Energy infrastructure priorities for 2020 and beyond

EU-Russia Subgroup meeting on Energy Infrastructures

Jean-Arnold VINOIS
HoU Unit B1 «Security of supply and networks»
DG Energy, European Commission
Treaty on the Functioning of the European Union
New Art. 194 on energy:

Union policy on energy shall aim, in a spirit of solidarity, to:

- Ensure the functioning of the internal market;
- Ensure security of supply;
- Promote energy efficiency and the development of renewable forms of energy;
- Promote the interconnection of energy networks.

Objectives: 20-20-20 by 2020

Internal market

Security of Supply

Sustainability
Energy policy context

Third Internal Energy Market Package

EEPR

Regulation on security of gas supply
Energy Strategy 2020

Energy Efficiency Plan
Energy Infrastructure Legislative Proposal
External Energy Policy Communication
Energy 2050 Roadmap

2009
2010
2011
Energy 2020 - A strategy for competitive, sustainable and secure energy (Nov 2010)

Priority 1: Achieving an energy-efficient Europe

Priority 2: Building a pan-European energy market with an integrated energy network

Priority 3: Leadership in developing new energy technologies

Priority 4: Providing secure, safe and affordable energy

Priority 5: Strengthening the external dimension of the EU energy market
Implementation of the internal energy market

- Second / Third Internal Energy Market Packages - Rules for an open, integrated and competitive gas market in the EU
  - Separation of transport and supply/production
  - Transparency
  - Market integration through framework guidelines and network codes
    - Agency for the Cooperation of Energy Regulators (ACER)
    - ENTSO-G/E
  - Community-wide 10-Year-Network Development Plans as starting point for joint and consistent investment planning
Regulation EU No 994/2010 on Security of Gas Supply

- Entry into force: 2 Dec 2010
- Regulation based on energy article 194 TFEU
- Paradigm shift on security of supply from purely national prerogative (Directive 2004/67/EC) to a European framework
  - „Competent Authority at national level: „national governmental authority or the national regulatory authority“
  - Shared responsibility of natural gas undertakings, Member States and the Commission – high degree of cooperation
  - Three-level approach: market, national/regional and EU level
  - Regional cooperation
    - Risk assessment
    - Preventive Action Plan and Emergency Plan
    - Supply and infrastructure standards
Regulation EU No 994/2010 on Security of Gas Supply

- European framework with a defined role of the Commission
  - Union / Regional Emergency:
    - Declaration by the Commission at the request of 1 Competent Authority (optional), at request of 2 Competent Authorities (obligatory) once they declared national emergency
    - Coordination of the actions / monitoring
  - Gas Coordination Group
  - Decision on reverse flows
  - Assessment by the Commission of preventive action plans and emergency plans regarding compliance with EU law, solidarity and mitigation of risks
  - Binding recommendations by Commission on PAPs
  - Commission recommendation to establish regional plans
  - Notification of IGAs and gas contracts by MS to Commission
Regulation EU No 994/2010 on Security of Gas Supply

Risk assessment
Preventive Action Plans
Emergency Plans

Consultation between competent authorities and Commission (ENTSOG, NRAs, ACER)

Published and notified to the Commission

Assessment by the Commission:
- Compliance with EU law
- Solidarity
- Mitigation of risks

Commission can require changes to the Plans
Common standards for security of gas supply

- Common definition of protected customers:
  - 1) Households plus if Member States decide:
  - 2) SMEs and essential social services (max 20% final use of gas),
  - 3) District heating installations

- Binding supply standard for protected customers in 3 cases:
  - a) 7 days winter peak demand (1 in 20)
  - b) at least 30 days high gas demand (1 in 20)
  - c) at least 30 days in case of disruption of largest infrastructure (average winter)
**Binding infrastructure standard:**
- **N-1** (max 4 years); resilience and robustness of gas system

\[
N - 1[\%] = \frac{EP_m + P_m + S_m + LNG_m - I_m}{D_{max}} \times 100, \quad N - 1 \geq 100 \%
\]

- European approach on **reverse flows**: (max 3 years)
  - Obligation for reverse flows on all cross-border interconnections between Member States (except LNG, production, distribution)
  - Consultation and procedure for exemption. Proposal for capacity with Commission decision
Energy Infrastructure Strategy for 2020

European Council of 4 Feb 2011:

- Completing the internal market by 2014 – cooperation of ACER, ENTSOs, Commission
- Infrastructure is key for achieving 20-20-20 targets by 2020
- Ending isolation of energy islands by 2015
- Financing for infrastructure: mainly market-based complemented by limited public funds, notably for security of supply/solidarity
- Streamlining and improving authorisation procedures
Energy system investment needs and gap

Total investment needs in the electricity and gas sector between 2010 and 2020: over 1 trillion €

Power generation: ~ 500 bn
- RES: ~ 310 – 370 bn
- Conventional: ~ 130 – 190 bn

Transmission, storage, distribution: ~ 600 bn
- Distribution: ~ 400 bn
- Transmission: ~ 200 bn
  - Electricity: ~ 140 bn
  - Gas: ~ 70 bn
- Market delivery: ~ 100 bn

Gap: ~ 100 bn

Sources:
- PRIMES (PG)
- ENTSOs, KEMA, various reports, DG ENER analysis (TSD)
European infrastructures priorities – gas and oil by 2020

- Southern gas corridor
- Baltic energy market interconnection plan
- South-North gas interconnections in Western Europe
- North south gas & oil interconnections in Central & South East Europe
European infrastructures priorities – electricity by 2020

- Baltic energy market interconnection plan
- Interconnections in South West Europe
- Interconnections in Central-South East Europe
- Offshore grid in the Northern Seas and connection to Northern and Central Europe
- Smart grids in the EU
- Electricity highways as longer-term priority
Energy Infrastructure Package (to come 2011)

- **Aim:** To create a facilitating environment for private and public investments in energy infrastructure through
  - A new method to identify concrete projects (declared as projects of European interest) necessary to implement the priority corridors;
  - Removing regulatory obstacles and creating a better investment framework for cross-border infrastructure investment;
  - Shortening permit granting procedures, in particular by improving coordination and decision making procedures at different governmental levels.
EIP project selection approach

Projects under TYNDPs/regional investment plans by ENTSOs

Clear, transparent and measurable criteria to achieve EU 2020 targets

Regions

Regions

Regions

Regions

Regions

EU LEVEL
Compilation, control and coherence

Projects of European Interest (PEI)
Selection of PEIs on the basis of "clear and transparent criteria"

- Simple
- Measurable (in all 27 MSs, by all TSOs)
- Verifiable
- Set of common, horizontal criteria
- Possible: region-specific criteria
- Classification of projects (project stage, C/B analysis)

"European added value": projects with cross-border impact benefiting at least two Member States
**Regulatory and financing measures – an incentive-based approach**

**Balance between “user-pays”, “beneficiary-pays” and “taxpayer-pays” principles**

<table>
<thead>
<tr>
<th>Effective cost-allocation (“beneficiary-pays”)</th>
<th>Leveraging private investment through:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better match risks and regulated returns, i.a. incentives for the use of innovative technologies</td>
<td>Reduction of risks through innovative financial instruments (guarantees, equity participation, project bonds) in co-operation with IFIs</td>
</tr>
<tr>
<td>Pay-back for infrastructure where demand insufficient but need for security of supply</td>
<td>EU financial support (grants) – where needed</td>
</tr>
</tbody>
</table>

To ensure **complementarity** between regulation and public funding instruments
Making permit granting procedures more efficient

- **Complex legal and regulatory frameworks**
  - Different national frameworks
  - Changing legislation
  - Requirements due to environmental legislation

- **Inefficient administrative procedures**
  - Complex and fragmented processes
  - Lack of upfront planning and coordination
  - Lack of time limits
  - Lack of resources and knowledge
  - Lack of political support
Increasing public acceptance

- Opposition of affected population
  † up to 20,000 objections during public consultations, frequent legal appeals
  » Unclarity about the necessity and benefits of the project
  » Negative perception about impacts on environment and landscape, health and safety
  » Late and insufficient involvement of the public and stakeholders
  » Lacking or intransparent compensation
  » Expensive alternative solutions (notably cabling)
The way forward

- **Legislative proposal** to be tabled after the Commission’s Communication on post-2013 multi-annual financial framework, to replace existing TEN-E guidelines and TEN financial regulation

- **Impact Assessment** to accompany the proposal
EU renewable energy potential and future electricity infrastructure needs

- Wind energy onshore
- Solar energy
- Wave energy
- Bioenergy

Simplified Map
Electricity highways: what are we talking about?

- **An electricity highway is:**
  > an electricity transmission line with significantly more capacity to transport power than existing high-voltage transmission grids, both in terms of the amount of electricity transmitted and the distance covered by this transmission.

- New technologies will have to be developed, allowing notably direct current (DC) transmission and voltage levels significantly higher than 400 kV.

- In the longer term, several electricity highways should link together into a European electricity highway system.
Thank you for your attention!

Contact:
Jean-Arnold.Vinois@ec.europa.eu