

European energy security and Russian export strategy

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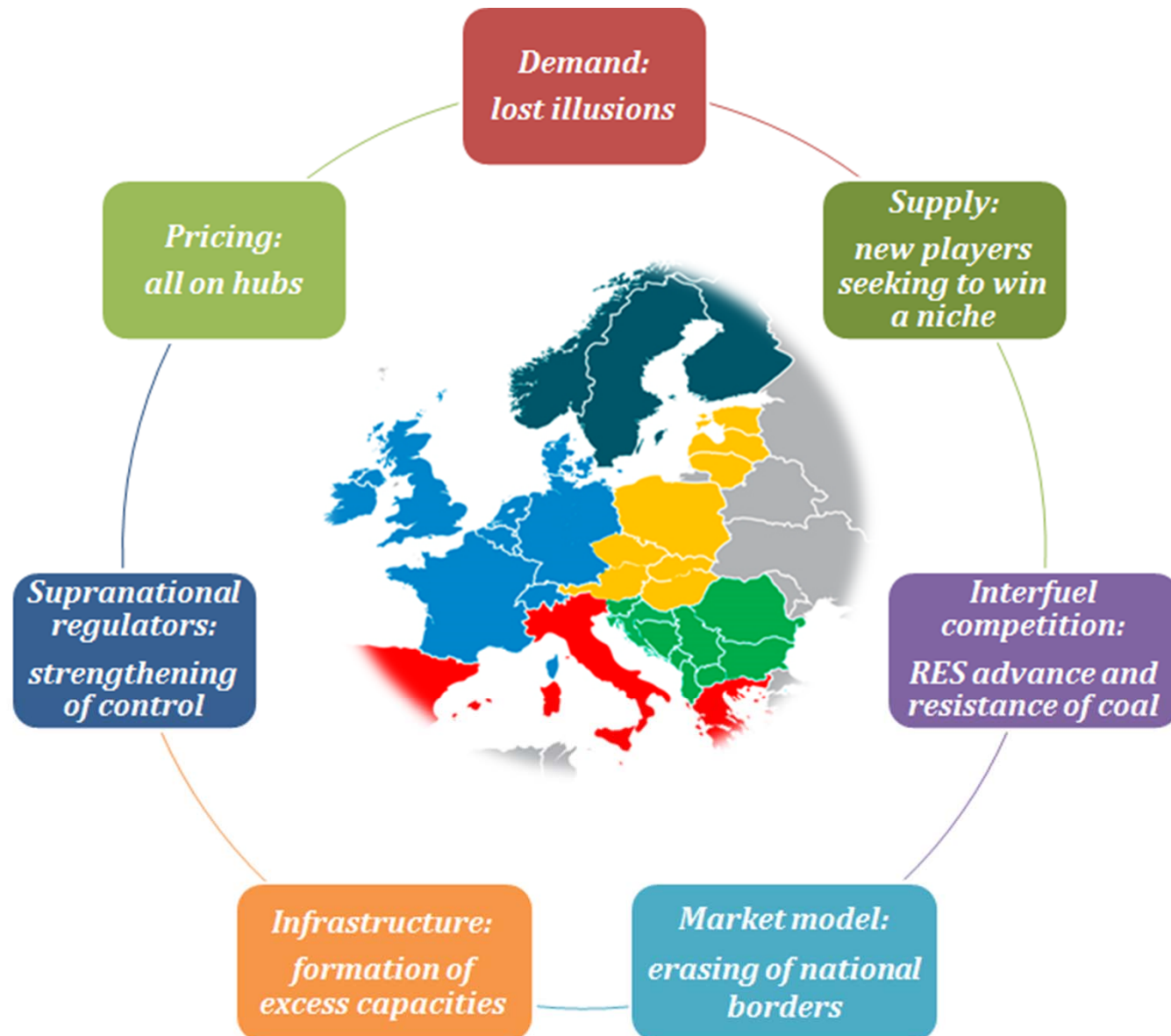
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Import dependency as one of the threats to energy security

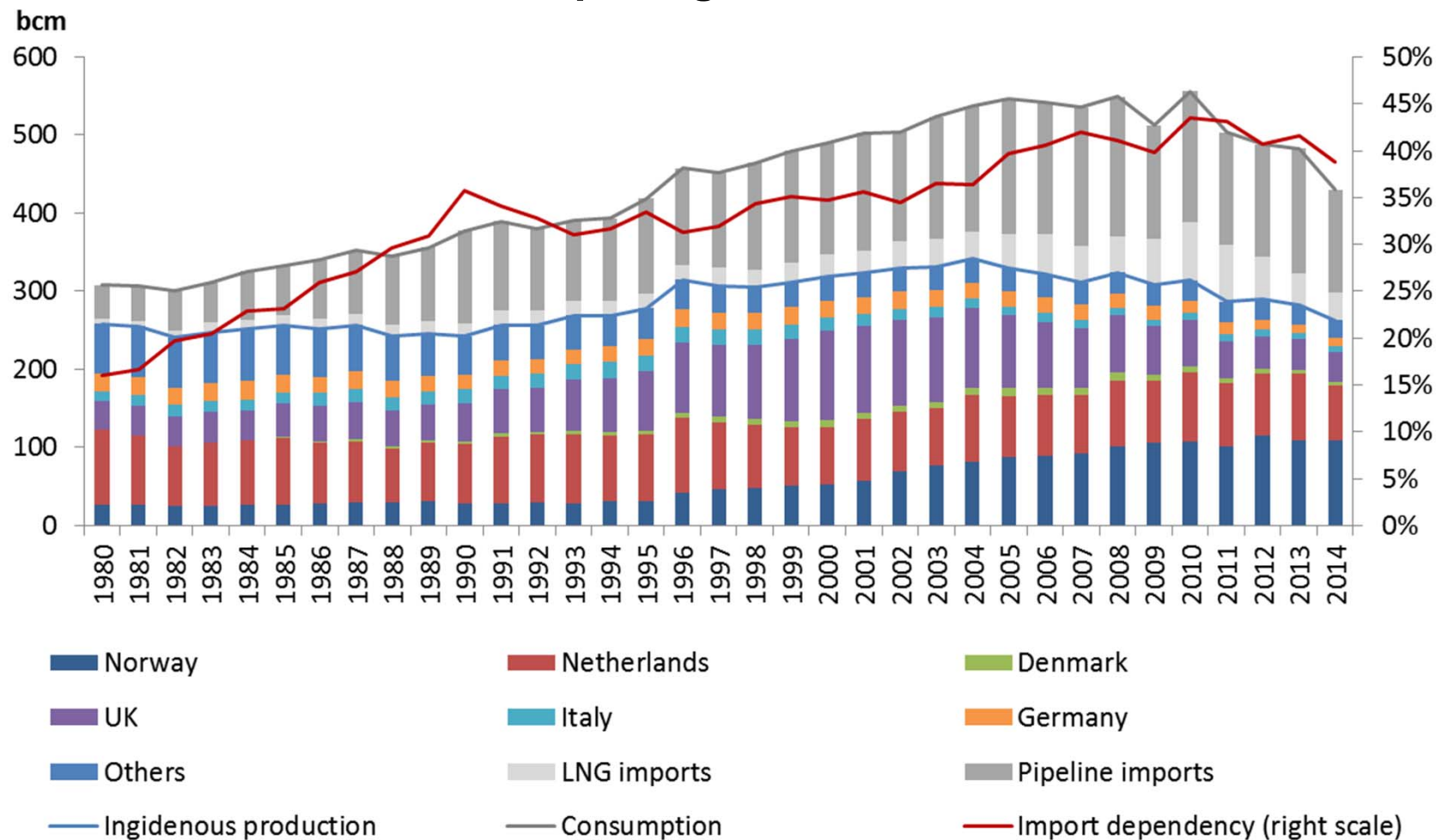
- Energy security can be called **a public good**, a common goal of energy suppliers and consumers - at stable and reasonable prices a consumer has an uninterrupted access to energy sources of acceptable quality, and a supplier has access to a consumer.
- Energy security is **not self-guaranteed** in a market economy, so there is a need for designing an energy security policy, however efficient markets contribute to enhancing energy security. Energy security policy should be aimed at reduction or modification of a threat for stability and sustainable development of an energy system.
- For different countries and in different time there are different **threats to energy security**: increasing energy demand; inefficient energy use; price volatility; import dependency; replenishment of a resource base; energy infrastructure vulnerability; inefficient regulation of property rights and rights to use energy resources; different natural, anthropogenic, social and political threats.
- Oil and gas storages, development of infrastructure, diversification of imports sources and energy balances, development of decentralized energy, energy saving, investments in energy technologies, institutional development and international energy cooperation **enhance energy security**.

European gas market transformations



European gas balance: increasing import dependency, declining production and consumption

European gas balance

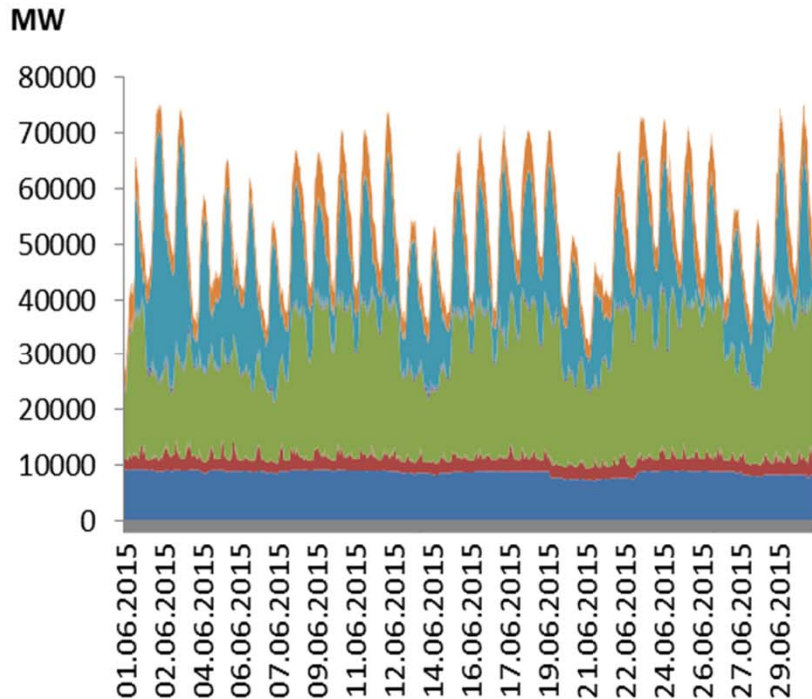


Notes: Turkey not included

Source: IEA World energy balances 2014, IEA Natural gas information 2014

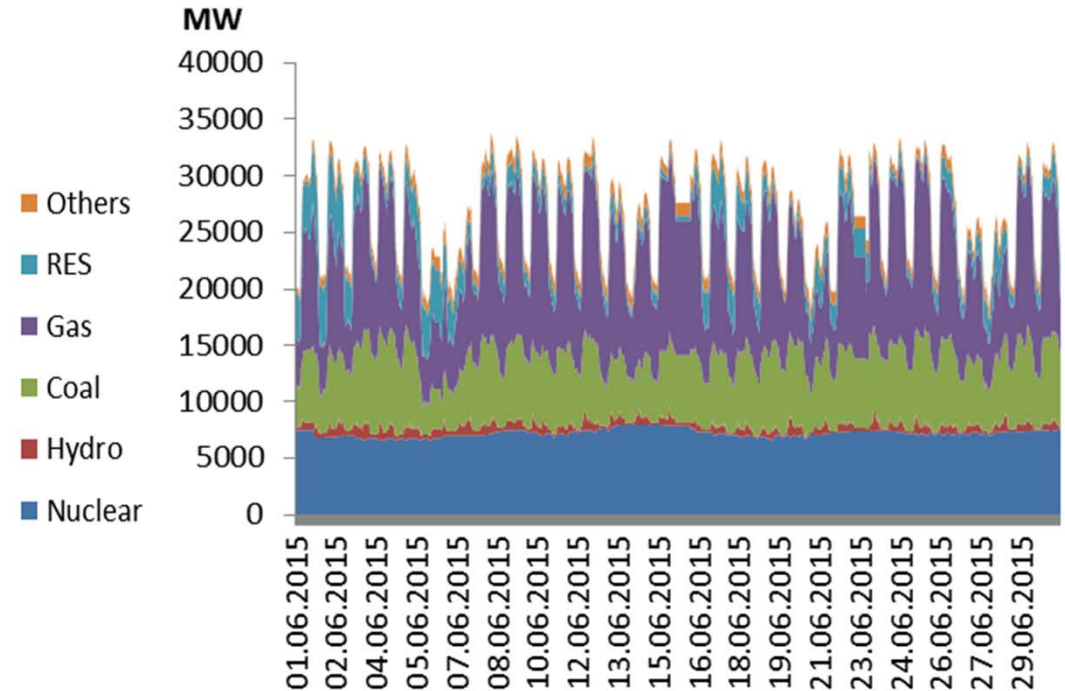
Gas in power sector: still not competitive

Structure of used power generation capacities in Germany in June 2015



Source: ENTSO-E

Structure of used power generation capacities in the UK in June 2015

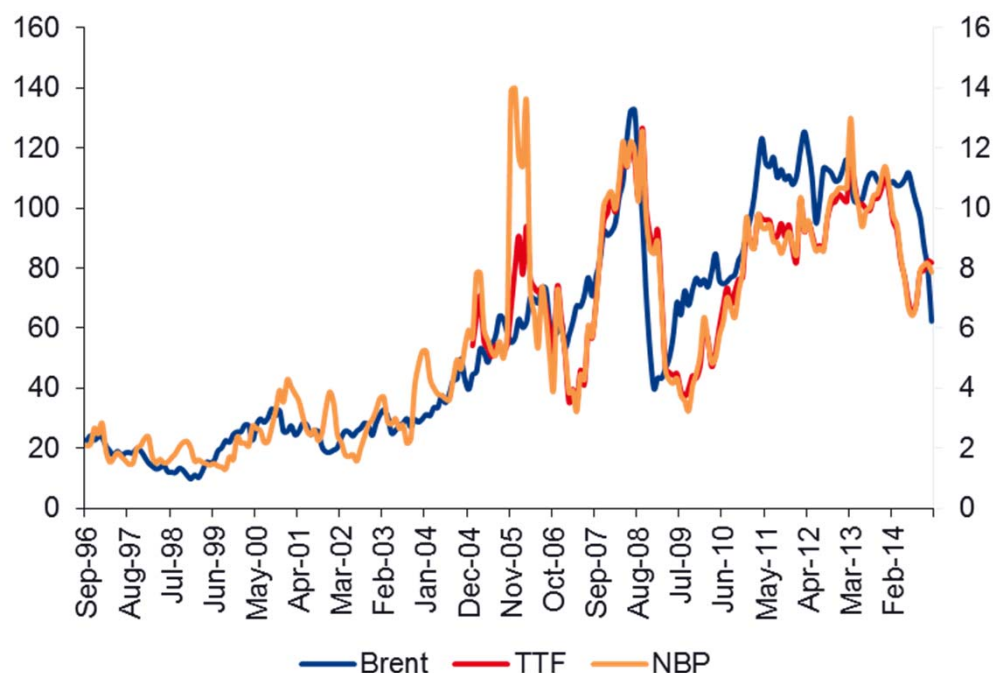


Source: Gridwatch based on Balancing Mechanism Reporting System data

Spark spreads for power generation from gas in most European countries has been negative since 2012, while dark spreads for power generation from coal has been up to 30-40\$/MWh higher. Gas disappears from power generation balances of the European countries or becomes a back-up fuel.

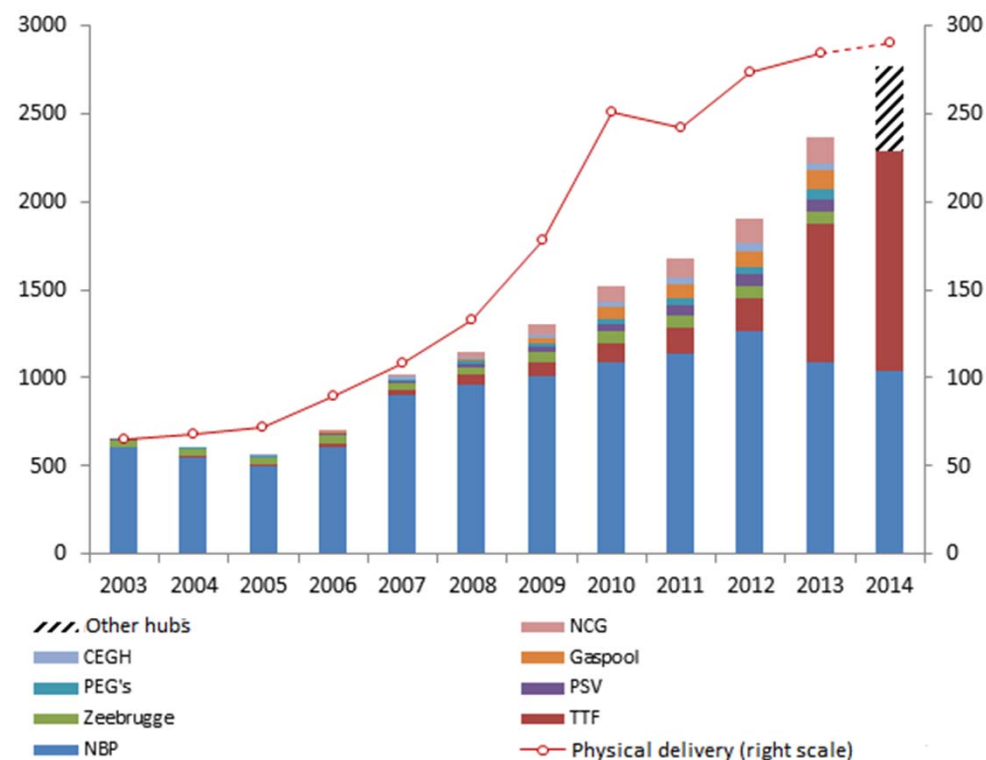
While volumes of gas traded at hubs continue to grow, spot gas prices strongly correlate to the oil price

Brent, NBP and TTF hub prices, Sep 1996- Dec 2014, \$/bbl (left scale), \$/mmbtu (right scale)



Sources: EIA, Bloomberg, NCG.

Volumes of gas traded at the European hubs, bcm

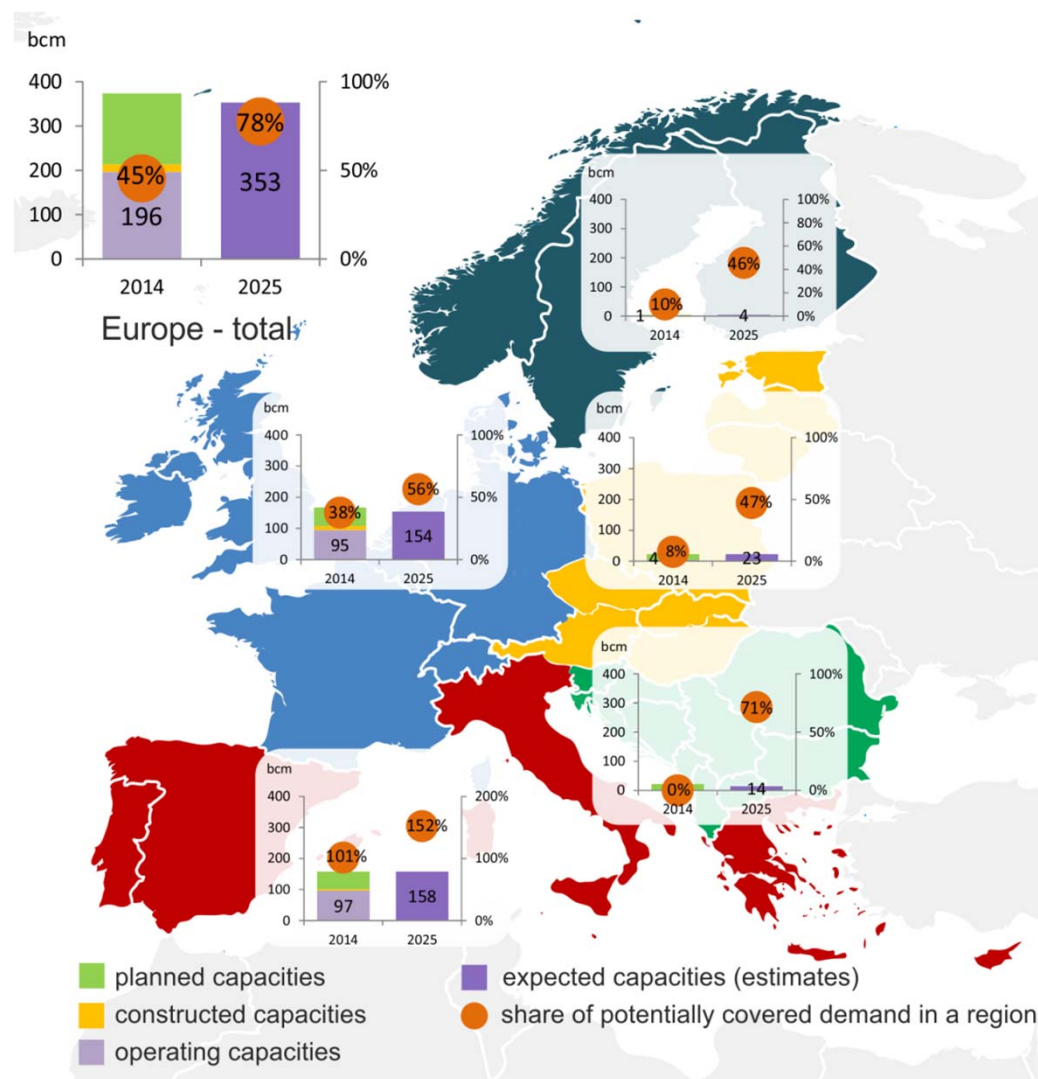
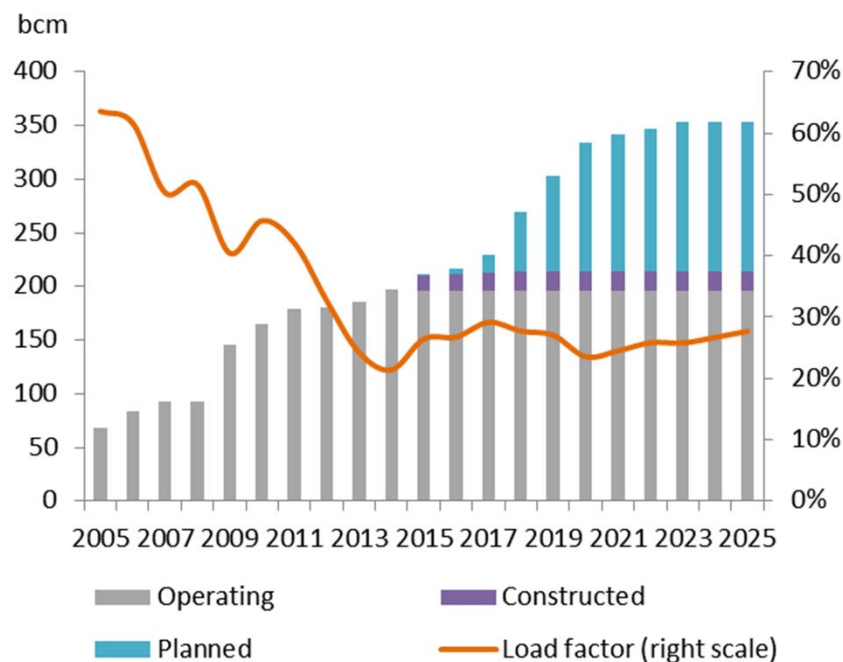


Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Spot gas prices in Europe strongly correlate to oil price (coefficient of correlation between Brent and NBP price amounted to 0,86 for Sep 1996 – Dec 2014, between Brent and TTF – 0,72 for Jan 2005 - Dec 2014).

LNG will claim more significant share of European gas demand as domestic production declines. Europe can import more LNG if it chooses, but it depends on the price it is willing to pay.

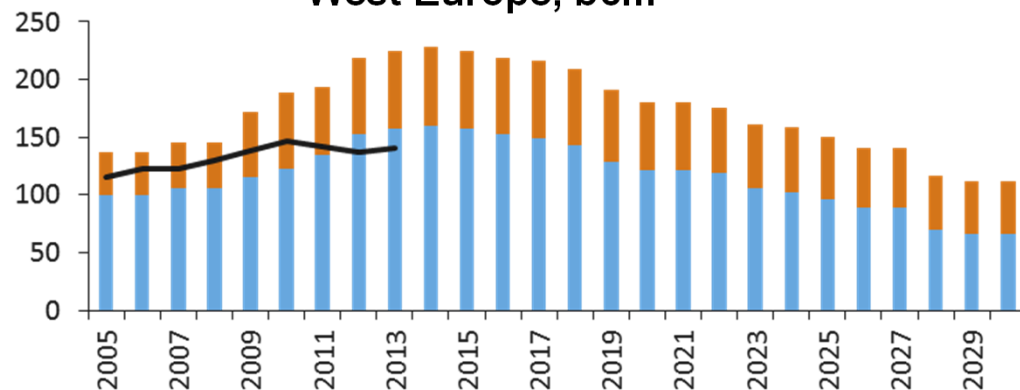
LNG terminals in Europe



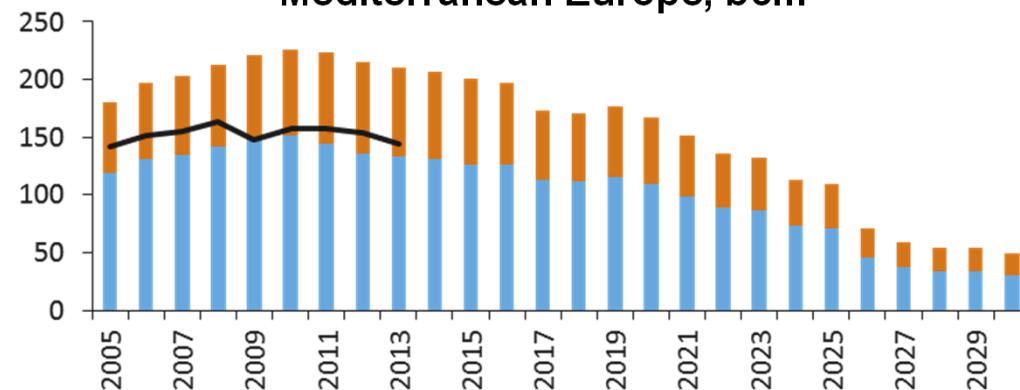
Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Existing long-term contracts to Europe leave little room for additional gas supplies up to 2020-2025

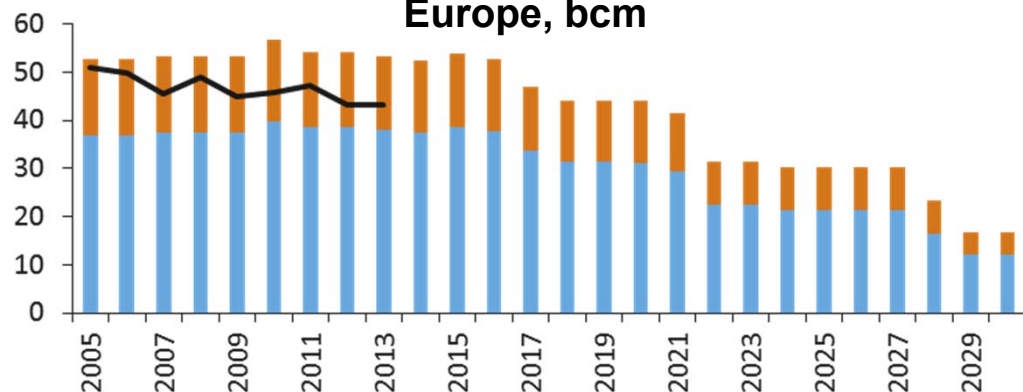
Gas supply contracts and net imports to North West Europe, bcm



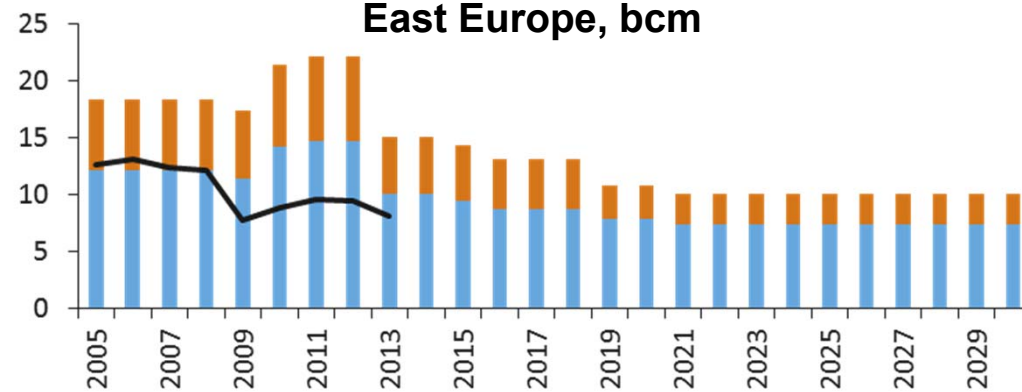
Gas supply contracts and net imports to Mediterranean Europe, bcm



Gas supply contracts and net imports to Central Europe, bcm



Gas supply contracts and net imports to South East Europe, bcm

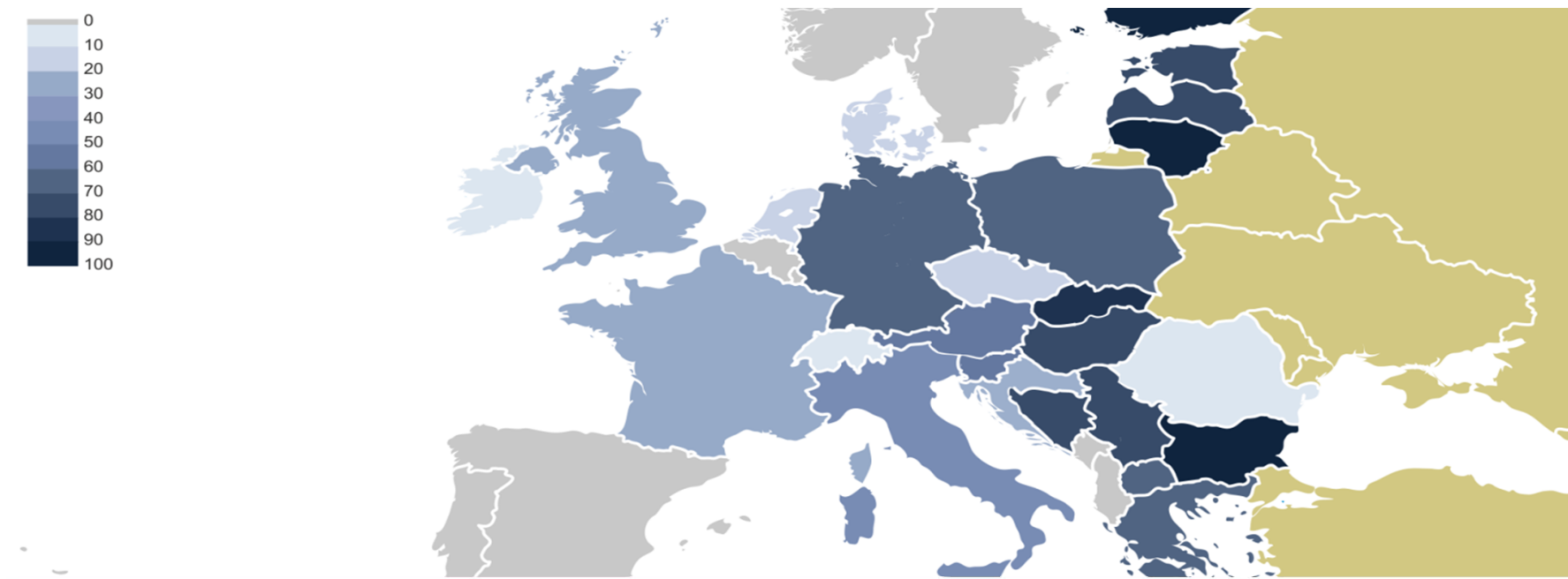


Source: Nexant, IEA database

Countries of North West Europe as the most overcontracted with pipeline gas and LNG are likely that resale it stimulating gas trading and hubs and exchanges.

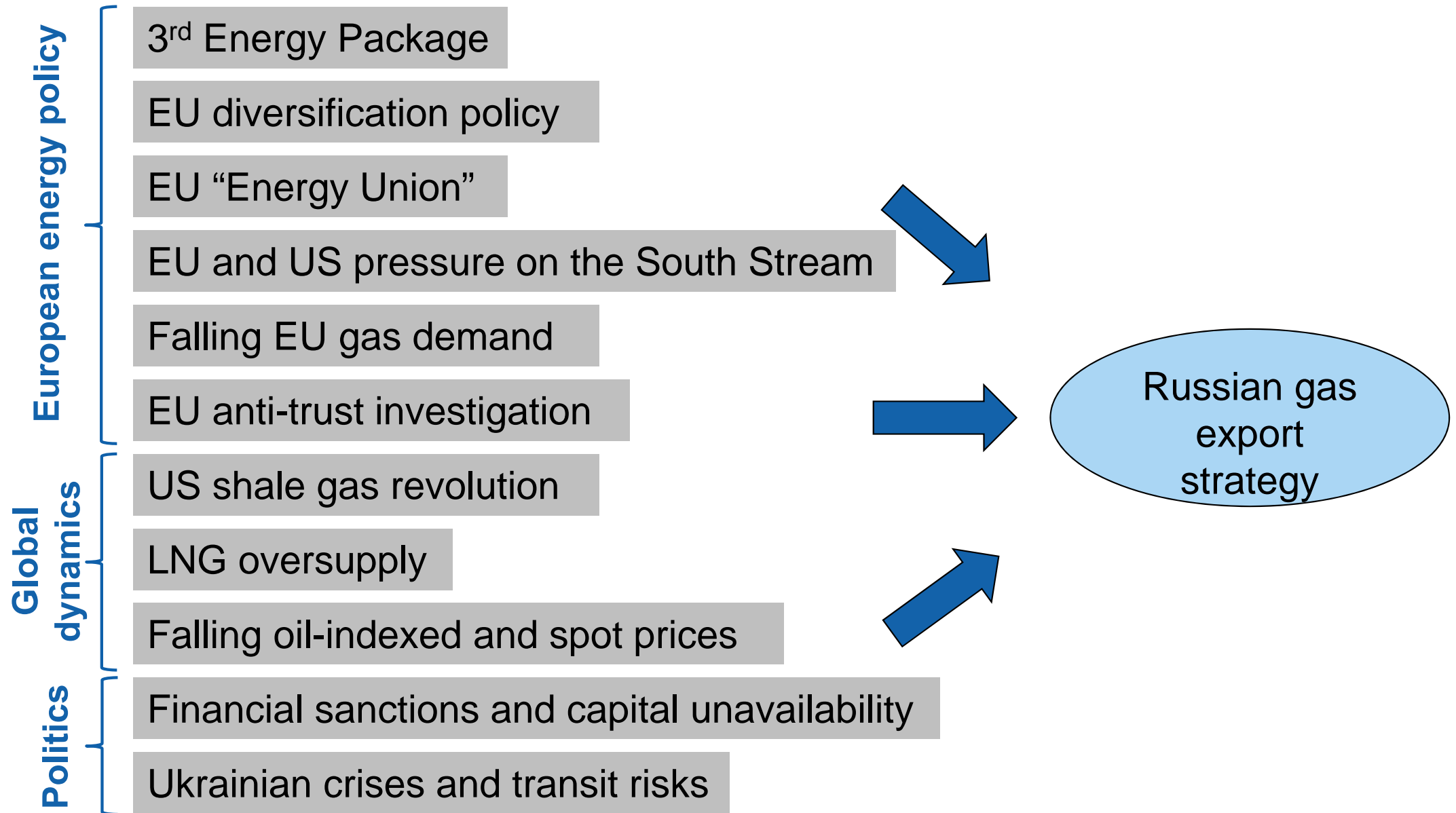
Import dependency of Central and Eastern Europe from Russian gas is above 50%

Gas imports from Russia to consumption in 2014, %



	Imports from Russia, bcm	Consumption, bcm	Dependency, %
Western Europe	69	254	27%
North Europe	3	13	25%
Central and Eastern Europe	28	53	53%
Mediterranean Europe	23	95	25%
South-Eastern Europe	6	21	29%

Increasing pressure on the Russia's gas export strategy



Oil exports from Russia to Europe inevitably decreases

- European dependency on crude oil imports won't increase significantly by 2020 as Norway is going to put into operation new offshore oil fields and because European oil refining is declining. Russian supplies of crude oil being not competitive enough (compared to the US, for instance) are now declining. Though in long-term period European dependency on oil imports is expecting increase up to 77% by 2040 Russia won't be able to increase its oil production to win a niche at the European oil market.
- At the same time Russia will increase its influence as a transit country, passing up to 65 mln t through Caspian Pipeline Consortium (mainly from Kazakhstan oil fields).
- In 2015-2020 Russian oil products exports to Europe will decrease and be displaced by cheaper oil products from Middle East and India. After 2020 supplies from these producers will be diverted back to internal markets but European demand will be declining so there will hardly appear additional niche for Russian oil products supplies.

Major new challenges for the Russian energy sector

Domestic challenges:

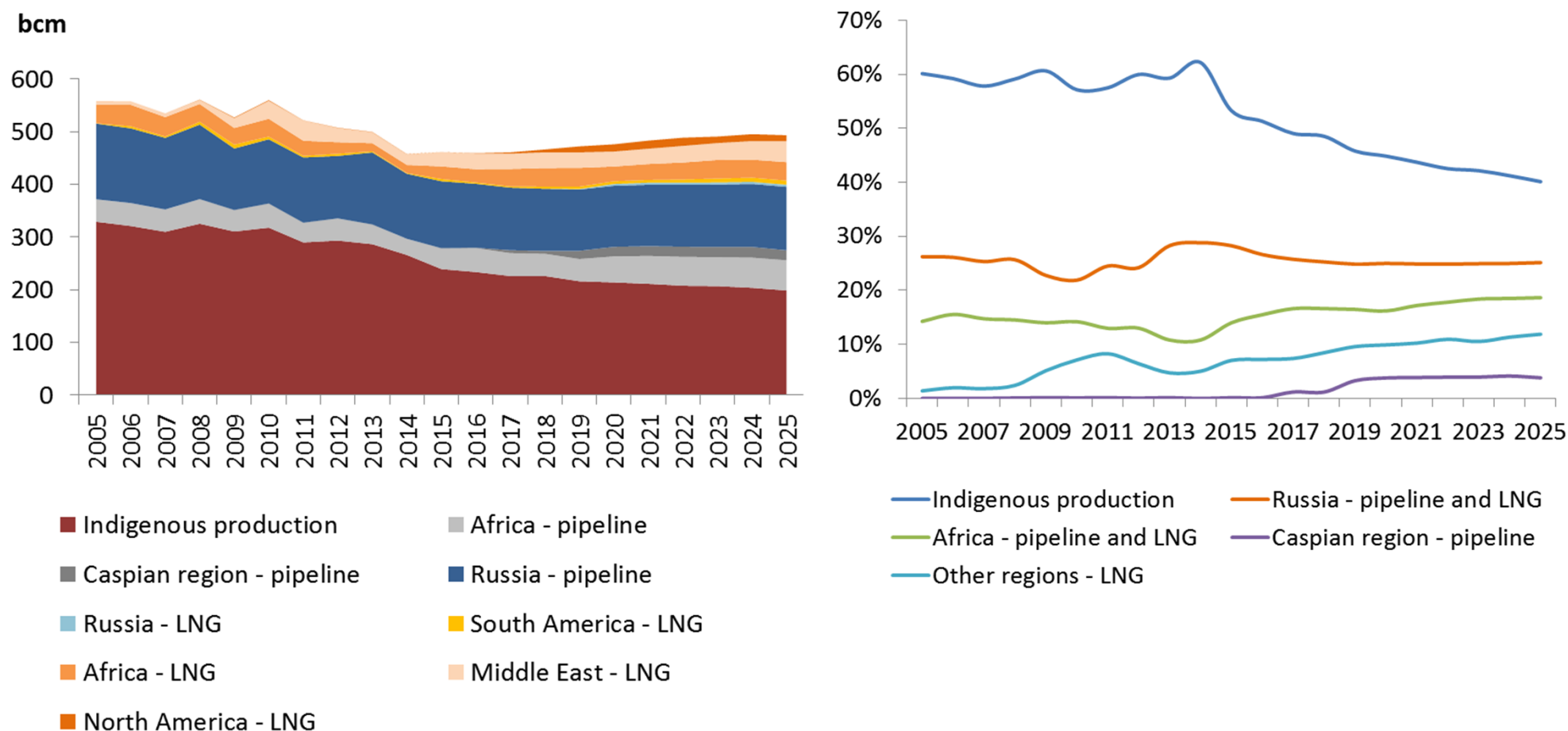
- Stagnation of the Russian economy slows down domestic energy demand. Lower investment availability and frozen energy prices cut investment programmes in the energy sector slowing down its renovation
- Institutional framework in the energy sector has reached unacceptable level of inefficiency (i.e. state-controlled companies – Rosneft and Gazprom)

Global challenges:

- Potential export revenues expectations are declining :
 - ❑ Stagnant oil and gas demand, changing rules in the European energy sector (main market for Russia)
 - ❑ Main demand growth moves to Asia, where Russian presence is very limited for the next 5-7 years
 - ❑ New hydrocarbon suppliers (shale from the U.S., Iran, Iraq, Brazil, Australia, East Africa, etc.)
 - ❑ Oil and gas prices declining trend until 2022-2025
- Geopolitical threats: new sanctions are possible

Russian gas in Europe got stuck. In all realistic scenarios Russia remains key supplier to the European market. However the perspectives of Russian exports growth to Europe are very limited

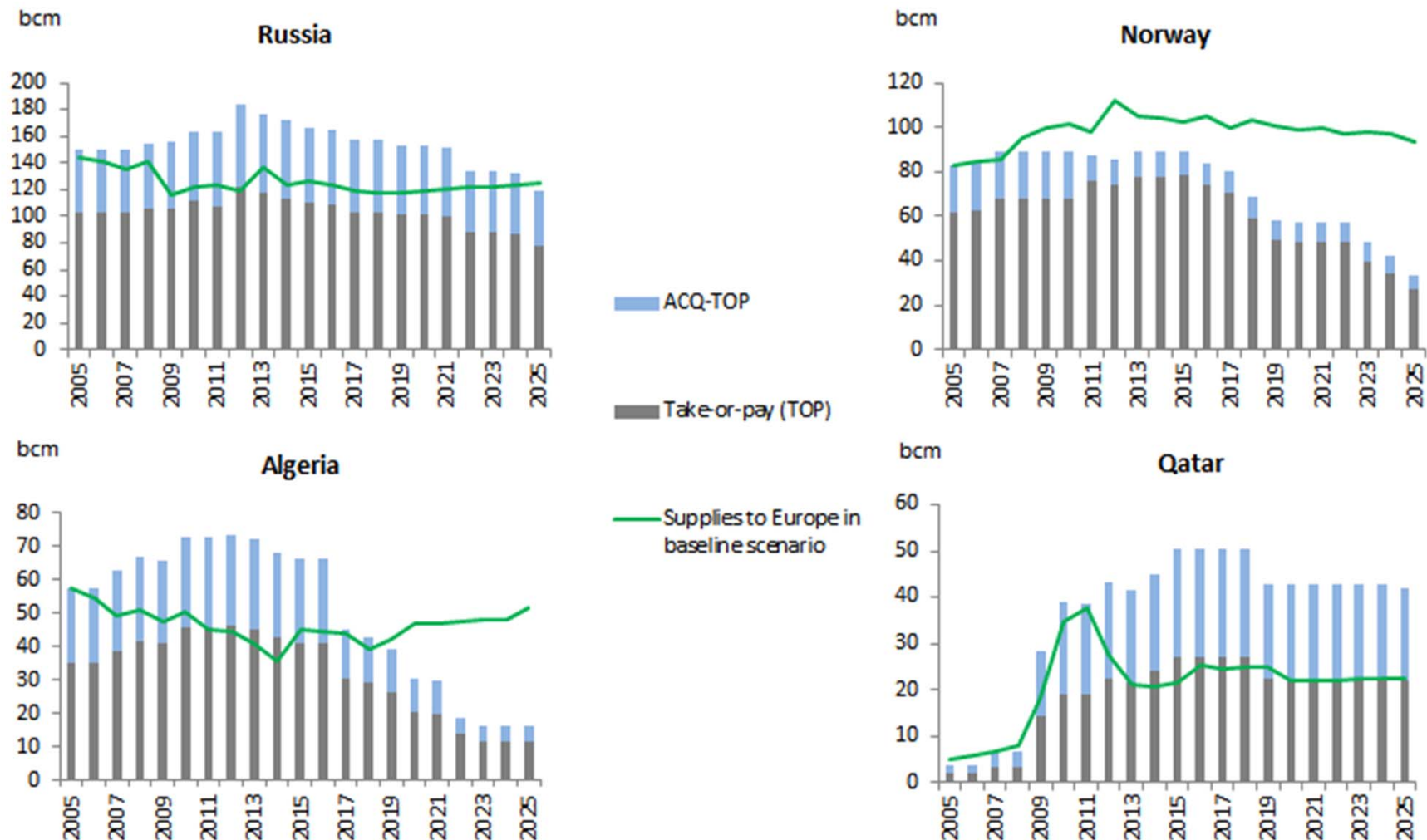
European gas balance forecast - Baseline scenario



Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Gazprom has a huge portfolio of long term contracts for supplies to Europe

Contracted gas supplies to Europe by major suppliers up to 2025



Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Changing strategy?

Old strategy

- ❑ Expansion strategy in the “sellers` market” in Europe (based on the expectations of stable gas demand growth in Europe and low competition), cautious market assessment in Asia.
- ❑ Gas supply on the basis of oil-linked LTCs with “take-or-pay” clauses.
- ❑ Delivery points on the EU border (trying to move them further into EU territory). The strategy of moving downstream and gaining access to end users in the European countries, developing a large number of joint ventures, as well as involving itself in searching for European storage, transport and distribution assets.
- ❑ Irreconcilable conflicts with Ukraine led to the appearance of strategies to bypass the transit countries by building transportation infrastructure in Europe (Nord and South Streams).
- ❑ LNG – top priority

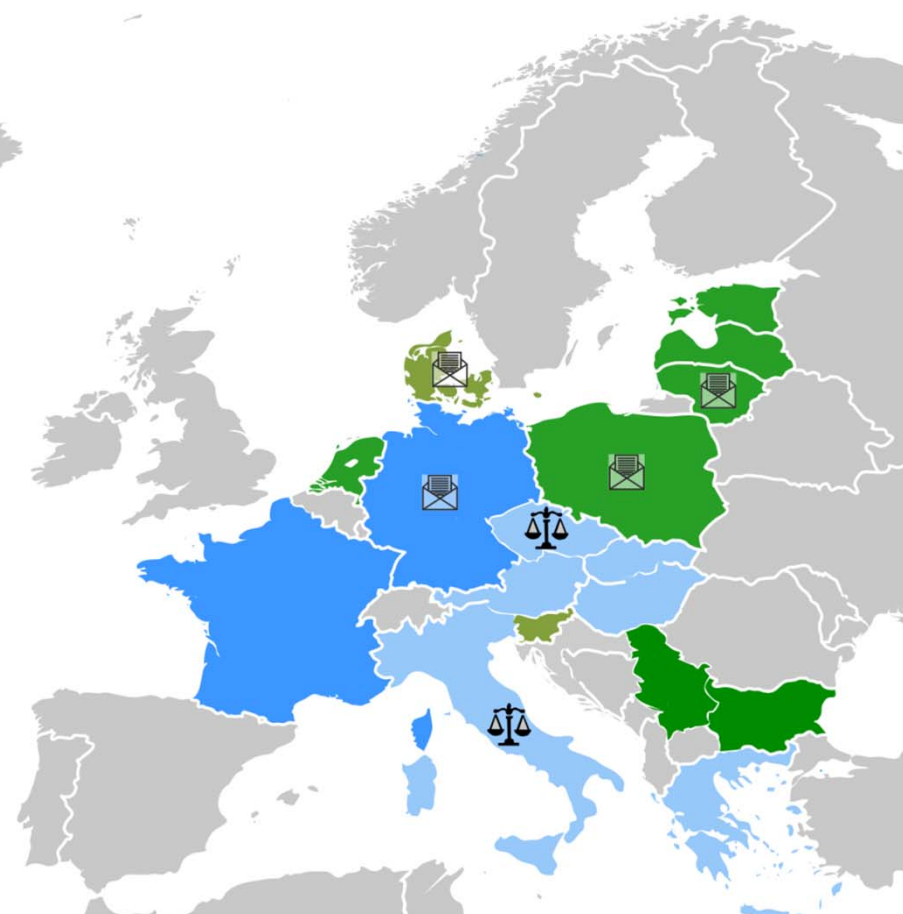
New strategy

- ❑ Strategy of market niche protection in the “buyers` market” in Europe (where demand dynamics is disappointing, aggravated by the geopolitical tensions, while competition is supposed to increase) and expansion strategy in Asia.
- ❑ Increasing share of spot contracts, reduced oil indexation and “take-or-pay” clauses in the LTCs.
- ❑ Moving delivery points to the Russian border and Turkey. The strategy of moving downstream and developing joint ventures is abandoned, as well as involving itself in searching for European storage, transport and distribution assets.
- ❑ Bypassing Ukraine is the political goal, but no more infrastructure investments on the EU territory.
- ❑ Focus on pipeline gas

European buyers has been turning to Gazprom requesting to review long-term contracts since 2009

No	Country	Company	2009	2010	2011	2012	2013	2014	2015	revision of a contract requested
1	Austria	Centrex								
2	Austria	EconGas OMV								
3	Austria	Erdgas Import Salzburg								
4	Austria	Gazprom Austria (GWH Gashandel)								
5	Bulgaria	Bulgargaz								
6	Hungary	Centrex Hungary Zrt.								
7	Hungary	Panrusgas Gas Trading Plc.								
8	Germany	E.ON								•
9	Germany	Verbundnetz Gas AG								•
10	Germany	WIEH								•
11	Germany	Wingas								•
12	Greece	DEPA								•
13	Denmark	DONG								•
14	Italy	Axpo Trading (EGL)								
15	Italy	Edison (Promgas)								
16	Italy	ENI								
17	Italy	ERG								
18	Italy	PremiumGas								
19	Italy	Sinergie Italiane								
20	Latvia	Latvijas Gaze								
21	Lithuania	Lietuvos Dujos								•
22	Netherlands	Gas Terra								
23	Poland	PGNiG								•
24	Serbia	Srbijagas								
25	Slovakia	SPP								
26	Slovenia	Geoplin d.o.o.								
27	France	GDF SUEZ								•
28	Czech Republic	RWE Transgas (RWE Supply & Trading)								
29	Czech Republic	Vemex s.r.o.								
30	Estonia	Eesti Gaas								
Number of reviewed contracts			6	10	12	14	8	11	4	

- The contract is reviewed according to Gazprom's quarterly reports
- The discount is provided according to Gazprom's officials, Gazprom clients, mass media, reports of analytical agencies



- discount, take-or-pay lowered, spot indexation introduced
- discount, take-or-pay lowered
- discount made
- the contract is reviewed, details are unknown
- the dispute resolved in court
- valid claim

Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Russian price strategy in Europe is in fact more flexible than declared

- ❑ Russia's policy with regard to contract review has been based on the principal of delaying for as long as possible before providing the minimum discount acceptable to each buyer.
- ❑ In 2013 Gazprom started to implement a new price discount model with so-called retroactive payments.
- ❑ Despite Gazprom's strident rhetoric in favor of traditional oil indexation, in actual fact numerous adjustments and contract reviews have already been made in the course of the last 6 years.
- ❑ Analysis of Gazprom's official reports demonstrates a much more flexible negotiating position than has commonly been thought to be the case. During the period 2009 – mid-2015 as many as 65 times gas supply contracts were reviewed with 30 clients, providing price discounts, easing of take-or-pay obligations and a certain introduction of a spot component.
- ❑ Calculations using Russian Customs Service statistics, Gazprom reports and the Nexant World Gas Model (which allows the assessment of contractual prices based on the prices of oil products), clearly show the increasing differential between these two prices. In fact, by 2014 Gazprom had already provided nearly on average **25% discount** (or 90\$/mcm) to its European customers compared to its pre-crisis traditional oil-linked price formulas.
- ❑ As of June 2015 there are 4 claims against Gazprom to international arbitration; 8 companies filed a request for the revision of the contract price.

The gap between oil-indexed and spot prices is narrowing

Natural gas prices in Europe, \$/mcm, 2005-2015

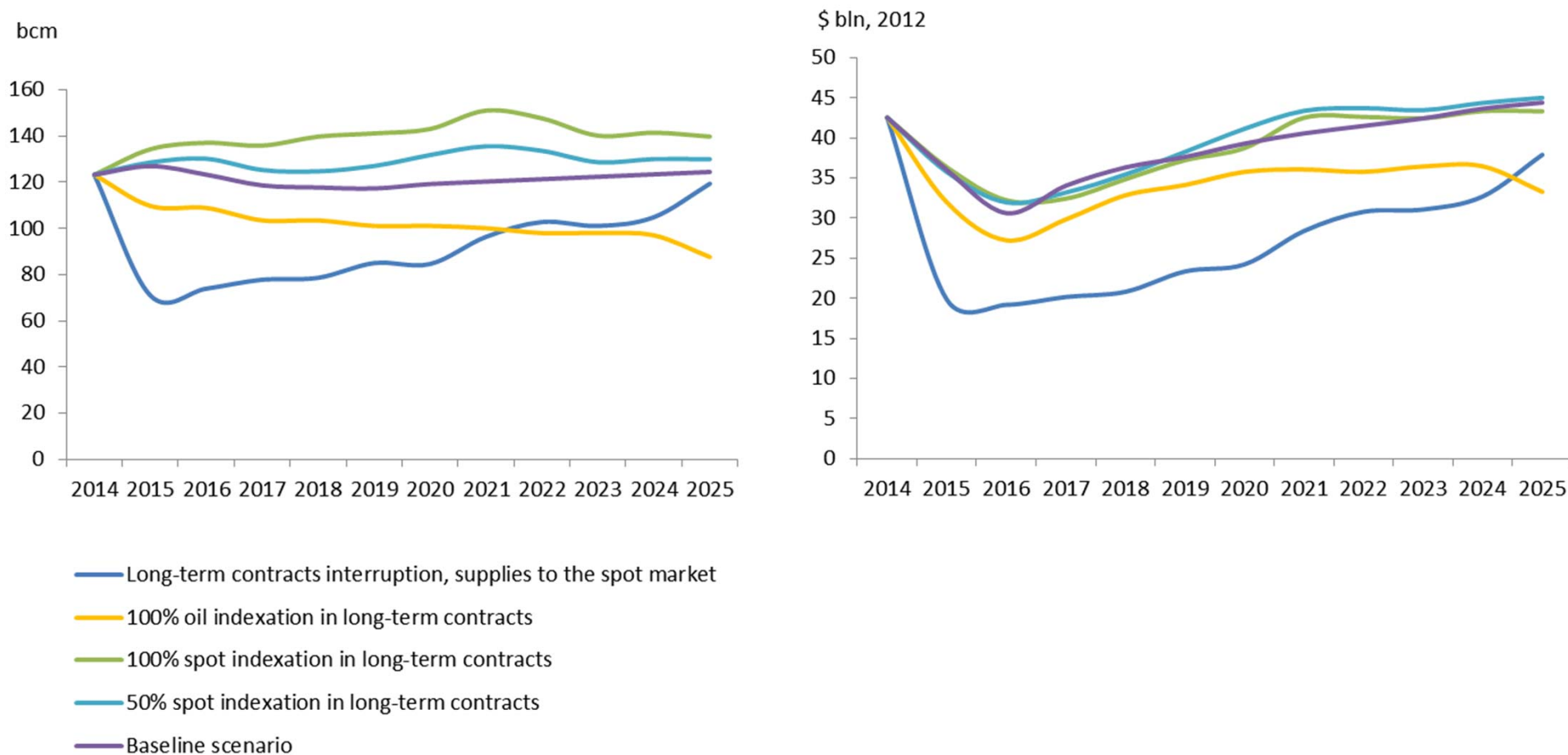


Sources: NCG, IMF.

Oil indexed natural gas prices in Europe are declining followed by oil price while becoming quite attractive compared to the levels of spot gas prices. The traditional Russian gas export strategy is being adapted to the new market conjuncture and regulatory framework

The optimal gas export pricing strategy for Russia is to gradually increase spot indexation in long-term contracts

Russian gas exports to Europe: volumes and revenue by scenario



Source: Gas market of Europe: lost illusions, timid hopes, ERI RAS, HSE Energy Institute, September 2015 (in Russian)

Russia started its historical gas shift Eastwards

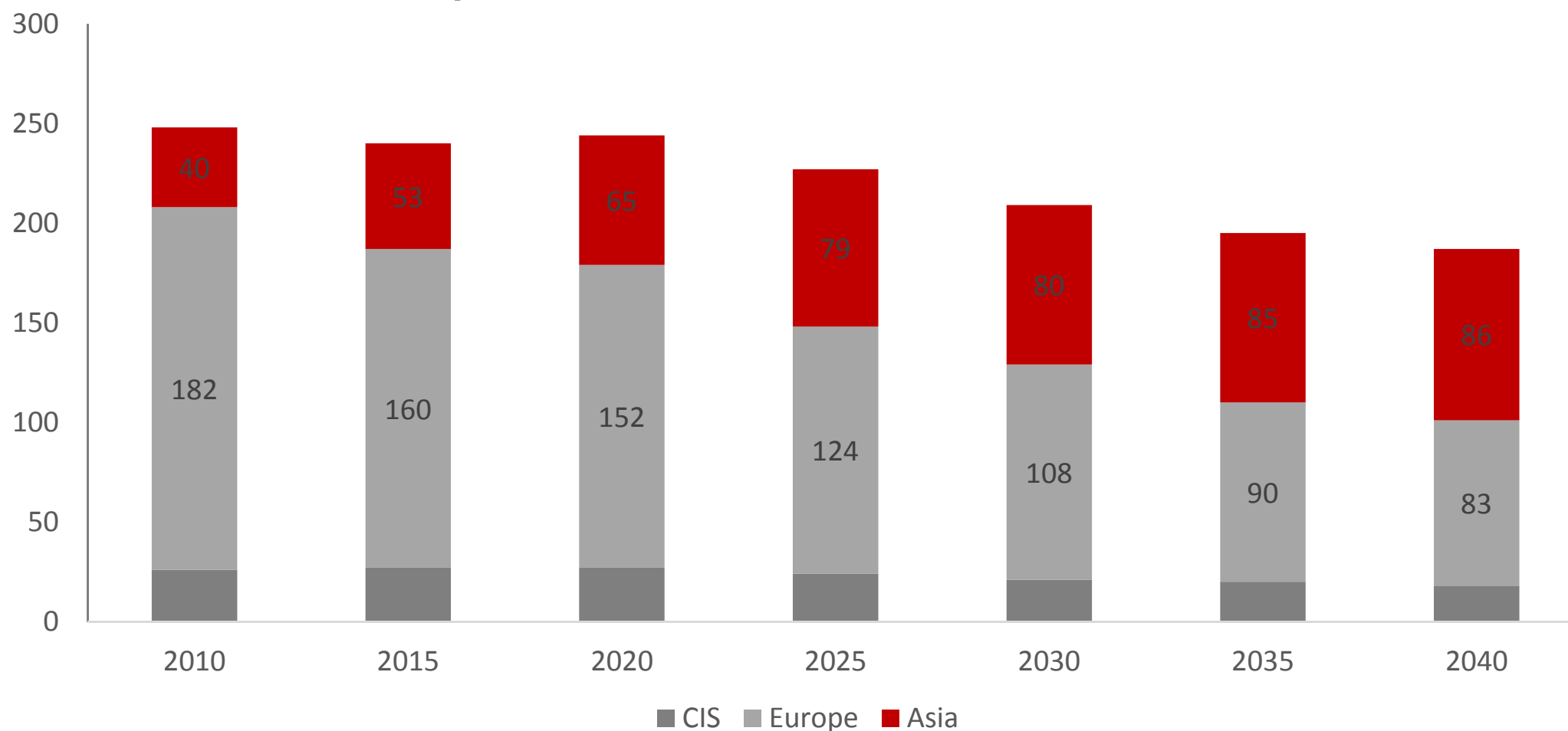
- ❑ Now there is clear urgent need for Russia to diversify its energy export markets:
 - There is no room for increase of Russian exports to Europe
 - Increasing competition (North American shale gas and oil, potential Iran, Iraq, Australia, Brazil entrance to the global markets)
 - For geopolitical reasons Europe is targeting to decrease dependence on Russian energy supplies
 - The sanctions target the finance and energy sectors, restricting some state firms' and banks' ability to raise financing
- ❑ North-East Asia seems to be the most attractive new energy market
 - Asian markets are demonstrating the highest growth rates even during the crises, and according to all projections, they will drive future global hydrocarbon demand growth
 - Lack of own energy resources (and problems with nuclear in Japan) make North-East Asian countries ideal, complimentary partners for Russia in the energy trade.
- ❑ Asian partners are regarded by Russia not only as a market, but also as a source of financing, technologies, equipment and even labor force.
- ❑ Creation of the new energy infrastructure in the Russian Eastern Siberia and the Far East is regarded as a tool to accelerate country's economic growth, helping to form new industrial clusters based on the development of energy resource production and processing.

China is expanding its participation in the Russian upstream

- ❑ In 2005 Rosneft offered Sinopec 25.1% of shares in the **Veninskii block of Sakhalin-3** project.
- ❑ In August of 2006, Sinopec purchased from TNK-BP 96.86% of the shares of its subsidiary **Udmurtneft**, which produced 6.4 million tons in 2011, through the company Promleasing.
- ❑ In 2006 Rosneft and CNPC signed an agreement about the creation of a joint-venture "**Vostok Energy**" (Rosneft - 51%, CNPC - 49%). In the summer of 2007 "Vostok Energy" won licenses for two small deposits in Irkutsk oblast, located near the ESPO.
- ❑ In the course of **Rosneft's IPO**, CNPC acquired 0.6% of the state company's shares for \$500 million.
- ❑ In October 2013, Rosneft and CNPC agreed to set up a joint venture for upstream developments in East Siberia, with Rosneft holding 51% and CNPC with the rest. The deal gives China access to the **Srednebotuobinsk field**, which has an estimated 2.05 million barrels of oil and equivalents in Siberia.
- ❑ Russian companies are also trying to move downstream in Asia, though so far success is very small. At the end of 2007 Rosneft (49%) and CNPC (51%) created the joint venture "**Chinese-Russian Eastern Petrochemical Company**" for the construction of a Chinese refinery with a capacity of 16 million tons in Tianjin, petrochemical complex and a network of 300 filling stations in the north of China. The cost of the refinery is estimated at \$4.6 billion, initially it was planned to be commissioned by 2011. However, it took much longer because of disagreements on a number of issues, including the financing of the project, and the agreement was signed only in May 2014. According to the terms of the agreement signed in May 2014, CNPC and Rosneft expect the first production in 2020.
- ❑ In September 2014 it was announced that CNPC is to get up to 10% in Russia's **Vankor oilfields**, Rosneft's biggest production asset. The deal is very profitable for the Chinese since this is an already developed field, while it could allow Rosneft to raise up to 1\$ billion to help manage its accumulated debt.

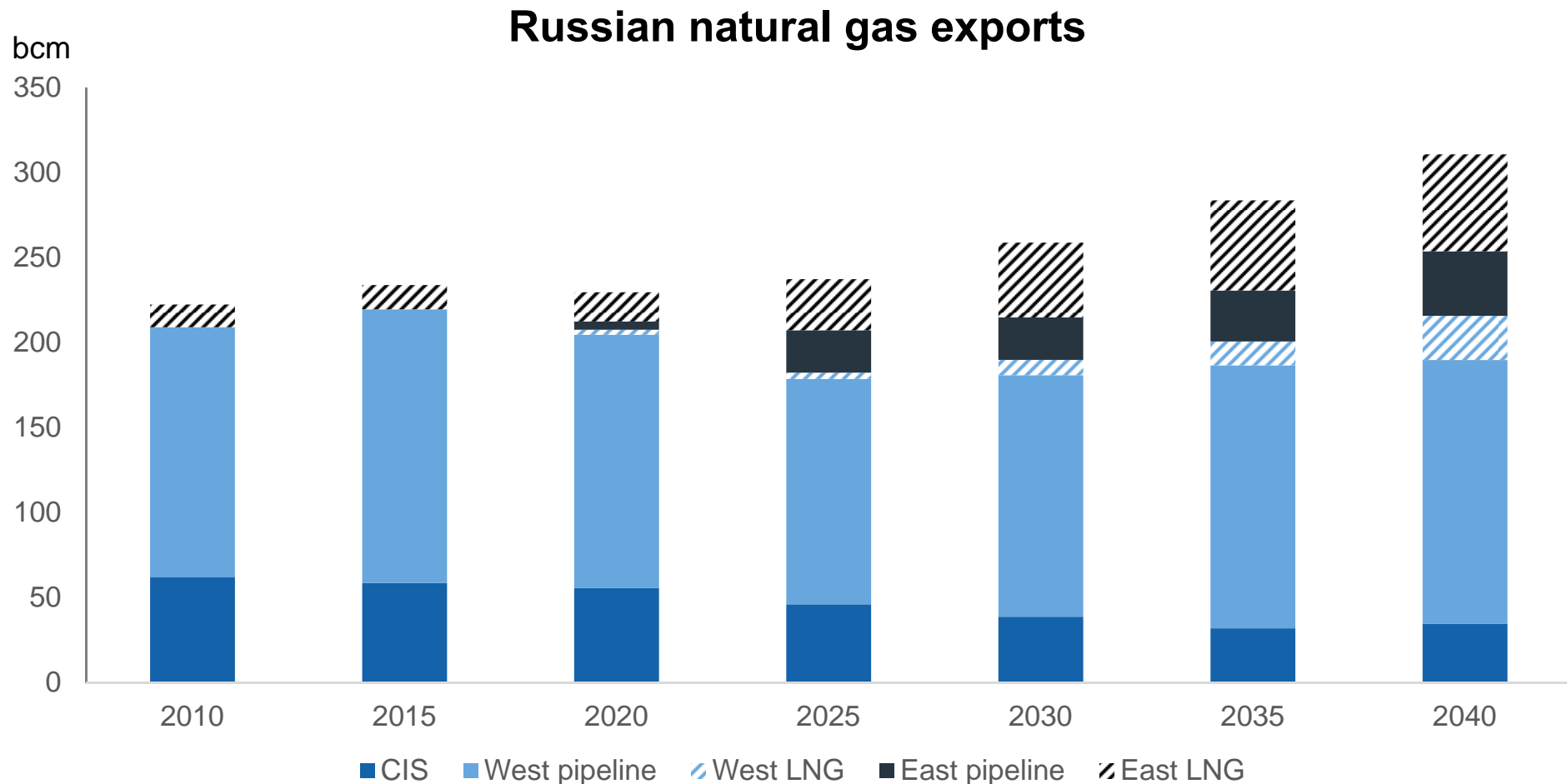
Oil exports to Asia are replacing European supplies

Crude oil exports from the Russian Federation, million tonnes



Source: Global and Russian Energy Outlook up to 2040, ERI RAS-AC, 2014

Russia seems to remain the major European gas supplier at least for the next 10-15 years, while in Asia Russian (and Central Asian) pipeline gas could set a floor price for LNG supplies



Source: Global and Russian Energy Outlook up to 2040, ERI RAS-AC, 2014

The main increase in Russian gas exports (if LNG is allowed) will be to Asia, LNG export volumes are most uncertain. Russian gas export volume estimations are reviewed significantly downward (from 400 bcm to 250 bcm in the longer-term), but still remain the highest in the world.

Conclusions

- Despite recent developments, absent drastic interventions in the institutionalized division of labor between public and private actors in European gas markets, on the European level we do not foresee a radical shift away from dependency on Russian natural gas supplies that has been plead for by so many politicians and commentators, on both sides of the Atlantic.
- Instead, absent such interventions, we assume that the fundamental incentive for private entities to act (i.e. price) has not changed, and that political preference will not enter the commercial lexicon.
- This, combined with the reality that most alternative supplies are only second best options (because their costs are significantly higher, or the quantities are not expected to be significant any time soon, or because supplies will not reach the market in the foreseeable future) and a substantial amount of natural gas supplies is tied up in long-term contracts, leads us to believe that despite the often expressed political desire for change no significant change will in fact happen.
- However the perspectives of Russian exports growth to Europe are very limited due to overcontraction and low demand growth. Russia's place in the European market is actually predestined and will be around exports volumes in 2014. Whether they will be closer to the upper or lower limit of the range is dependent on world markets conjuncture, adaptability and flexibility of Russian export policy.
- Cooperation between Russia and Europe in the gas sector have moved from strategic partnership to a normal commercial interaction, burdened by political disputes.
- Asian and domestic markets are becoming more attractive than European market with weak demand and stronger competition
- Significantly changes the structure of Russian crude oil exports by destinations: Europe's share will decrease to less than 50% by 2040. At the same time the importance of the "Eastern vector" of Russian oil exports increases.
- Europe retains its importance for the Russian oil products exports, with the inevitable decline in the absolute volume of deliveries.

Contacts

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