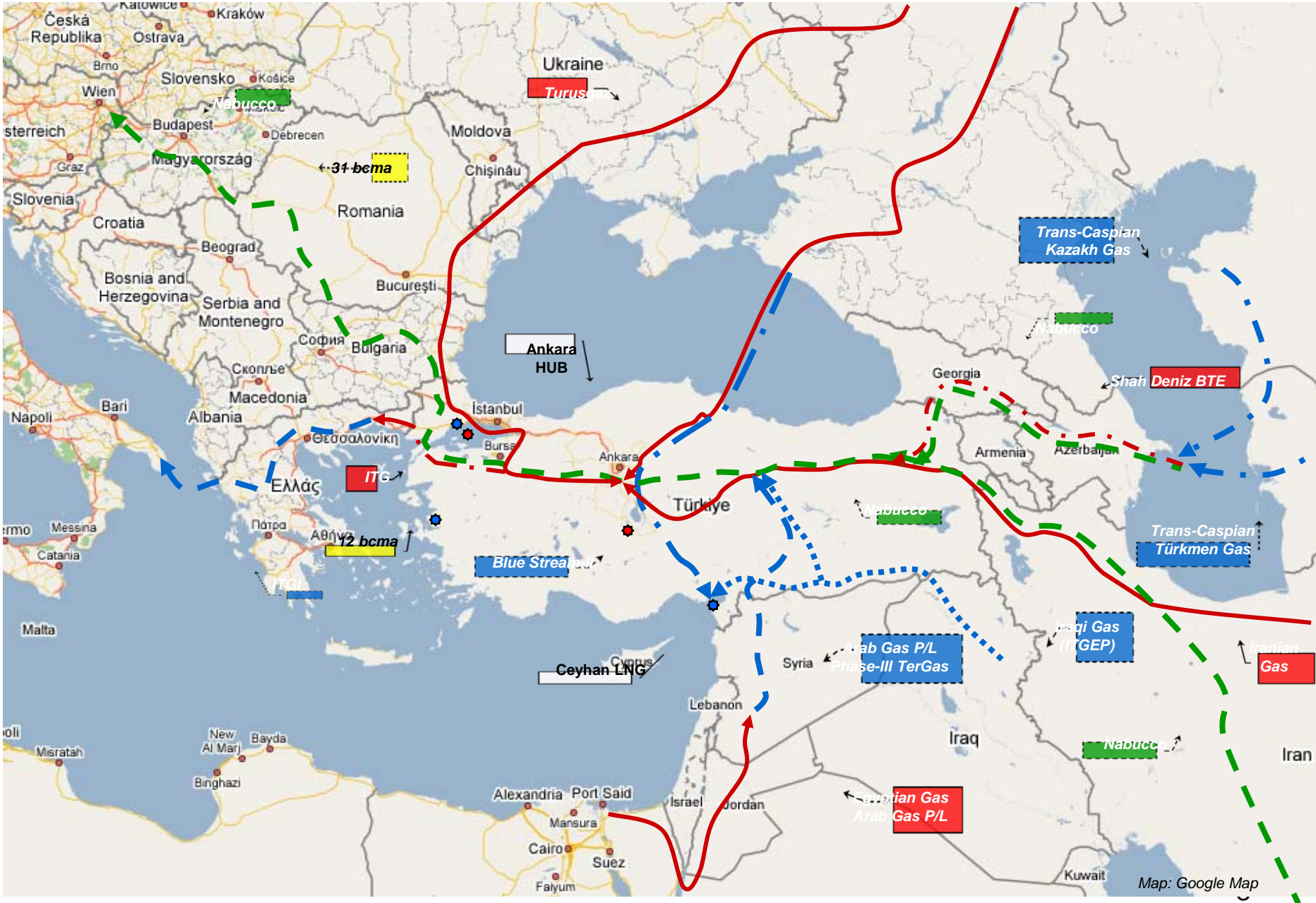
Energy Security aspects;

- Sustainability,
- Security of supply,
- Competitiveness

Natural Gas Supply Sources - Europe

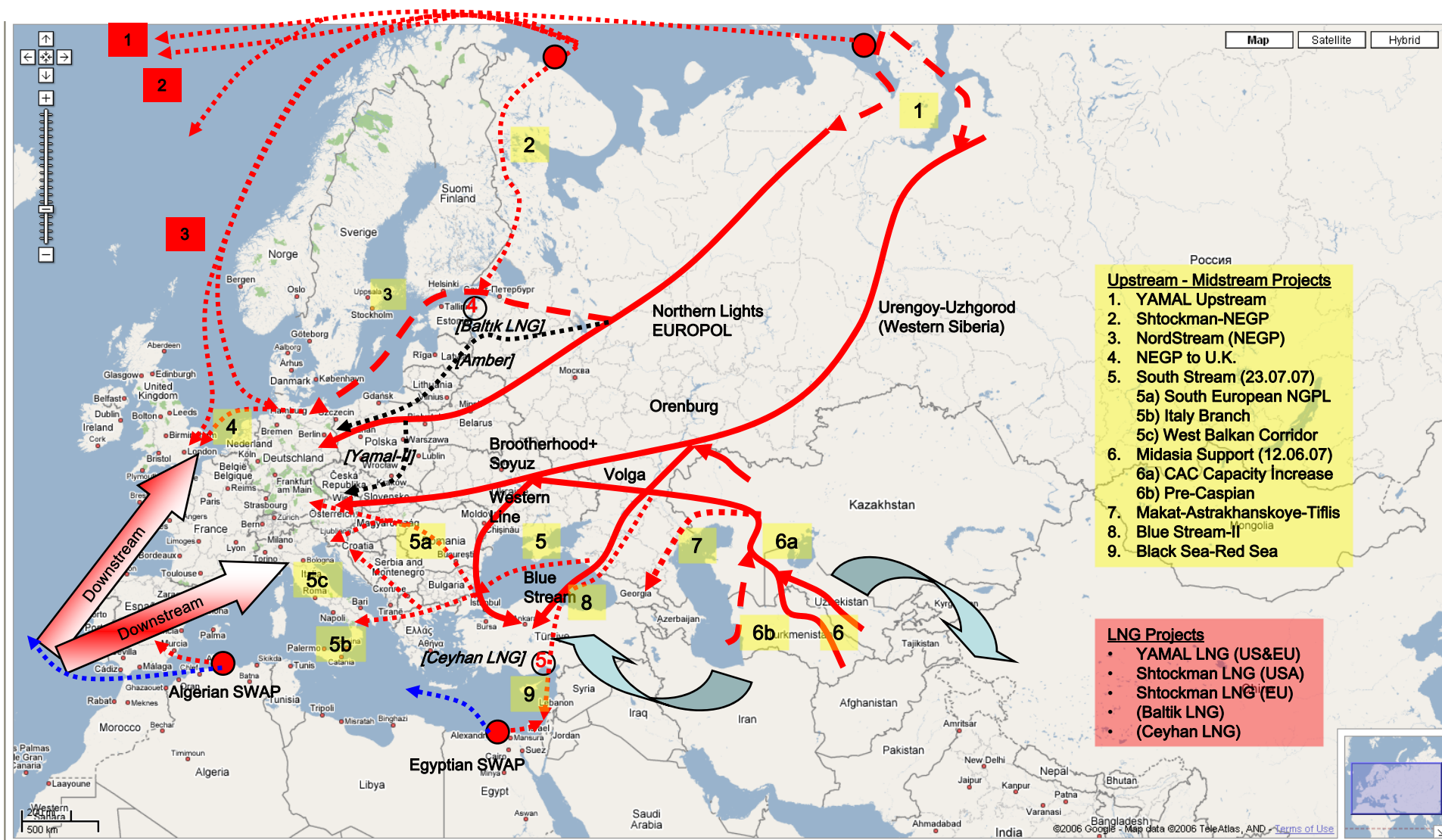


Natural Gas Hub Scenario



Map: Google Map

Existing and Planned Natural Gas Pipelines





Multinational Pipelines – Challenges

- Nationalistic conceptions
- Dependency Conflict
- Conflict of regulations between States
- Supply Sources

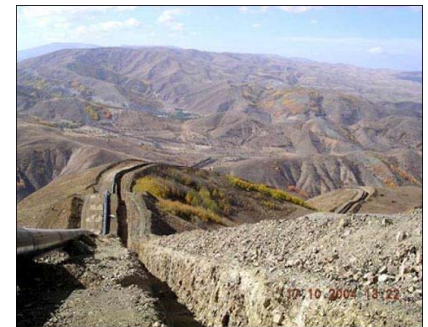


Pipeline Construction – Challenges

- Limited material suppliers
- Recruitment
- Increasing Costs
- Alignment of standards

BTC Experience

- 1768 km of pipeline through 3 countries
- 8 Pump Stations, 101 Block Valves
- 150 000 pipes
- Diameter of 34 inches to 42 inches
- Climbing to an altitude of 2 800 meters
- 1 million barrels / day transport capacity



BTC Experience – Finance

- \$3,9 billion pipeline cost
- %70 financed by third parties
 - EBRD
 - IFC
 - World Bank – Private Sector Arm
 - Export Credit Agencies of 7 different countries
 - Syndicate of 15 Commercial Bank

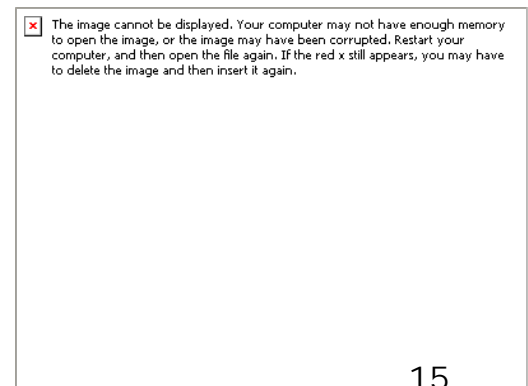
BTC Experience – Environment & Social

- Environmental and Social Investment Programs
 - With local & international organizations
 - Including NGOs, Private Sector & Universities
- Allocated \$20 million for Environment, \$25 million for Social Programs
- Nearly 500 communities are worked with
- Over \$100 million spent within the commitment of Environmental Impact Assessment Programs



BTC Experience – Recruitment Procurement & Contracts

- 15 000 workers at peak, 40 000 worker total
- %90 of unqualified workers from the provinces affected directly
- Expatriates from more than 25 different nations
- 8 EPC, 6 LLI, 14 SFI Contractor over 100 Sub-contractor from more than 15 countries
- Over 500 Vendors





Way Through

- Global partnership
- Multinational framework
- Multidisciplinary & Multisectoral approach
- Innovation