
Gas Target Model update

State of Play

Vienna, 15 July 2014

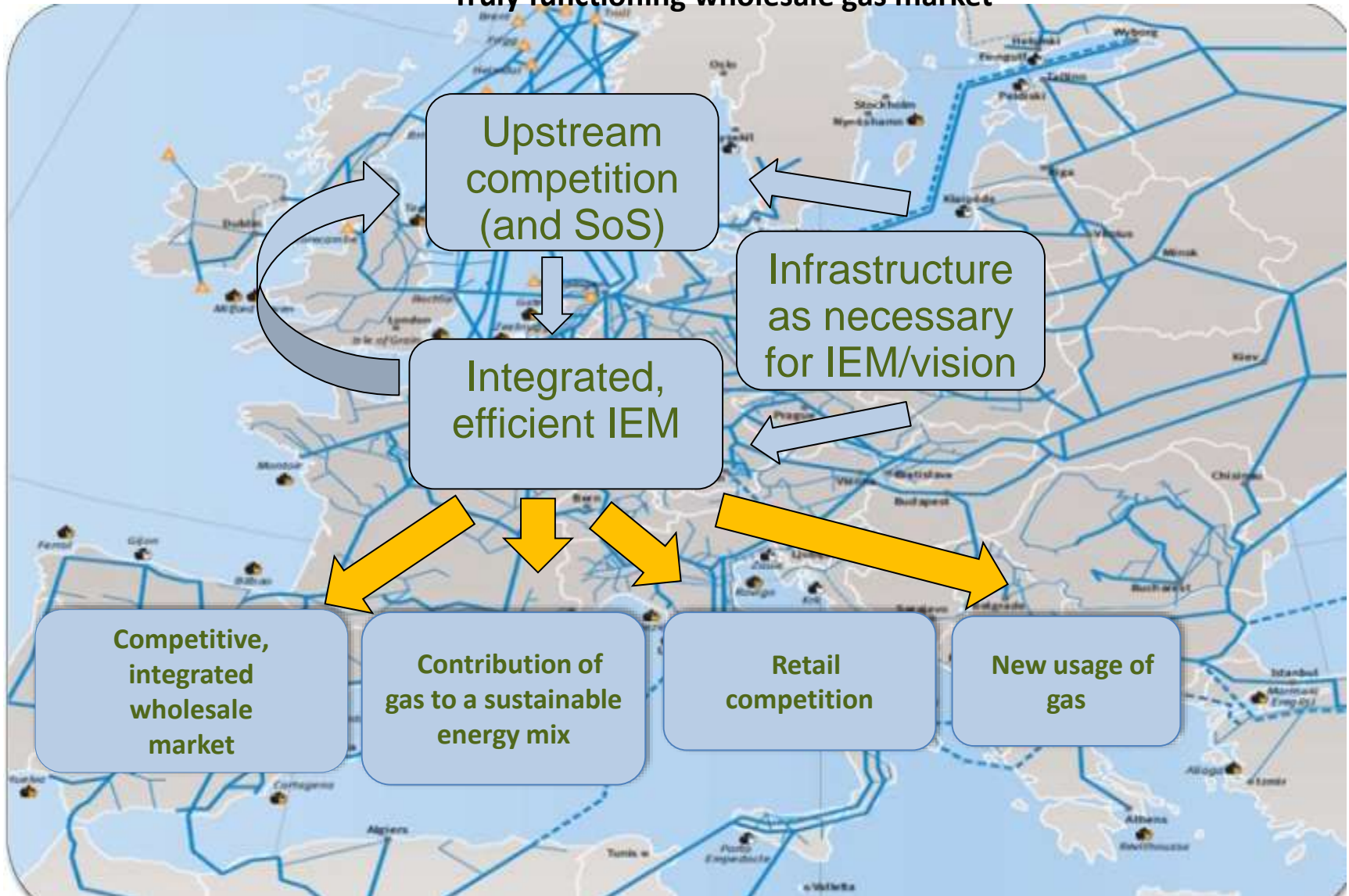
Work Stream 2

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Challenges for the future gas market(s)

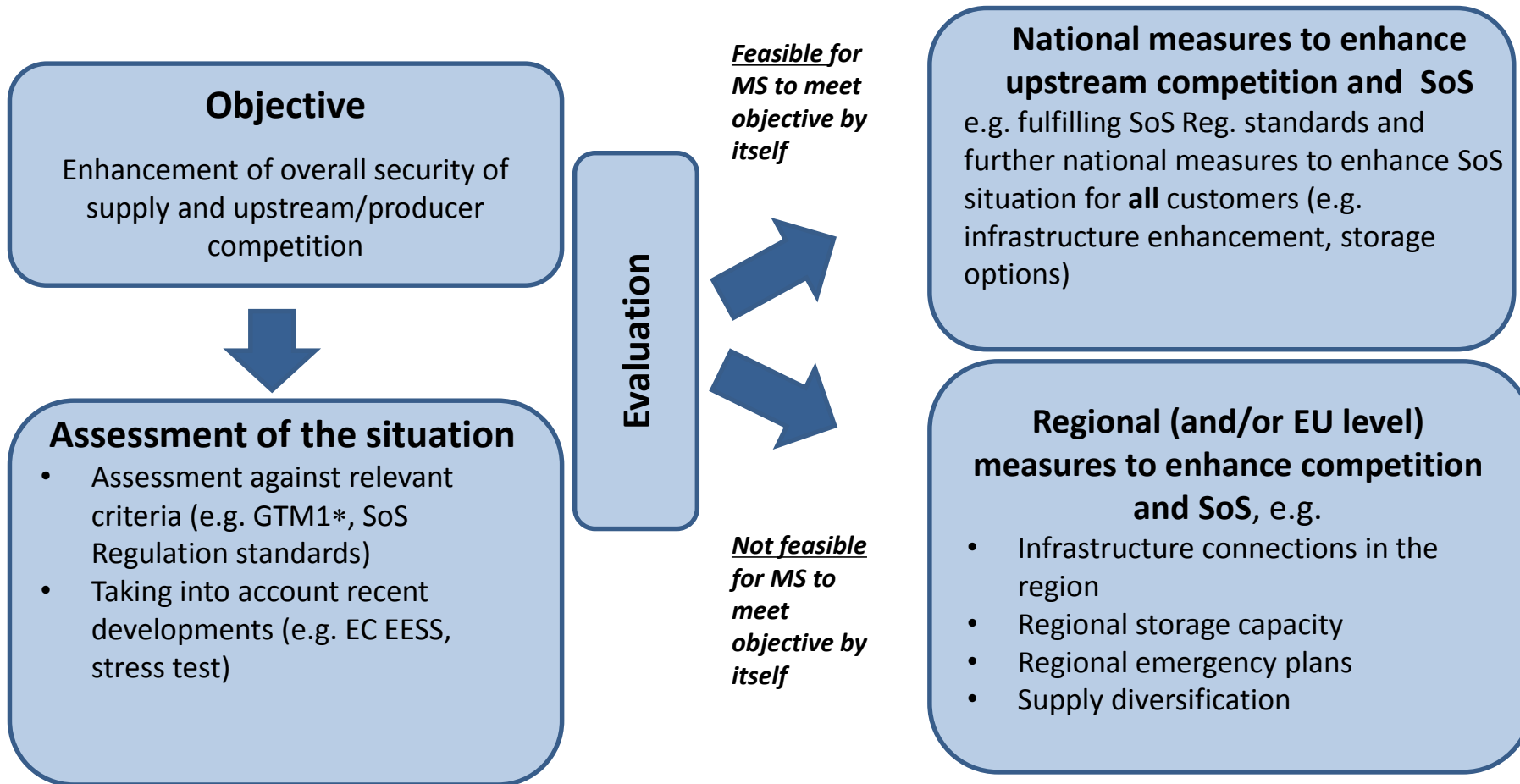
Truly functioning wholesale gas market



Upstream competition and security of supply

Focus in GTM update:

- longer term measures: (Upstream) competition → Security of Supply
- enabling competition, optionality, diversification, adequate infrastructure



*Gas being available from at least 3 different sources, Residual Supply Index (RSI) of more than 110% for more than 95% of days per year

Upstream competition and security of supply

To enhance upstream competition:

- Diversification of supply routes and sources
- Decreasing dependency on one source → more options needed

Status quo: Relevant **GTM1** criteria still valid:

- > Gas being available from at least 3 different sources; and
- > Residual Supply Index (RSI) of more than 110% for more than 95% of days per year

→← only a few MS can supply all domestic gas demand from different sources

+ 6 MS without alternative to Russian gas supplies + Reverse flow situation (incl. exemptions)?

Fulfilment of infrastructure and supply standards by all MS?

+ taking into account the recent EC communication on European Energy Security Strategy

Need for:

- Implementing IEM and GTM
- Diversification: additional sources and routes, maximise indigenous production, fuel switch
- Adequate infrastructure, also for exceptional situations
- Incorporate gas storage and LNG in the considerations
- Enhanced transparency and modelling

Wholesale Market Functioning

Framework process: transparent, objective and inclusive

- Based on analysis: development of regular forward-looking assessments of the markets
 - Evaluation of options and clear proposal for enhancement of market functioning, including CBA; consultations and publication of results
 - Final decision about market enhancement / integration measures
- **NRA run process with full stakeholder and MS involvement, MS esp. in decision taking phase**

Objectives

Every European final customer has the right to benefit from a functioning wholesale market (based on 3rd Package provision)

Assessing status quo

- Gas markets assessed against relevant criteria (GTM1 + additional indicative criteria set under development)
- Taking into account impact of NC implementation

Evaluation

Not feasible for hub to meet objective by itself

Feasible for hub to meet objective by itself

Market integration: tools to deepen liquidity

- Full merger
- Partial merger
- Satellite market
- Market coupling

Market enhancement:

- Further **improving hub** design and governance for an effective trading environment
- Further improving spot-market efficiency

Criteria for functioning markets 1/2

GTM1 criteria	Target
Churn rate Volume of gas traded relative to physical volume	≥ 8
Market zone size Consumption of gas by consumers within a market zone	≥ 20 bcm
Number of supply sources We interpret this to be the number of countries imports are originating from	≥ 3
HHI Measure of concentration amongst suppliers based on energy measured by firm	$\leq 2,000$
RSI Share of consumption which can be met without largest supplier based on supply capability, i.e. capacity (again on firm level)	≥ 110 %

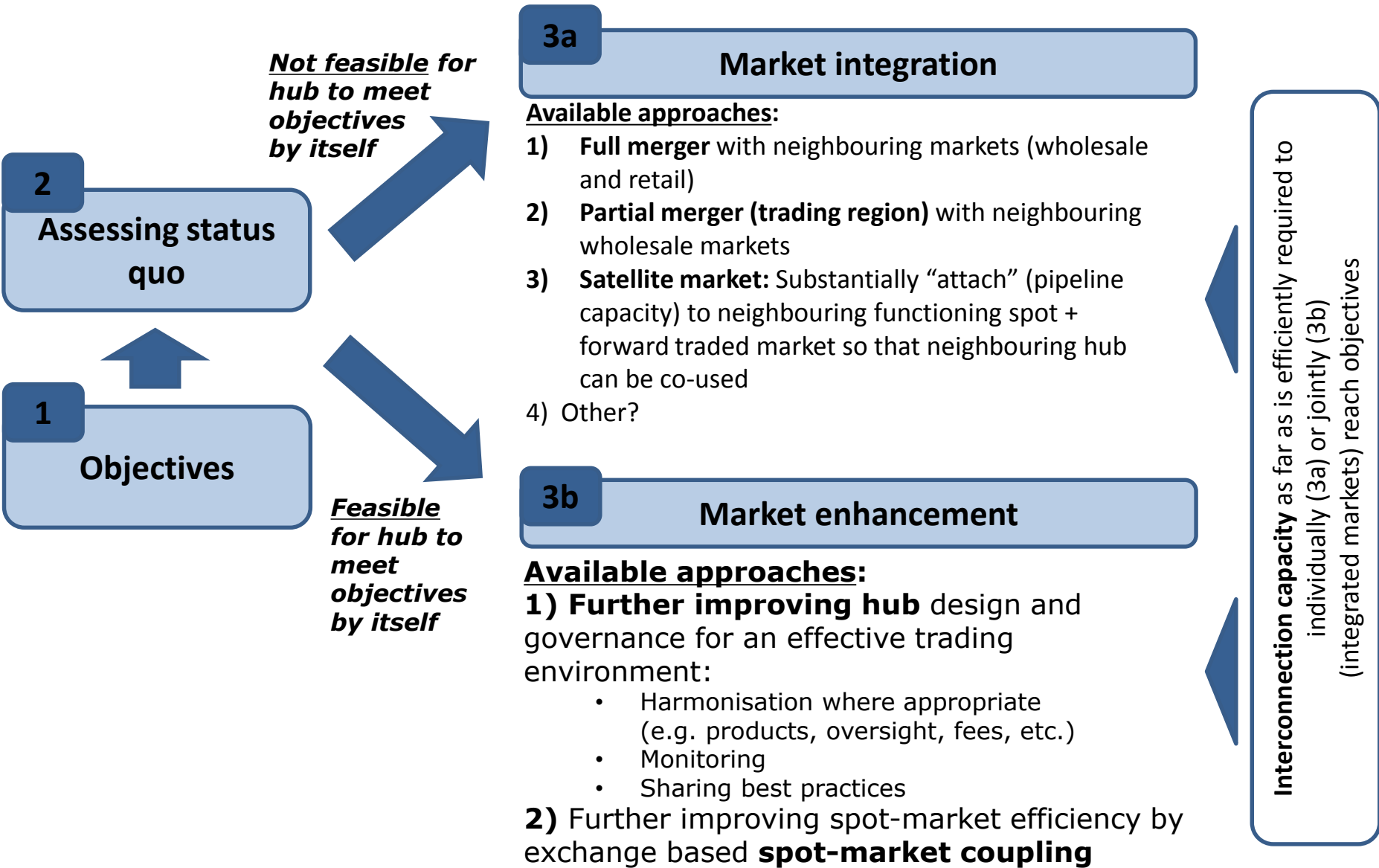
WECOM criteria work in progress!	Target
Price relevance threshold Minimum number of deals required per product/hub/trading-day	> 15 deals
Liquidity threshold Minimum amount of gas simultaneously offered/requested (ask/bid) for a product on a hub	> 120 MW
Liquid trading horizon Minimum time horizon within which trading in gas standard products should be possible with the market being in a liquid state	≥ 36 months

Criteria for functioning markets 2/2

Other criteria, e.g. on hub design – work in progress!	Target
Optimal minimum number of trades per hub	30*
Desired minimum total (market) volume traded on a hub in any year (total over all participants)	100-300 TWh/year*
Desired minimum trading volume on one hub per year	5-10 TWh/year*
Desired minimum order quantity (lot size) on traded forward gas markets	10 MW*
Concentration of trading (to understand whether a small number of traders are responsible for most trades or whether the market is highly diversified)	No single (group of) company(ies) shall provide more than 30%-40% of bids and offers
Other criteria?	

* Based on responses to the ACER questionnaire

Wholesale Market Functioning - structure



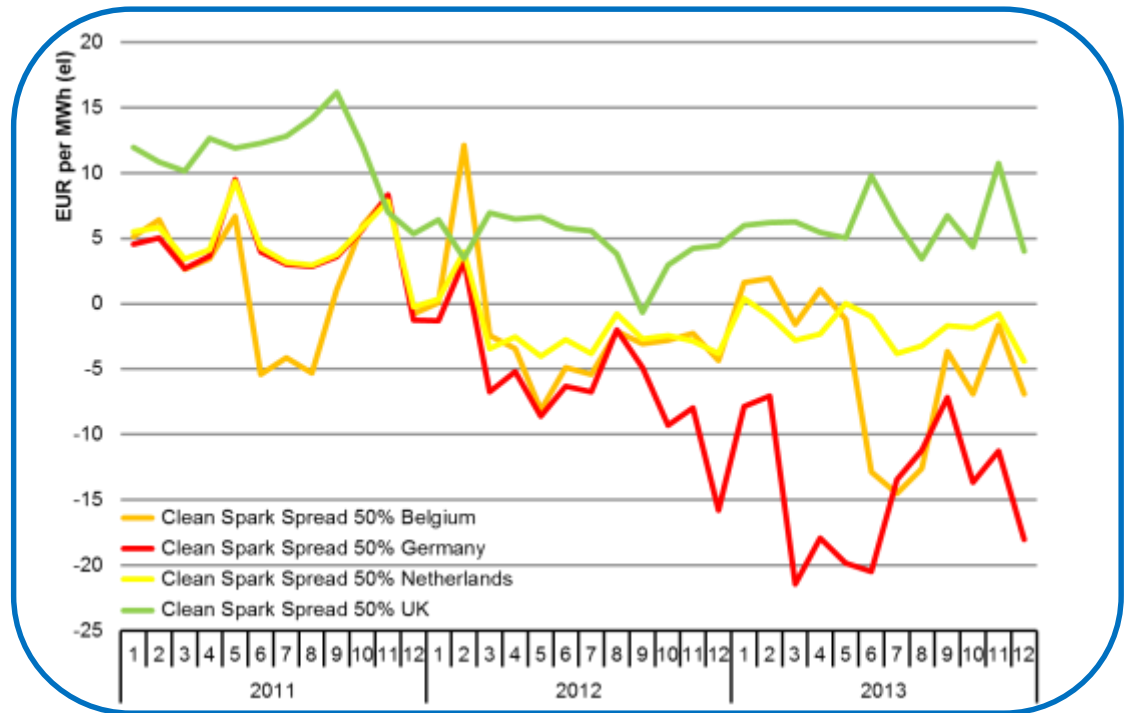
Role of gas in complementing RES electricity generation

Profitability of gas fire power plants

- Low CO₂ and coal prices
- Low electricity demand during economic crises
- Rapid expansion of renewables



- Decline in profitability
- Some countries have negative spark spreads



Problem is worst in NW Europe but by no means limited to this region

*Graph based on data from Platts

Role of gas in complementing RES electricity generation

Decline in use of CCGTs

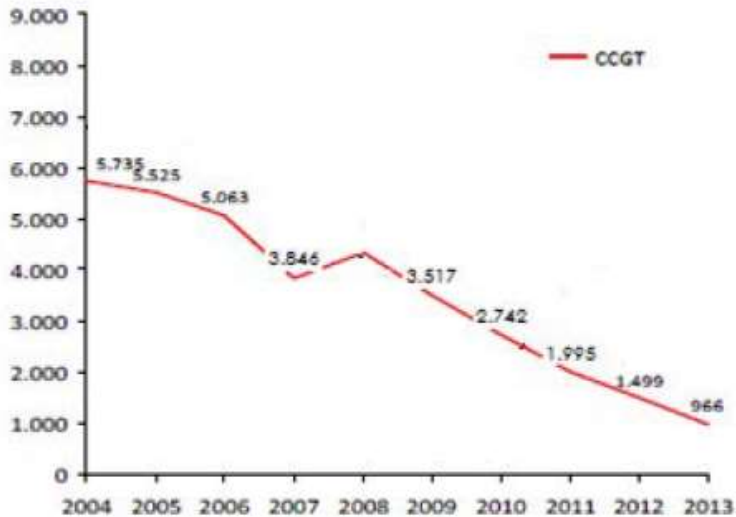


Figure 2 – Spanish CCGT plants operating hours (Source REE)

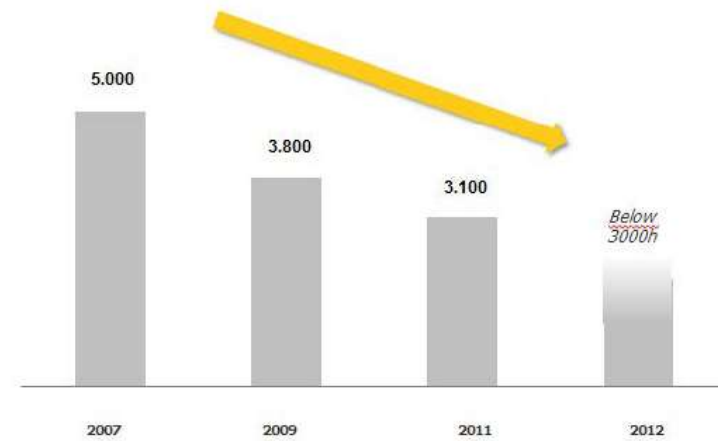


Figure 3 – Italian CCGT plants operating hours (Source: Edison - based on Terna data)

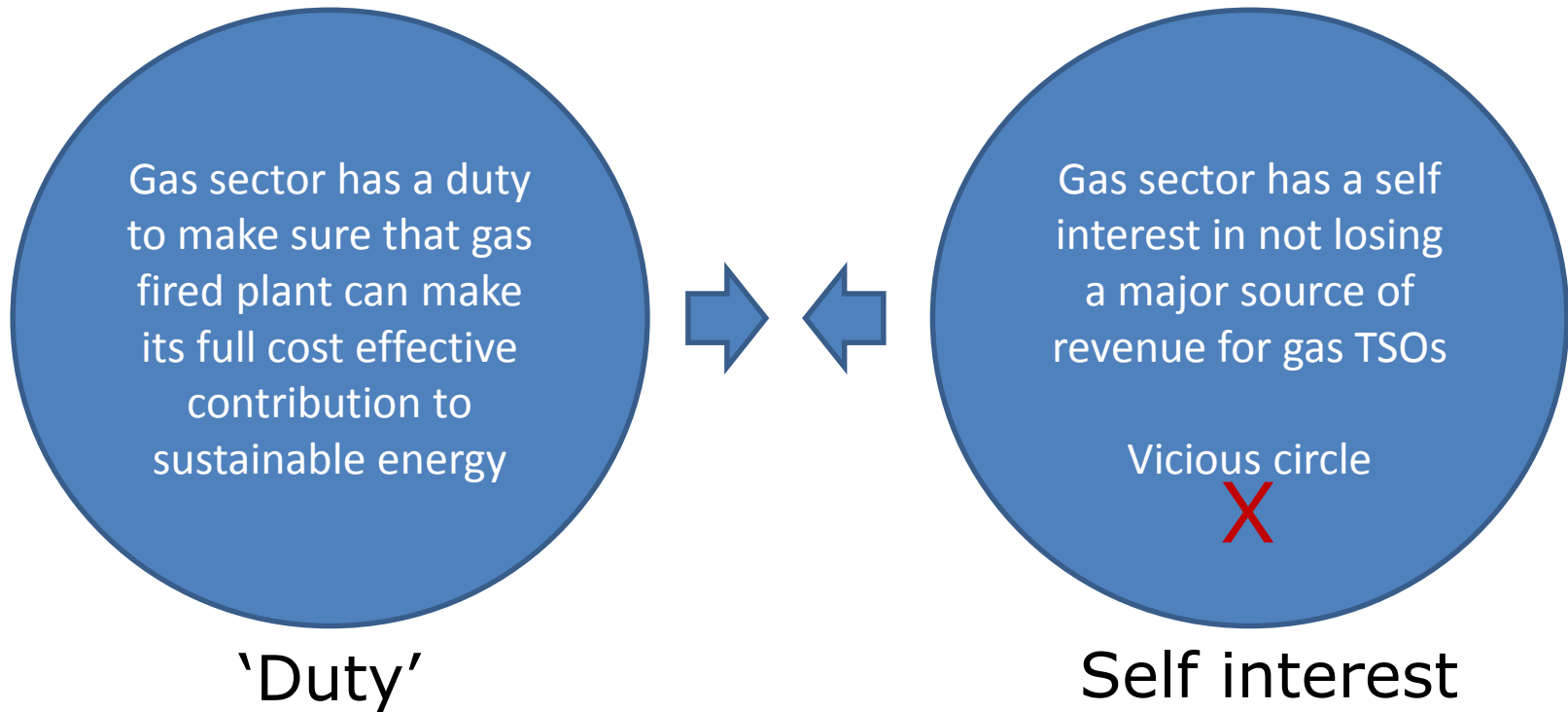
Figures reproduced from 'Flexible Gas Markets for Variable Renewable Generation' Eurelectric, May 2014

Plant closures and lack of investment create SoS concerns

➔ **MSs are considering implementing, or are already implementing, capacity mechanisms.**

Role of gas in complementing RES electricity generation

Role of gas sector regulatory/market arrangements



The issue is not one of special subsidies for gas fired generation but of ensuring that monopoly elements of the gas sector are as responsive as possible to the needs of a major customer group

Role of gas in complementing RES electricity generation

Better coordination between gas and electricity markets

GAS

Information sharing and transparency

Cooperation between gas and electricity TSOs (national and regional level)

Enhanced cooperation between ENTSOG and ENTSO-E at European level

Further consideration of additional specific proposals under consideration (e.g. timeline coordination, improved coordination of bidding procedures)

ELECTRICITY

New usage of gas

Increase of non-traditional use of gas in the EU in the coming decades

- gas as a fuel for transportation (increasing role in the form of LNG and/or CNG, on land and/or on water, in heavy duty vehicles and/or lighter ones, and possibly in trains)
- gas as a storage medium, in particular for electricity from intermittent generation
- Need for infrastructure (e.g. fuelling stations)

Key question for GTM update: to what extent the current EU regulatory framework enables, or possibly hinders, such developments

- In order to see if any changes in this respect are needed, ACER is undertaking a study
- First results in September, final study in October 2014



Next steps:

- Ongoing drafting of the updated GTM
 - Based on stakeholder comments and final discussions with the advisory panel / relevant stakeholders
 - Taking into account also the gas relevant responses to the “Energy regulation: Bridge to 2025” public consultation
- September / October 2014: finalisation of GTM update

Thank you for your attention

Gas Target Model update Annex

Results of market assessment

CEER criteria for functioning markets

Wholesale market functioning

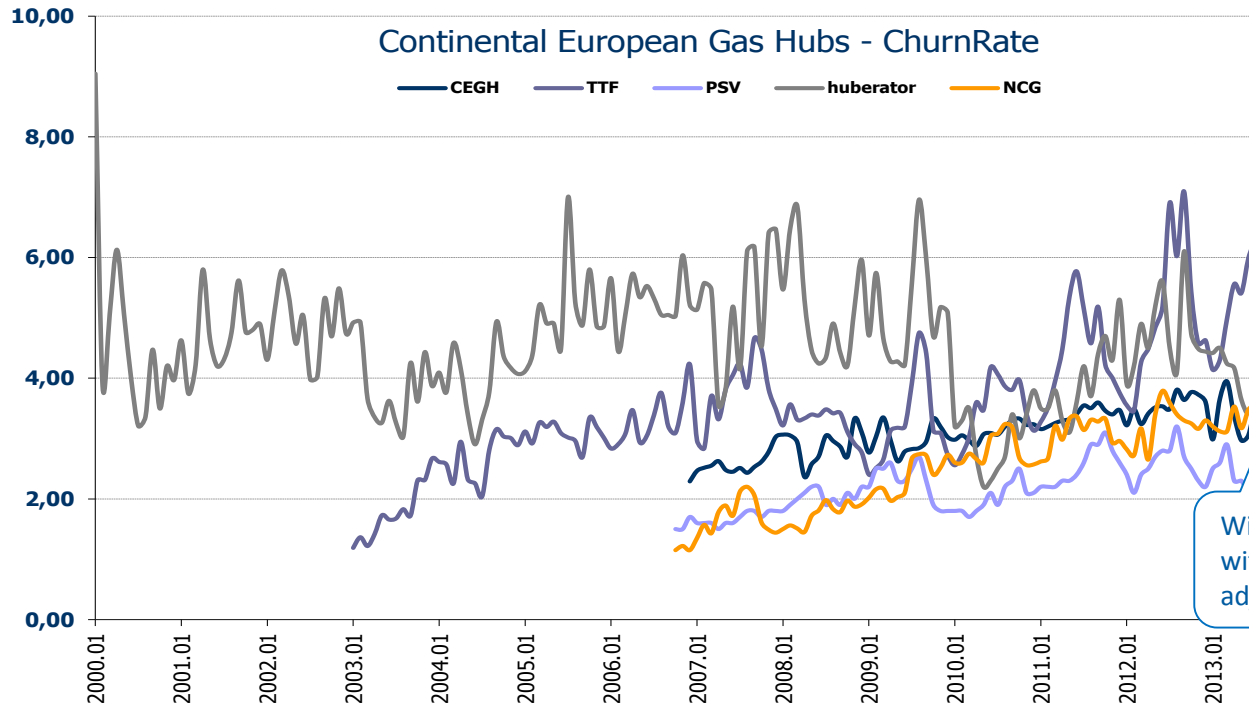
GTM1 criteria – preliminary results of Frontier analysis

Criteria	Target
Churn rate <ul style="list-style-type: none">● Volume of gas traded relative to physical volume	≥ 8
Market zone size <ul style="list-style-type: none">● Consumption of gas by consumers within a market zone	≥ 20 bcm (215 TWh)
Number of supply sources <ul style="list-style-type: none">● We interpret this to be the number of countries imports are originating from	≥ 3
HHI (Herfindahl Hirschman Index) <ul style="list-style-type: none">● Measure of concentration amongst suppliers based on energy measured by firm	$\leq 2,000$
RSI (Residual Supply Index) <ul style="list-style-type: none">● Share of consumption which can be met without largest supplier based on supply capability, i.e. capacity (again on firm level)	≥ 110 %

Few liquid hubs in Western Europe

Trading at wholesale markets

Churn rates

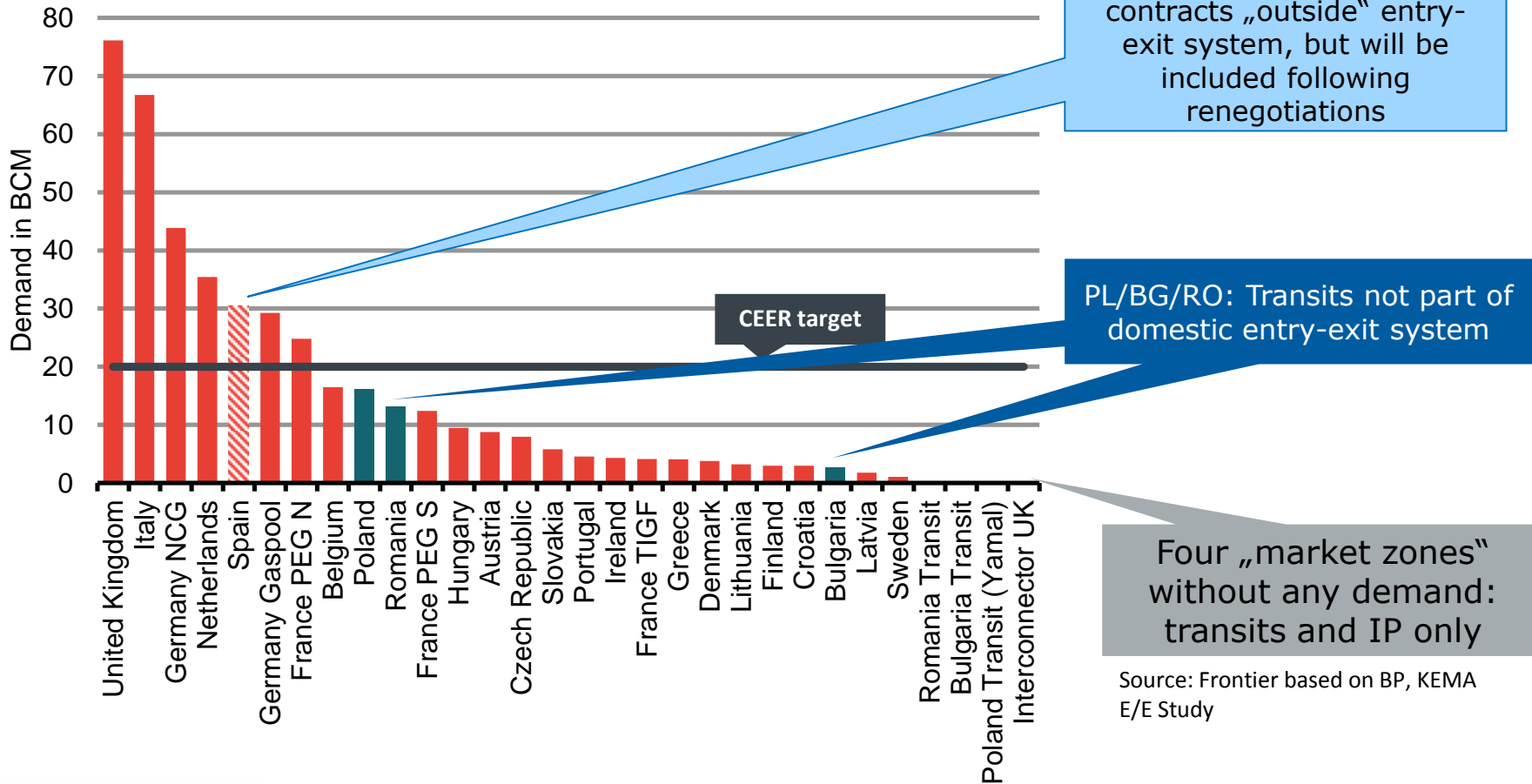


Will liquidity drop with ToP volume adjustment?

- Only TTF (part of the time) and NBP with churn rates > 8
- Zeebrugge: 5
- Austrian / German / Italian / French hub: 2-3
- No transparent trading of wholesale gas in most EU Member States

Most market areas too small

Market zone size



Conclusion

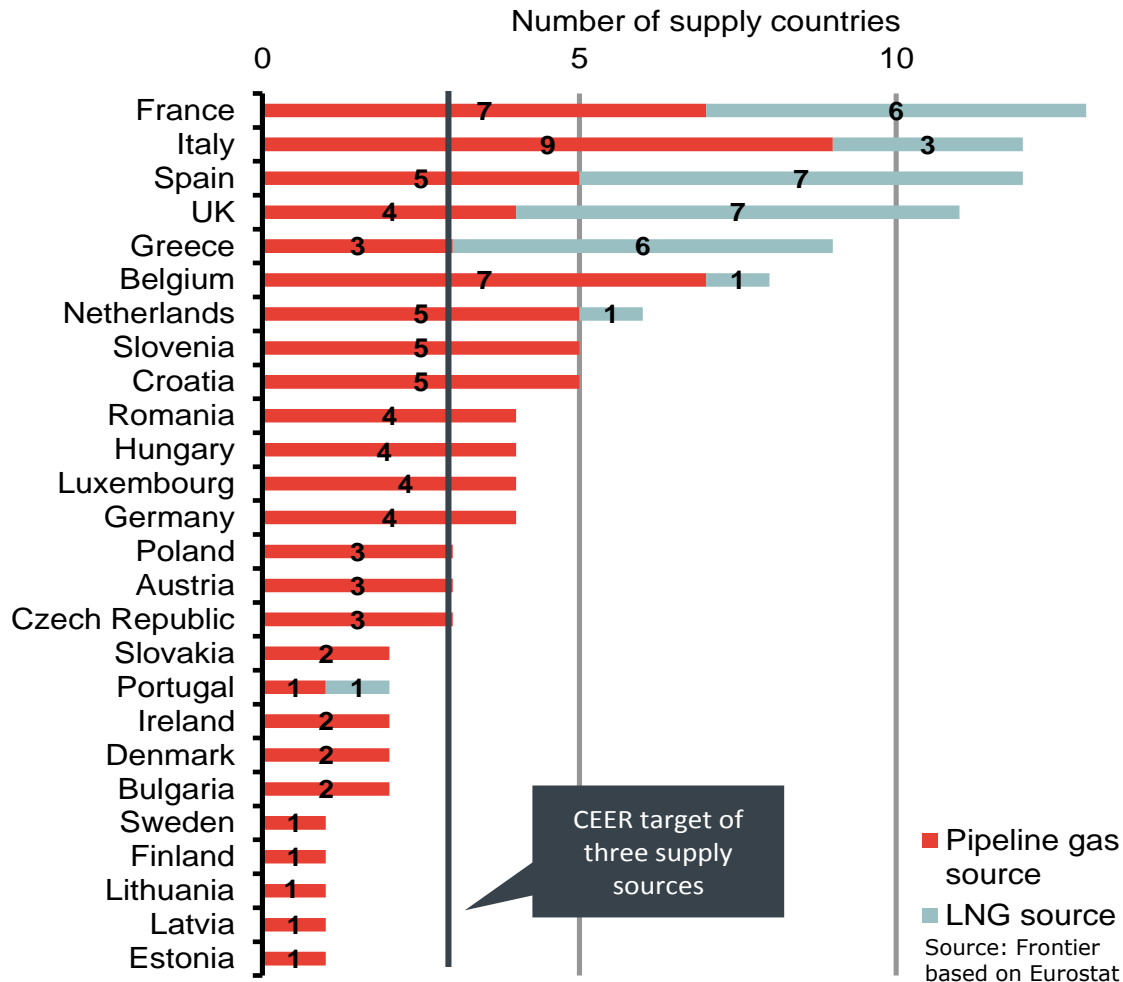
- On MS level, only 6 MS > 20 bcm (7 market zones as Germany x2)
- Cross-border market zones required to exceed 20 bcm in each market zone

Source: Frontier based on BP, KEMA E/E Study

Many MS depend on one/few suppliers

Pluralism of supply sources*

Frontier interprets the number of „supply sources“ as the number of countries imports are originating from



Conclusion

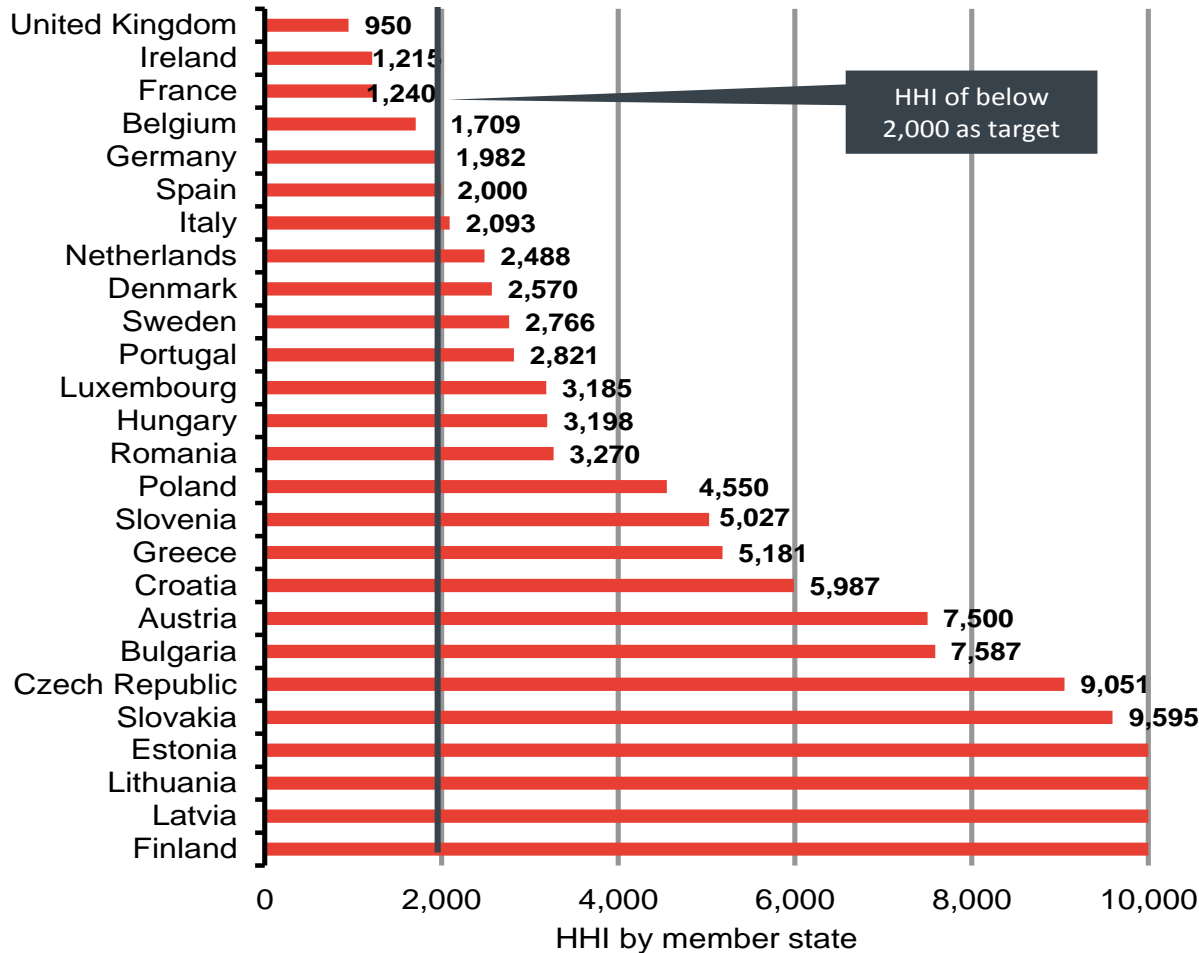
- 10 MS do not meet target of 3 supply sources
- LNG is significant source of diversity - top 6 MS all have LNG terminals
- But number of sources does not allow any conclusion on market power of individual suppliers, market structure, and potential competition (one or two sources may dominate in a given country)

* Not number of entities bringing natural gas into the country

High upstream concentration

HHI

Based on energy measured by firm



Conclusion

- 6 MS with sufficiently diversified supply on a firm level to meet GTM1 target of HHI < 2000 – mainly large markets in Western Europe
- Single supplier in 4 MS
- But also HHI does not allow full conclusion on competition as it ignores potential competition
- E.g. Czech gas market may in reality be no less competitive than Bulgarian owing to potential competition from Germany

Source: Frontier

Background: pivot analysis for RSI

Logic of the pivot analysis

- Demand is compared with the total capacity of all suppliers (apart from supplier A) in a limited period
- A supplier is pivotal when he is an "inevitable trading partner":
 - Thesis: by holding back supply, a shortage of supply and profitable price increase can be engineered
 - A supplier is pivotal if his supply share is higher than the excess capacity in the market
- A pivotal supplier can in theory raise price above the competitive price
 - Incentives and practicability (of withholding) are, however, not part of this simple analysis
 - Therefore, the pivot analysis does not provide a final proof of a market power problem (even if pivotality is found)

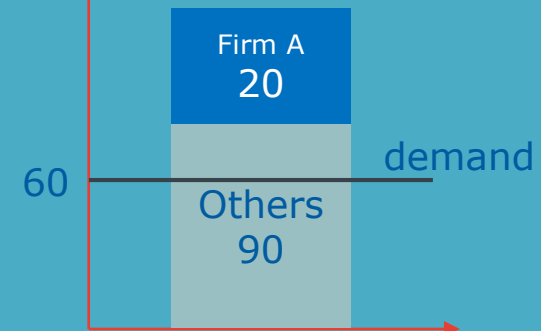
Measures for pivotality and RSI

Capacity (TWh/a)



Firm A would be **pivotal**
 $RSI = 90/100 = 0,9 = 90\%$

Capacity (TWh/a)



Firm A would **not** be pivotal
 $RSI = 90/60 = 1,5 = 150\%$

Residual Supply Index (RSI):

Share of demand which can be covered by capacity of suppliers other than A

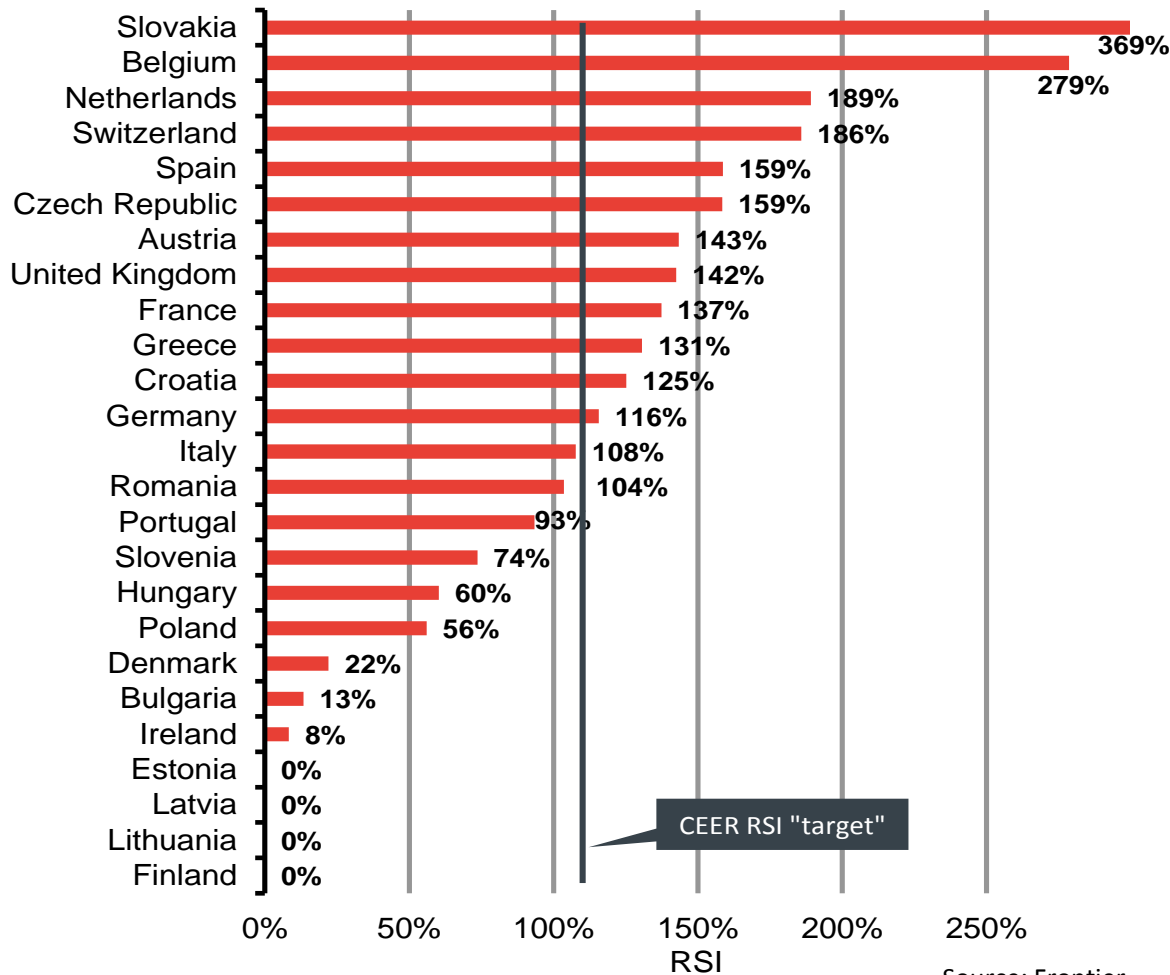
If $RSI > 100\%$, then no pivotality

Large differences between MS

RSI

$RSI = 100 \times \text{supply capacity (n-largest)} / \text{demand}$

Based on border capacity/ domestic production



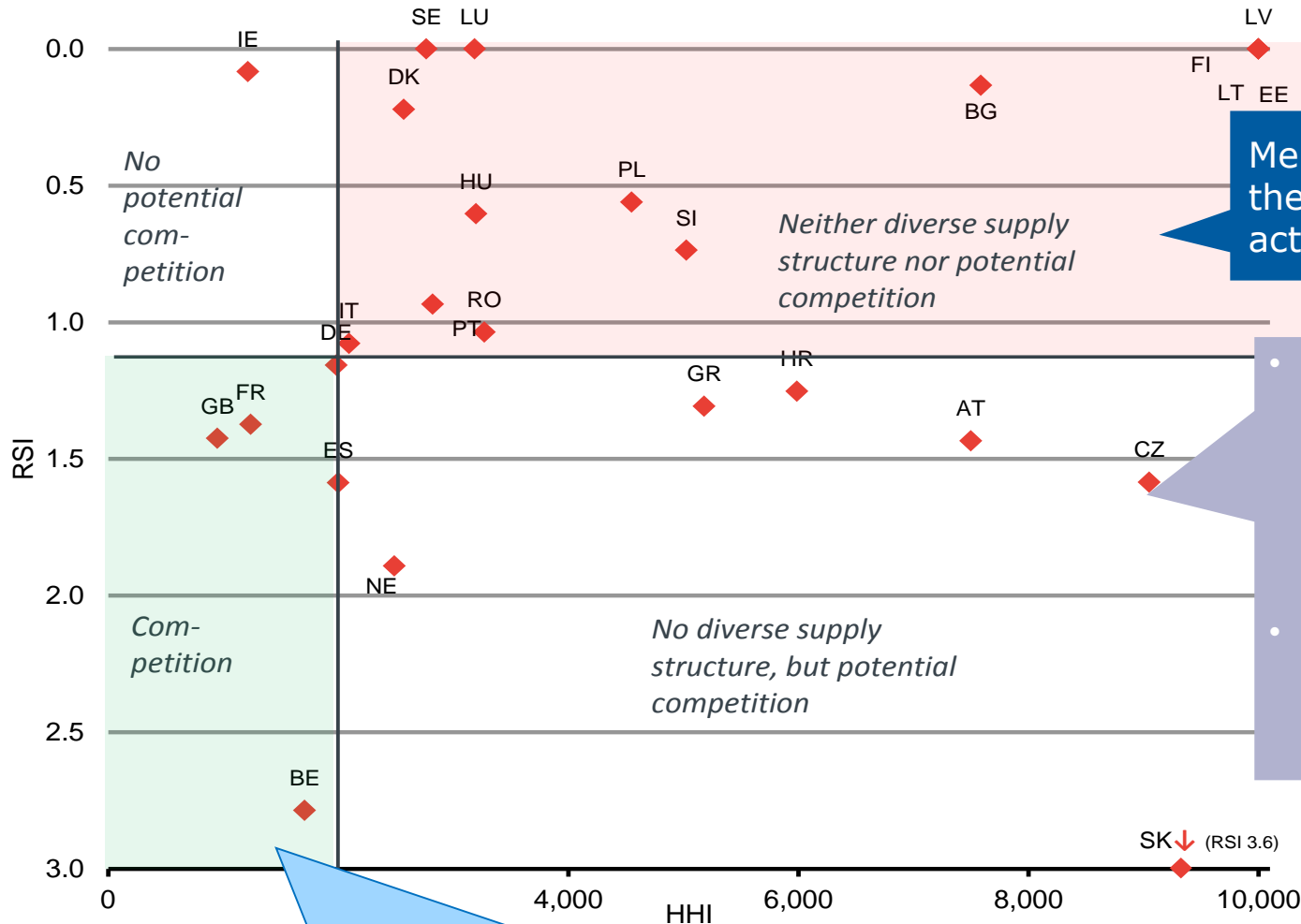
Source: Frontier

Conclusion

- Shows reliance on largest supplier
- Indication that, based on RSI, investments in reverse flow for the benefit of, e.g. Austria, Czech Republic, Slovakia, significantly reduced reliance on largest supplier there
- But RSI alone has limitations: focus on capacity (ignores competitive situation on other side of an IP)
- RSI may also be helpful in combination with HHI

States of competition differ significantly

RSI & HHI



Member States where there may be need for action

- Does potential competition actually constrain potential market power of existing upstream suppliers?
- Why is potential for further supply diversification not utilised?

The few Member States where competition is not an issue based on both measures, but these are large MS with many gas consumers

Source: Frontier

Overall GTM1 criteria results

Criteria					
Member State	Churn Rate	Zone size [TWh/year]	Number of sources	HHI	RSI
Austria	3	105	3	7.500	143%
Belgium	6	197	8	1.709	279%
Bulgaria	0	39	2	7.587	13%
Croatia	0	35	5	5.987	125%
Czech Republic	0	95	3	9.051	159%
Denmark	0	45	2	2.570	22%
Estonia	0	9	1	10.000	0%
Finland	0	36	1	10.000	0%
France	3	165	13	1.240	137%
Germany	4	438	4	1.982	116%
Greece	0	49	9	5.181	131%
Hungary	0	113	4	3.198	60%
Ireland	0	52	2	1.215	8%
Italy	3	799	12	2.093	108%
Latvia	0	21	1	10.000	0%
Lithuania	0	39	1	10.000	0%
Luxembourg	0	12	4	3.185	0%
Netherlands	7	424	6	2.488	189%
Poland	0	193	3	4.550	56%
Portugal	0	55	2	2.821	93%
Romania	0	157	4	3.270	104%
Slovakia	0	70	2	9.595	369%
Slovenia	0	12	5	5.027	74%
Spain	0	365	12	2.000	159%
Sweden	0	13	1	2.766	0%
United Kingdom	15	910	11	950	142%
GTM1 target	≥ 8	≥ 215	≥ 3	< 2,000	≥ 110 %

- Only UK meets all GTM1 criteria, NL & BE close
- Hub liquidity an issue in DE, IT, FR, ES
- French market separated into too many zones
- Italy very dependent on two large sources
- DE only barely meets HHI and RSI targets
→ may not meet them if demand picks up again
- Eastern European gas markets usually meet none or only one or two out of 5 criteria

Source: Frontier Economics

Conclusion on functioning of markets

Large Western European gas markets

- Except UK and NL, liquidity below target churn rate and uncertainty regarding further evolution of liquidity
- But liquidity may be accessible in neighbouring market zones
- Pluralism of supply sources, owing to LNG, and diverse market structure with imports from multiple firms and production by multiple firms (where applicable)
- But dependence on large suppliers may increase again should gas demand pick up
- **Many consumers (in largest markets) already benefit from wholesale gas competition**

Central and Eastern Europe

- Most gas markets do not have transparent hub trading
- Probably many are too small to develop into competitive wholesale markets, based on CEER criteria
- Often high concentration on the supply side
- Potential competition in some Central European Member States
- But often heavy reliance on largest supplier, i.e. Gazprom
- **Lack of competition in smaller Member States should not be ignored**