

# NORD STREAM 2: ÉLÉMENTS D'ANALYSE ÉCONOMIQUE ET GÉOPOLITIQUE

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## OUTLINE

- I - Background information
- II - On going economic issues and possible remedies
- III – Avenues for future research

# I - BACKGROUND INFORMATION ON NORD STREAM 2

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# RUSSIA-EUROPE-USA INTERACTIONS ON NATURAL GAS

## A NEW EPISODE IN A LONG SOAP OPERA...

### Historical milestones

- 1970: Willy Brandt's "**Ostpolitik with Pipes**"

The deal between Thyssen AG and Mannesmann AG aimed at supplying the U.S.S.R. with the steel pipes needed to monetize the Urengoy gas field.

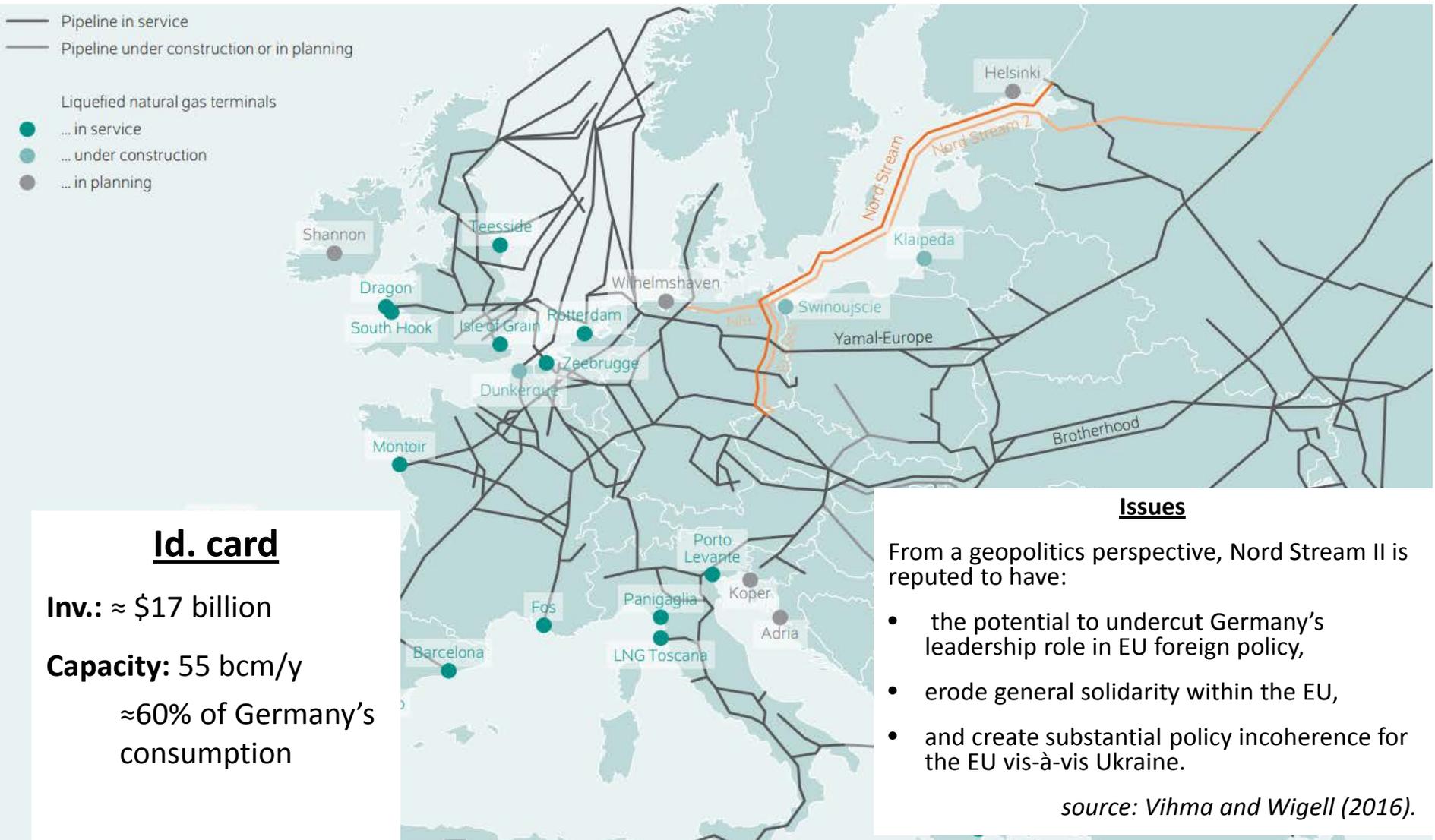
- 1980s: the EEC-USA disputes on gas imports from the U.S.S.R.

- 1993: The "Wingas" deal

Gazprom granted Wintershall the exclusivity of the Yamal-Europe deliveries.

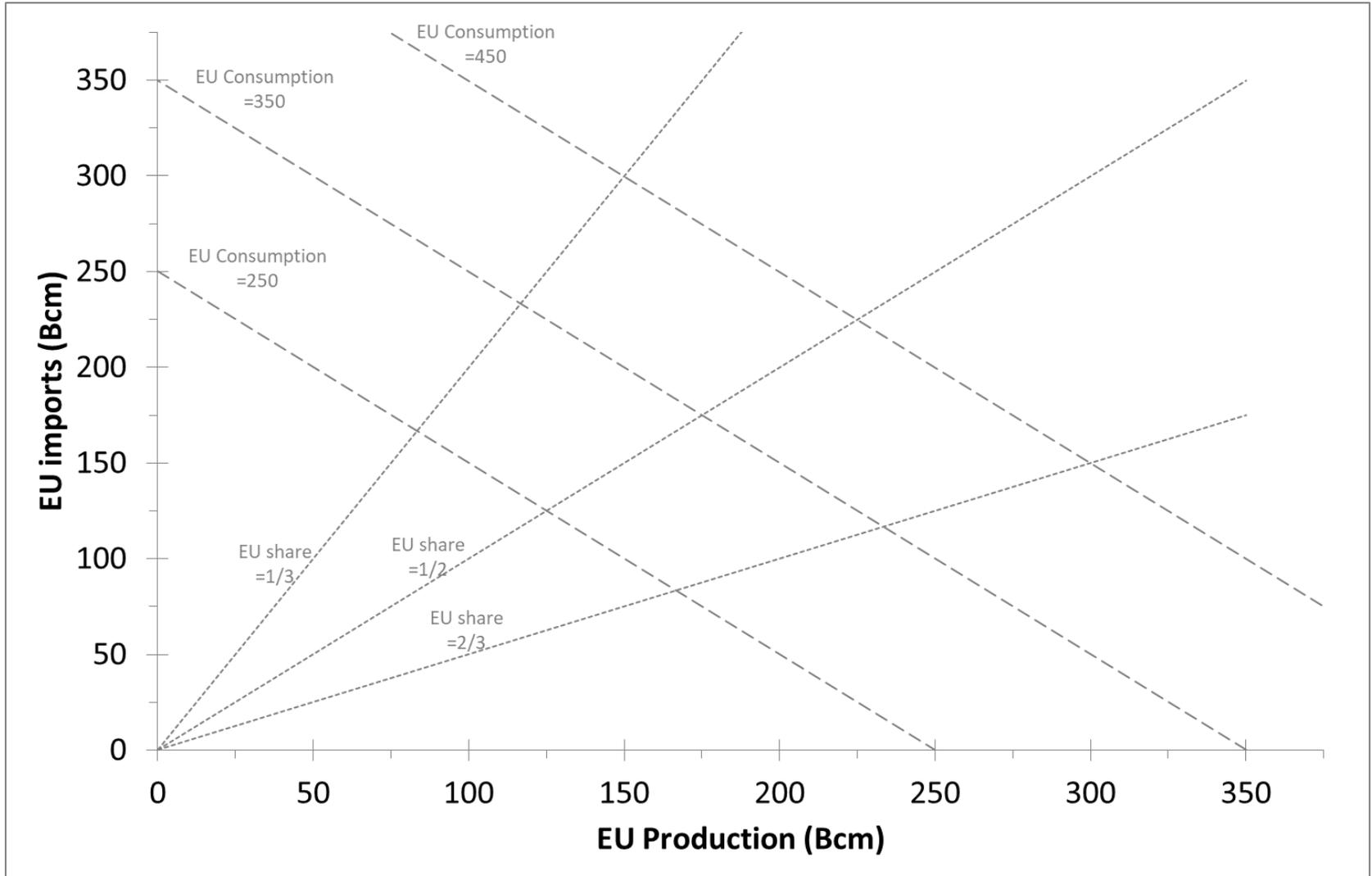
- Jan 2006, Jan. 2009: The Russia-Ukraine gas disputes

# THE PROJECT

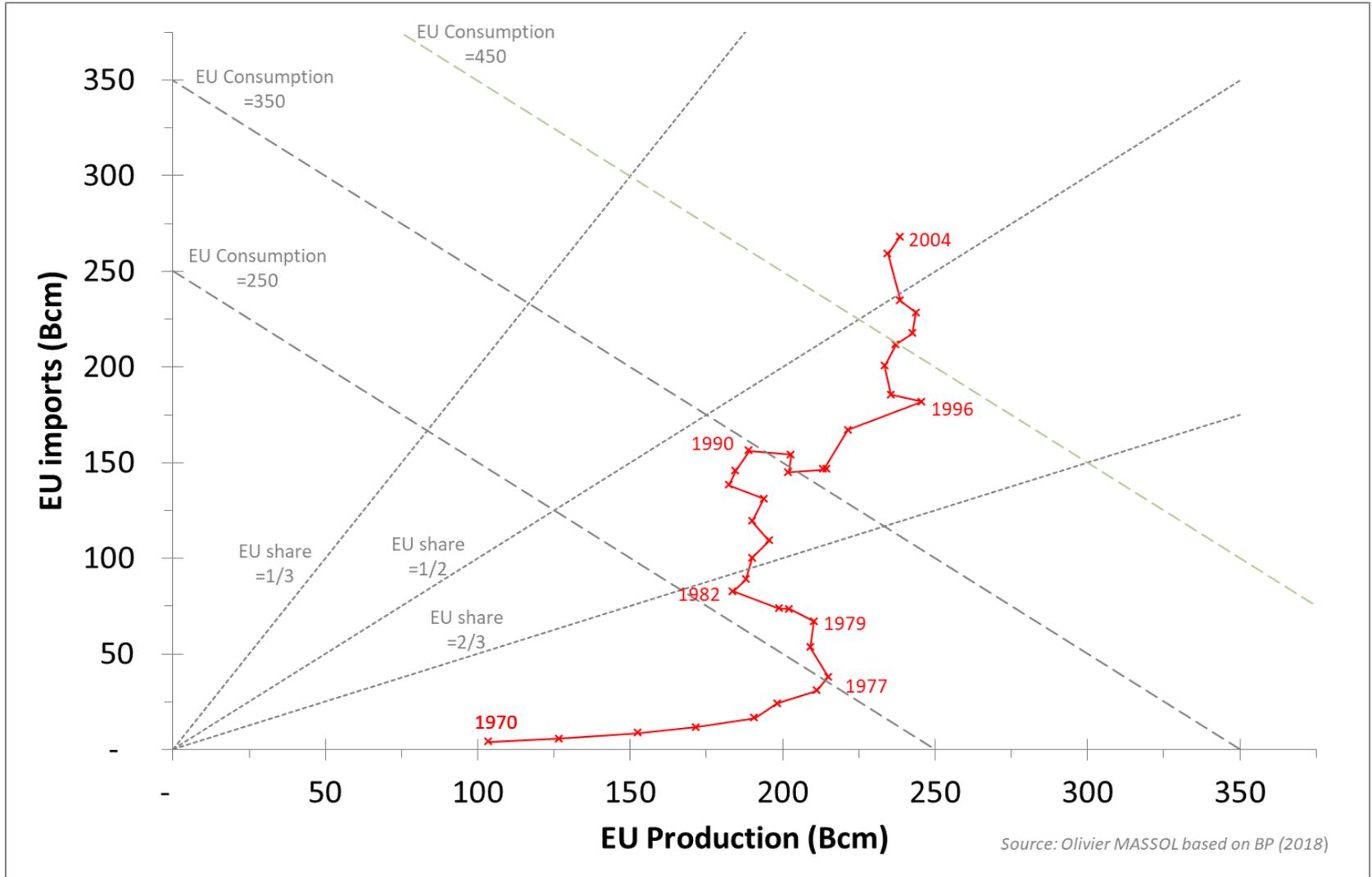


Source: DIW (2018)

# EU'S GAS DEPENDENCY

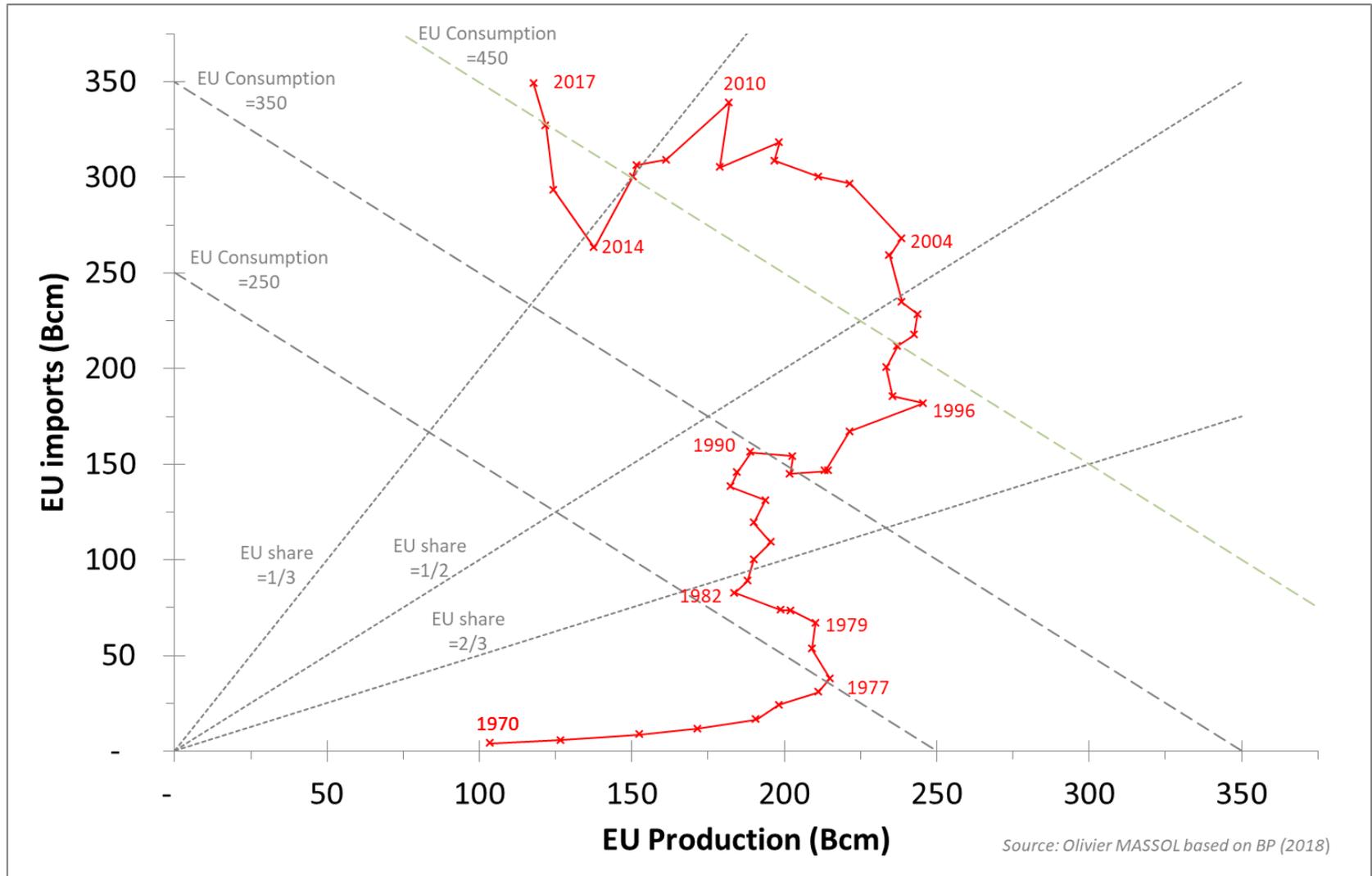


# EU'S GAS DEPENDENCY

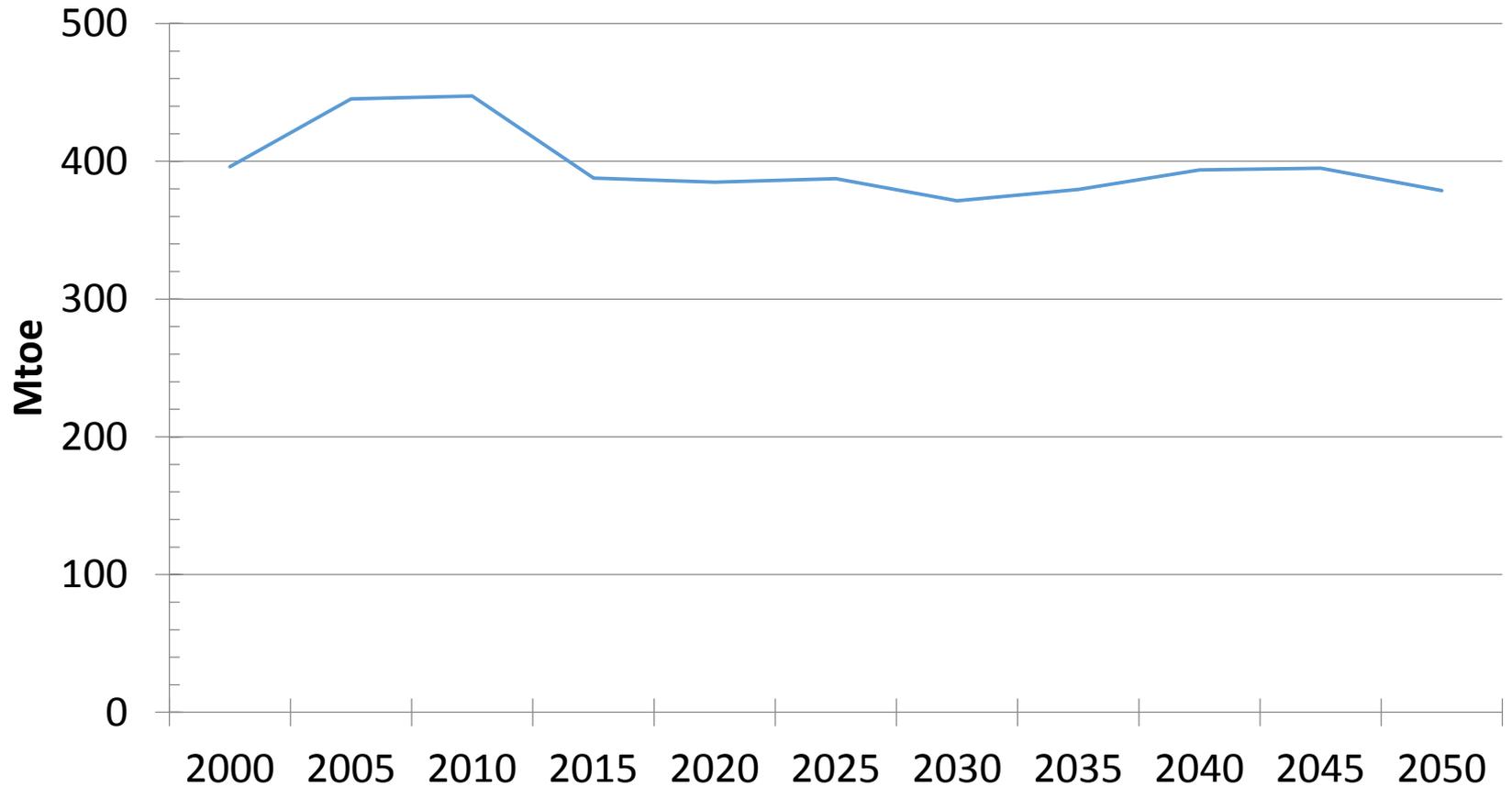


# EU'S GAS DEPENDENCY

**2017 Russian imports:**  
to the EU: **159 bcm** (i.e. 34% of C)  
To Germany: **48.5 bcm** (i.e., 48.5% of C)



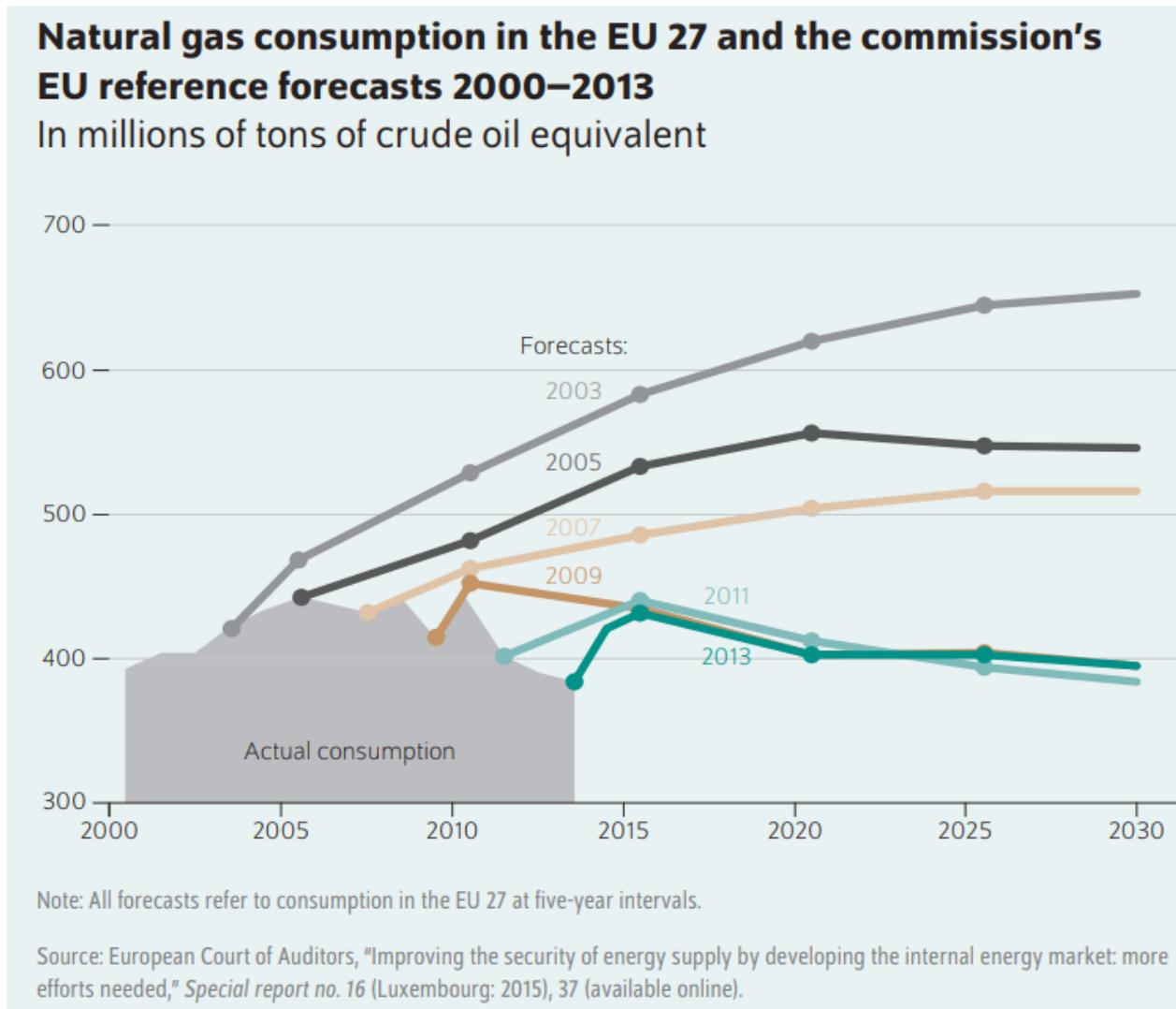
## EU Natural Gas Consumption



Source : EU Reference Scenario 2016

## EU DEMAND UNCERTAINTIES (1/2)

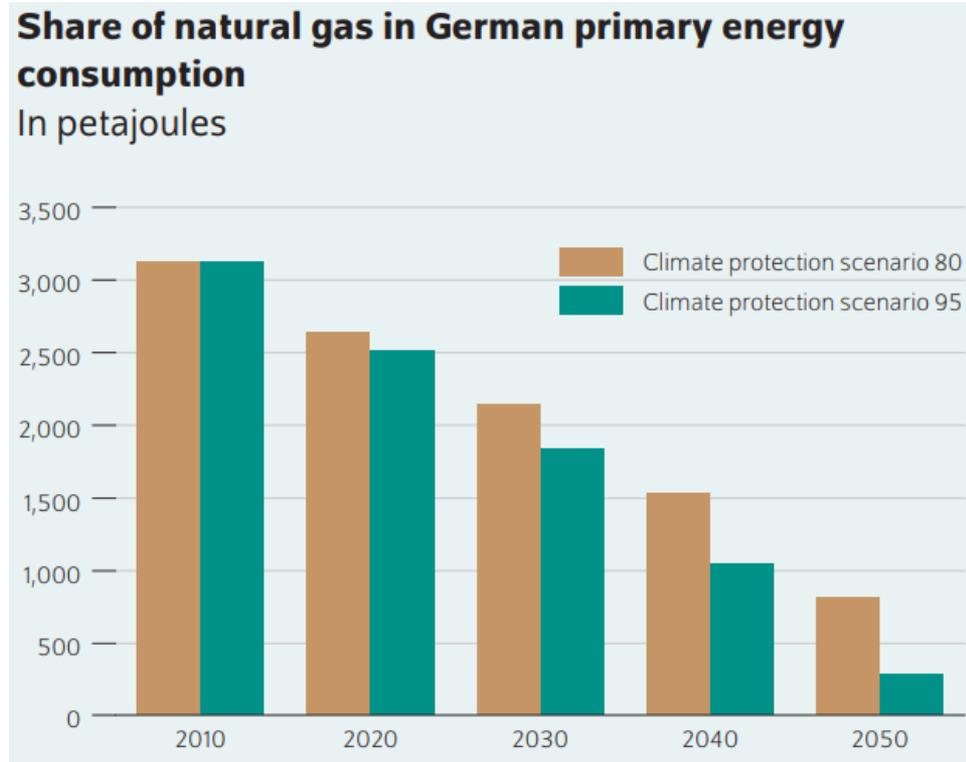
The EU Reference Scenario overestimates the magnitude of future gas demand



# GAS DEMAND UNCERTAINTIES (2/2)

## The Future of Natural Gas: three opposed theses

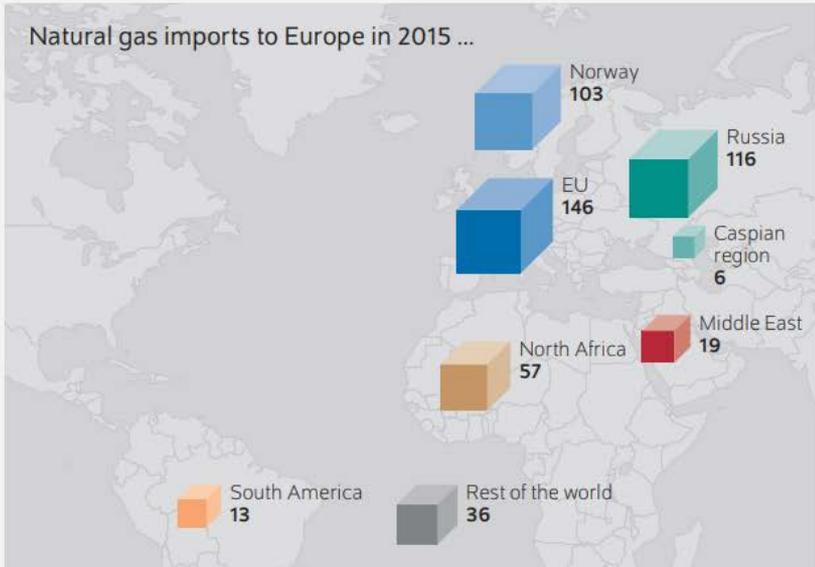
1. Gas as a **backup fuel** (Jacoby, 2011; Helm, 2012)
2. Gas as a **bridge fuel** (Committee on Climate Change, 2012)
3. Gas **phased out** (Aghion et al., 2014; Holz et al., 2016)



Source: Öko Institut (2015): Klimaschutzszenarien 2050. 2. Endbericht, Berlin.

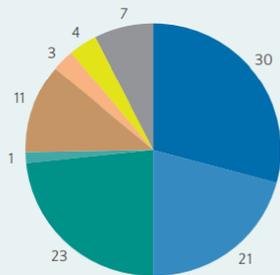
# WHAT SUPPLIES ABSENT NORD STREAM 2?

The natural gas supply to Germany and Europe is diversified and secure without the planned pipeline from Russia to Germany (Nord Stream 2)



Source: DIW Berlin calculations using the Global Gas Model (Holz et al., 2017).

Natural gas imports to Europe (in percent)



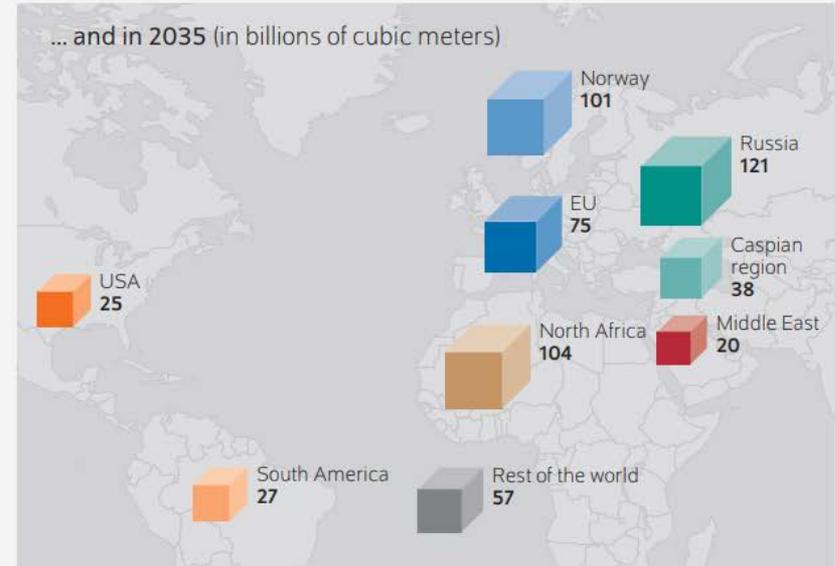
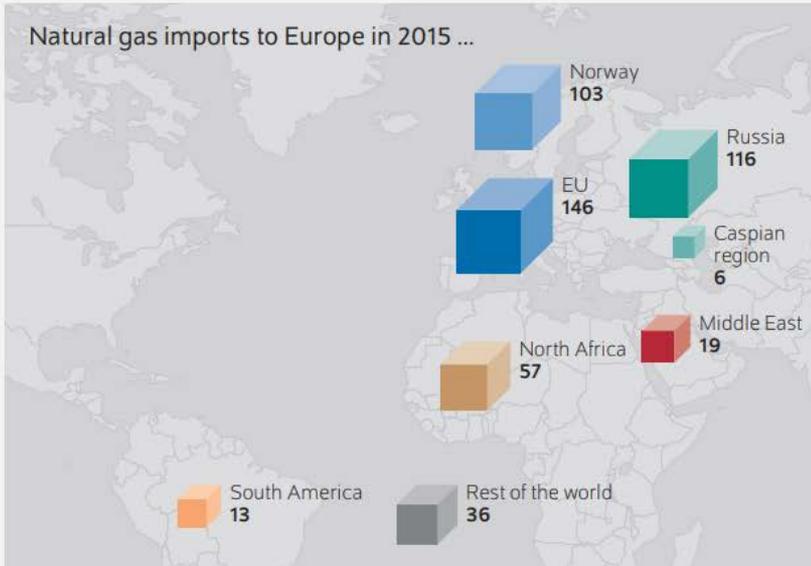
2015



Source: DIW Berlin calculations using the Global Gas Model (Holz et al., 2017).

# WHAT SUPPLIES ABSENT NORD STREAM 2?

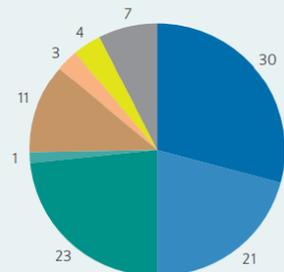
The natural gas supply to Germany and Europe is diversified and secure without the planned pipeline from Russia to Germany (Nord Stream 2)



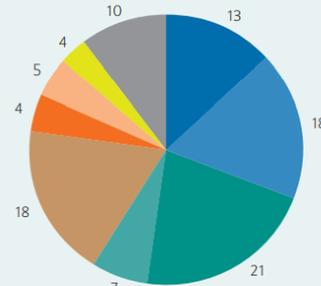
Source: DIW Berlin calculations using the Global Gas Model (Holz et al., 2017).

© DIW Berlin 2018

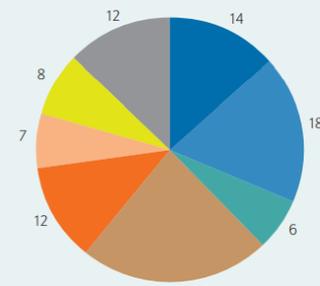
Natural gas imports to Europe (in percent)



2015



2035



2035 – without Russia



Source: DIW Berlin calculations using the Global Gas Model (Holz et al., 2017).

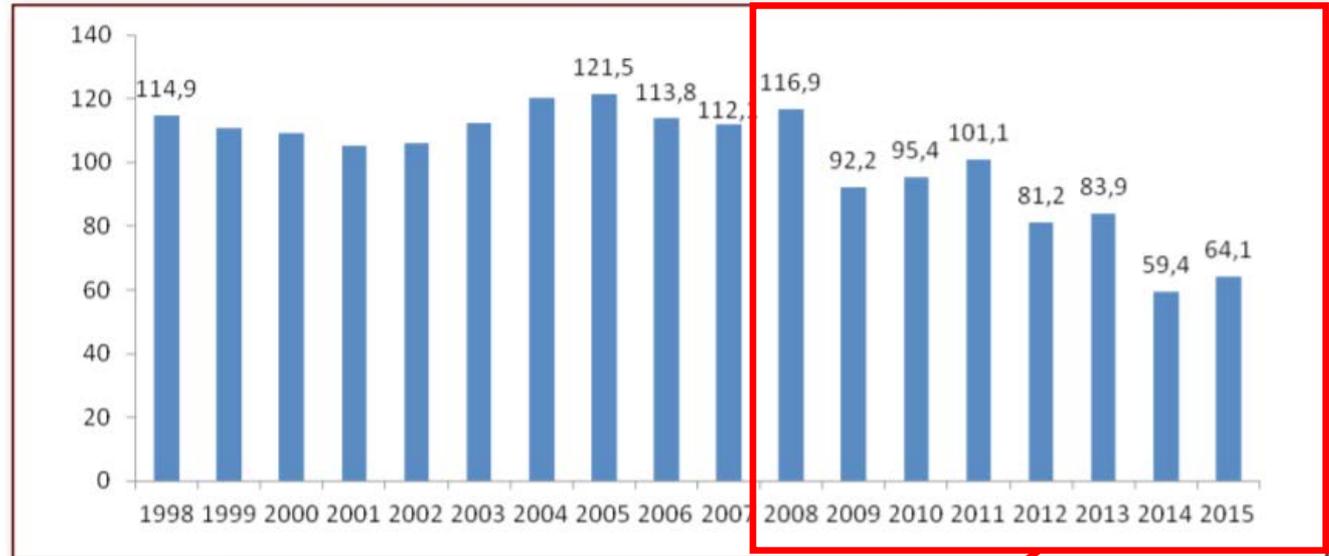
# II - ON GOING ECONOMIC ISSUES AND POSSIBLE REMEDIES

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## A – ADVERSE IMPACTS ON UKRAINE

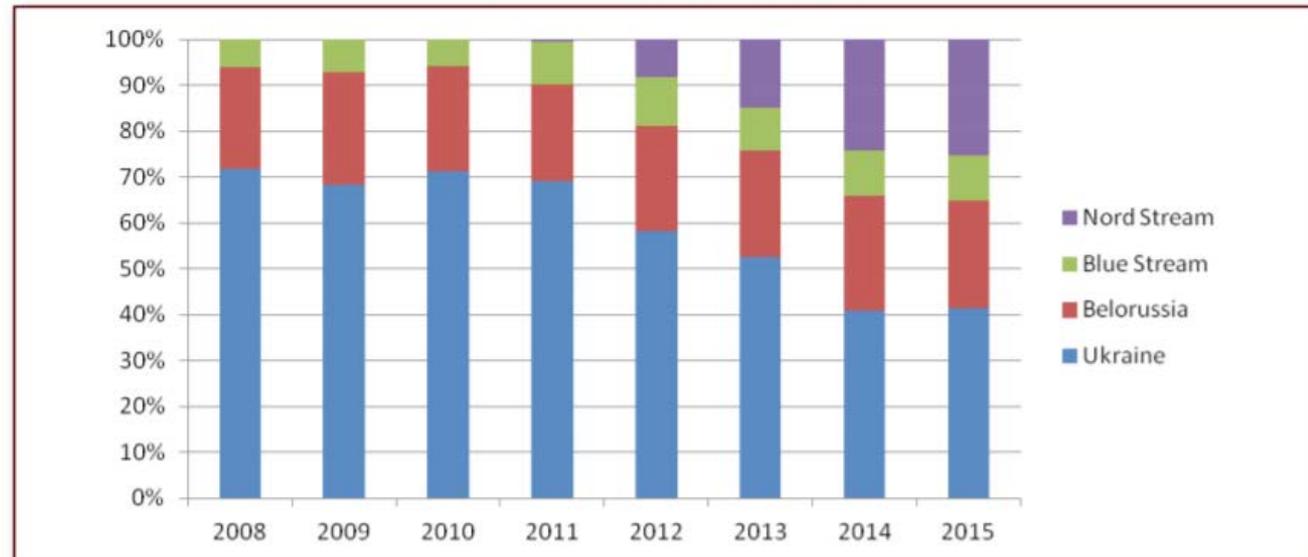
# IMPACTS ON UKRAINE

Transit of Russian gas via Ukraine to Europe and Turkey, bcm



Source: Naftogaz of Ukraine

Russian gas exports to Europe (exc. Baltic States and Finland) and Turkey by route, %



Source: Naftogaz of Ukraine, Eustream, Gazprom, ENTSO-G

# BYPASSING UKRAINE

## INSIGHTS FROM PAST ANALYSES

### ● Yamal Europe

**von Hirschhausen, C. et al. (EJ, 2006) Transporting Russian Gas to Western Europe — A Simulation Analysis**

- An early game theoretic approach to analyze the situation where the transit country has significant bargaining power because it controls the essential facility.
  - Producers determine the price, while importers react by choosing quantities while transit countries respond by setting the transit fee

### ● **Results:**

- **When Ukraine was the exclusive transit country, it was unnecessary to think about behaving in a more cooperative way.**
- **When Russia opened the Yamal pipeline, Ukraine changed its strategy and entered into a cooperative agreement with Russia.**

**=> Question: Why Ukraine did not reach an agreement with Russia earlier in order to prevent the construction of the new pipeline?**

Possible explanations:

- Ukraine was too self-confident in its monopoly position,
- short-termism of Ukrainian politicians and gas industrialists,
- or the substantial distrust of many Ukrainian officials in Russia and the corresponding belief that setting up a cooperative profit sharing scheme is impossible.

# BYPASSING UKRAINE INSIGHTS FROM PAST ANALYSIS

## ● Nord Stream 1

Hubert and Ikonnikova  
(Journal of Industrial  
Economics, 2011)



Figure 1  
Transit Options to North-Western Europe

A cooperative game theoretic analysis to examine the power structure in the pipeline network for Russian gas.

TABLE 2  
RELATIVE SHAPLEY VALUE [%]

	status quo <sup>a</sup>	adding one option at a time				
		<i>Upgrade</i>	<i>Yamal 2</i>	<i>Bypass</i>	<i>Baltic</i>	<i>North</i>
Russia	57.1	57.8	60.3	59.2	58.7	79.7
Ukraine	31.8	32.5	22.2	23.5	29.1	15.1
Belarus	11.1	9.6	14.3	13.2	7.5	5.2
Poland	0	0	3.2	2.1	1.6	0
Slovakia	0	0	0	2.1	0	0
Lithuania	0	0	0	0	1.6	0
Latvia	0	0	0	0	1.6	0

# THE EU'S RESPONSE TO UKRAINE & SSE

## ● Fostering the development of interconnection & reverse flows capabilities

- Underlying idea: making Ukraine & SSE markets part of a broader economic zone
  - i.e., capable to dilute the market power that can be exerted by Gazprom.

- Important precondition for success:

$$0 \leq Q_{jit}, P_{it} - P_{jt} - T_{jit} - \xi_{jit} \leq 0 \text{ and } (P_{it} - P_{jt} - T_{jit} - \xi_{jit})Q_{jit} = 0 \quad (1)$$

$$0 \leq \xi_{jit}, Q_{jit} \leq K_{jit} \text{ and } (Q_{jit} - K_{jit})\xi_{jit} = 0, \quad (2)$$



Figure 7.3.5: 2020 Low UA disruption



Figure 7.3.6: 2030 Low UA disruption

Source : ENTSOG

# THE EU'S RESPONSE

## ● Fostering the development of reverse flows capabilities

- However, in case of **imperfect competition...**

e.g. a monopolistic arbitrageur

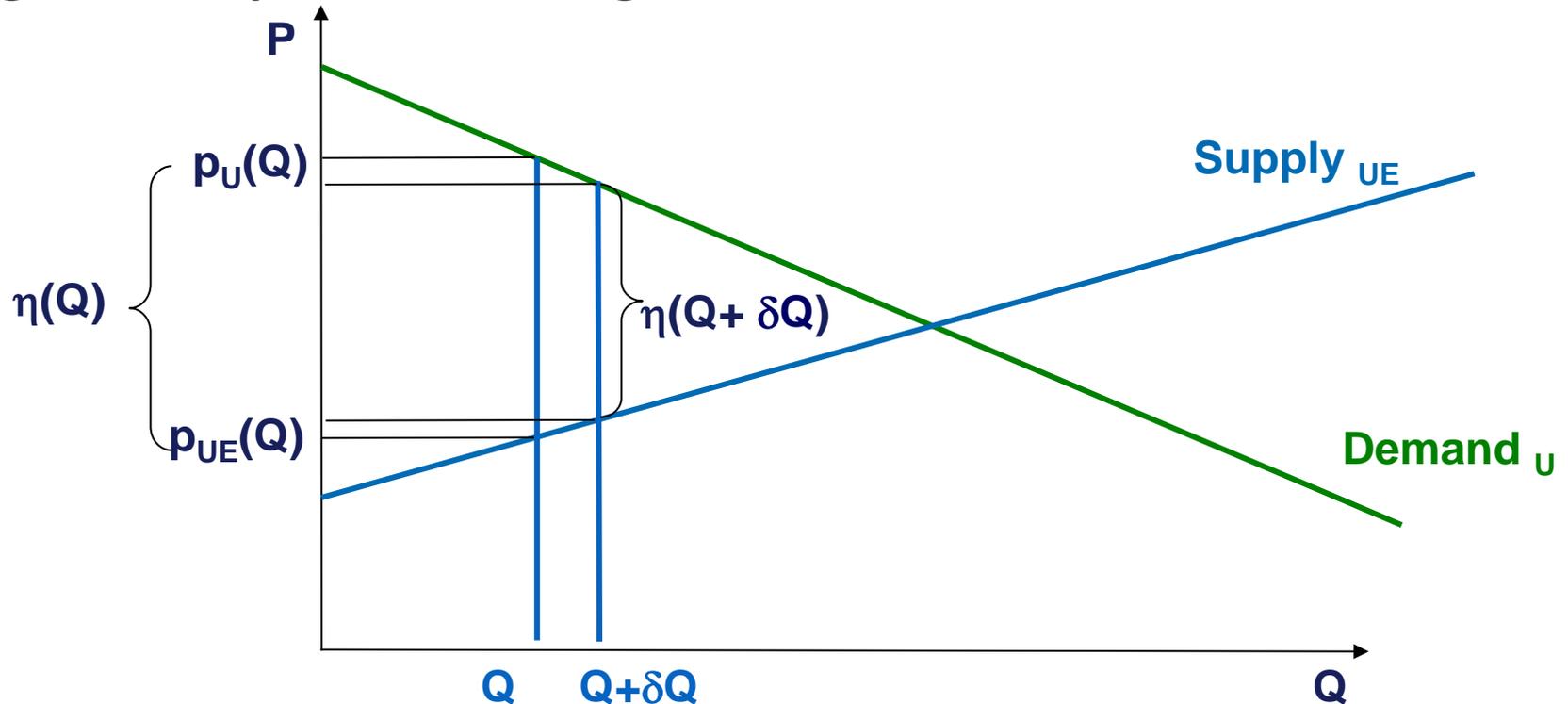


Figure 7.3.5: 2020 Low UA disruption



Figure 7.3.6: 2030 Low UA disruption

Source : ENTSOG



## THE EU'S RESPONSE

### ● Fostering the development of reverse flows capabilities

- However, in case of **imperfect competition...**

e.g. a Cournot oligopoly with  $G$  players

$$\left\{ \begin{array}{l} 0 \leq Q_{jit}, P_{it} - P_{jt} - T_{jit} - \left( \frac{d_i b_i}{b_i + d_i} + \frac{d_j b_j}{b_j + d_j} \right) \frac{Q_{jit}}{G} - \xi_{jit} \leq 0 \\ \text{and} \left( P_{it} - P_{jt} - T_{jit} - \left( \frac{d_i b_i}{b_i + d_i} + \frac{d_j b_j}{b_j + d_j} \right) \frac{Q_{jit}}{G} - \xi_{jit} \right) Q_{jit} = 0, \end{array} \right. \quad (3)$$

$$0 \leq \xi_{jit}, Q_{jit} \leq K_{jit} \text{ and } (Q_{jit} - K_{jit}) \xi_{jit} = 0, \quad (4)$$



Figure 7.3.5: 2020 Low UA disruption



Figure 7.3.6: 2030 Low UA disruption

Source : ENTSOG

See (Massol & Banal Estañol EJ, 2018)

# II - ON GOING ECONOMIC ISSUES AND POSSIBLE REMEDIES

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## B – IMPACTS ON POLAND

# POLAND'S REACTIONS

## ● Poland's Baltic Pipe project

- One of EU's Project of Common Interests
- Capacity: 10 Bcm/y
- FID taken on Nov 2018, opening planned on oct. 2022.

## ● Poland's LNG terminal

- Capacity expansion at Swinoujscie LNG import terminal from 5 Bcm/year to 7.5 Bcm/year by 2022.
  - Approved by the EU Commission on March 19, 2019
- PGNiG plans to increase LNG purchases four-fold from 2.7 Bcm in 2018 to 10.5 Bcm by 2024 (with US deliveries).



# CAN THE PUBLIC SUPPORT FOR THESE ALTERNATIVE ROUTES BE RATIONALIZED?

● Yes!

**Schulte & Weiser (Energy Economics, 2019)**

● Insights from Lithuania's LNG experience

- An historically Gazprom-dominated market

- 2014 Lithuania:

- **state financed** an import terminal for liquefied natural gas (LNG) in Klaipėda
  - signed a long-term contract (LTC) which can be interpreted as a minimum import volume quota for LNG having higher marginal supply costs than Russian gas
- ⇒ **Transition from a monopoly to a dominant-player-competitive fringe model**
- ⇒ **A minimum import volume quota for fringe supplies optimizes the consumer surplus, which is adjusted by a compensation paid for the fringe's market entry.**
- ⇒ **Therefore, the Lithuanian decision to incentivize the market entry of high-cost LNG can be rationalized.**

# III – AVENUES FOR FUTURE RESEARCH

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## POSSIBLE FUTURE RESEARCH

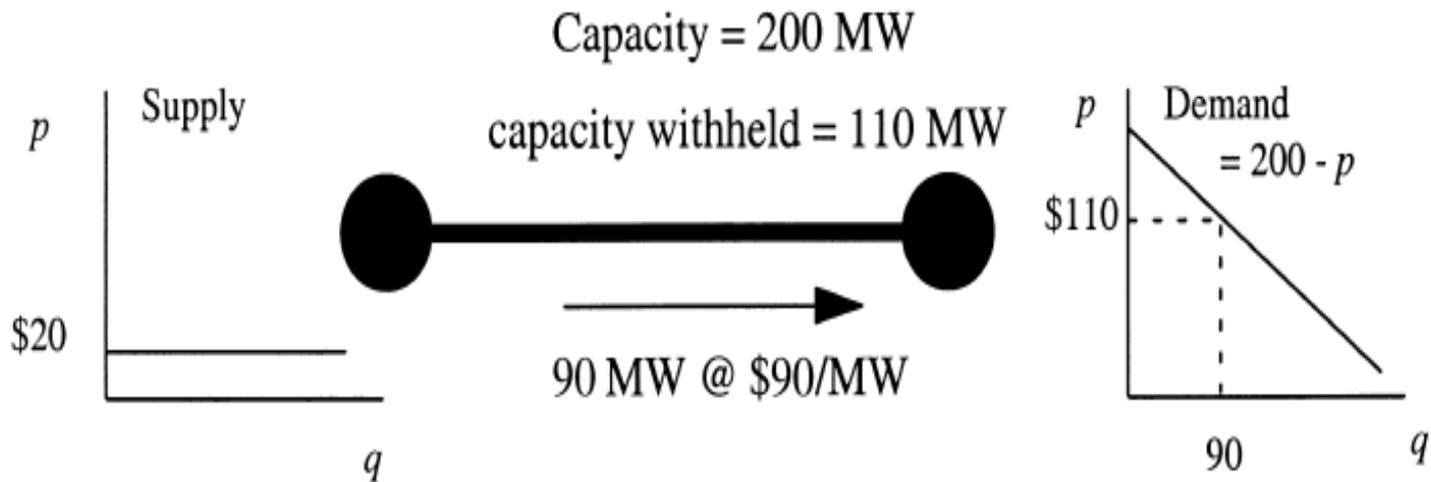
- Modeling the pro-competitive effects of US LNG on Russia.
- Modeling the effects of the on-going transformations in Russia's internal market structure
- Modeling the effects of the recent EU decision to extend the scope of the gas directive

## ISSUE:

- Mitigating the market power that can be exerted in interconnected gas markets

A tentative typology (adapted from Bushnell, 1999):

Strategy 1: “Utilizing Transmission Rights to **Maximize arbitrage Revenues**”

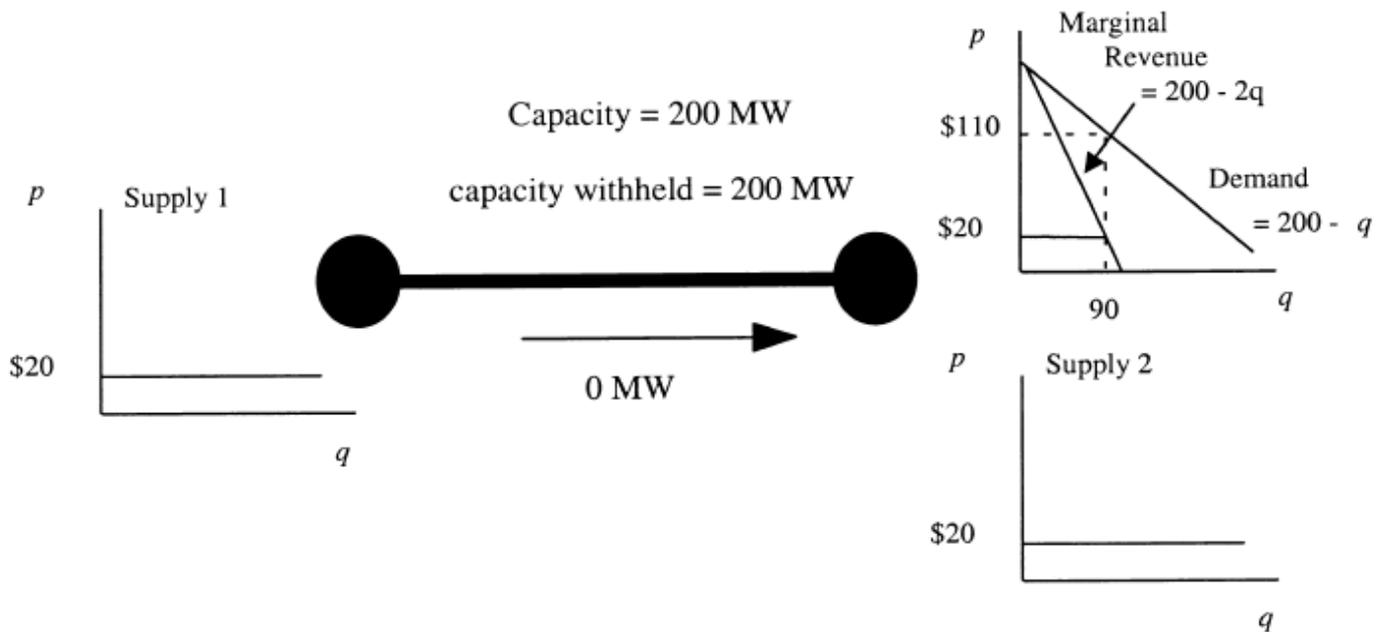


## ISSUE:

- Mitigating the market power that can be exerted in interconnected gas markets

A tentative typology (adapted from Bushnell, 1999):

Strategy 2: “Utilizing Transmission Rights to *the Advantage of Local production*”

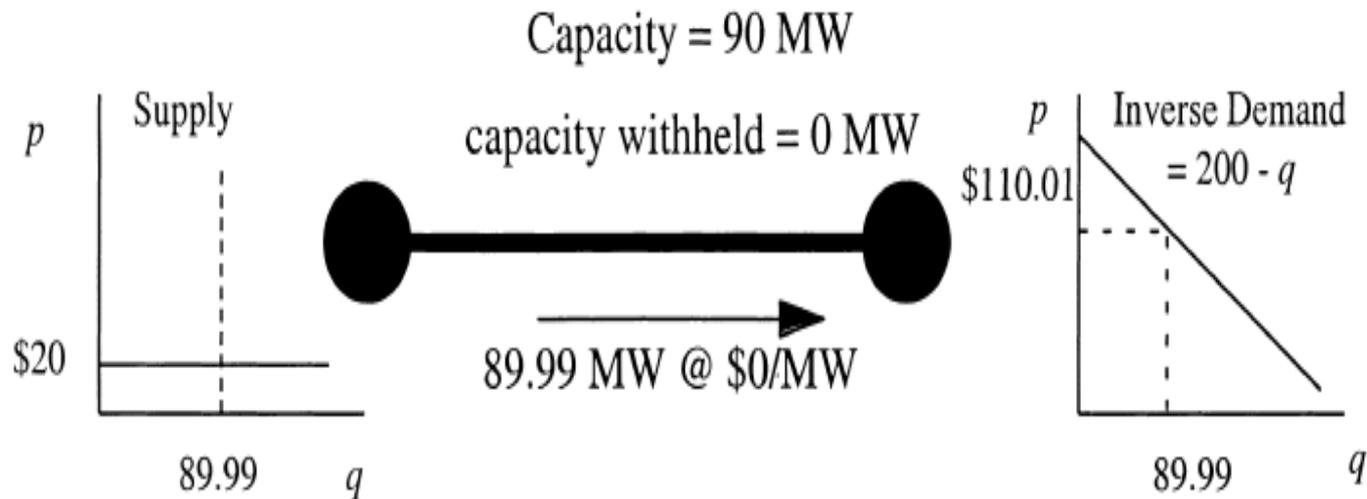


## ISSUE:

- Mitigating the market power that can be exerted in interconnected gas markets

A tentative typology (adapted from Bushnell, 1999):

Strategy 3: “**Capturing** Transmission Rents”





**Thank you!**