



Wholesale market functioning: GTM1 criteria

2nd ACER Workshop on Gas Target Model review and
update – 19 March 2014

Agenda

- GTM1 criteria
- Results on member state level
- Discussion

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GTM1 criteria

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 %

GTM1 criteria assessment depends on market delineation

Application of criteria

- Area poses a dilemma
 - Market zone – clear, but not necessarily a relevant market area
 - Member state – clear cut, but also not formally useful for competition assessment

Relevant economic market

- Neither market zone nor member state always relevant, especially for competition assessments
- In theory, the competition criteria may need to be applied in the context of the relevant market from an economic perspective

RSI: Concluding that SK has capacity from CZ/AT to replace largest import route not helpful if CZ/AT also depend on the same largest upstream supplier as SK

Approach

- Computation on member state level

Conceptual remarks (I)

Churn rate

- Not necessarily perfect indicator
 - Hedging opportunities etc. may also exist if a market zone is well integrated (commercially and physically) with adjacent zone which has a highly liquid trading point
- Other aspects also relevant, e.g.
 - Churn rate by product
 - Bid-ask spreads

Number of supply sources

- As supply sources are defined on geographic level, it is only a rough measure of level of competition
 - There might be intensive competition between multiple firms from just one or two supply sources (e.g. producers on the UKCS)
 - Some sources (e.g. LNG spot volumes) may only arrive in small quantities and at significant price premiums, but “count” as separate supply source

HHI

- Production vs. wholesale level and relevance of long-term contracts
 - Control over volumes may partially be transferred to importers

We focus on HHI at upstream level

Background: RSI

Our approach

- Computed based on data on capacities, prevailing flow directions, supply and demand balance in investigated area
 - Pivot analysis
- On an area-by-area basis, qualitative assessment of how to replace largest supplier if that is not yet possible

Compared to power markets where RSI more common

Issues ...

... because of natural gas' characteristics

Approach

Storage (seasonal)

- Gas is storable on a large scale
- In many market areas, significant storage capacities are available – these are part of the supply capacity depending on the time horizon of the analysis

- Calculation on annual basis (i.e. without storage)

Transits and exports play large role

- Partly subject to contracts and potentially relevant to supply/demand in an area
 - Transits block capacities
 - Exports contribute to demand

- Transits block some capacities
- Exports not part of demand

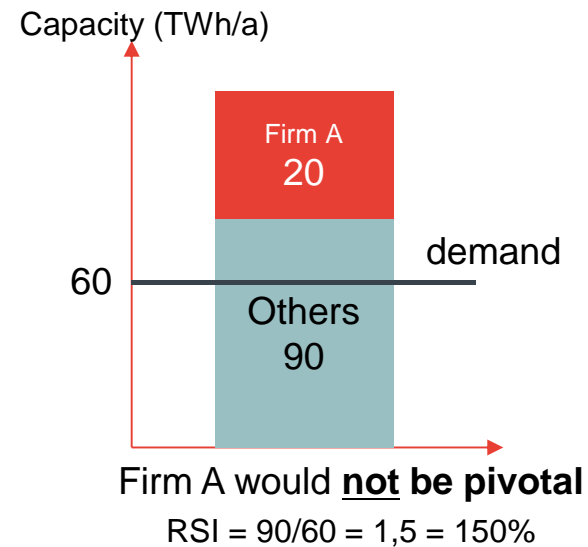
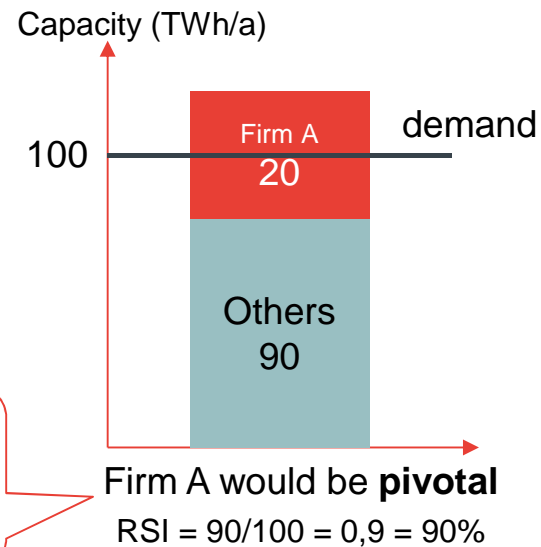
Background: pivot analysis

Logic of the pivot analysis

- In the pivot analysis, demand is compared with the total capacity of all other suppliers (apart from supplier A) in a limited period
- A supplier is pivotal in a period in which he is an “inevitable trading partner”:
 - Thesis: By holding back supply, a (profitable) shortage of supply can be engineered
 - There would be piviality if the share of capacity of one stakeholder (e.g. A) is higher than the excess capacity in the market
- A pivotal supplier has at least the theoretical possibility of raising the price above the competitive price
 - Incentives and practicability (of withholding) are, however, not part of this simple analysis
 - Therefore, the analysis does not provide a final proof of market power problem (even if piviality is found)

Measures for piviality and RSI

Residual Supply Index (RSI): Share of demand which can be covered by capacity of suppliers other than A
If $RSI > 100\%$, then no piviality



Conceptual remarks (II)

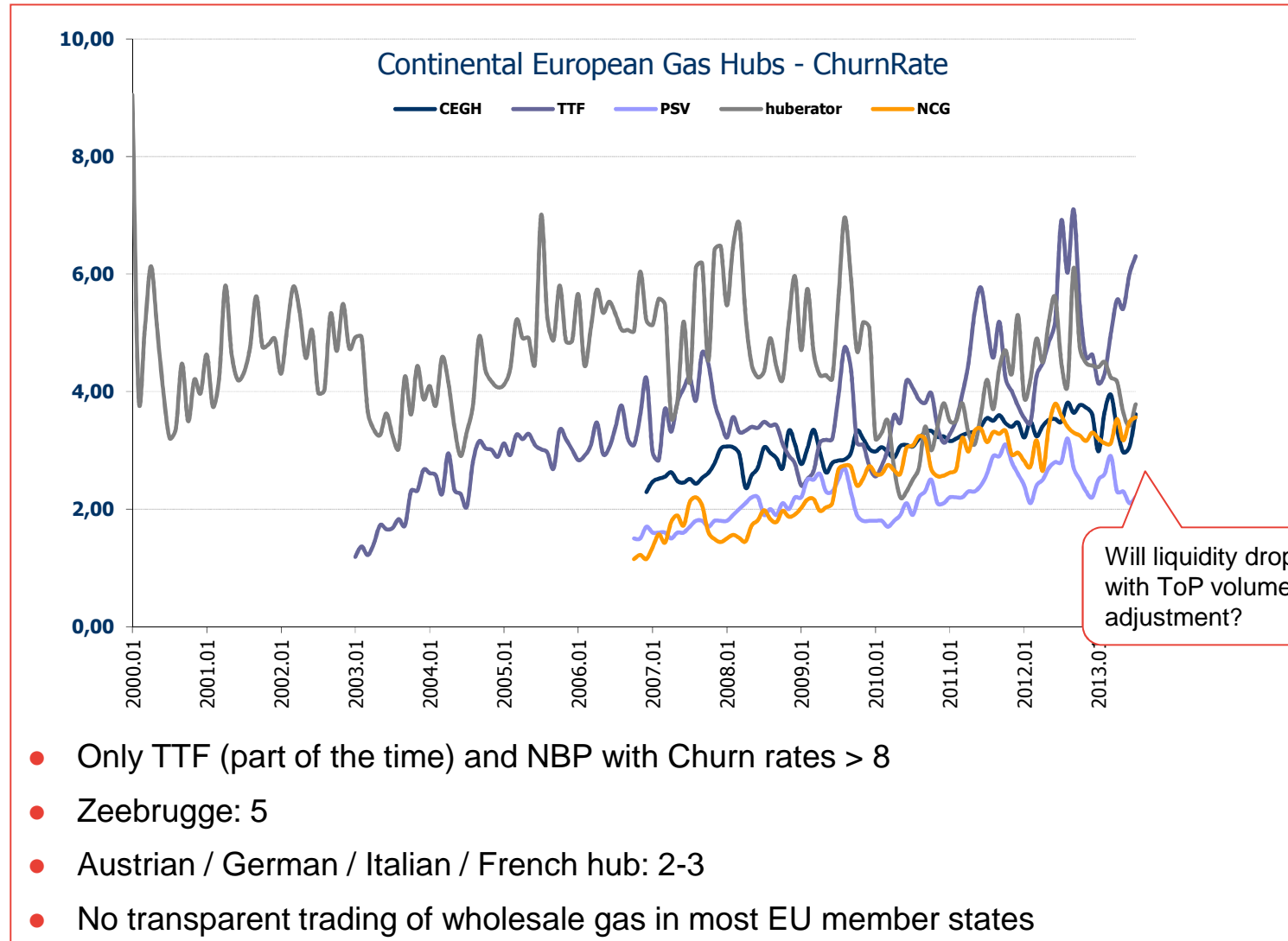
RSI

- Mechanistic application on capacity level overstates level of competition
 - On capacity level, assuming that CMP works, the largest suppliers in many member states could probably be replaced by all other suppliers.
 - Volumes in gas market as important as capacity – RSI does not check if there are actual volumes on other side of the border to “back up” capacity
 - Also not considered if capacity is related to adjacent “market areas” where same upstream supplier has a dominant role
- Wider market delineation ignores potential bottlenecks within considered area
 - Choosing a wider market delineation may overcome issues of ignoring market dominance issues in adjacent areas, but may overstate substitution possibilities
- Ignores price effect
 - E.g. large LNG capacities may imply that large suppliers can be replaced, but LNG volumes would only be attracted to Europe for significant price premiums
- Conclusion: RSI needs to be interpreted carefully when assessing the level of competition

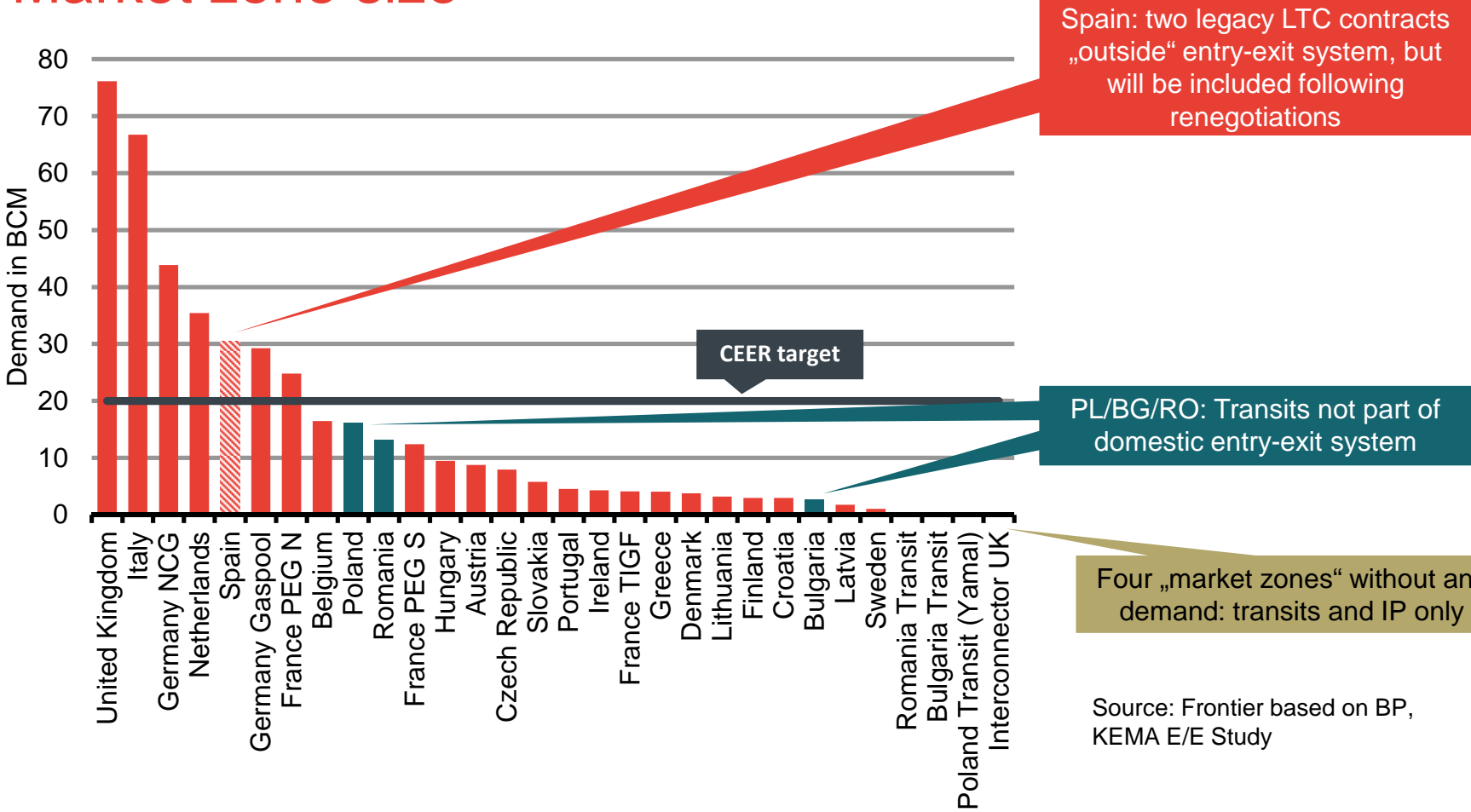
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Trading at wholesale markets

Churn rates



Market zone size



Spain: two legacy LTC contracts „outside“ entry-exit system, but will be included following renegotiations

CEER target

PL/BG/RO: Transits not part of domestic entry-exit system

Four „market zones“ without any demand: transits and IP only

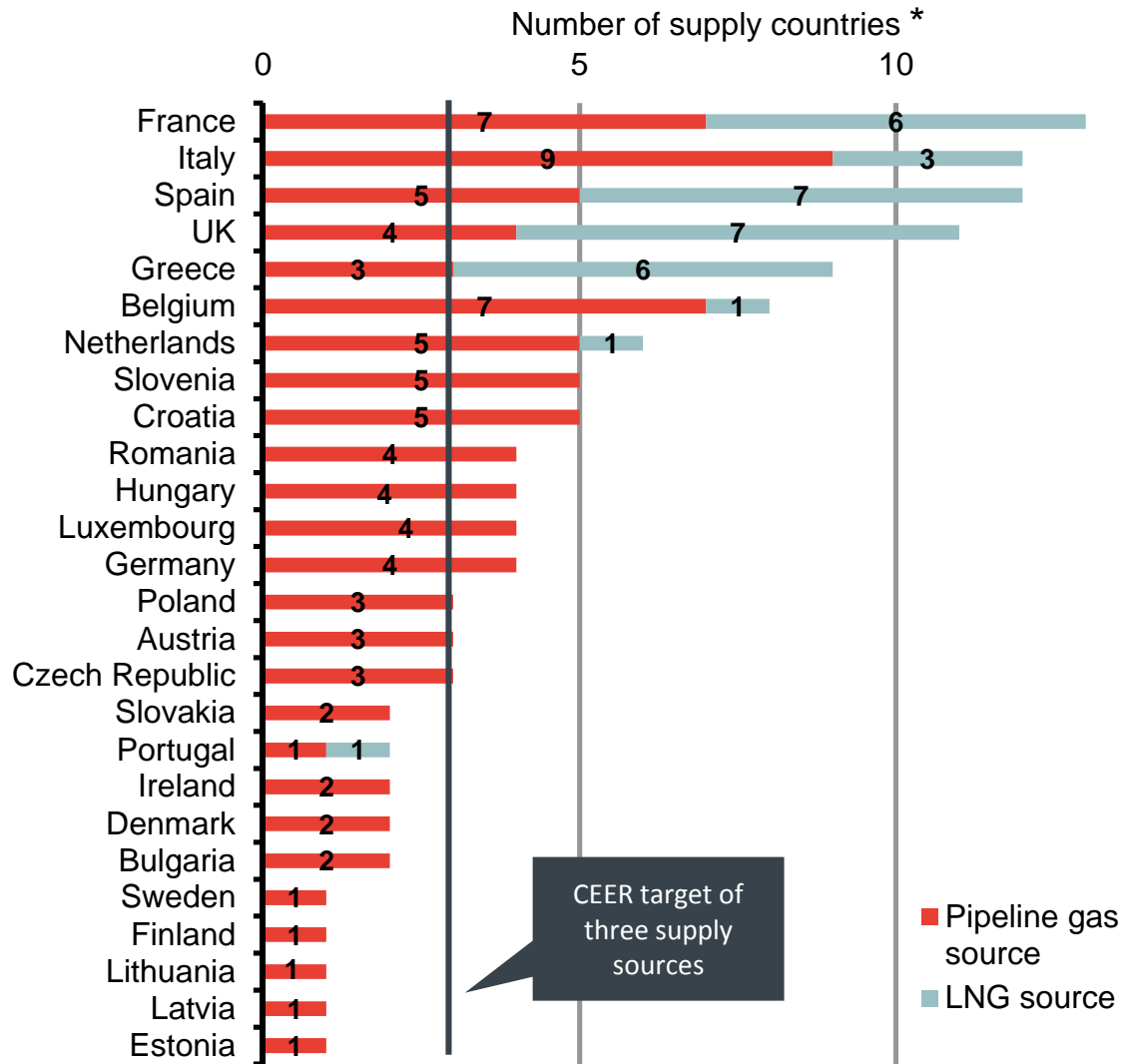
Source: Frontier based on BP, KEMA E/E Study

Conclusion

- On member state level, only six member states with > 20 bcm gas demand (currently seven market zones > 20 bcm as two German zones)
- Cross-border market zones required if large demand in each market zone required for competition

Pluralism of supply sources

We interpret the number of „supply sources“ as the number of countries imports are originating from



CEER target of three supply sources

■ Pipeline gas source
■ LNG source

Conclusion

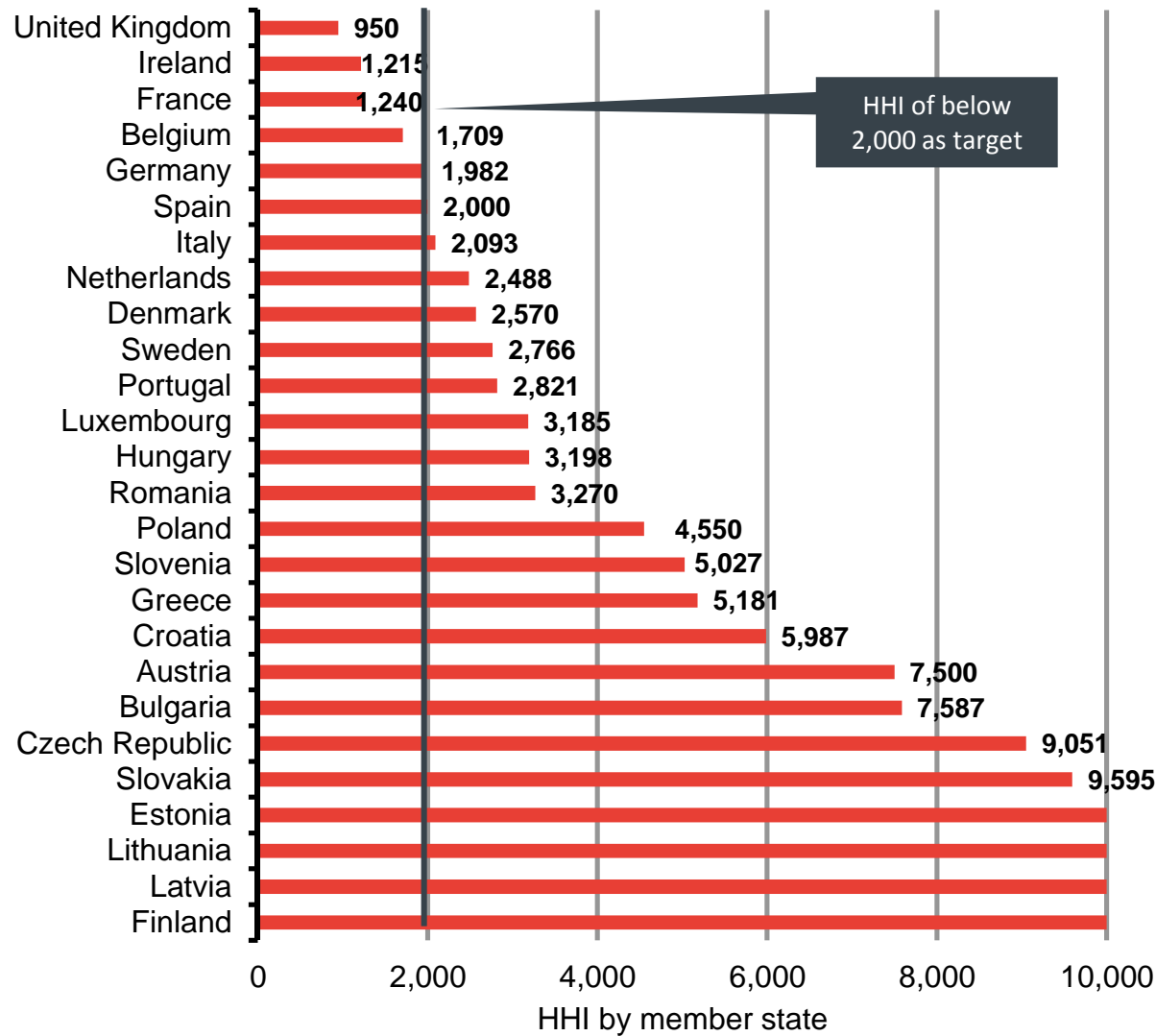
- 10 member states (with gas markets) do not meet target of three supply sources on “country level”
- LNG as significant source of diversity (top 6 member states have LNG import facilities)
- But number of sources does not allow any conclusion on market power of individual suppliers, market structure, and potential competition (one or two sources may dominate in a given country)

Source: Frontier based on Eurostat

13 * Not number of entities bringing natural gas into the country

HHI

Based on energy measured by firm



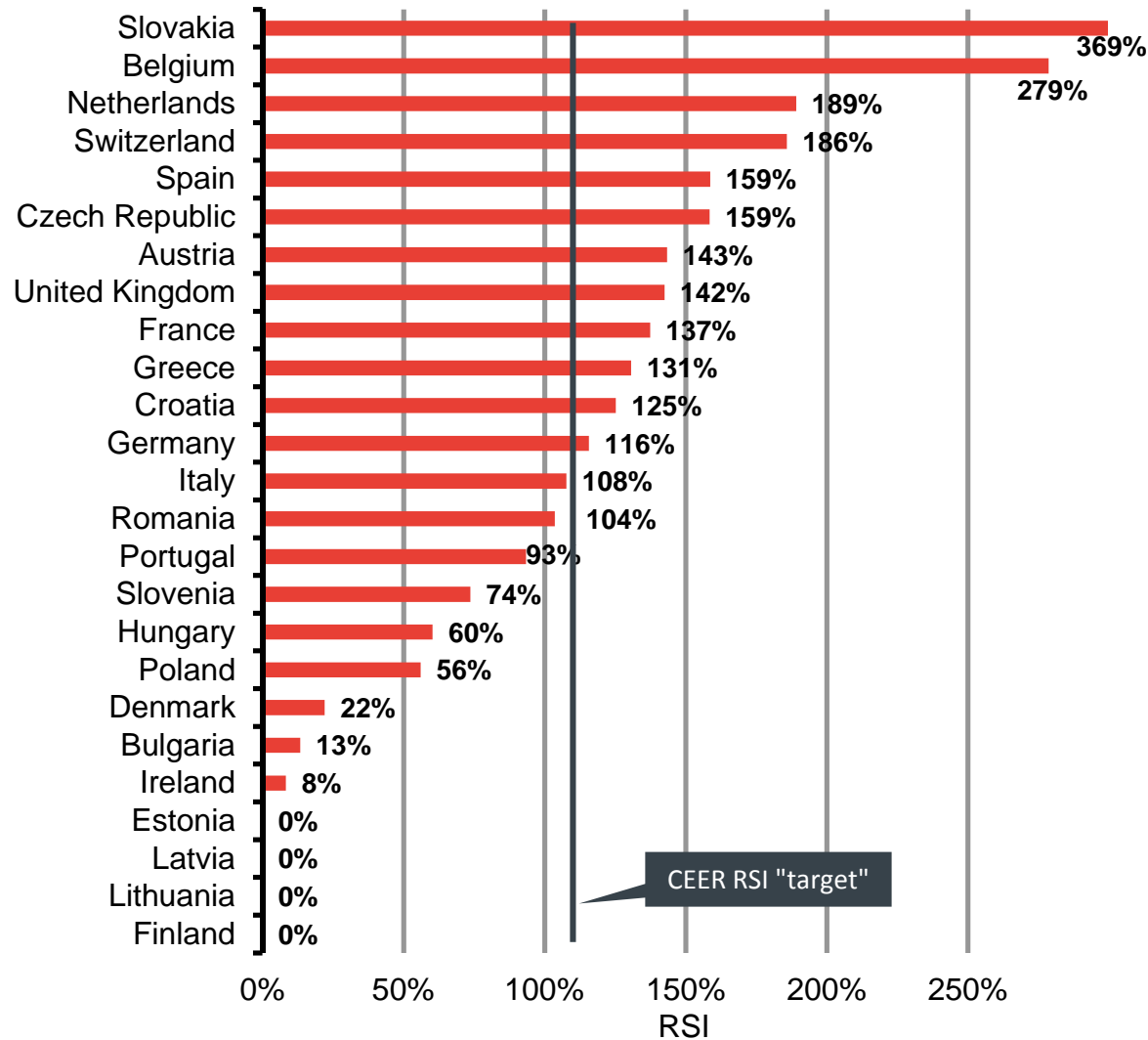
Conclusion

- Six member states with sufficiently diversified supply on a firm level to meet GTM1 target of HHI < 2000 – mainly large markets in Western Europe
- Single supplier in four member states
- But also HHI does not allow full conclusion on level of competition as it ignores potential competition
- E.g. Czech gas market may in reality not be less competitive than Bulgarian market because of potential competition from Germany

RSI

RSI = 100* supply capacity (n-largest)/demand

Based on border capacity/
domestic production

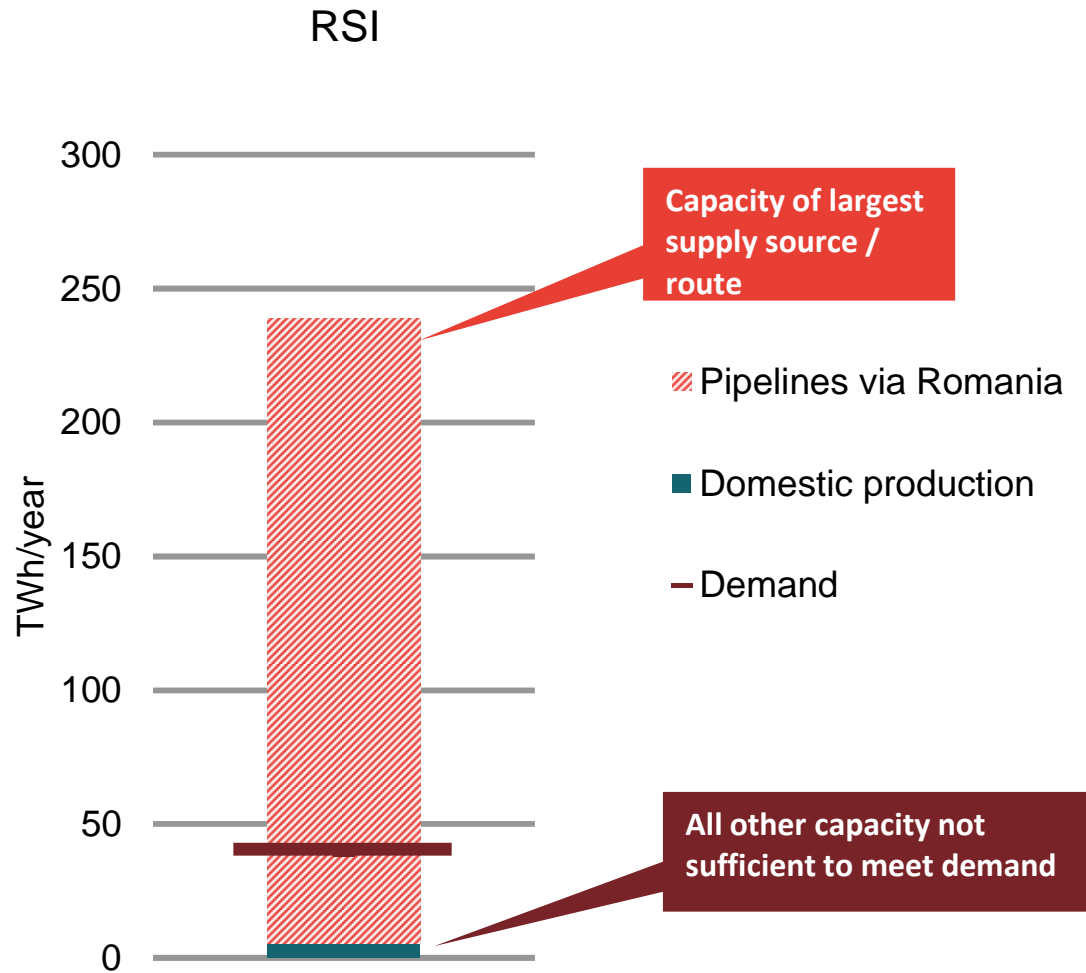


Conclusion

- 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 on itself has limitations: Focus on capacity (ignores competitive situation on other side of an IP)
- RSI may also be helpful in combination with HHI

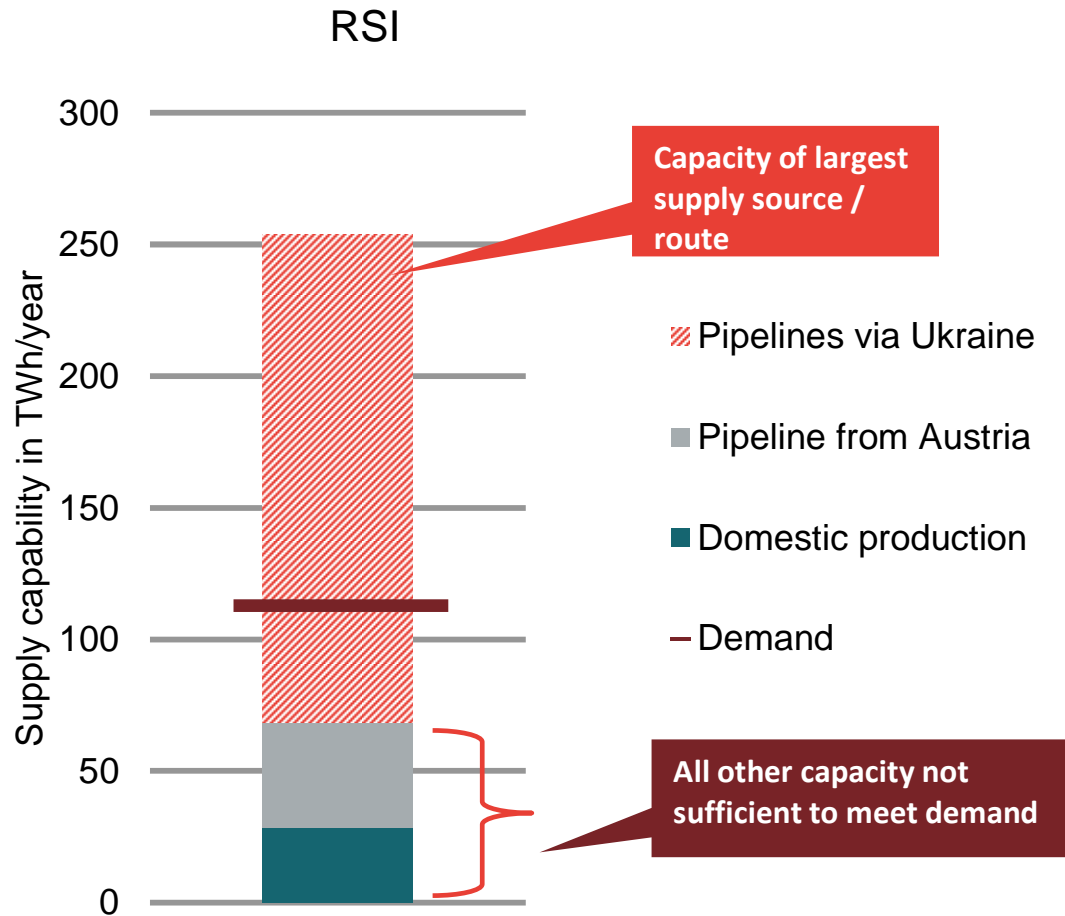
See methodological
comments earlier

Country specific results: Bulgaria



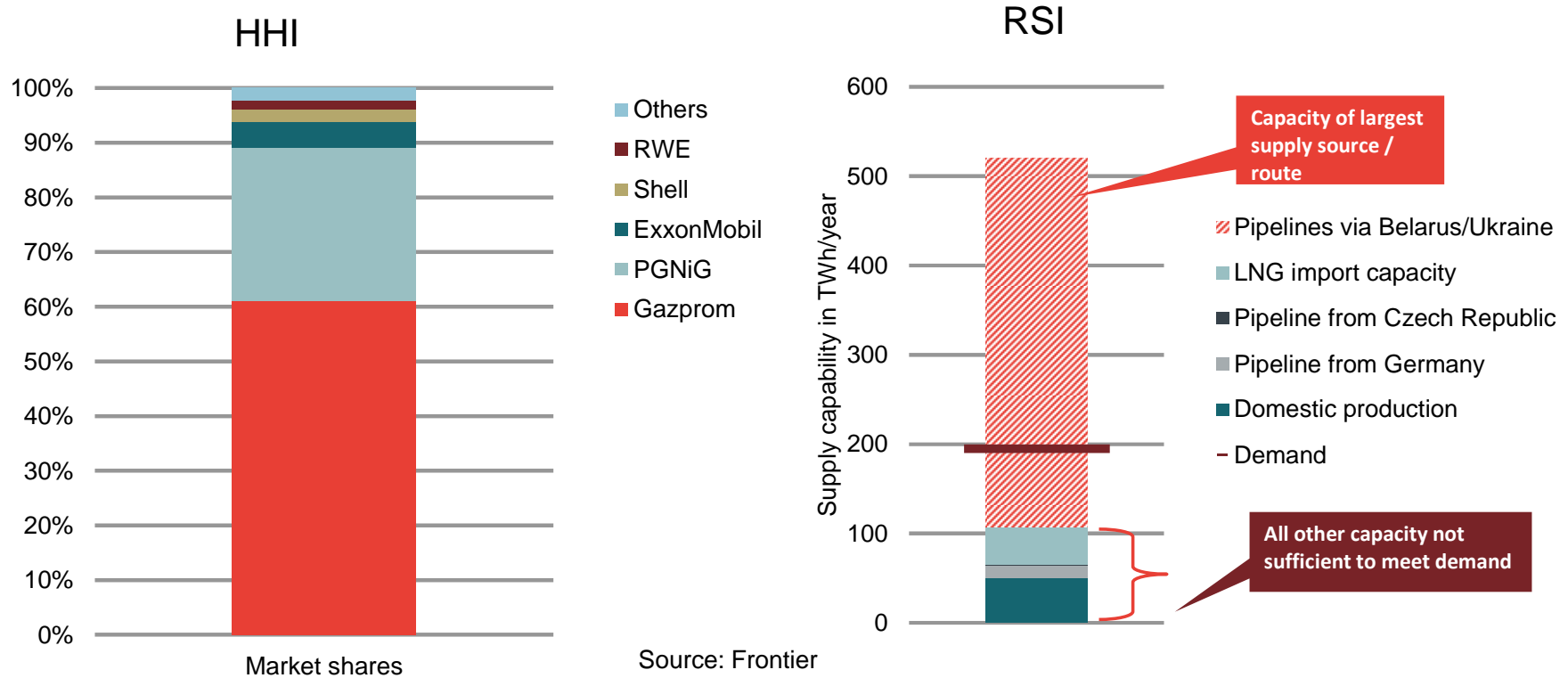
- Large dependence on one import source and route
- Only domestic production is an alternative
- RSI of 13 % → 87 % of demand cannot be replaced

Country specific results: Hungary



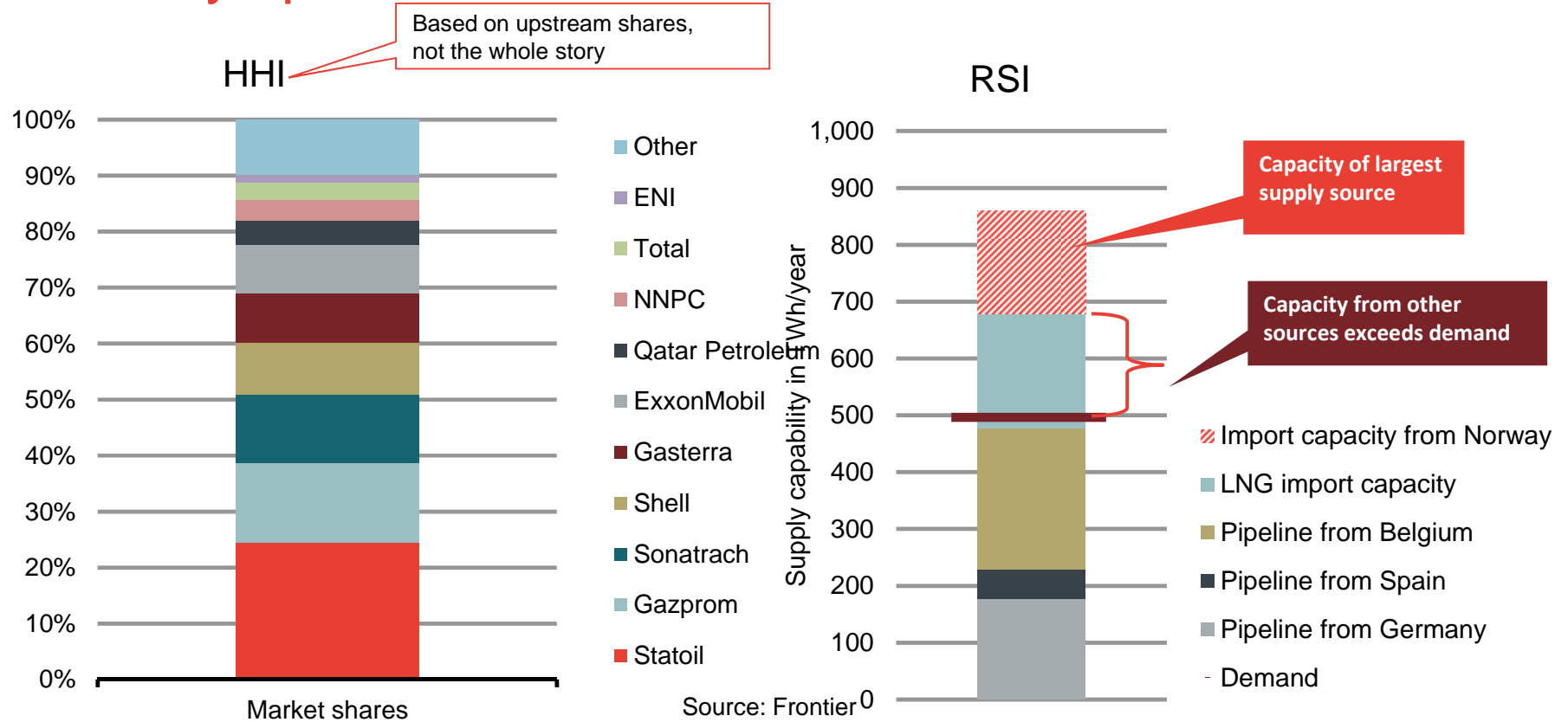
- Large dependence on one import source and route
- Only import route from Austria as an alternative (and domestic production), but cannot replace Russian imports even if capacity can be fully filled with gas
- RSI of 60 % \rightarrow 40 % of demand cannot be replaced

Country specific results: Poland



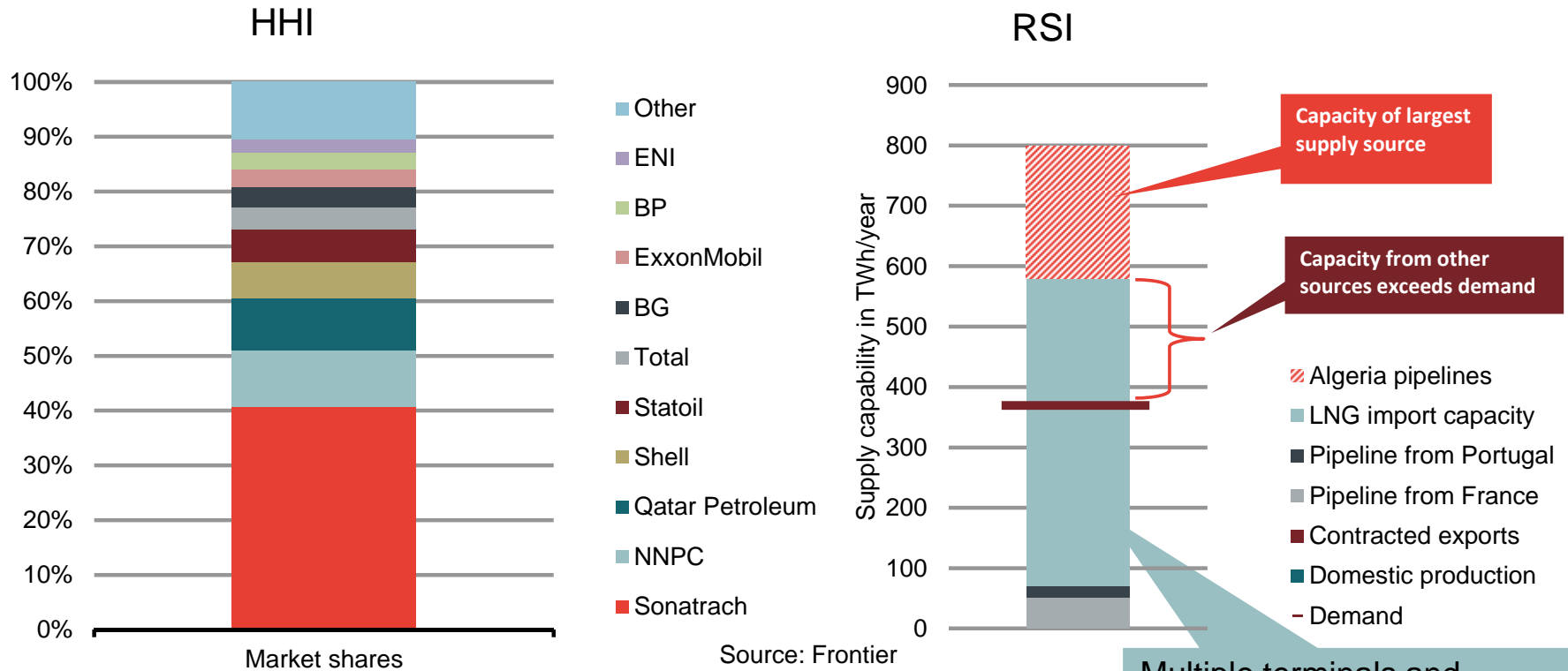
- HHI of 4,550
 - Gazprom with about 60 % market share
 - Domestic production as second largest supply
 - RSI of 56 %
 - 44 % of demand cannot be replaced, LNG terminal operational as of 2014 already taken into account
- We are still researching supply firms

Country specific results: France



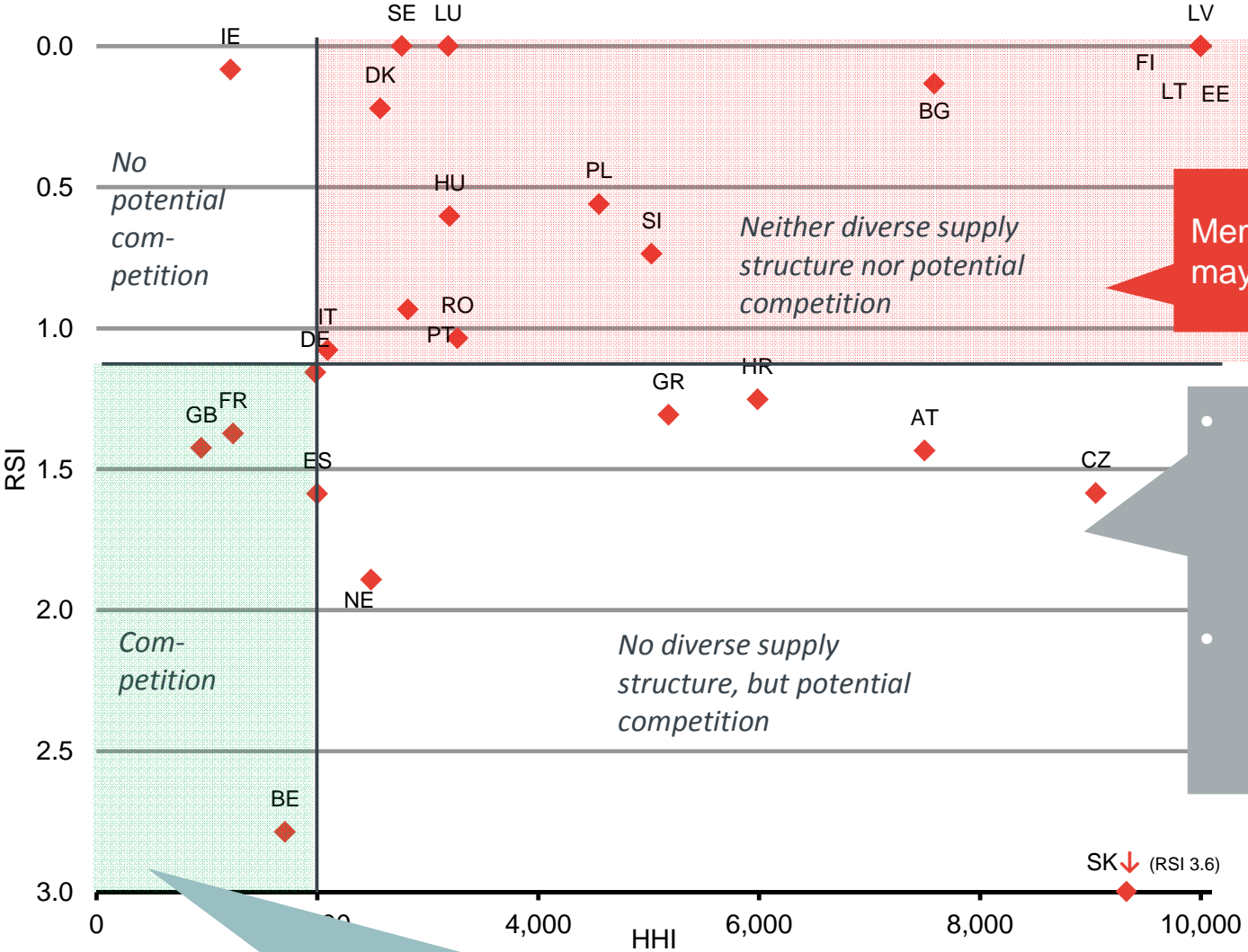
- HHI of < 1,300
 - Diversified supply because of LNG and multiple upstream pipeline suppliers
- RSI of 137 %
 - Significant pipeline capacities from NO, DE, BE and ES plus LNG import terminals allow replacing each individual supply route

Country specific results: Spain



- HHI of approx. 2,000
 - Diversified supply because of LNG
- RSI of 159 %
 - Especially spare LNG import capacity allows replacing pipeline supplies from Algeria, but Spain very exposed to global LNG prices

RSI and HHI index



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

Overall results for discussion

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, Netherlands and Belgium close to meeting all criteria
- Hub liquidity an issue in DE, IT, FR, ES
- French market separated into too many zones
- Italy very dependent on two large sources
- Germany 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

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Conclusion

Large western European gas markets

- Except UK and NL, liquidity below target churn rate and uncertainty regarding further evolution of liquidity
- But existing and transparent gas trading in large market zones
- Pluralism of supply sources, also thanks 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 without transparent hub trading and – according to CEER criteria – relatively small to develop into competitive wholesale markets
- Often high concentration on the supply side
- Potential competition in some Central European member states
- But often large reliance on largest supplier, i.e. Gazprom
- **Lack of competition in smaller member states should not be ignored**



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