European energy markets
a EU regulator's perspective

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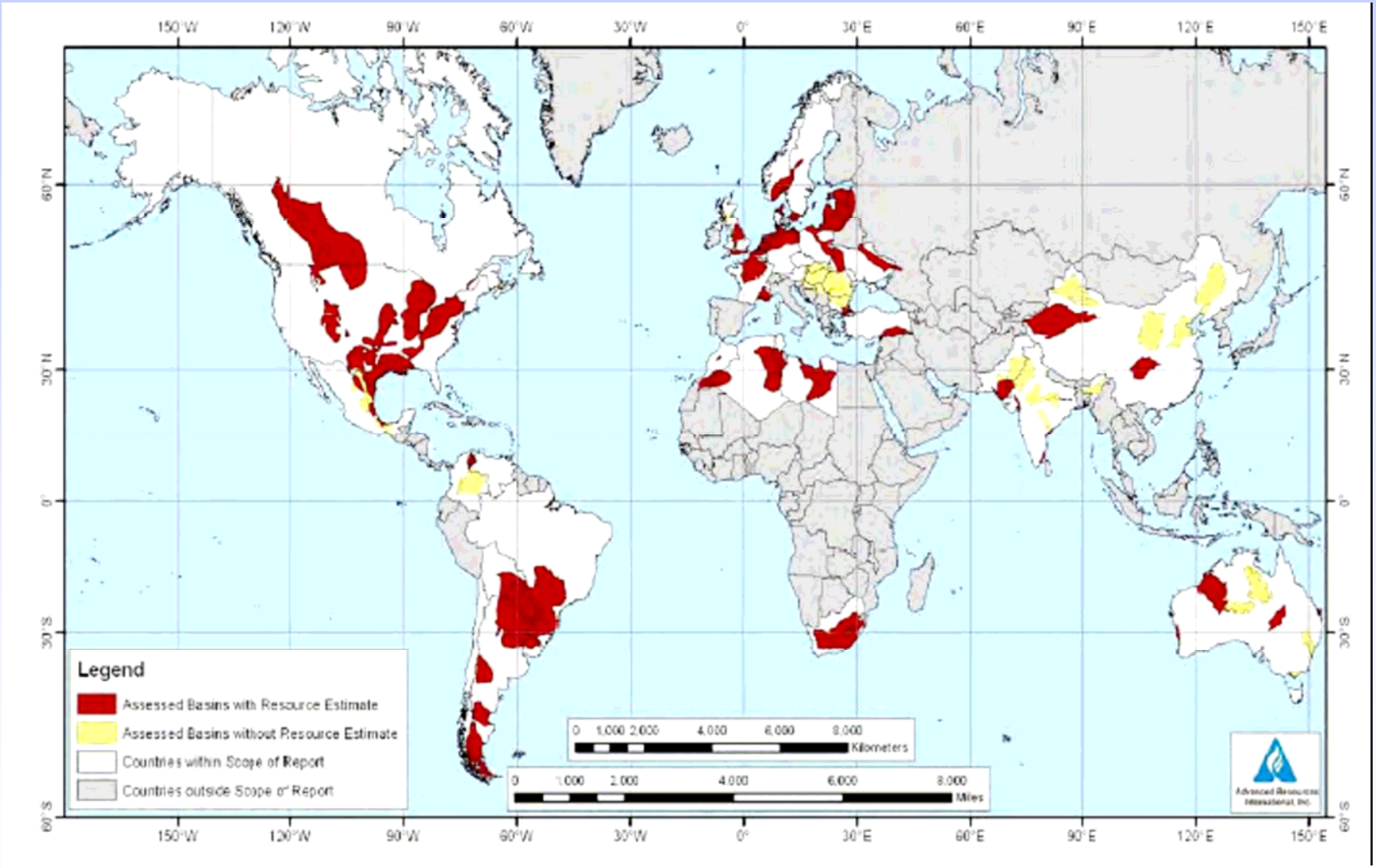
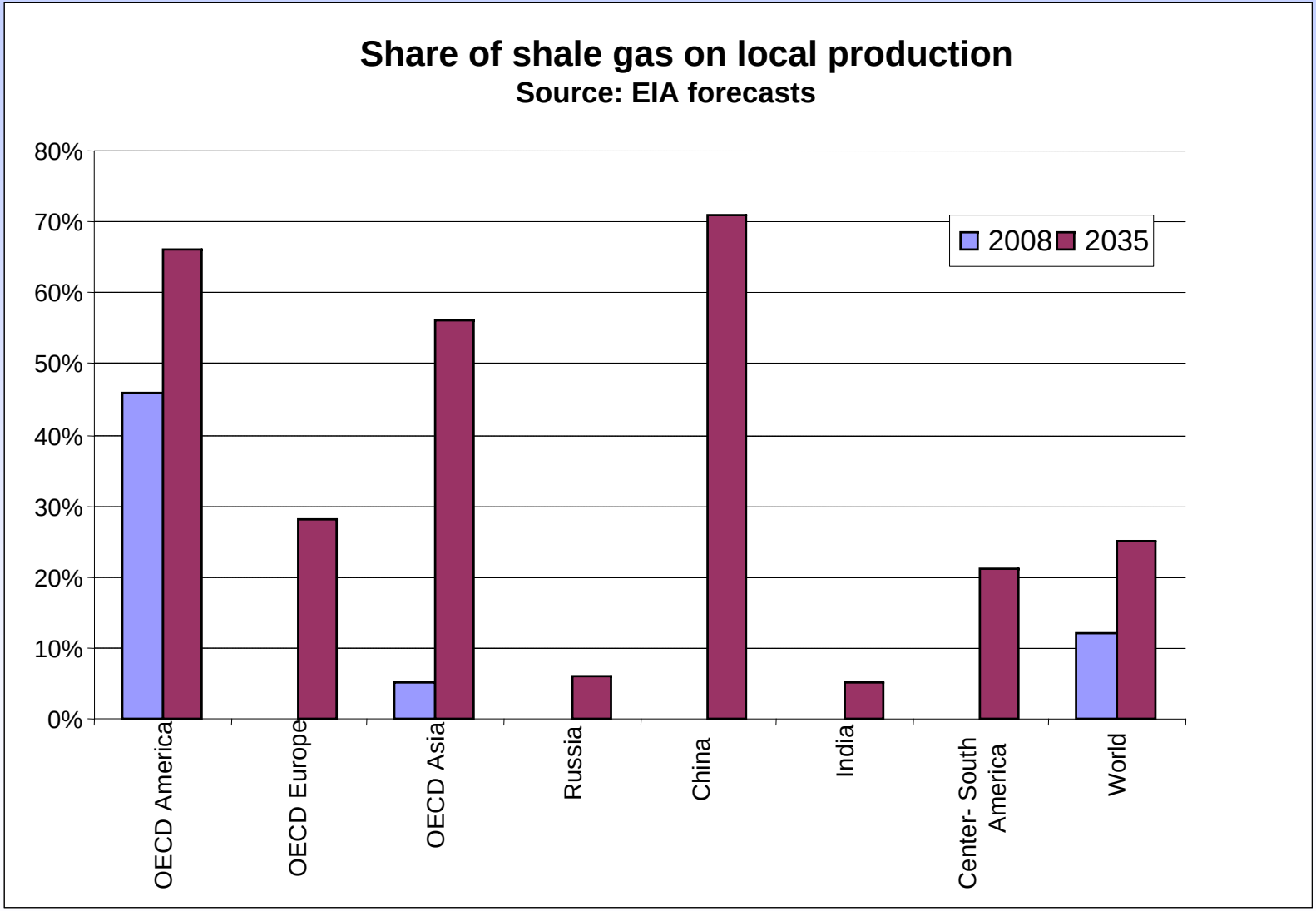
Shale gas potential

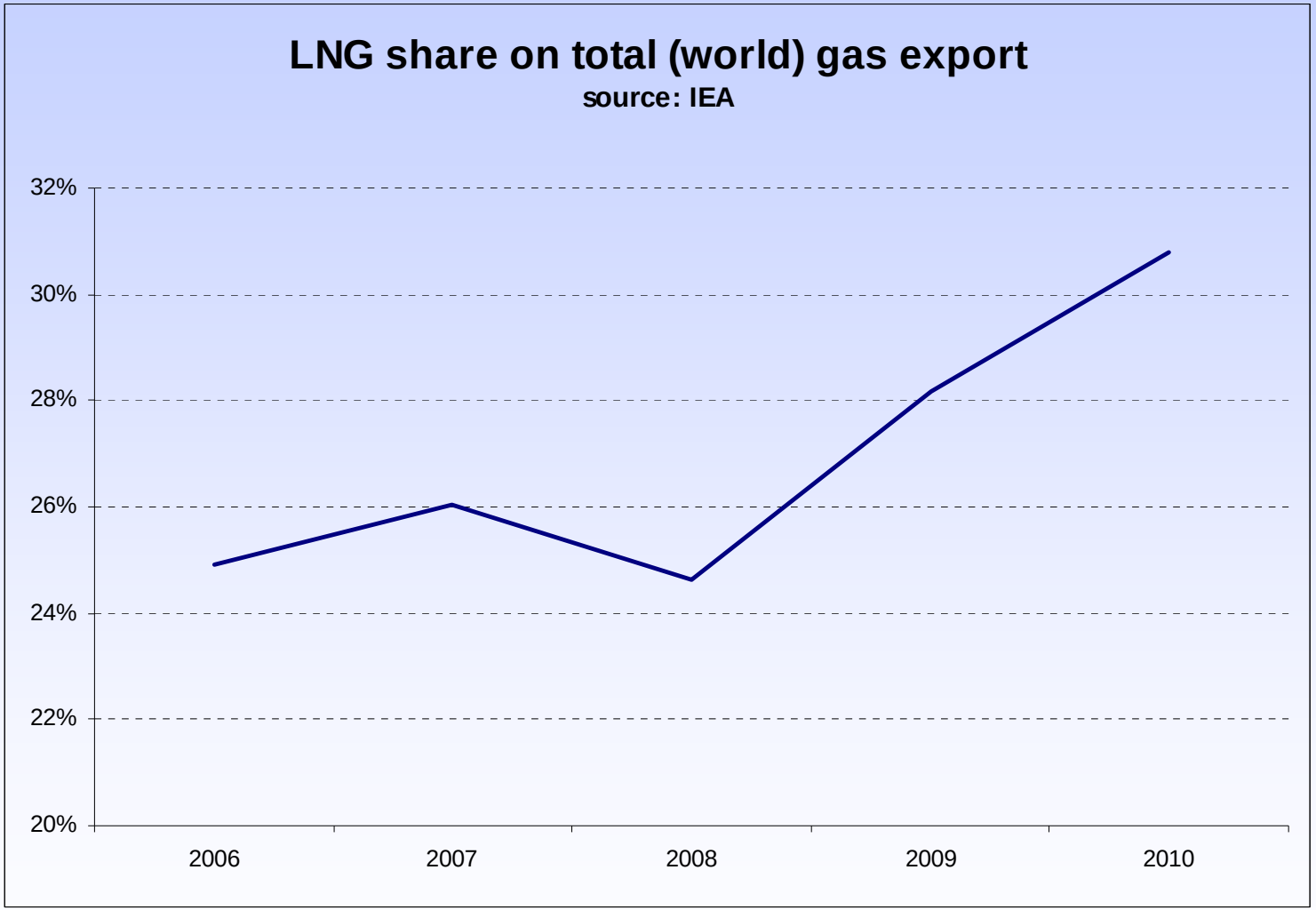
EIA estimates of 48 basins in 32 countries



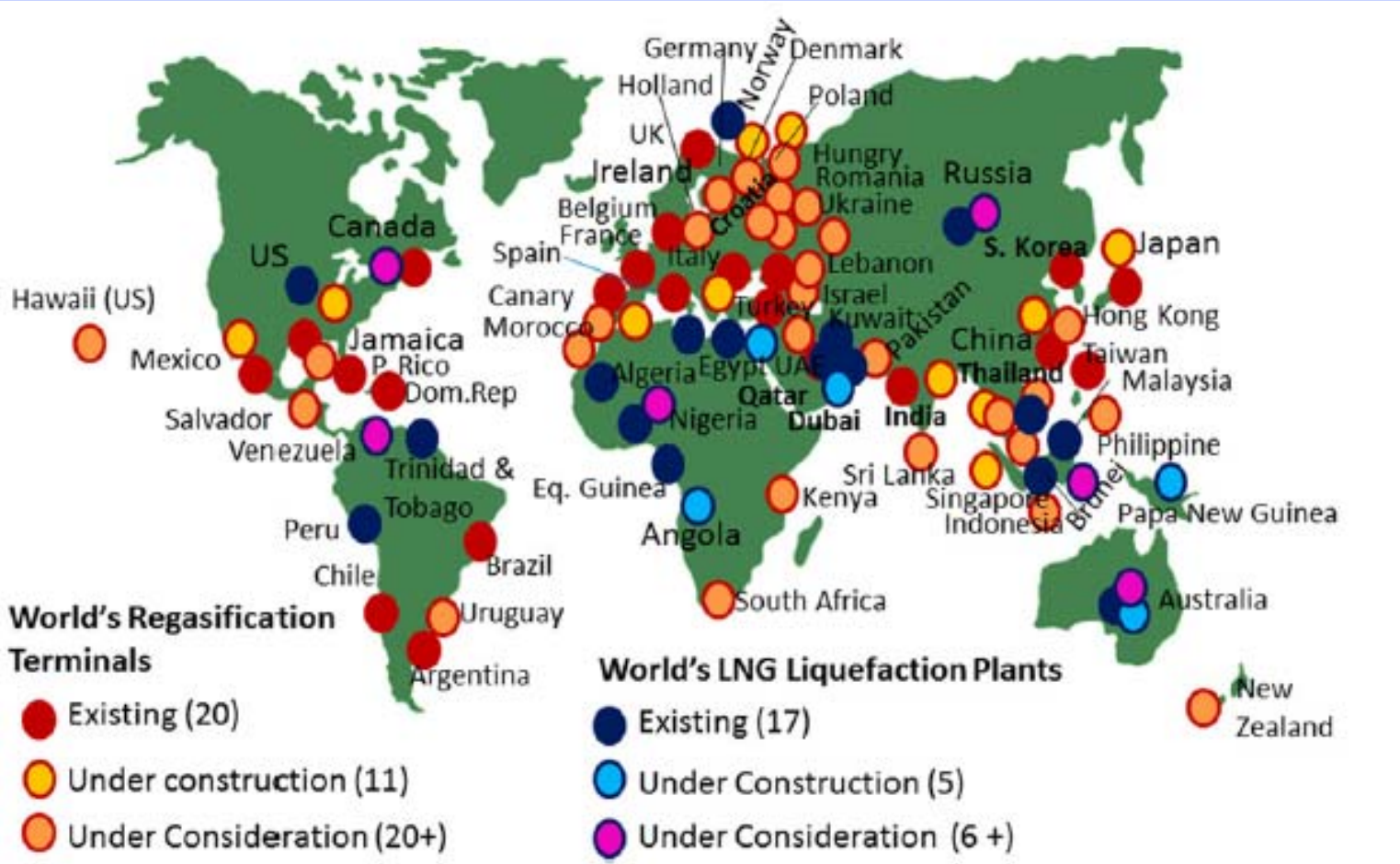
Shale gas forecasts



The importance of LNG is growing

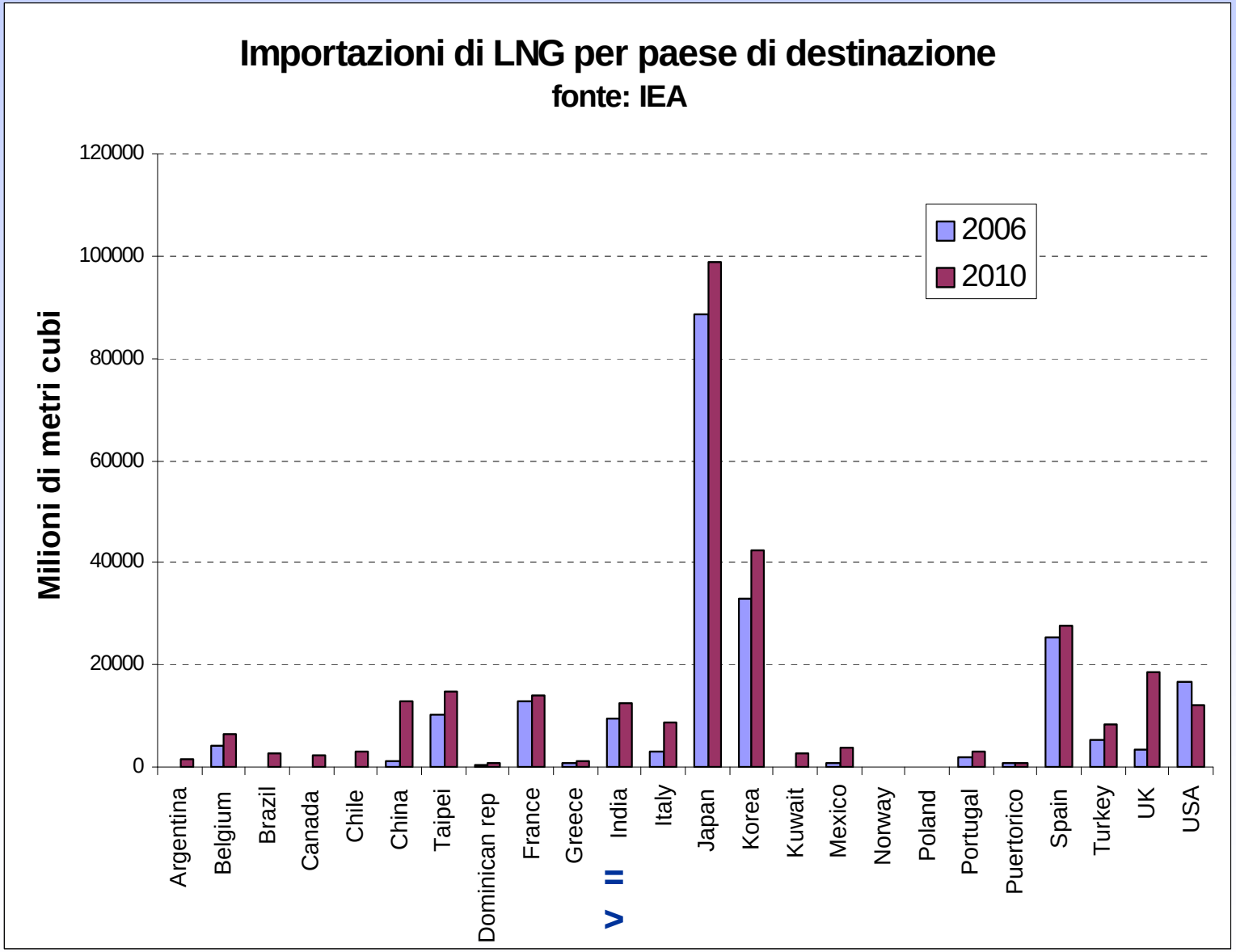


World's major LNG exporting and importing countries

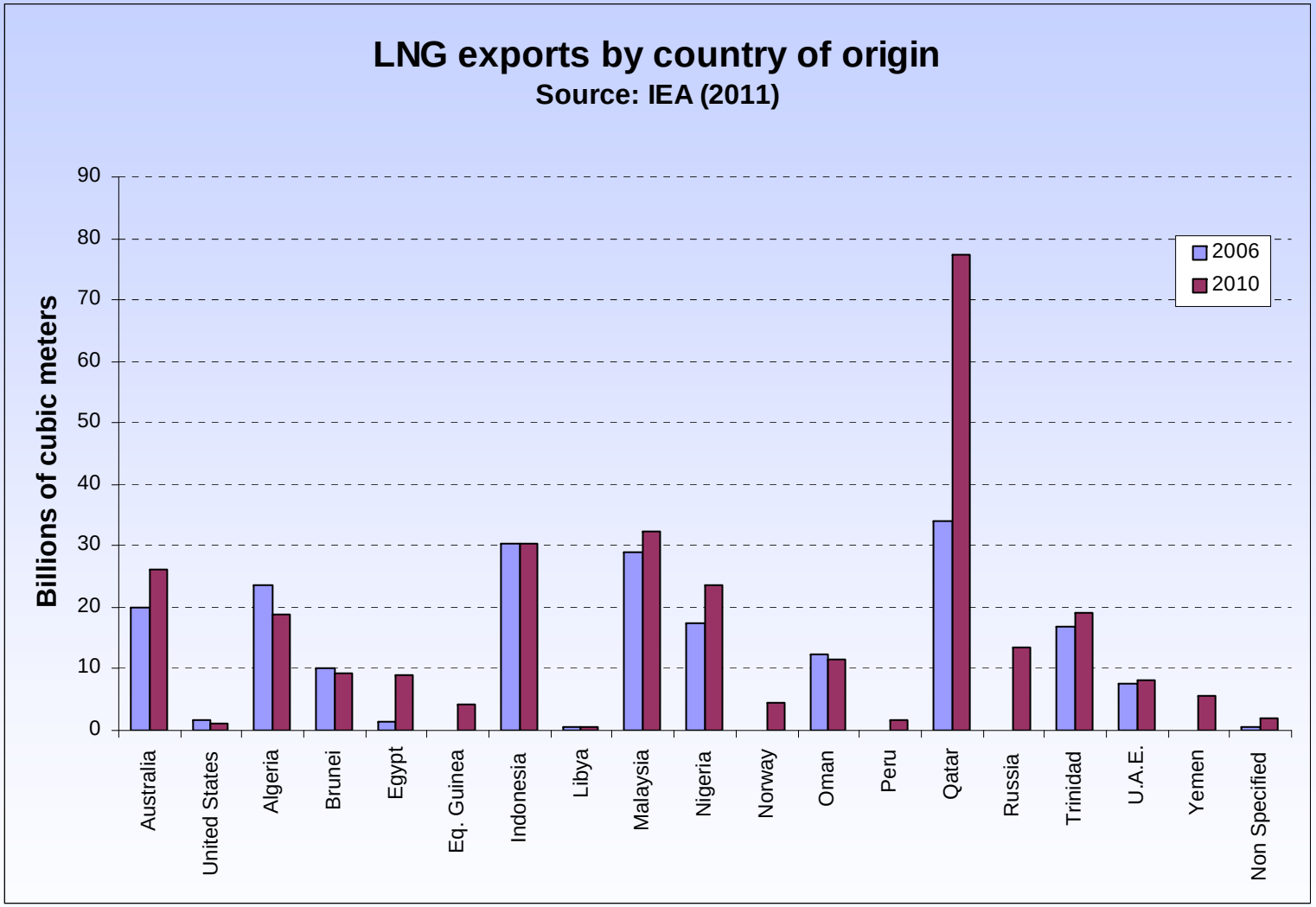


Source: BG group

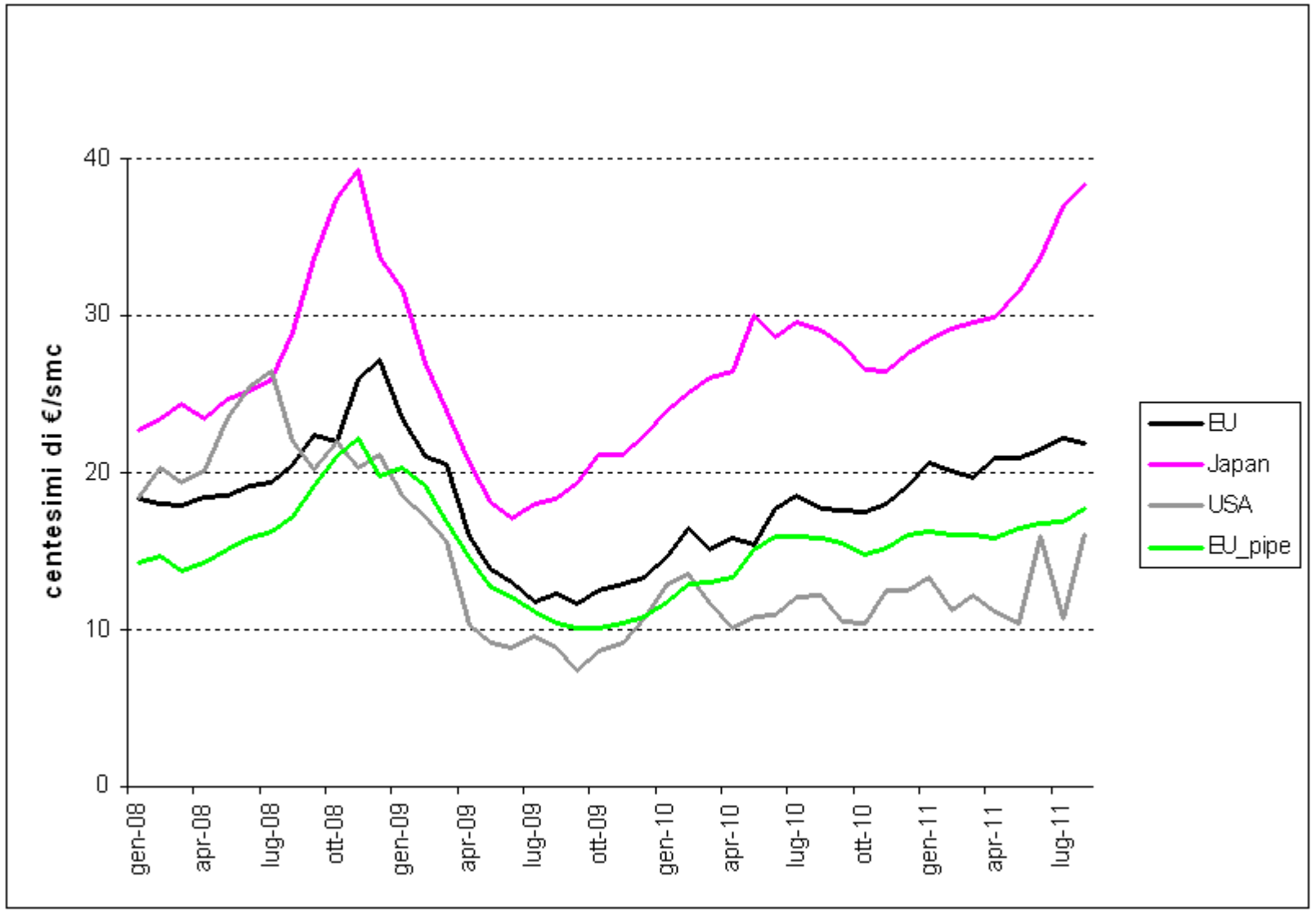
Where does LNG go ?



Where does LNG come from?



LNG prices



Source: IEA

WILL EUROPE TAKE ADVANTAGE OF THESE PROCESSES OF CHANGE ?

A. BACKGROUND

B. PRICES, CONTRACTS AND A NEW CONCEPT OF SECURITY OF SUPPLY

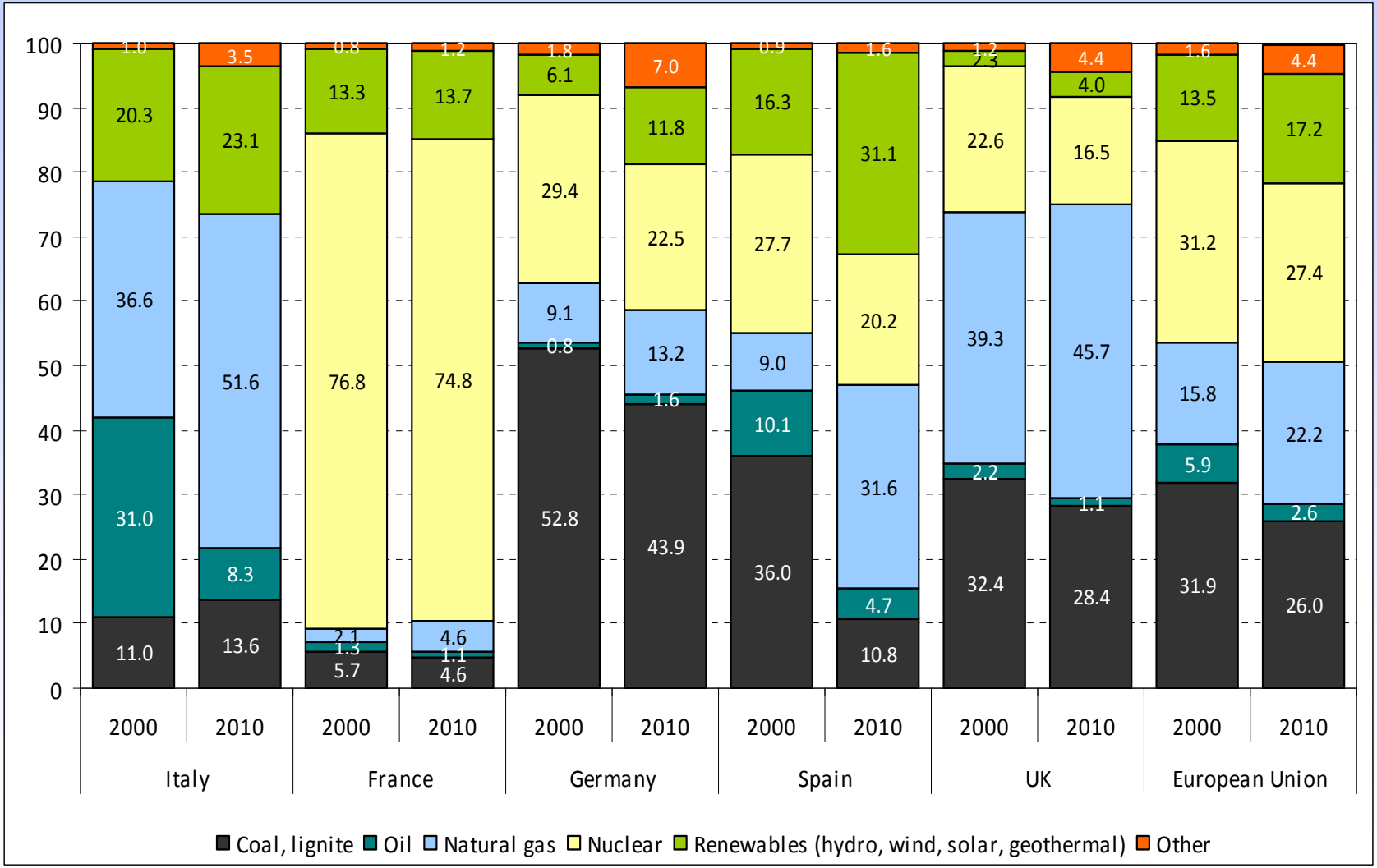
C. SOME CONTROVERSIAL ISSUES: policy, regulation and firms

Why gas is key for the EU

Many reasons, but two in particular:

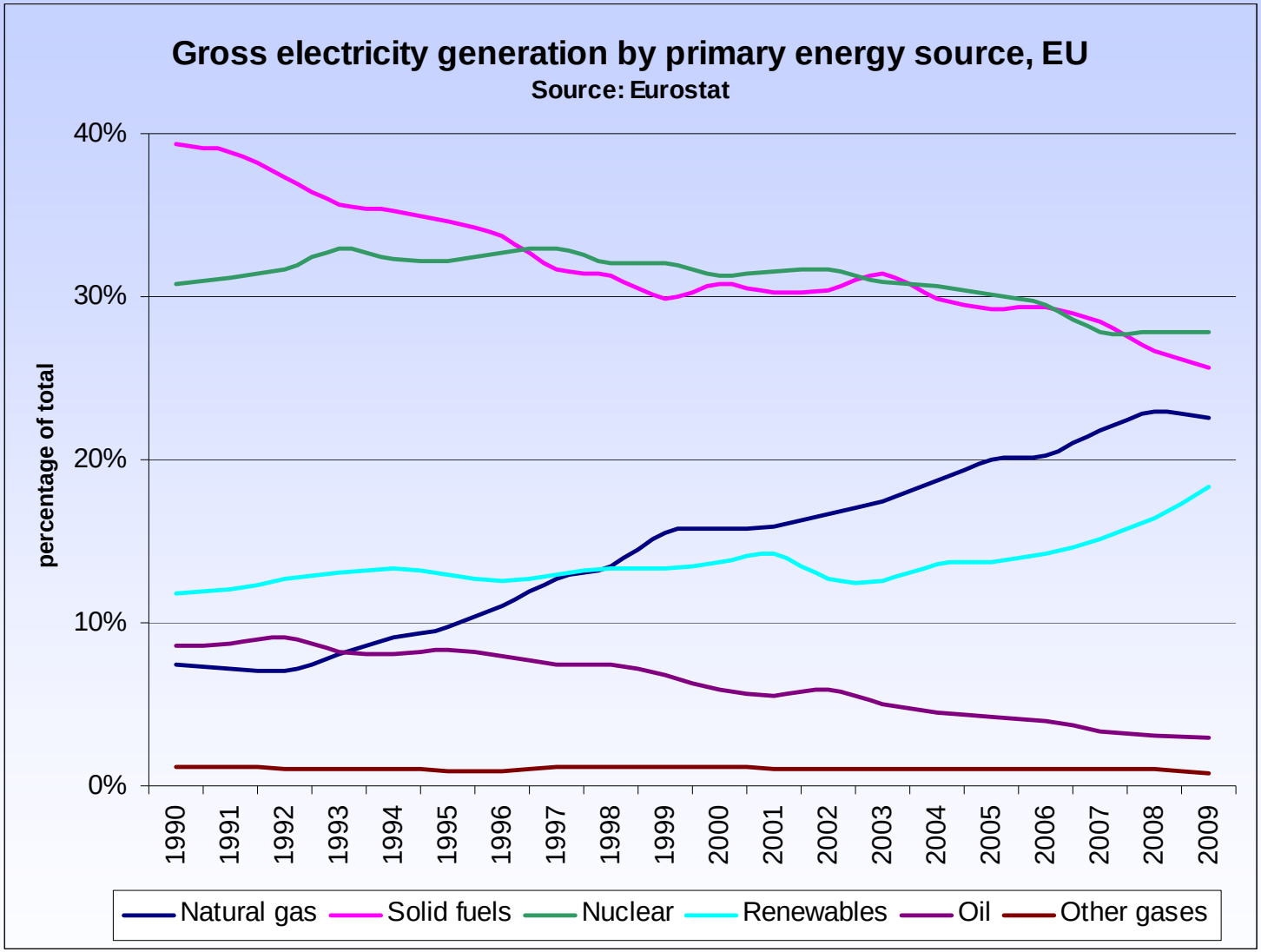
1. Europe has a strong dependency on foreign gas
2. The share of gas in EU power generation is increasing
   - ✓ To comply with Kyoto targets
   - ✓ The need for backup of renewables create demand for gas (baseload replacement)

The generation mix: gas and renewables are growing for all (and will grow more)

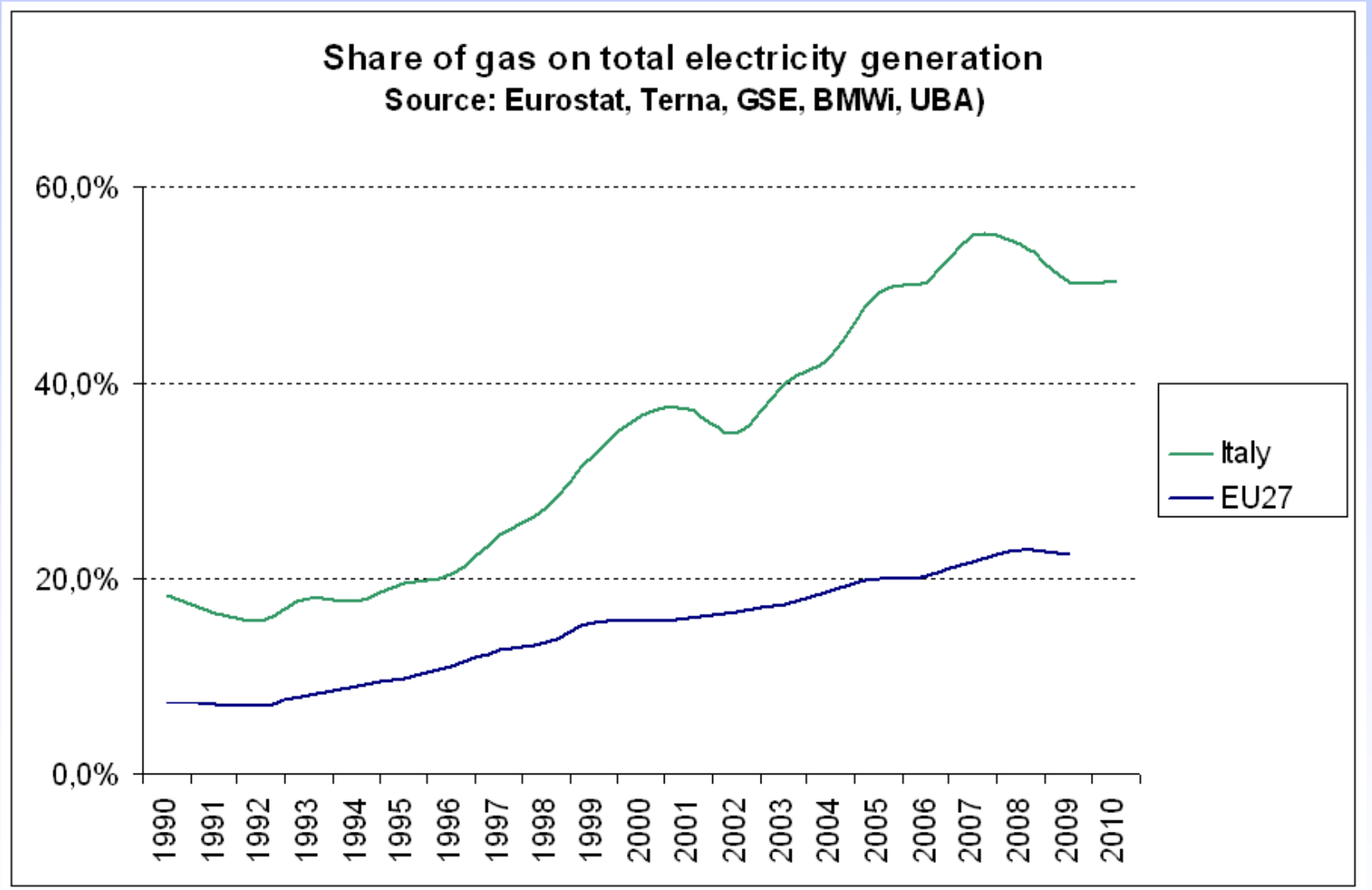


Source: Enerdata

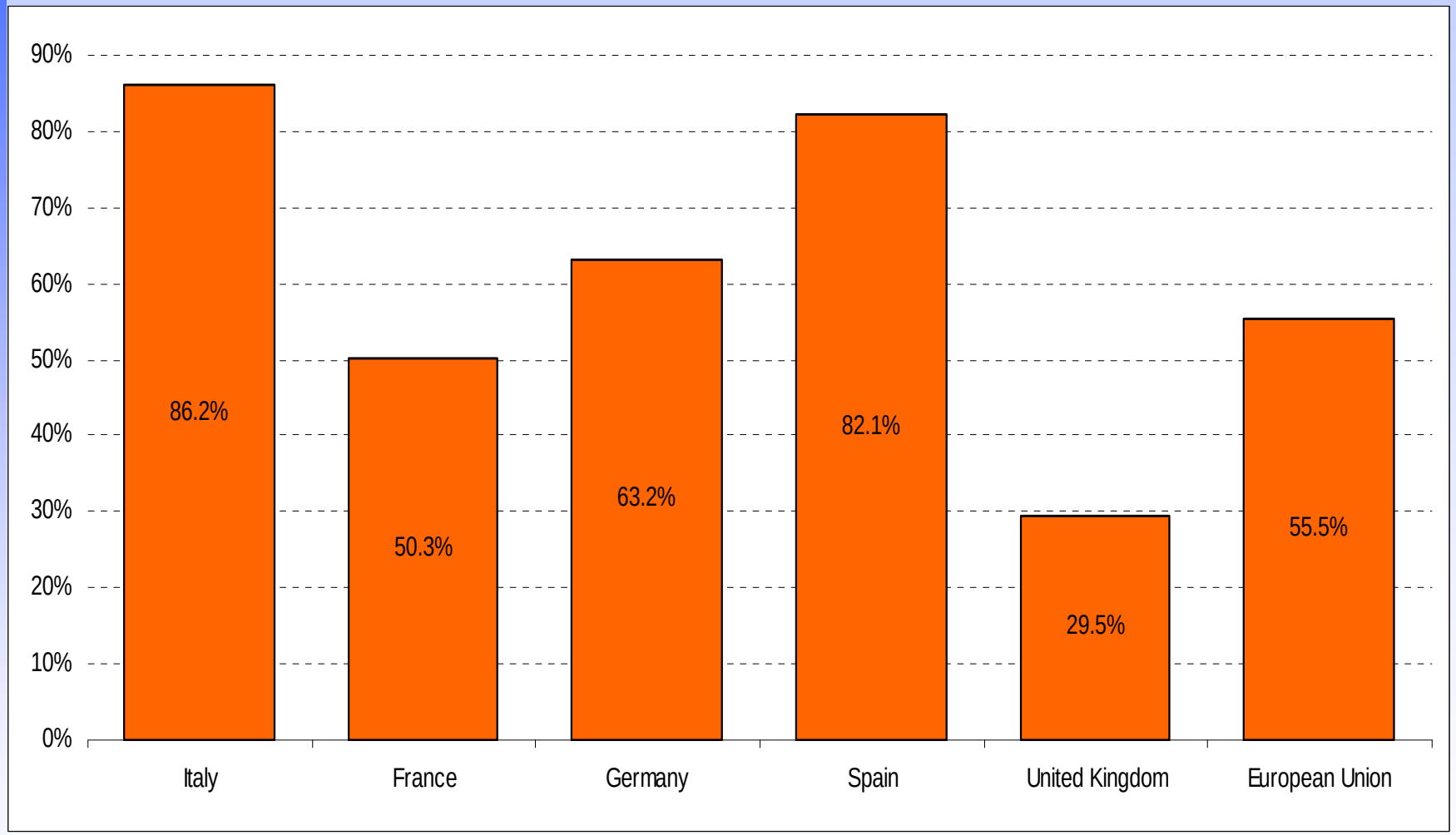
Electricity generation by source



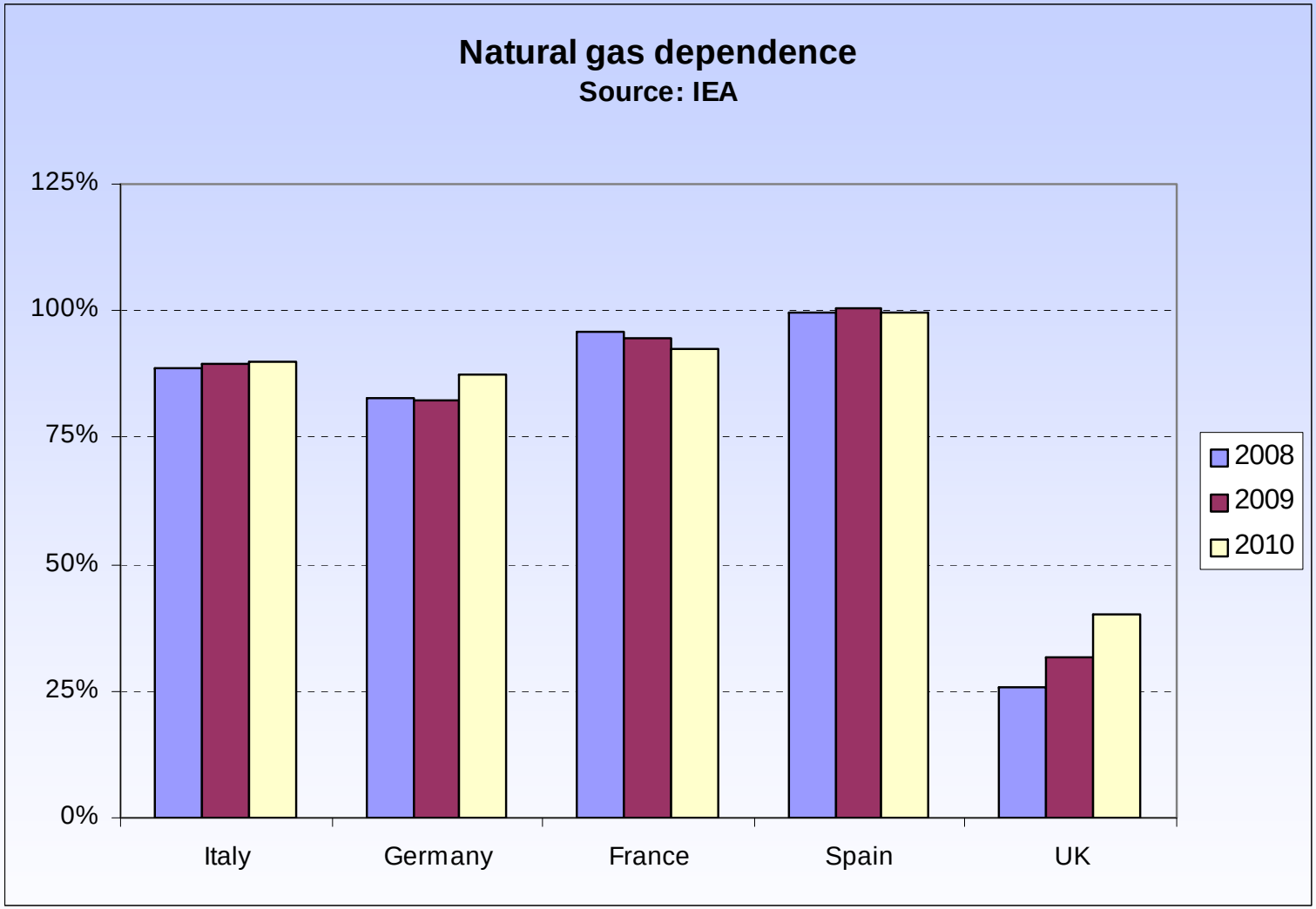
The importance of gas in EU 27 and Italy



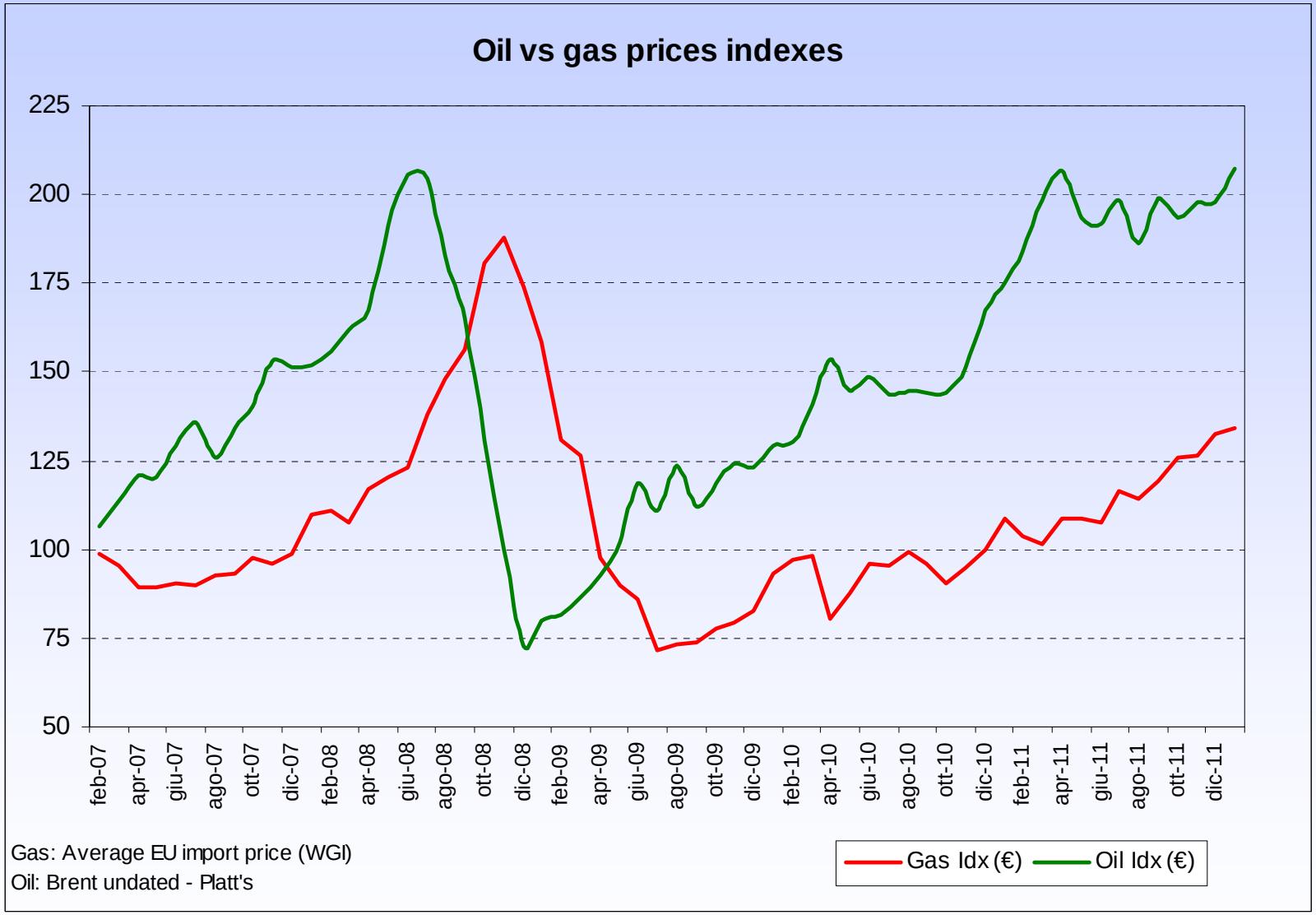
Energy dependence of the EU is strong
(net imports on primary energy consumption, 2010)



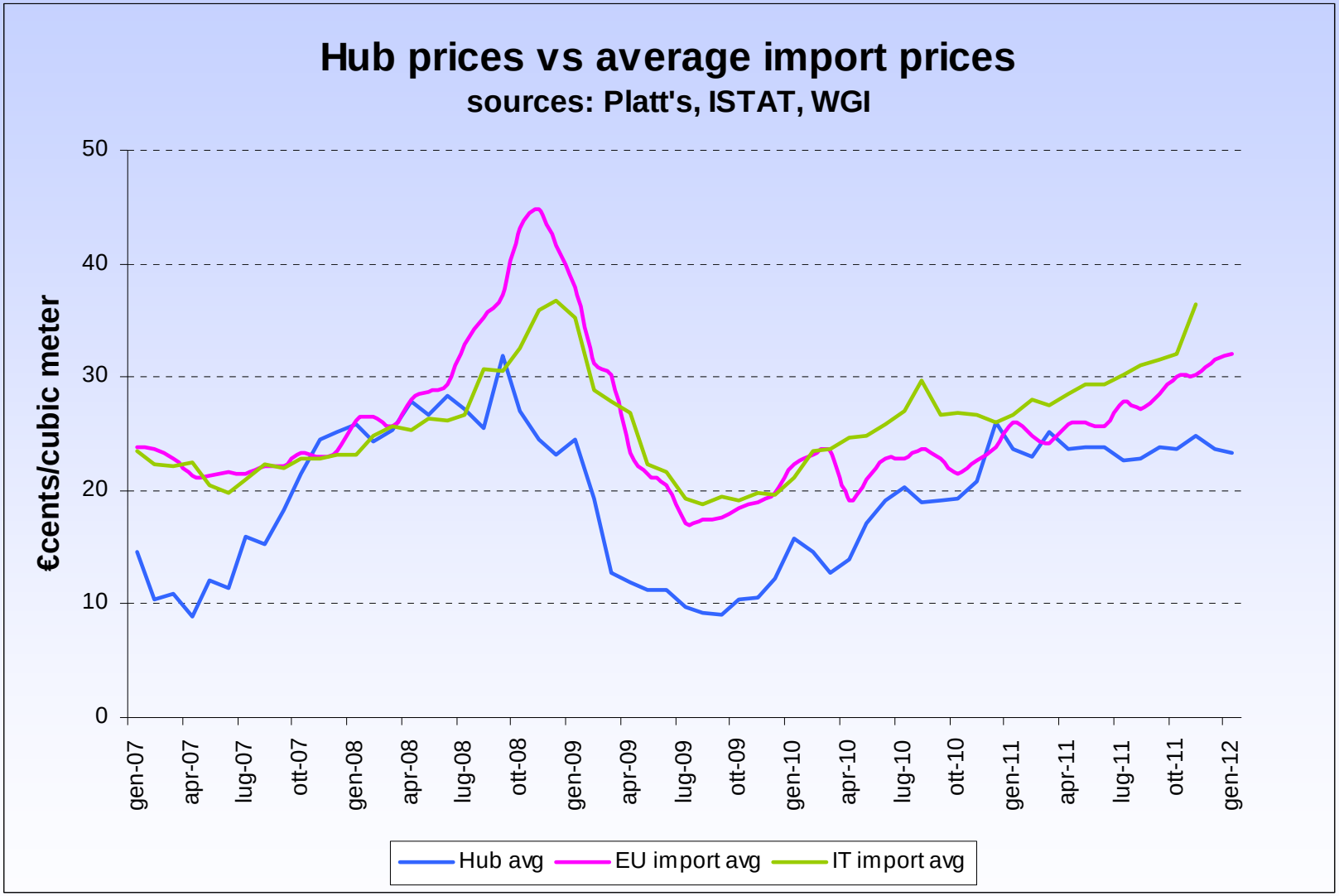
… even stronger for gas



Gas prices: decoupling?

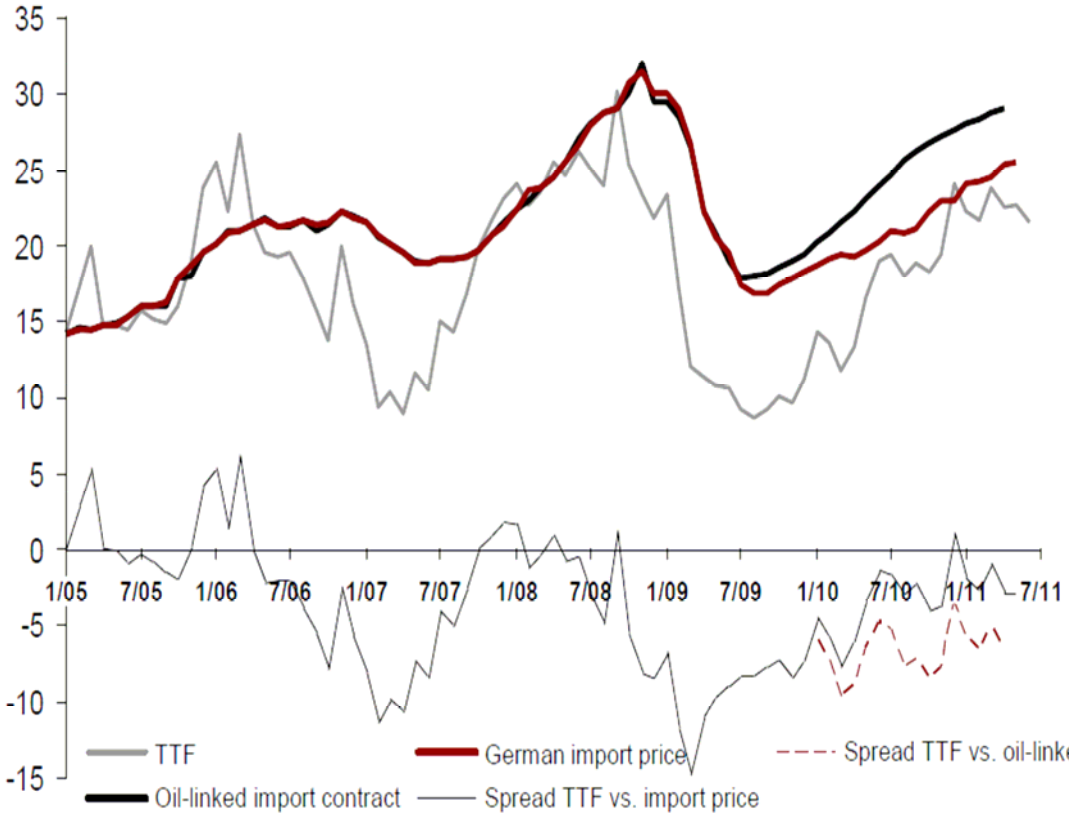


Hubs and import prices



Oil indexed – hub prices spread

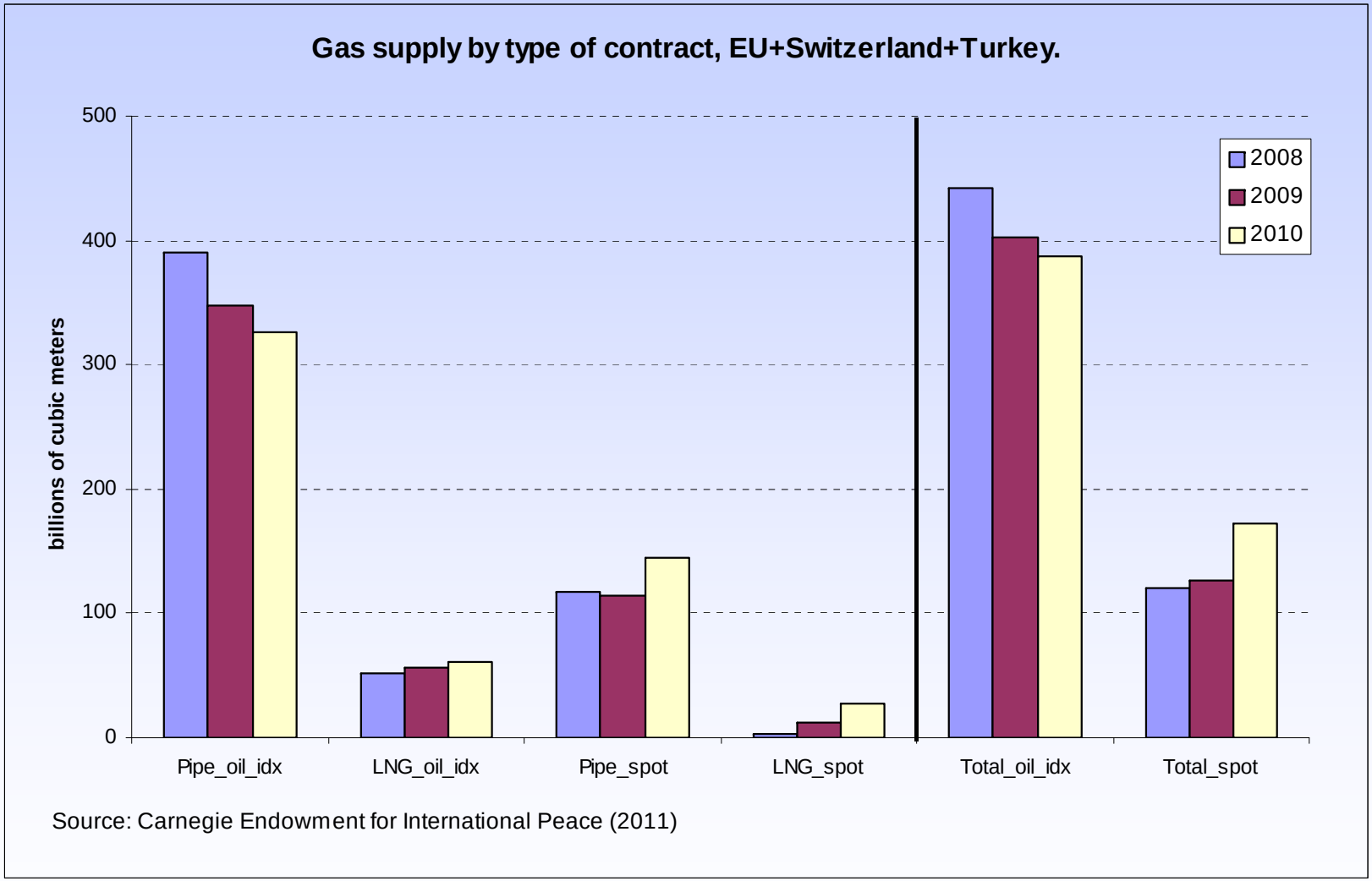
Spread development between oil indexed and hub priced gas
(in EUR / MWh)



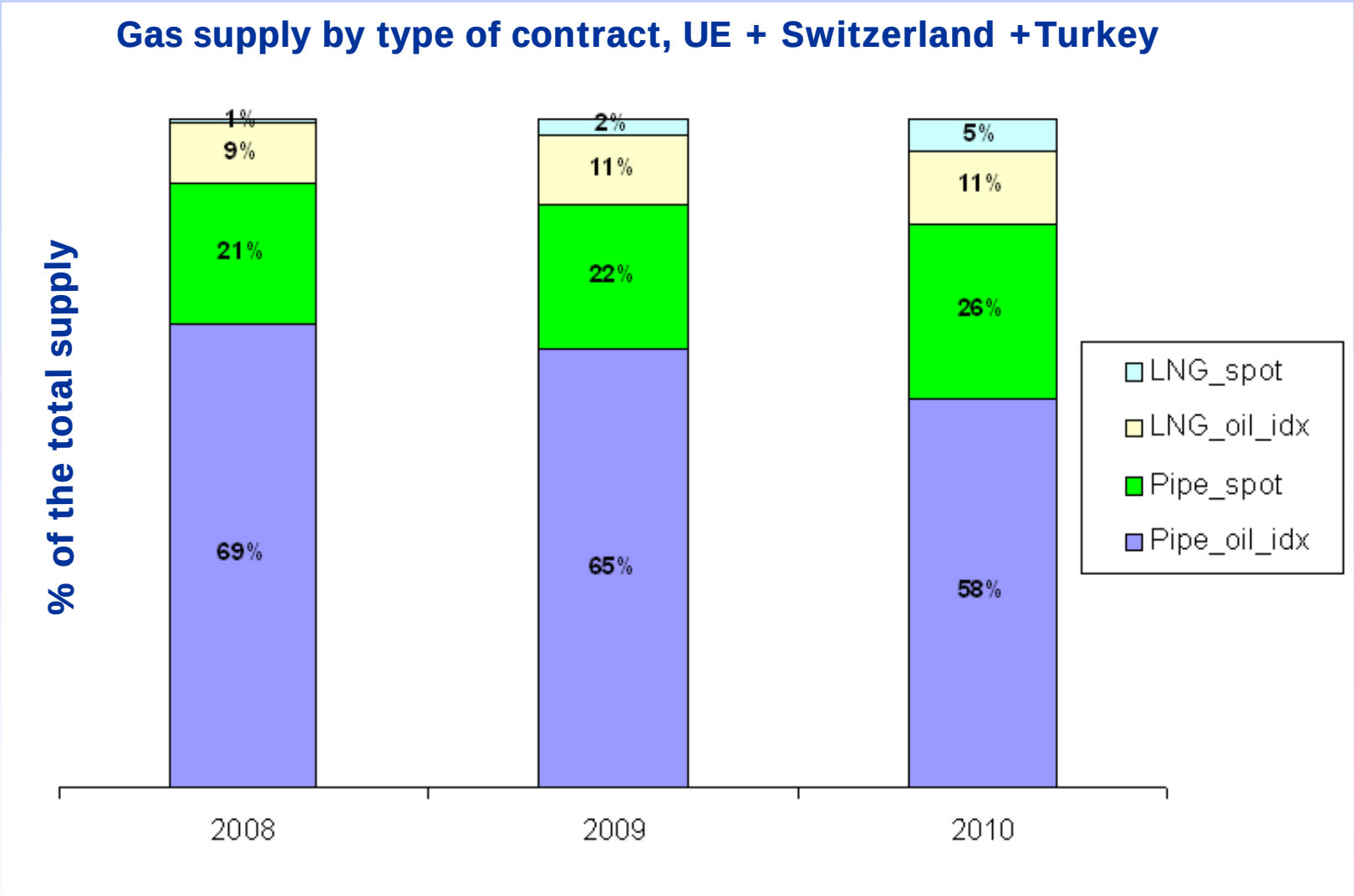
- Until mid-2009 only very little gas was imported into Germany at other than oil-indexed levels
- Since mid-2009 there has been a clear de-coupling with the contract price increasing more strongly than the import price
- This is a clear sign that already a significant amount of gas is imported to Germany based on hub prices

Classical risk sharing between upstream players and importers based on oil-indexed pricing was pulverized leaving the latter with huge losses behind

Spot vs Oil indexed contracts



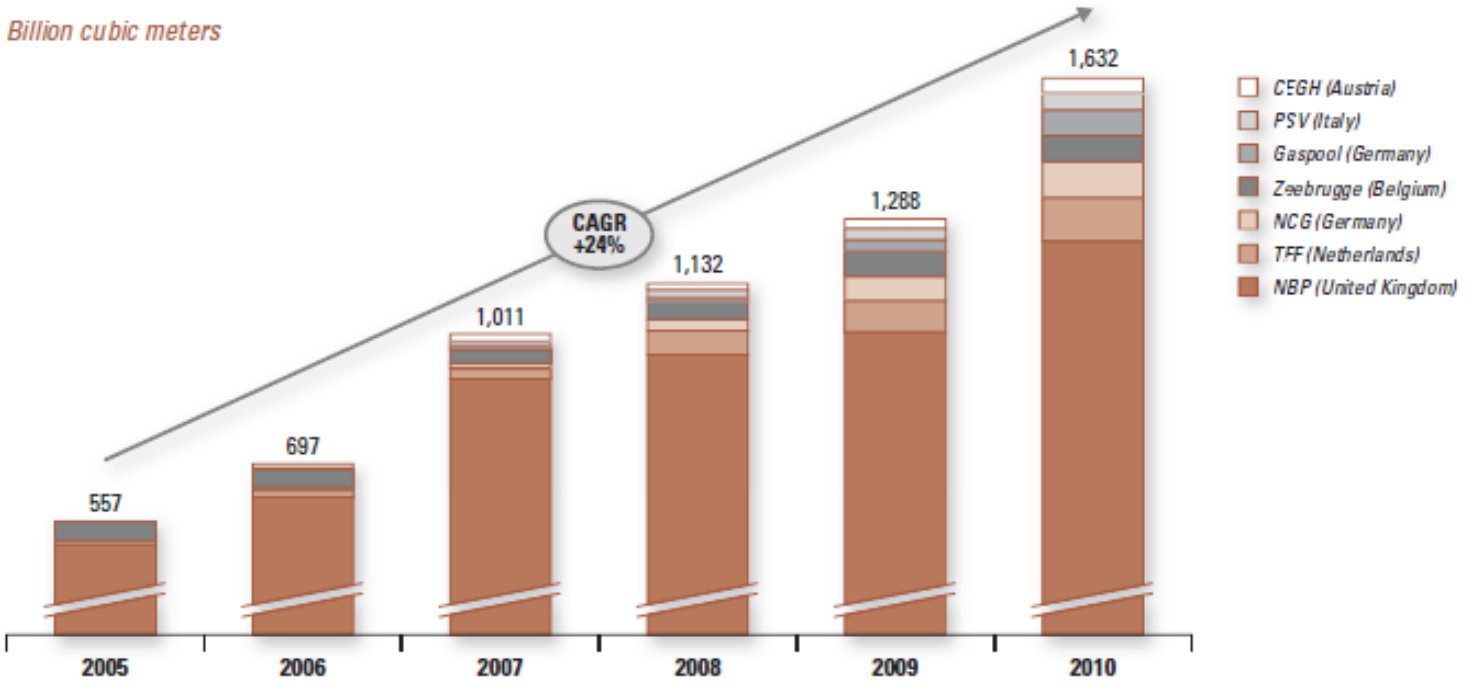
The development of the spot market



Source: Carnegie Endowment for International Peace (2011)

The emergence of gas hubs in Europe

The development of liquid gas hubs



Note: CAGR is compound annual growth rate

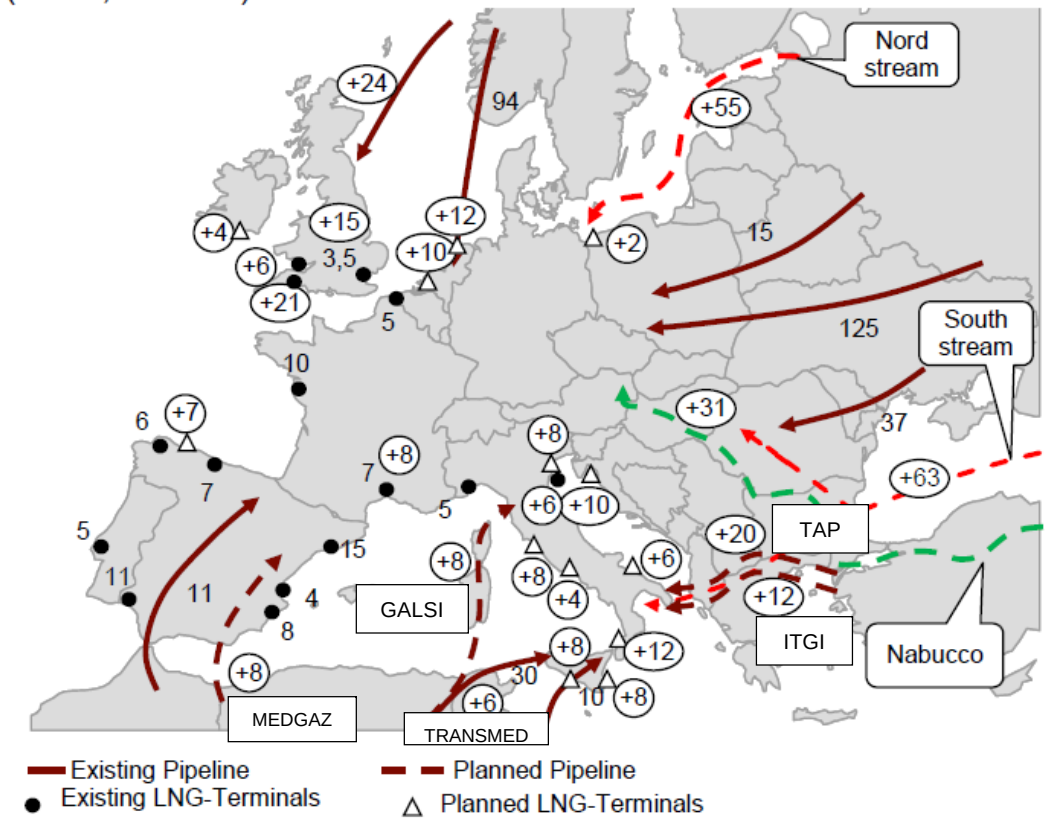
Source: A.T. Kearney analysis

[2] With the exception of the United Kingdom, where gas prices are mainly indexed to competitive gas (and less than 20 percent to oil products).

Where does gas come from?

Capacities of gas import pipelines and LNG 2020[1] – EU27

(2011, in bcm)



Pipeline (planned/new/extensions)	Capacity[2] (in bcm)
Medgaz (in operation since Apr11)	8
Nord Stream	55 (27.5)
Nabucco	*31 (8)*
Galsi	8
South Stream	*63*
ITG/IGI	*12*
TAP	*20 (10)*
Transmed	6

LNG Terminal (planned/new/extensions)	Capacity (in bcm)
South Hook LNG (04/10)	21.2 (10.5)
Grain LNG [Expansion] (12/10)	14.8 (4.4)
Fos-sur-Mer (Caveau) (09/10)	8.25
Gate Terminal (Maasvlakte)	12
Gioia Tauro (Medgas) LNG	12
Krk Island	10
Dunkirk LNG	10
Porto Empedocle LNG	8
Rosignano Marittimo	8
Priolo (Augusta) LNG	8
Trieste LNG	8
El Musel LNG	7
Other projects	25.6

1) Doubtful, speculative projects not considered
2) Final expected capacity for EU27 in 2nd phase (capacity 1st phase)
Sources: Wingas, EU, E.ON, King & Spalding, Petroleum Economist, IEA, A.T. Kearney

Source: ATKearney

EUROPE:
SOME CONTROVERSIAL ISSUES

- Policy
- Regulation
- firms

The new ACER's rules: changing the EU Gas Sector

- **Capacity Allocation Mechanisms for the European Gas Transmission** (FG published by ACER on 3/08/2011 – NC presented by ENTSOG on 6/03/2012)
- The most innovative provision: bundled products for capacity services
  - the corresponding exit and entry capacity available at both sides of every point connecting adjacent entry-exit systems shall be integrated in such a way that the transport of gas from one system to an adjacent system is provided on the basis of a single allocation procedure and a single nomination
  - Big impact on existing long term ToP contracts
- Pilot projects already started at regional level to allocate bundled products (often through regional platforms):
  - North West => creation of booking platforms through a bottom up approach (by TSOs)
  - South = > harmonisation at the Spanish and Portuguese IP (Auction to be launched in June 2012)
  - South South East = > positive experience of the GATRAC platform

The new ACER's rules: changing the Electricity Sector

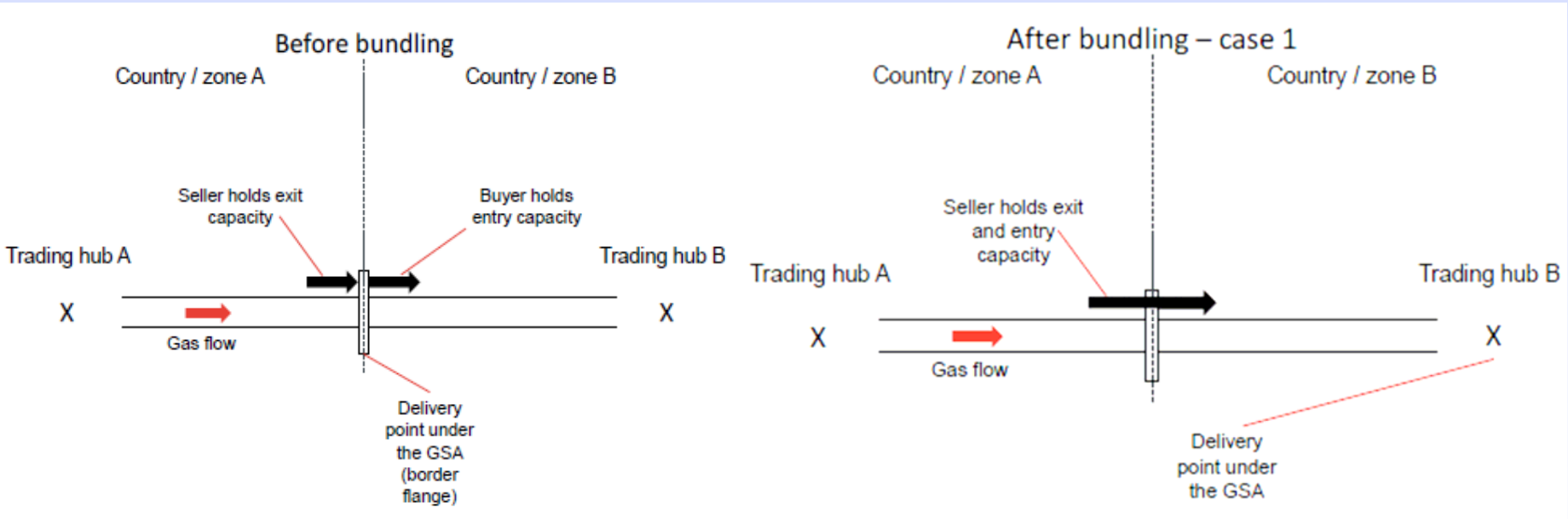
- **Framework Guidelines on Capacity Allocation and Congestion Management for Electricity** (published by ACER on 29/07/2011)
- The most innovative provisions: mandatory market coupling; a new common grid model (EU zonal market)
  - Implicit allocation of day ahead capacity through a common EU algorithm: incentive to efficient capacity allocation and price convergence (to the limit allowed by physical congestions)
  - A new network model will highly effect the current system operation
- Pilot projects already started at regional level:
  - ITVC (*interim tight volume coupling*) project => volume coupling of two regions (CWE+N); form the end of 2012 to be changed into a price coupling
  - MIBEL => Iberian peninsula coupling

Diffusion of EU rules beyond EU borders

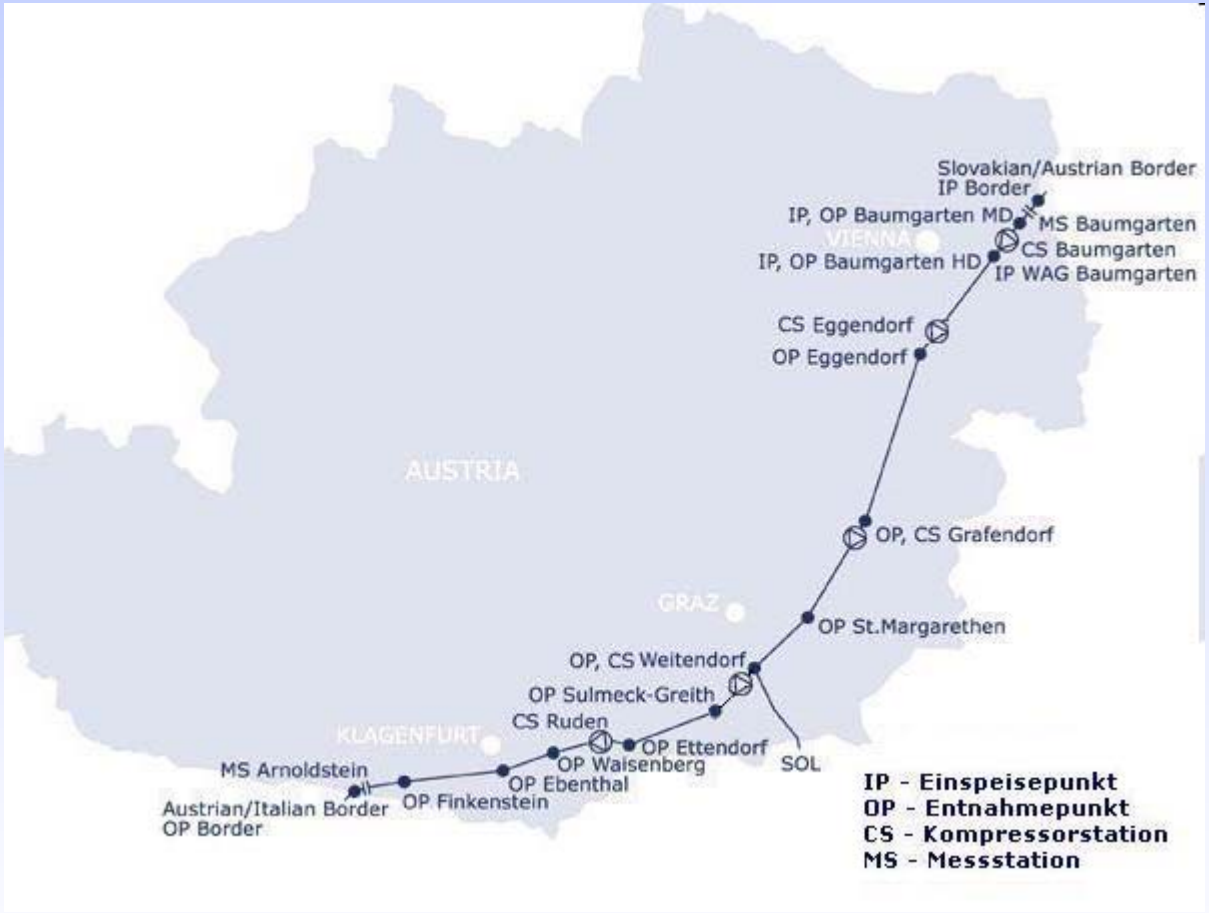
- Neighbouring areas interested in the EU energy regulatory framework => important to trade and facilitate investments
- Successful experiences are
  - Set up of MEDREG Association
  - Signing of the Energy Community Treaty
- Cross border projects will benefit from common rules => i.e. ITGI (South corridor) and TAP (South East corridor)

Gas framework guidelines on capacity allocation

The goal is moving from borders to hubs, removing gas frontiers and the need to buy separate entry and exit rights every time gas is traded between countries. With this system, entry and exit rights are “bundled” and sold with gas.



Old gas routes: from Russia to Italy via Austria (TAG)



Source: TAG

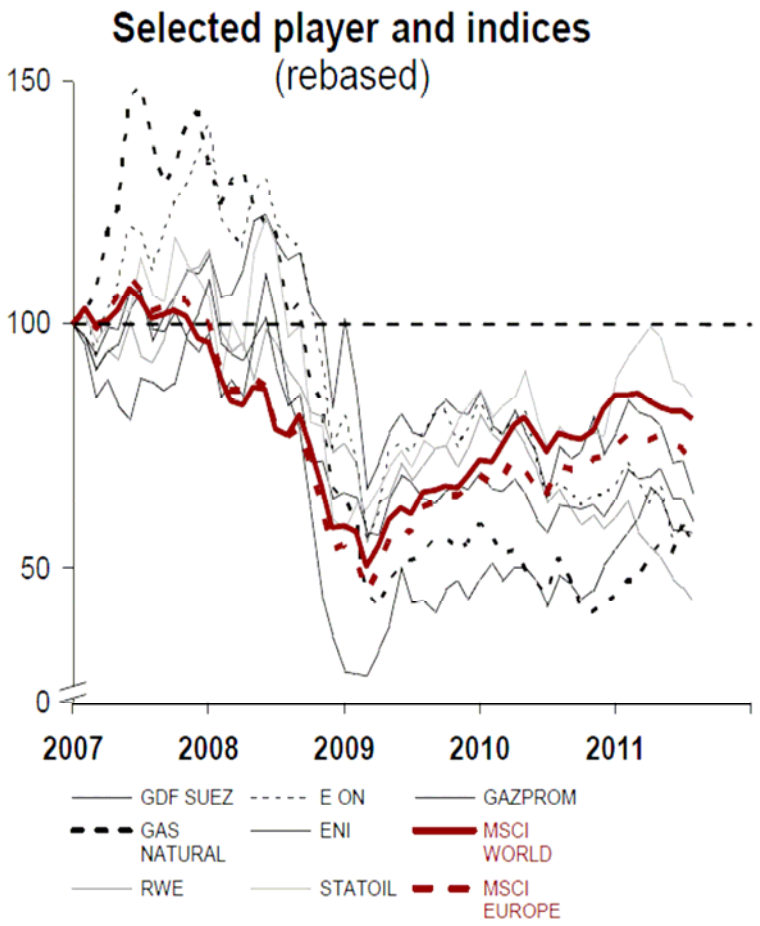
30% of the natural gas imported by Italy comes trough TAG

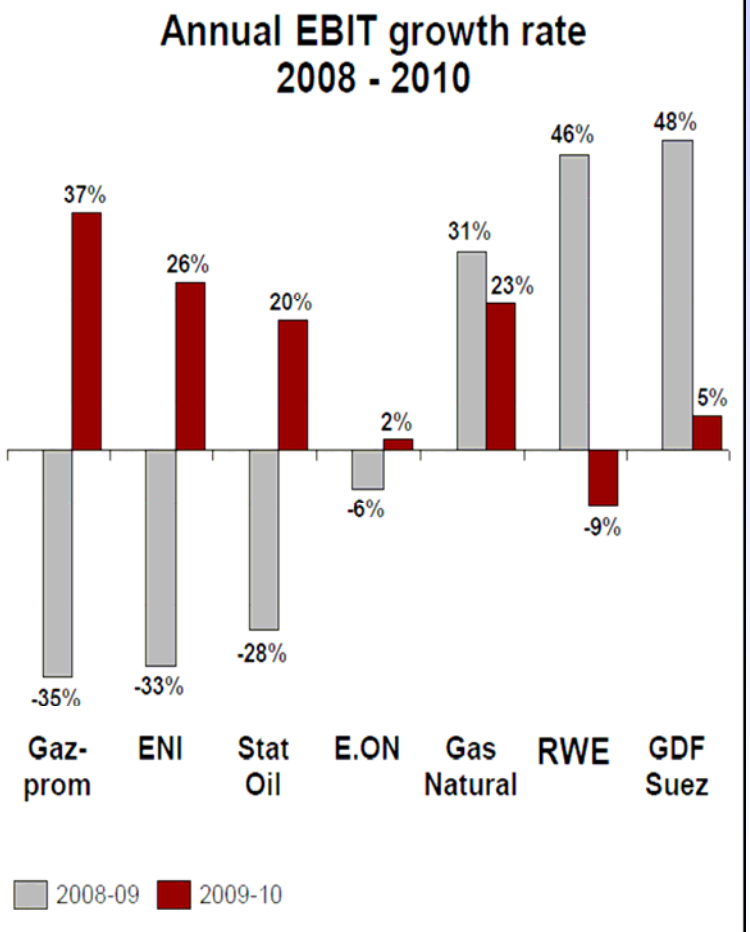
New gas routes for Italy?

Fonte: Reuters

The effects of change on gas players

Financial performance of major gas players

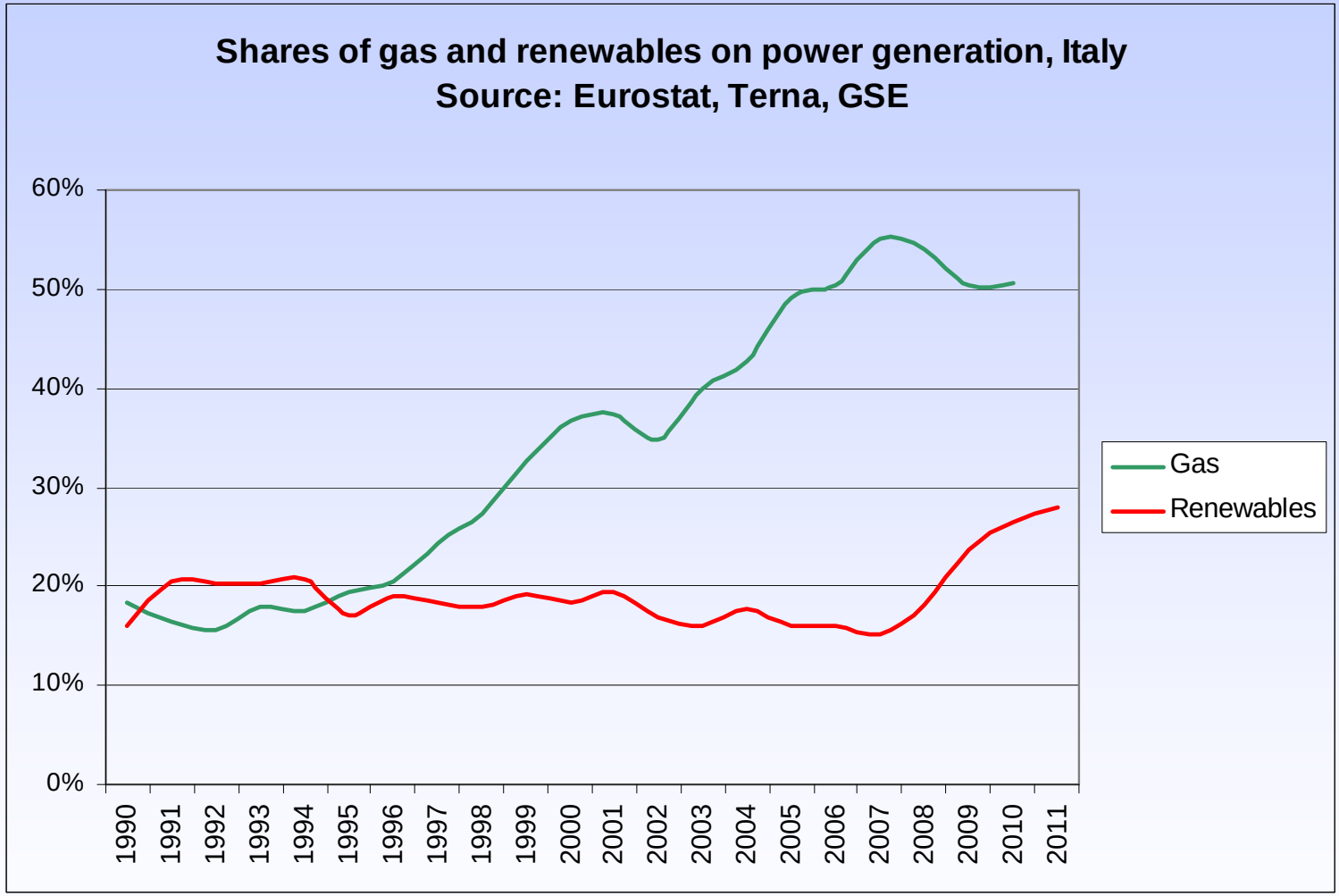




Focus – Italy

AEEG current regulation stance and ....
renewables

Gas vs renewables



AEEG regulation favouring an efficient and integrated EU market /1

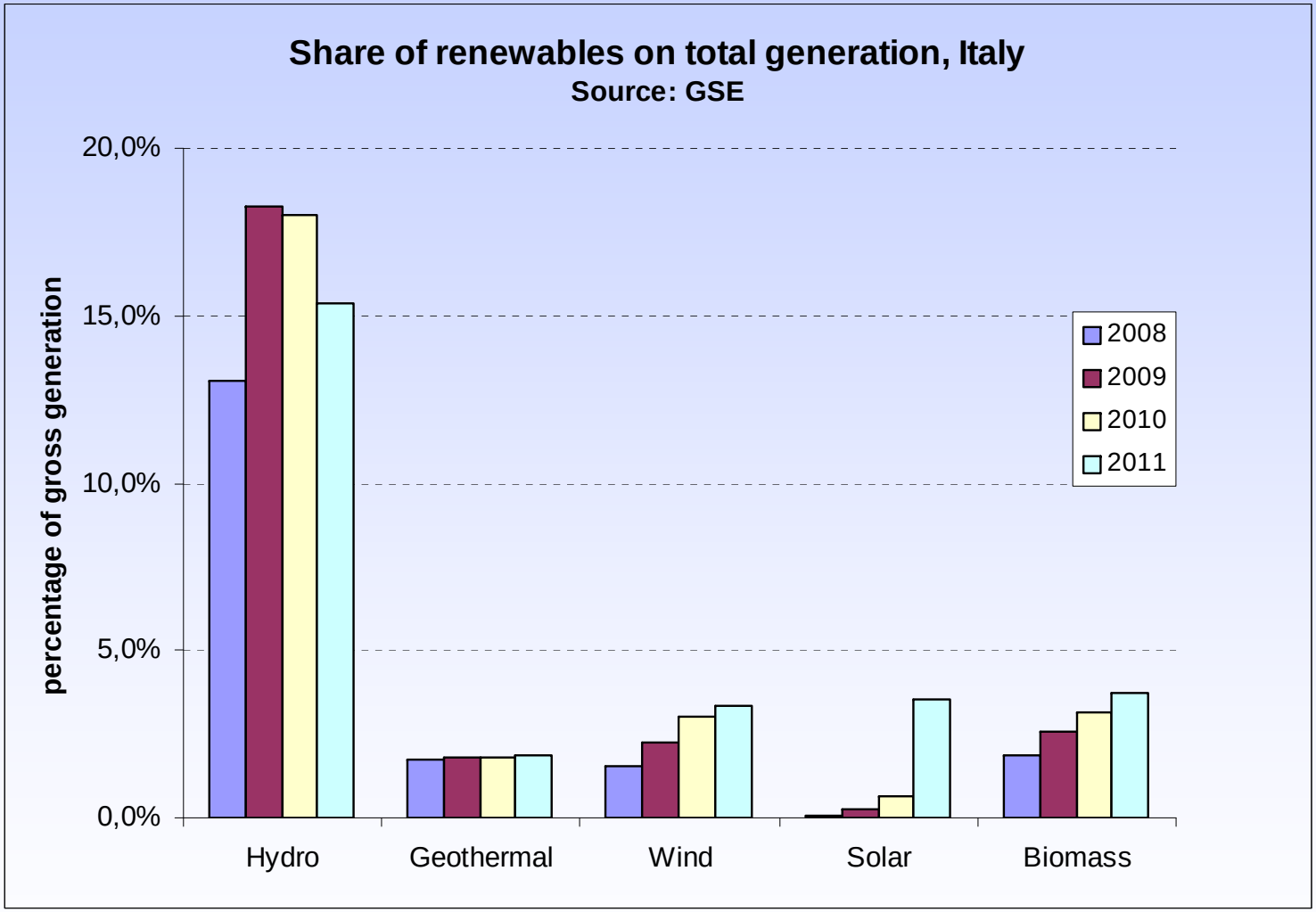
- Gas sector:
  - New market based balancing market: providing a transparent price reference for the daily value of natural gas in the system
  - Establishing a regulatory framework able to favour new investments: the TSO foresees 7 billion€ investments in the next 3 years
- Electricity sector:
  - Important deployment of smart meters: around 40 million customers – now able to actively respond to energy price signals
  - Establishing a regulatory framework able to favour new investments: the TSO foresees 5 billion€ investments in the next 4 years

AEEG regulation favouring an efficient and integrated EU market /2

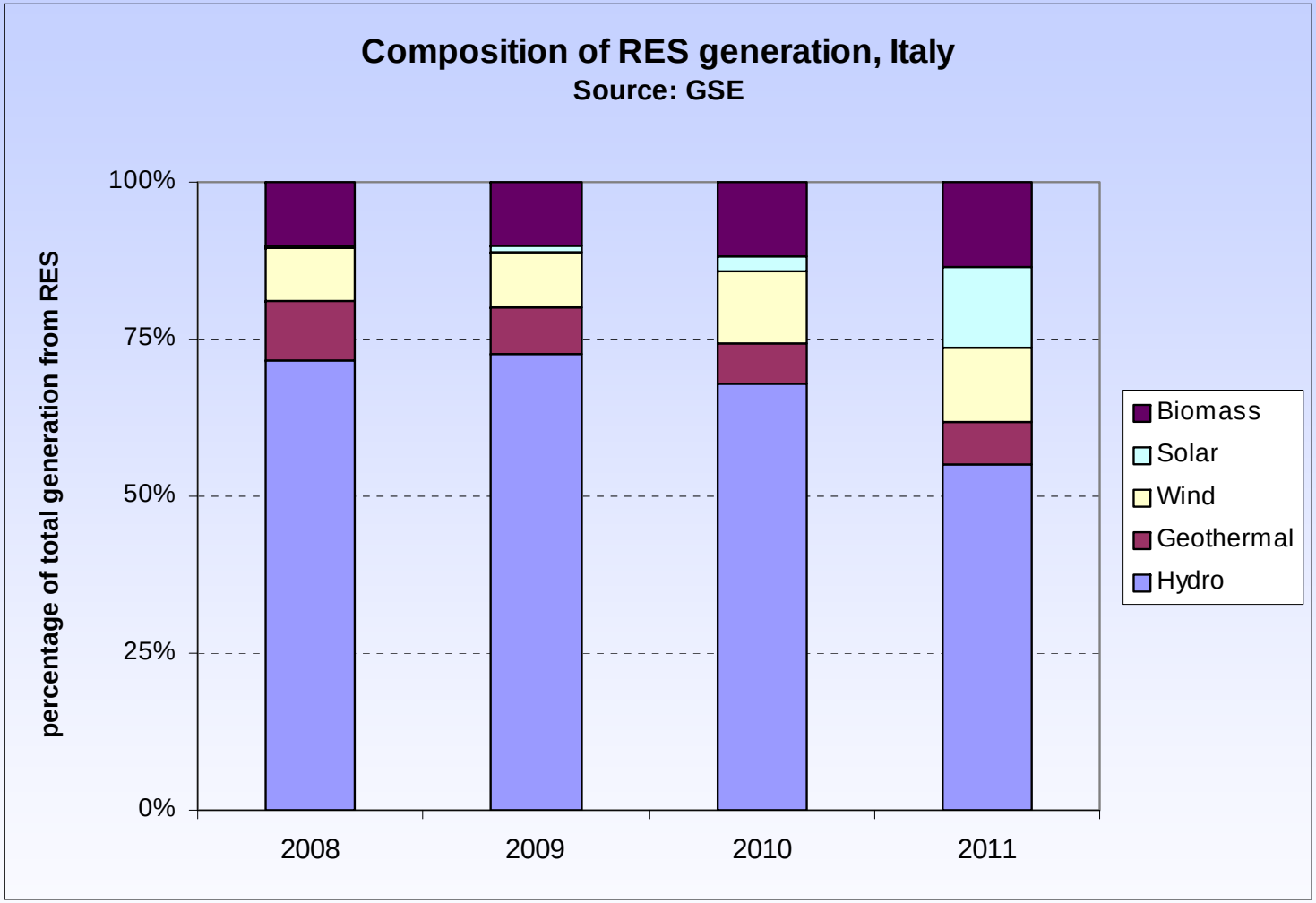
- Gas sector:
  - Capacity Allocation=> coordinated short term capacity services at Tarvisio/Arnoldstein IP
  - Promoting competition=> reference retail price to take into account spot prices at Italian and EU level
- Electricity sector:
  - Short term capacity allocation: market coupling IT-SI
  - Long term capacity allocation: joint allocation of transmission rights for the entire Central South market region

- The target for Italy coming from the EU directive is: 17% of internal energy consumption by 2020 should come from renewable energies.
  - For electricity, the National action plan indicates a 29% target by 2020.
  - Recent estimates for 2011 show that IT already reached 24.5% of internal energy consumption.

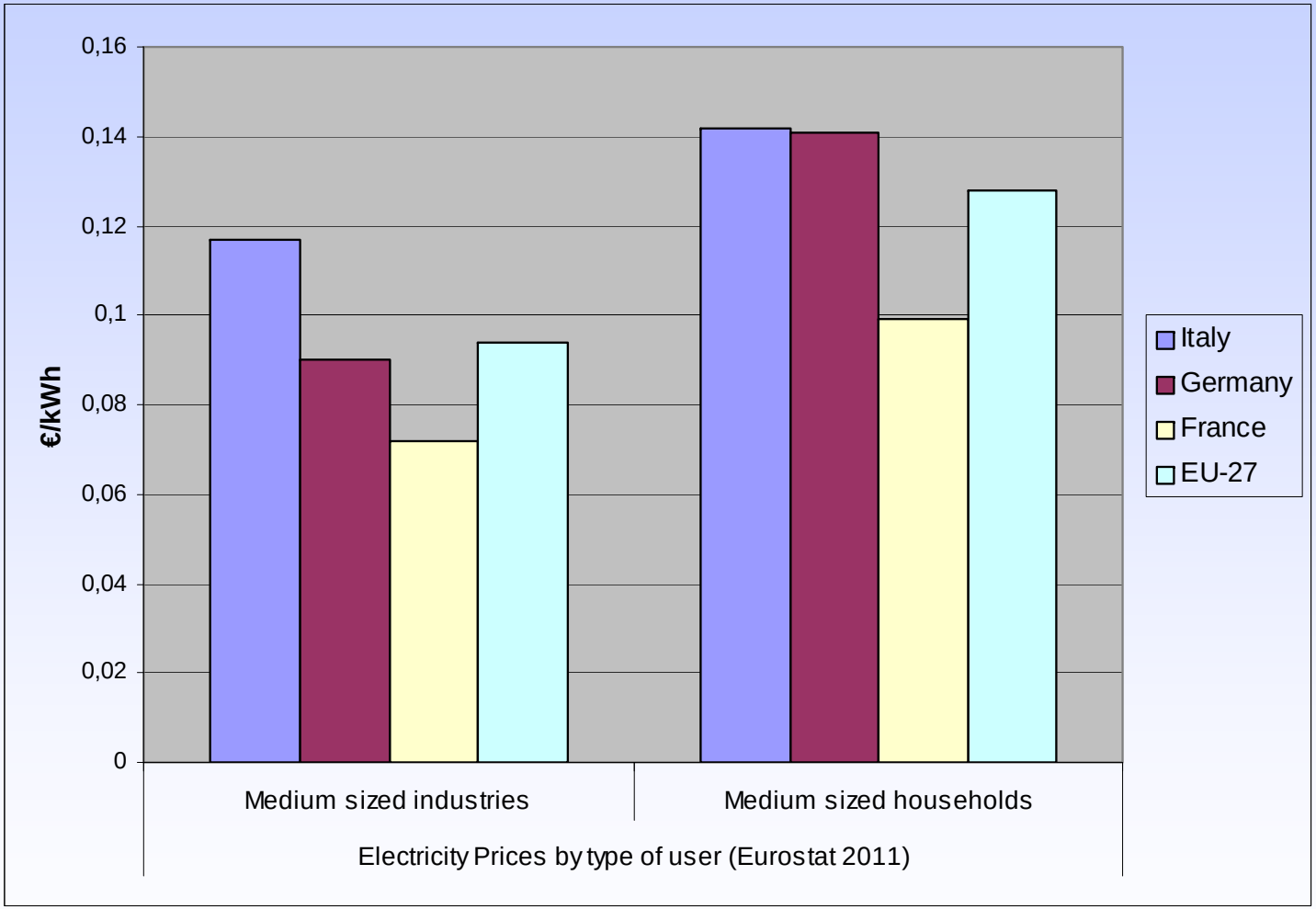
The weight of E-RES



The growth of solar



...and for users



What price for renewables?

- AEEG estimated (PAS 21/11, May 2011) € 100bn incentives for renewables until 2020, paid for by electricity bills.
- New estimates last week (REL 56/12) is €10.5bn for 2012 only: €100bn cumulative by 2020 could be underestimated.
- Between 2008 and 2012 we estimate about €24bn spent in incentives for E-RES.
- Is it sustainable?
  - Incentives have been revised (Ministerial Decree April 2012 – “Quinto Conto Energia”)
  - The idea is linking incentives to technology
  - But technology is running faster

Electricity interconnection capacity requirements 2020 in MW

Ssource: KEMA, Imperial College London)

THANK YOU FOR YOUR ATTENTION !

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“Im Zweifel für Europa"

Nel dubbio, per l’Europa*

S. Cassese, “Introduction: Im Zweifel für Europa”, *S. Micossi, G.L. Tosato, “The European Union in the XXI century: Perspectives from the Lisbon Treaty, 2009