Vienna Forum on European Energy Law

Pipelines between economics, law and diplomacy

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AGENDA

- Development of the gas demand supply balance in Europe
- Development of the indigenous gas production
- Major sources and routes for gas imports
- Prerequisites for gas corridors
- Diversification and market liquidity

Gas demand / Supply Europe
actual and forecast

- **Gas demand / supply scenario for Europe [1)]**

	2013	2014 [5)]	2020	2025
Gas Demand Europe [2)]	460	423	455	465
European Gas Production [3)]	264	250	210 [4)]	200 [4)]
Gas Imports Europe	**196**	**177**	**245**	**265**
Pipeline imports Russian Gas	129	119	140	150
Pipeline imports North Africa	28	27	25	25
Pipeline imports Caspian Gas	0	0	10	10
LNG imports [6)]	39	34	70	80

Notes:
1) Data Source IHS Cera
2) Excluding Ukraine (40 bcma), Belarus (20 bcma) and Turkey (47 bcma)
3) Including Norway (LNG exports 4 / 5,5 bcma (2013/2014) and are excluded for European Demand-Supply calculation)
4) Assuming a significant reduction of Groningen field (NL)
5) Gas Consumption in 2014 was significantly lower and shall therefore not be used as reference case
6) Actual LNG regasification capacity 208 bcma, additional 23 bcma are under construction and additional 170 bcma are planned

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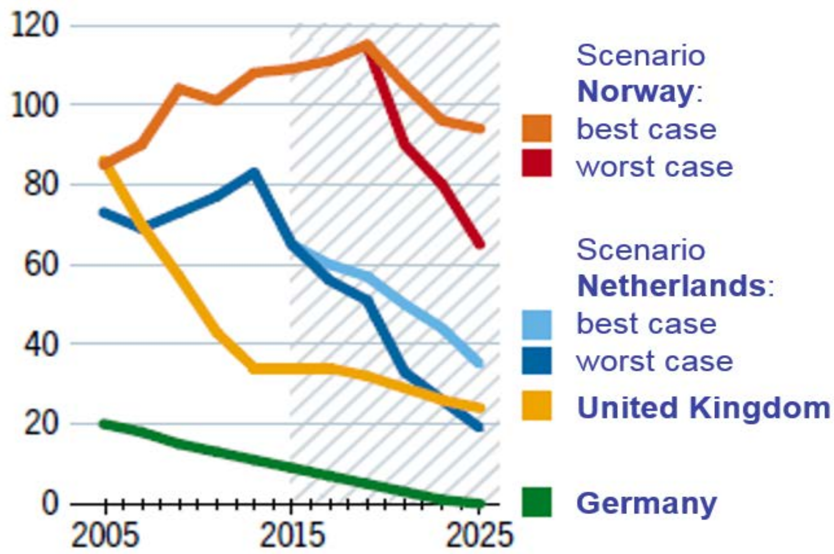
Development of European Gas Production

Depleting Reserves in Norway, the Netherlands, the UK and Germany

Drop in gas production in North-Western Europe in billion cubic metres



- **Norwegian** production is currently at its peak, but is projected to drop in the coming years again, owing to depletion of major fields. 2035 forecasts on export potential by IHS see the EU receiving about 73 bcm, at least 24bcm less than currently
- **Dutch** production is dropping, as major fields in populated areas face issues of seismicity and production caps. IHS sees NL production drop to around 20bcm by 2035 (from currently 60-70bcm)
- **UK** production projected to drop by up to 25 bcm until 2030, leaving UK with under 10 bcm from its continental shelf
- **German** production has halved in the last decade and is projected to drop further, with reserves (as of 2015) of under 90 bcm – which would deplete within 10 years at current rate

Source: Wirtschafts Woche, 17 February 2015, for graph; National Grid Future Energy Scenarios July 2015 for UK outlook, IHS Energy Long-Term Supply and Demand Outlooks to 2040, July 2015 for NL and NO outlook, LBEG for DE reserve outlook.

Further drivers for EU production decline: protracted low-oil-price phase will slow E&P in the North Sea, further seismicity in NL fields could drive import needs, high uncertainty in shale gas development

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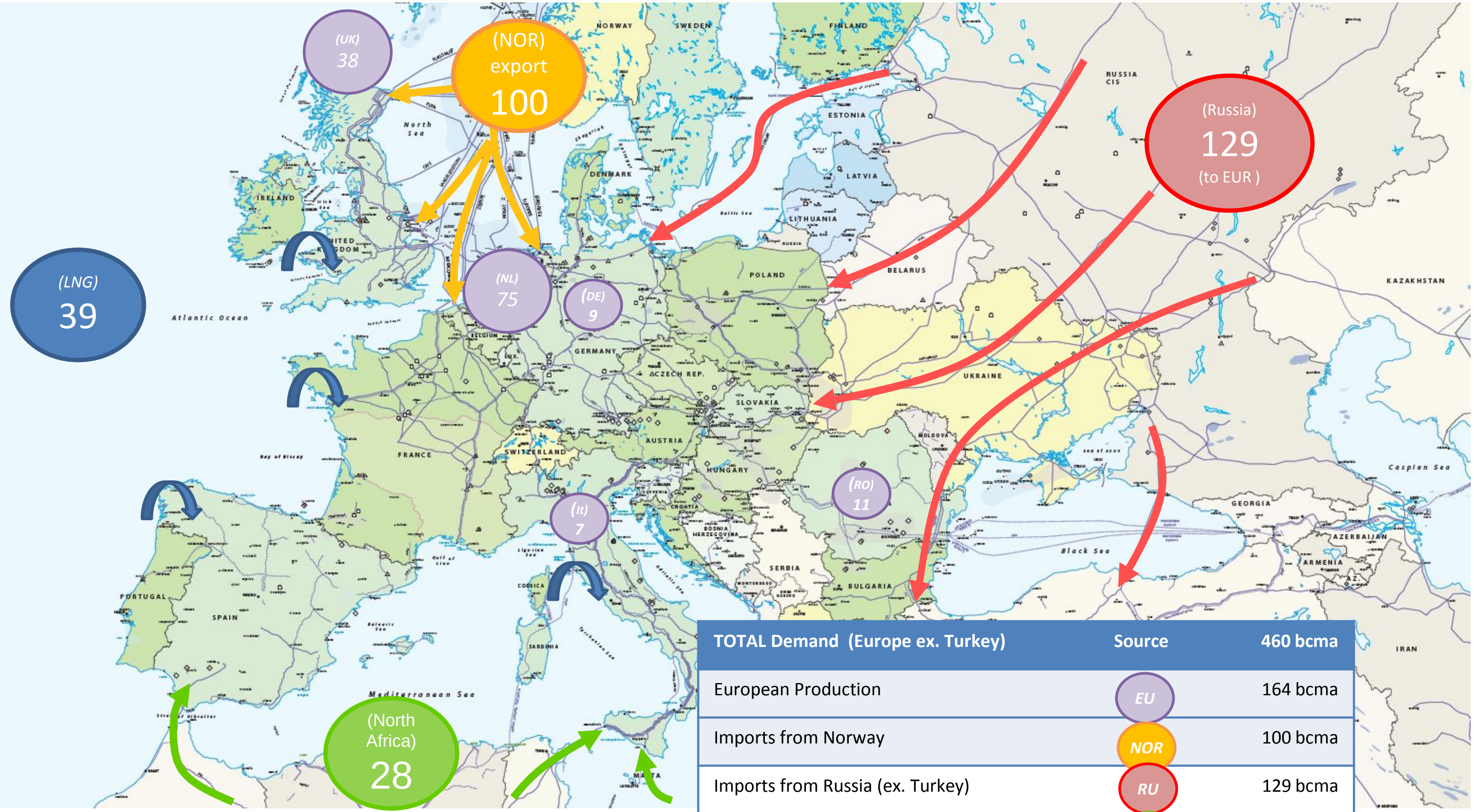
Evaluate/anticipate future gas flows

Gas supply routes to Europe (2013)



TOTAL Demand (Europe ex. Turkey)	Source	460 bcma
European Production	EU	164 bcma
Imports from Norway	NOR	100 bcma
Imports from Russia (ex. Turkey)	RU	129 bcma
Import from North Africa (Alg, Lybia)	Afr	28 bcma
Imports from LNG	LNG	39 bcma

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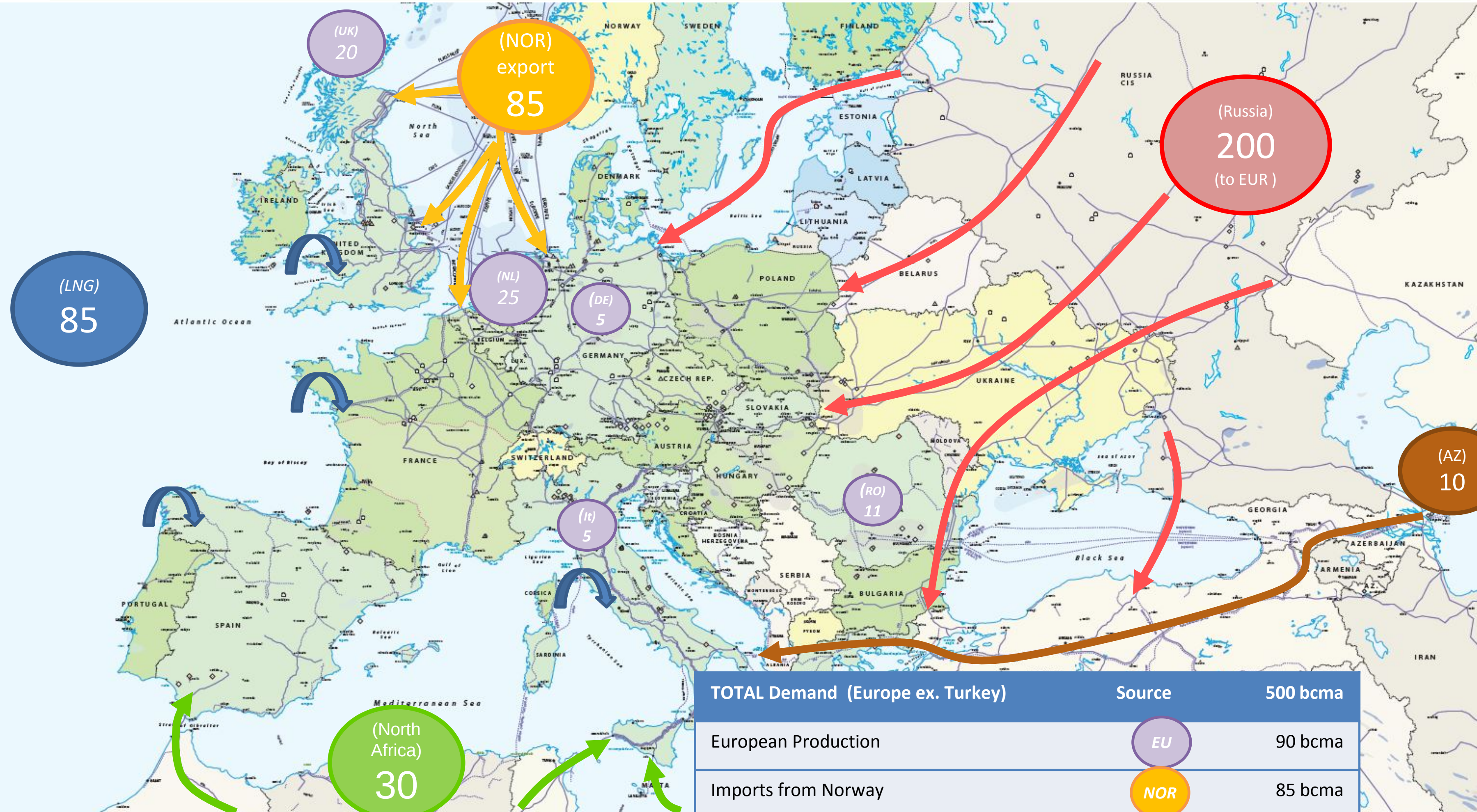
Evaluate/anticipate future gas flows

Gas supply routes to Europe (2030)



TOTAL Demand (Europe ex. Turkey)	Source	500 bcma
European Production	EU	90 bcma
Imports from Norway	NOR	85 bcma
Imports from Russia (ex. Turkey)	RU	200 bcma
Import from North Africa (Alg, Lybia) plus Caspian	Afr AZ	40 bcma
Imports from LNG	LNG	85 bcma

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Prerequisites for gas corridors

- Commerciality / Bankability
- Reliable gas source
- Reliable, predictable transit conditions
- Connection to liquid gas hubs
- Transparent, predictable and synchronized legal framework
- Credible partners

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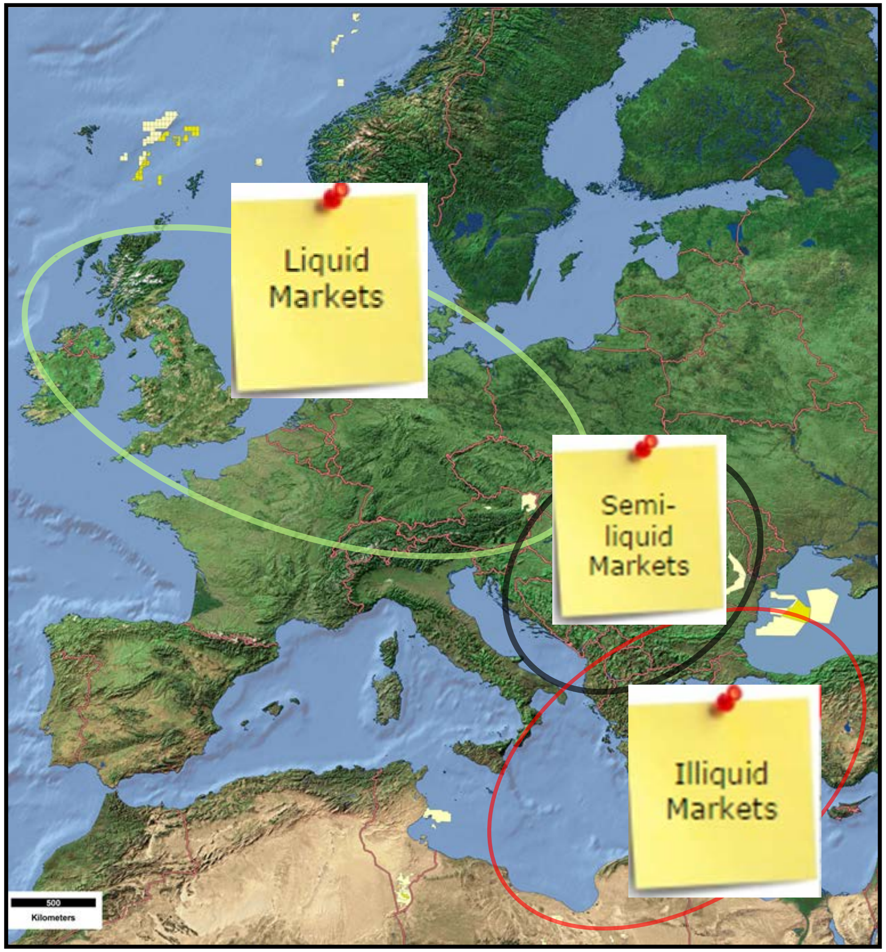
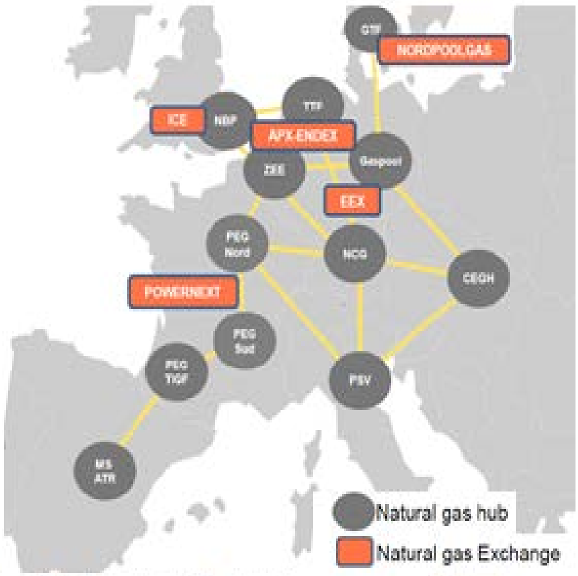
Diversification and market liquidity



Logistics Node Baumgarten and CEGH as the anchor points for the opening of the SEE markets

Liquidity and market size is critical



Source Slide; Patrick Heather Consulting Ltd

Annual gas consumption	
Bulgaria	2.4 bcm/a
Croatia	2.3 bcm/a
Serbia	2.5 bcm/a
Hungary	8.6 bcm/a
Romania	11.6 bcm/a

Figures 2014