

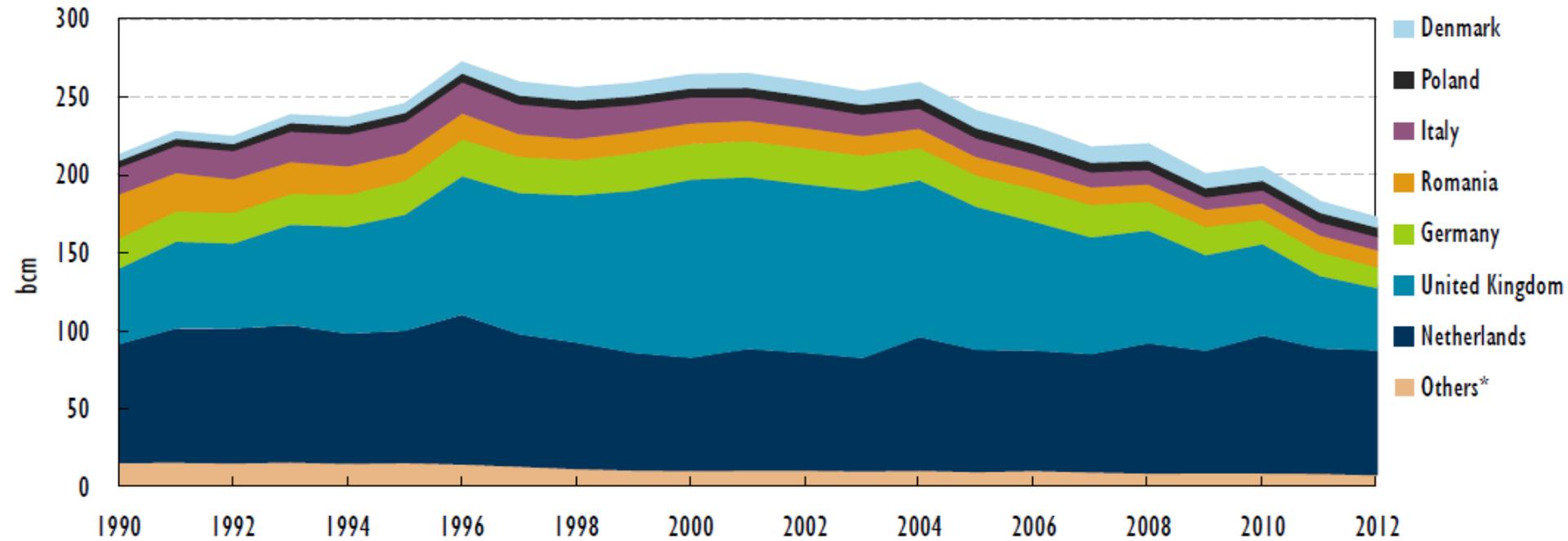
IEM: Natural Gas Market

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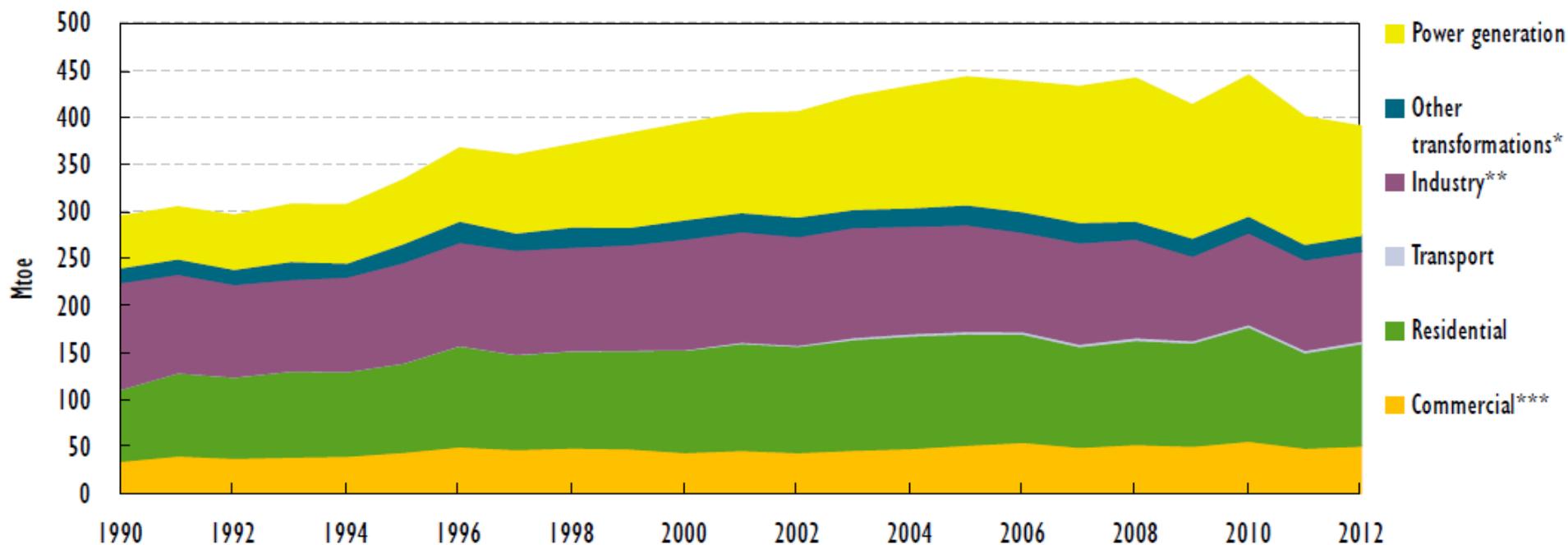
Key data (2012)

- Production: 173,7 bcm, -33,2% since 2002.
- Total EU imports: 330 bcm.
- Consumption by sectors: 29,5% power generation (second largest fuel), 27,6% residential, 24,3% industry, 13,3% commercial and other services.
- Peak demand in 2010.
- Between 2008-2013 large investments in gas-fired power plants, LNG terminals, storages and pipelines.
- Market opening and liberalisation, increased hub trading and short-term flexibility, lowering the link between oil and gas prices.

Natural gas production, 1990-2012



Natural gas supply by sector, 1990-2012



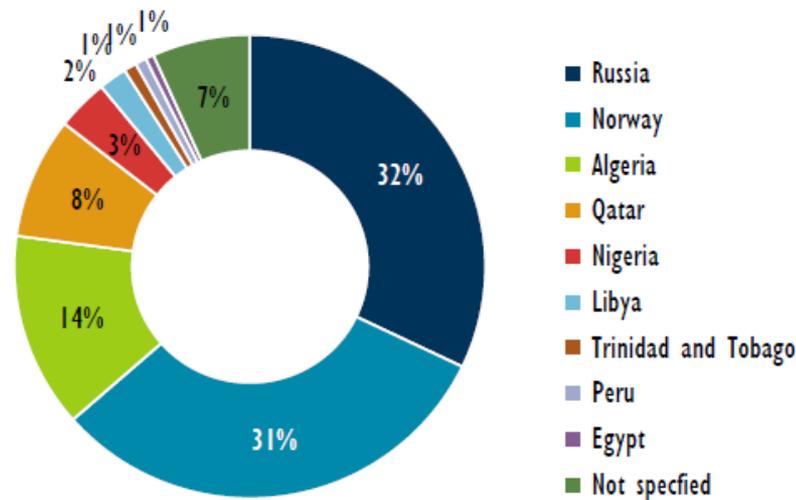
Notes: TPES by consuming sector.

* *Other transformations* includes refining and energy-own use.

** *Industry* includes non-energy use.

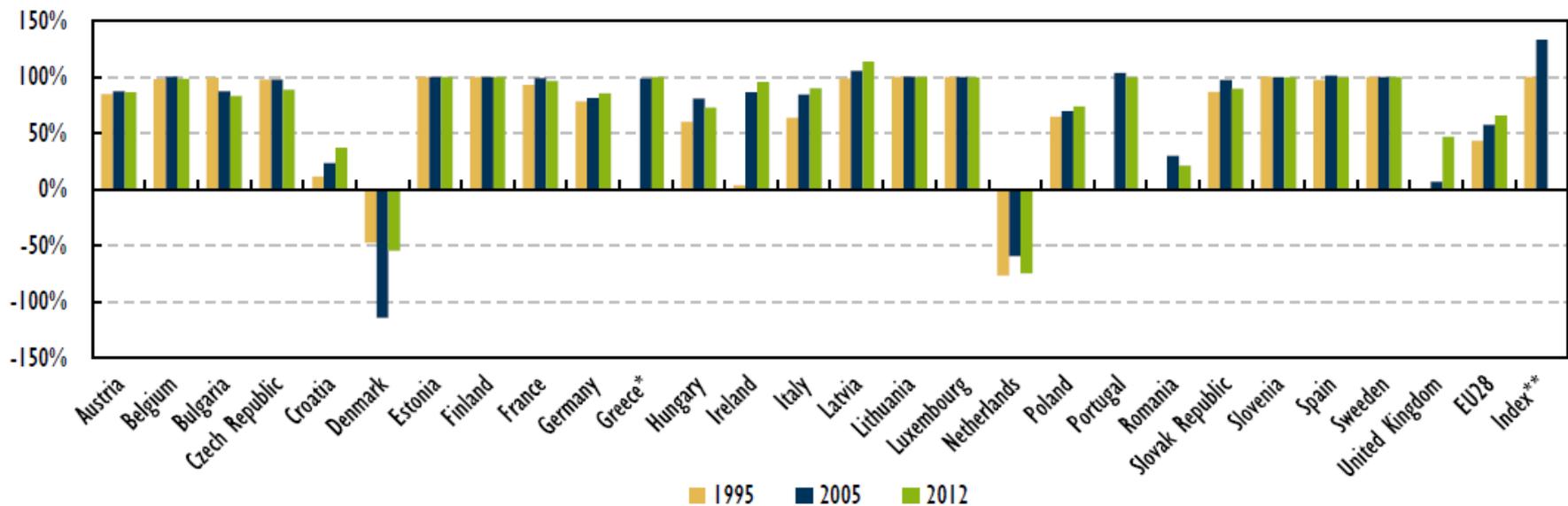
*** *Commercial* includes commercial and public services, agriculture/fishing and forestry.

Gas imports to the European Union, 2012



Source: Eurostat, 2014.

Gas import dependency of EU member states, 1995, 2005 and 2012



Note: import dependency can be higher than 100% in case the country imported more gas to refill storage. Only countries with gas supplied are included.

LNG

- 19 LNG terminals (2013) with total nominal re-gasification capacity of 186 bcm/y. Klaipėdos in Lithuania, Swinoujście in Poland and Dunkerque in France to be opened.
- Utilisation of 23,5%.
- Higher prices in Asia and Latin America (Brazil and Argentina).
- LNG terminals used for re-export to reduce the costs and losses.

Europe



Regulation

- The same structure as in the electricity sector.
- Based on the third internal market package, an effort to increase market effectiveness, liquidity and cross-border trade.
- Strengthening of the independency and powers of NRAs and their EU co-operation (ACER).
- Active role of TSOs and their EU wide co-operation.
- Common rules for the gas market – Framework Guidelines, Network codes.
- Move from P2P to EE systems.

Organization of wholesale market

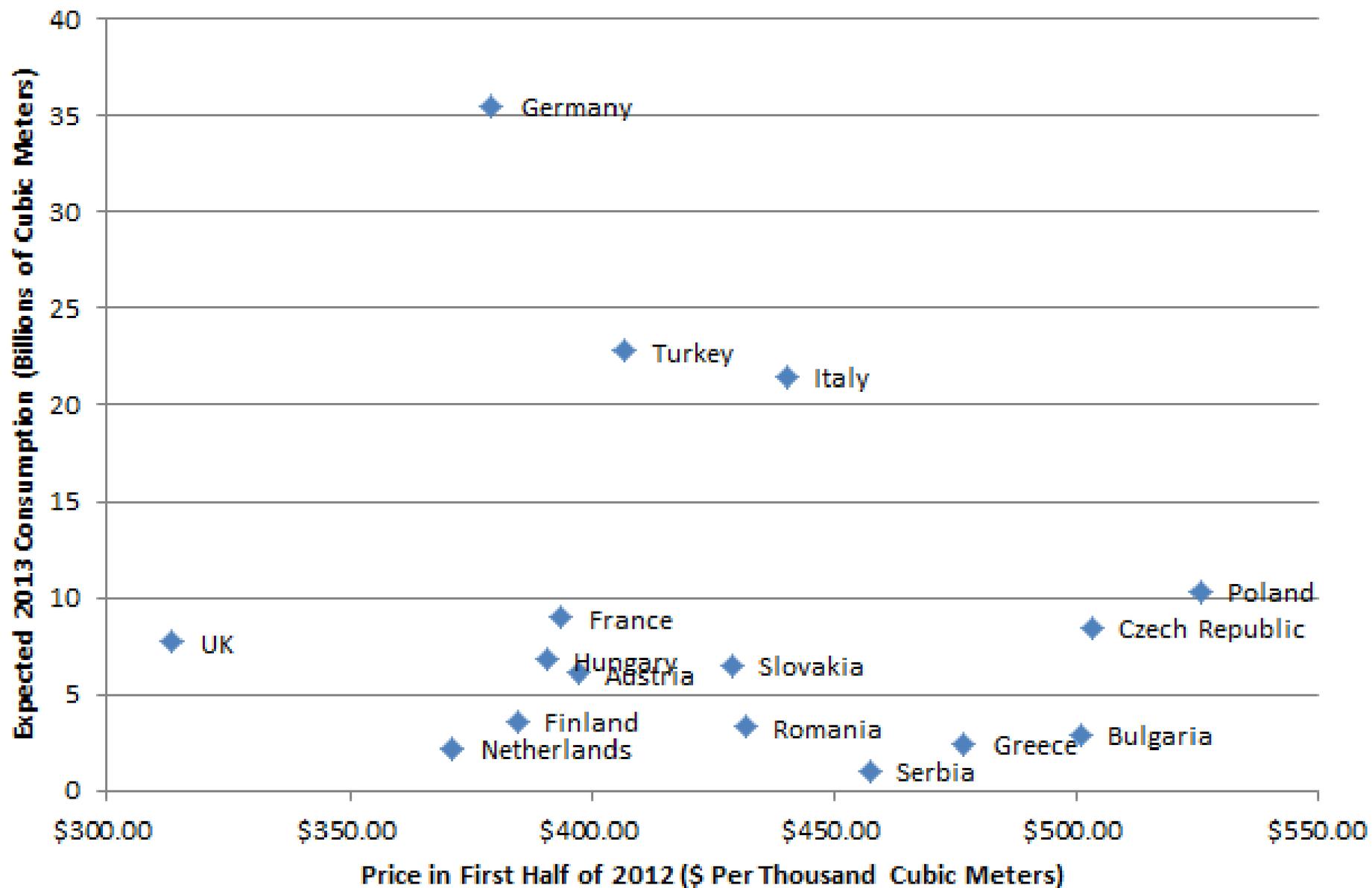
- Shift from TOP LTCs to hub trading.

Traditional gas market model

- LTC + ToP.
- Pricing formula linked to gas replacement values (oil indexation).
- Net back replacement value gas pricing.
- Territorial restrictions.
- In the EU physical fragmentation of the market.

Traditional gas market model

- Competition is limited.
- Suppliers with significant market power.
- Price arbitrage (convergence) is limited, resulting in different prices over the EU.



IEM

- Competition (TPA, unbundling).
- Common regulatory framework with independent regulatory bodies.
- LTCs and destination clauses etc. under pressure (foreclosure potential), shift to hub-trading.
- Interconnectors.

LTCs

- Anti-competitive foreclosure effects → questioned by the EU's antitrust policy.
- Gas Natural, Distrigaz, E.ON Ruhrgas, Repson, Synergen, etc.
- Not forbidden per se, but volumes locked-in under the contract, duration, cumulative effect and efficiencies are evaluated.

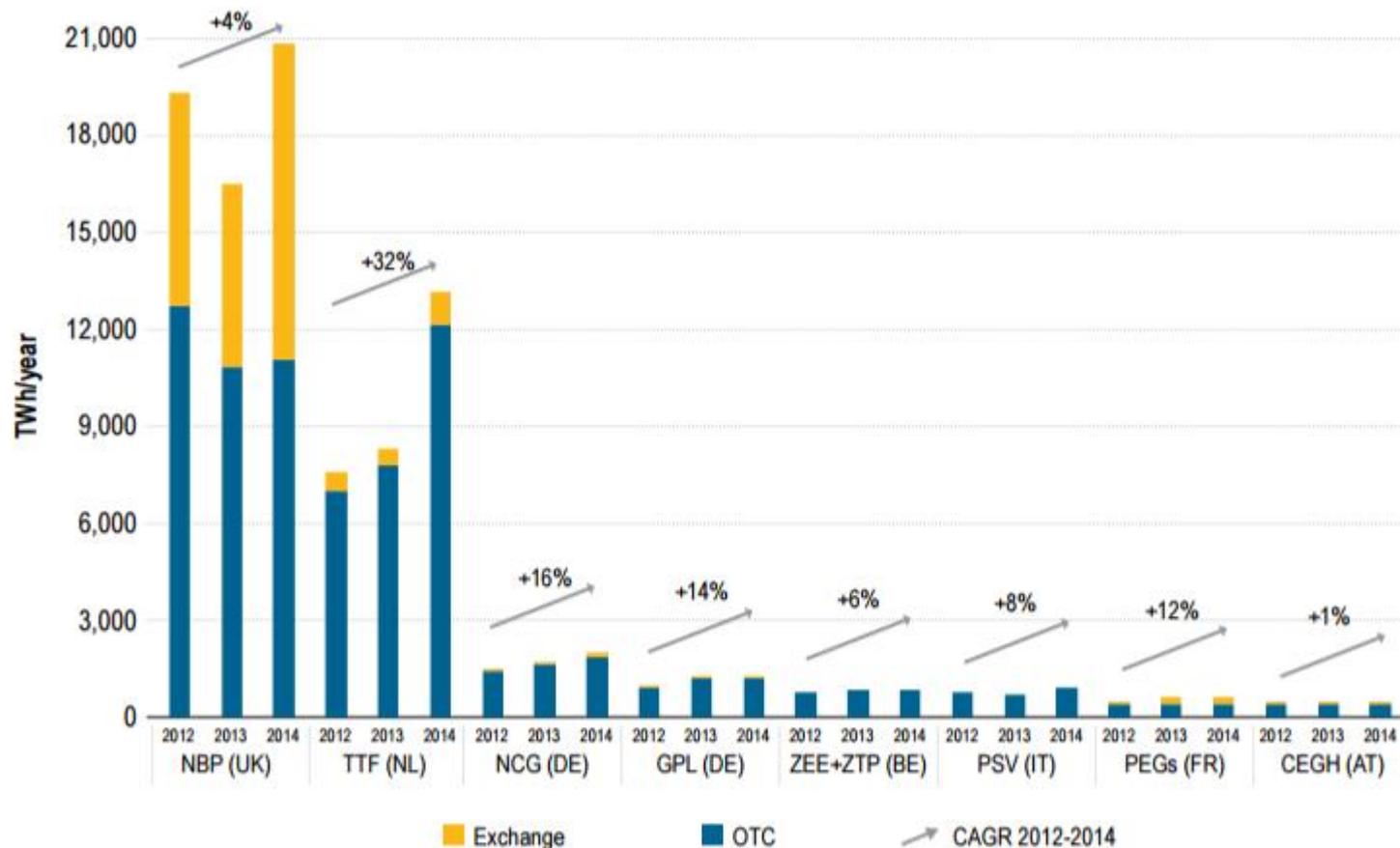
Territorial restrictions

- In 2004 EC confirmed that they restrict competition (GDF with ENI/ENEL contract).
- 2009 EC fined EDF and E.ON (partitioning the markets, MEGAL pipeline).
- Intervention to the Gazprom-ENI, Gazprom-OMV, Gazprom-E.ON or Gazprom-PGNiG agreements.
- Territorial restrictions no longer acceptable on the EU market.

Oil indexation

- Oil products are no longer substitutes for natural gas in Europe, Gazprom still defends this pricing mechanism.
- Questioned by EC in antitrust proceeding against Gazprom (Sept 2011).

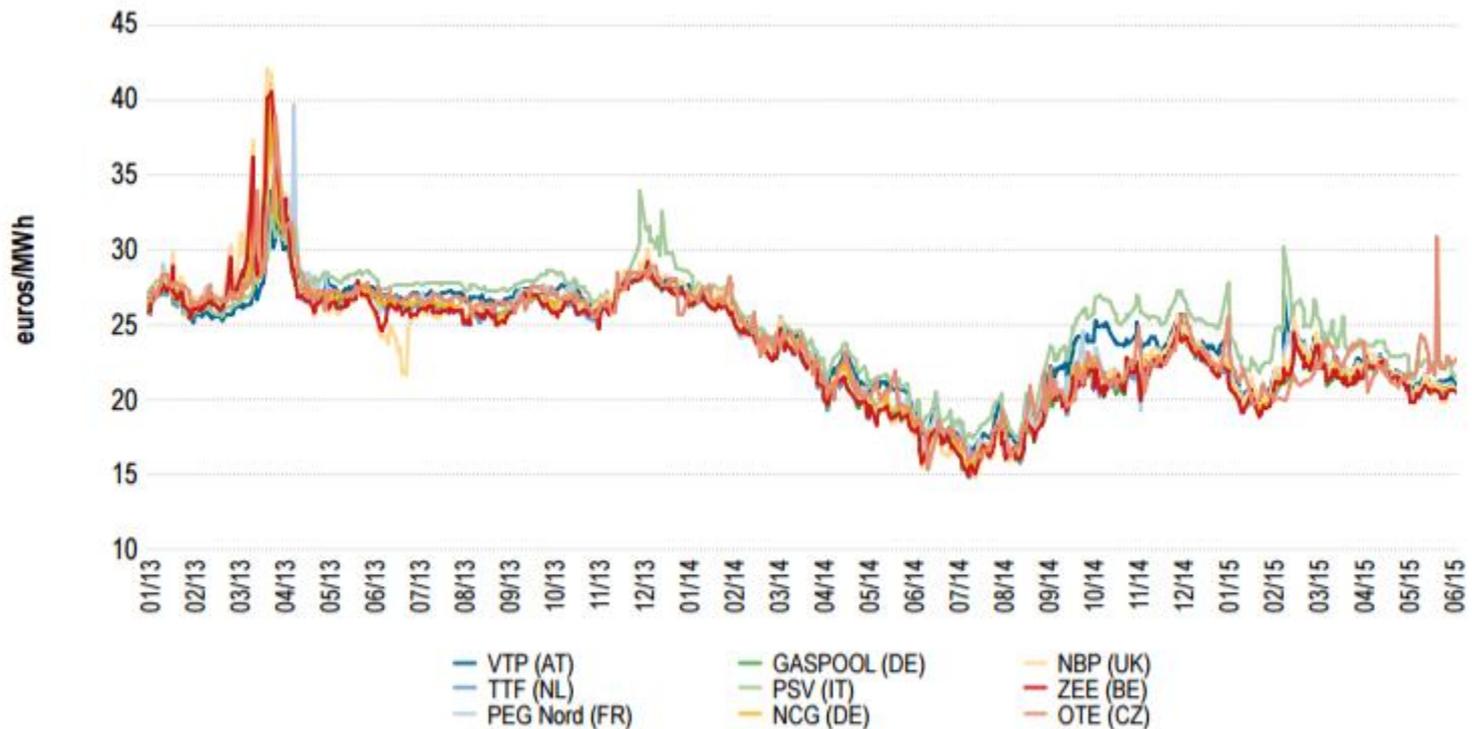
Traded volumes at main EU hubs and CAGR, TWh/year and %



Source: GTS (NL), Huberator (BE), Gaspool (DE), NCG (DE), GRTgaz (FR), CEGH (AT), Snam (IT), Trayport (GB).

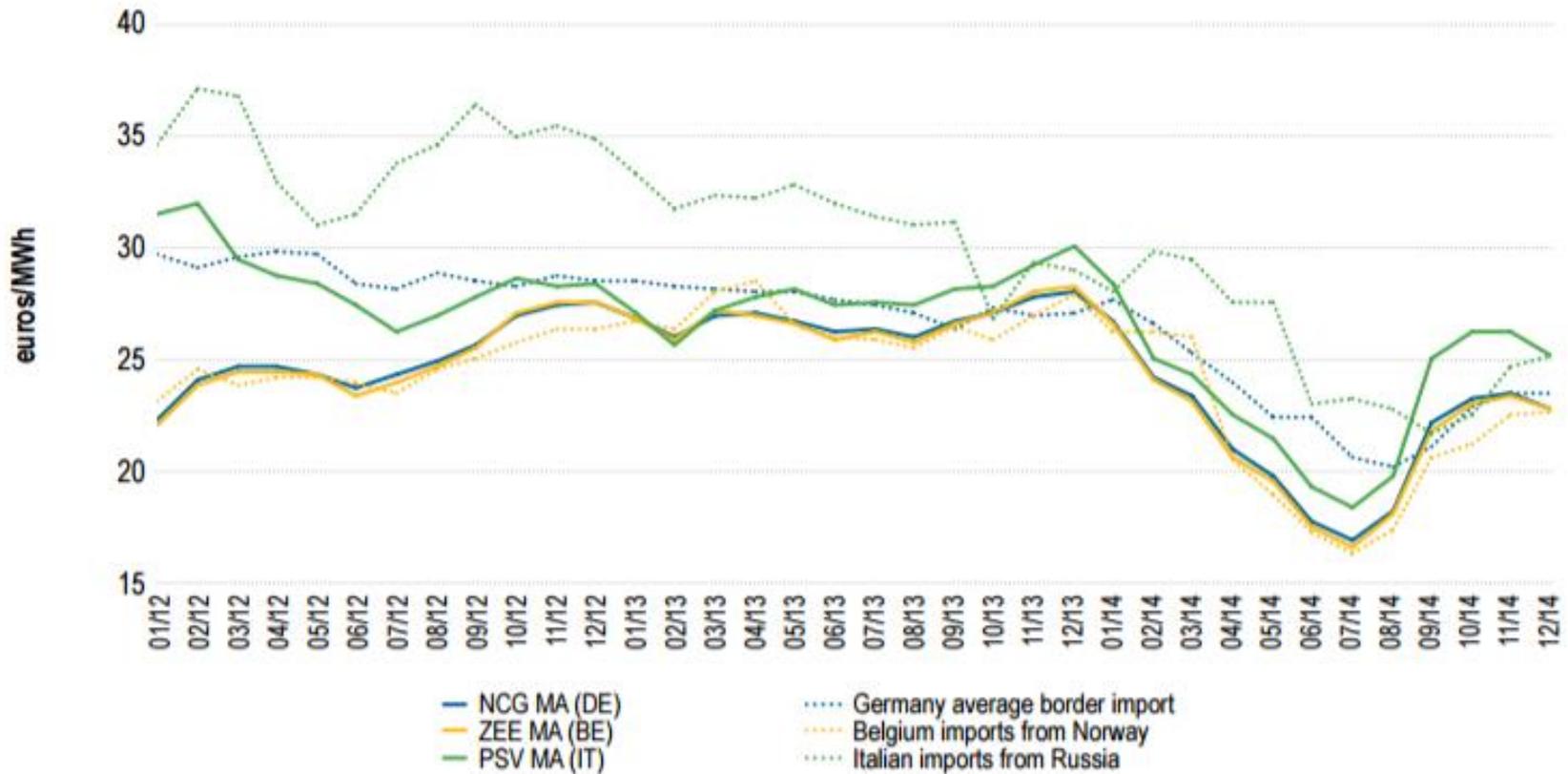
Note: Over-the-counter trade (OTC) refers to volumes traded among parties via brokers, either the parties managing credit risk or trading being cleared by the broker. Exchange execution refers to those volumes supervised and cleared by an organised central market operator.

Day-ahead prices at NWE EU hubs, euros/MWh



Source: Platts, OTE.

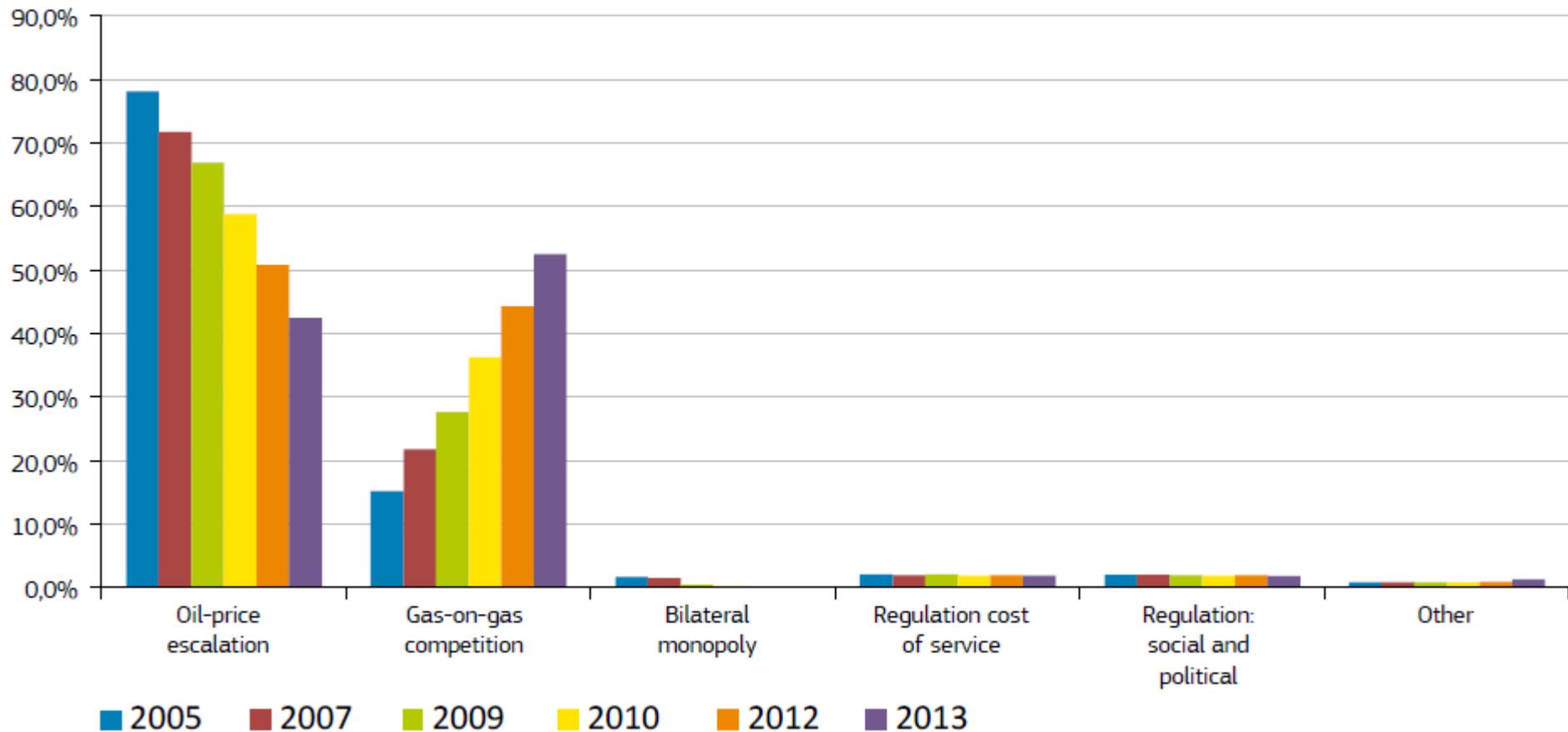
Comparison of selected EU MSs hub and cross-border import prices, euros/MWh



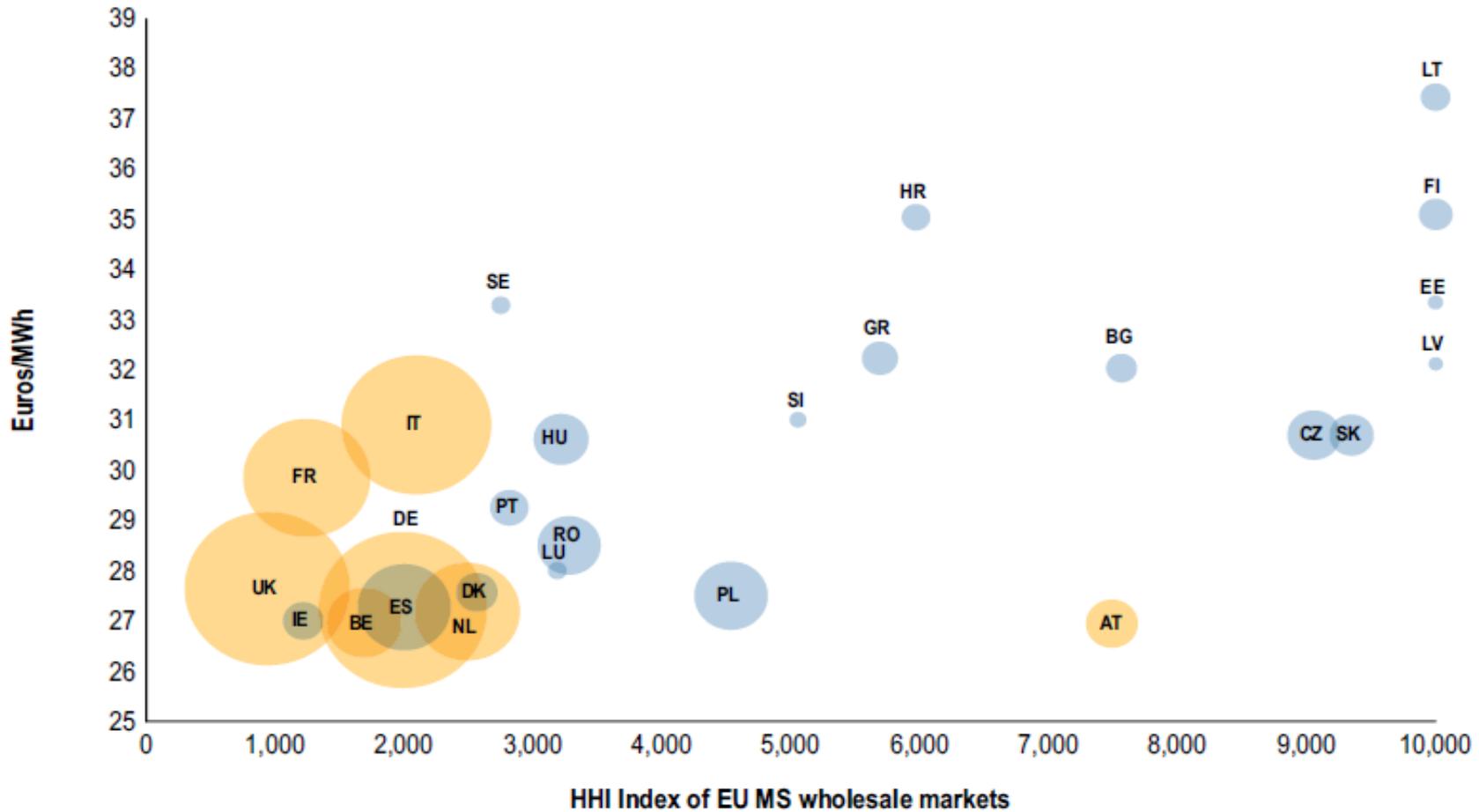
Source: Platts, Eurostat Comext, BAFA (2014).

Note: BAFA provides an estimate of overall German cross-border gas import prices.

WHOLESALE PRICE FORMATION MECHANISMS IN EUROPE: 2005-2013



Gas wholesale prices in EU MSs compared with market concentration and gas demand – 2013 (euros/MWh)



Impact on Gazprom

- G. forced to offer retroactive discounts on existing contracts (ENI – 7%, GdF, PGNiG, Eon; in 2013 USD 800 – 900 mil.).
- G. accepts fundamental changes in the contracts in terms of oil indexation, ToP clauses (RWE's Czech subsidiary in 2013 – Court of Arbitration of the International Chamber of commerce).
- = G. is slowly willing to accept spot indexation in its future gas contracts (5/2014 – ENI – prices aligned with the market).

Impact on Gazprom

- G. reduced the ToP minimum to 70% of annual contract quantity (from 85%), volumes taken in excess sold at hub-based prices.
- = oil indexation preserved in Gazprom's contracts, but base price lowered to adjust to hub prices.

Retail markets

- Still national in scope
- Increasing competition but the market share of the incumbent supplier remains high in many countries
- Still regulated prices in 15 MS

Presence of foreign players (capital city)	Estimated incumbent market share in the household market – December 2012 (capitals)		
	More than 90%	Between 50% and 90%	Less than 50%
More than 50%	Romania (1/1)		Spain (4/6); The Slovak Republic (9/12)
Between 20% and 50%		Italy (4/8); France (3/8); Ireland (2/4); Belgium (2/4)	The Netherlands (6/18), The Czech Republic (4/18), The Great Britain (4/14)
Between 0% and 20%			Austria (2/10), Denmark (2/11), Germany (4/74), Sweden (1/6)
0%	Greece (0/1), Bulgaria (0/1), Estonia (0/1), Finland (0/1), Lithuania (0/1), Latvia (0/1), Poland (0/1), Portugal (0/3)	Slovenia (0/6)	

Sources

- IEA (2014): Energy Policies of IEA Countries – The European Union.
- Jirušek et al.(2015): Energy Security in Central and Eastern Europe and the Operations of Russian State-Owned Energy Enterprises
- ACER (2015): Annual Report on the Results of Monitoring the Internal electricity and Natural Gas Markets in 2014