

Evolution of Russian Gas Supplies to the EU: Long-Term Trends - from the Past into the Future (introductory remarks)

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Long-term trends and emerging challenges for natural gas within “Broader Energy Europe”: multi-facet diversification as a trend and a driver of growing interdependence of Russia and the EU in gas (1/2)

1) Dissolution of USSR/COMECON (1991+):

=> two earlier connected neighbouring gas areas with DPs on the border became disconnected by a number of new sovereign transit states that appeared “above” DPs in RF-EU gas value chain

=> part of RF-EU gas value chain above DPs (in the zone of responsibility of producer/exporter) became subject to legislative/regulatory activities of transit states

=> new risks & uncertainties for RF & EU

2) Regulatory changes/challenges within the EU (1998=>2003=>2009-2017+):

=> from “point-to-point” to a “pool” gas system “below” DPs in RF-EU gas value chain

=> until 2004 new risks & uncertainties for EU only, not for Russia

3) Geographical expansion of the EU (2004/2007+): DPs in RF-EU gas value chain have “moved” from EU border to inside EU:

=> part of RF-EU gas value chain “above” DPs (in the zone of responsibility of RF producer/exporter) became subject to legislative/regulatory activities of EU importer

=> new risks & uncertainties for RF & EU

Long-term trends and emerging challenges for natural gas within “Broader Energy Europe”: multi-facet diversification as a trend and a driver of growing interdependence of Russia and the EU in gas (2/2)

4) Multi-facet diversification on the importer (EU) and exporter (RF) side as respond to new challenges, risks & uncertainties:

=> triggering effect for further diversification for both EU & RF of RF-Ukraine transit gas crises (Jan'2006 & Jan'2009)

=> Diversification as a way forward from

(i) individual country markets within European continent connected by cross-border pipelines, to

(ii) “Broader Energy Europe” based on/cemented by cross-border capital-intensive long-distance large-scale immobile gas infrastructure, to

(iii) *Integrated Eurasian Energy market* by further expansion of such infrastructure from/through Russia Eastward

=> growing long-term interdependence of countries united by such infrastructure

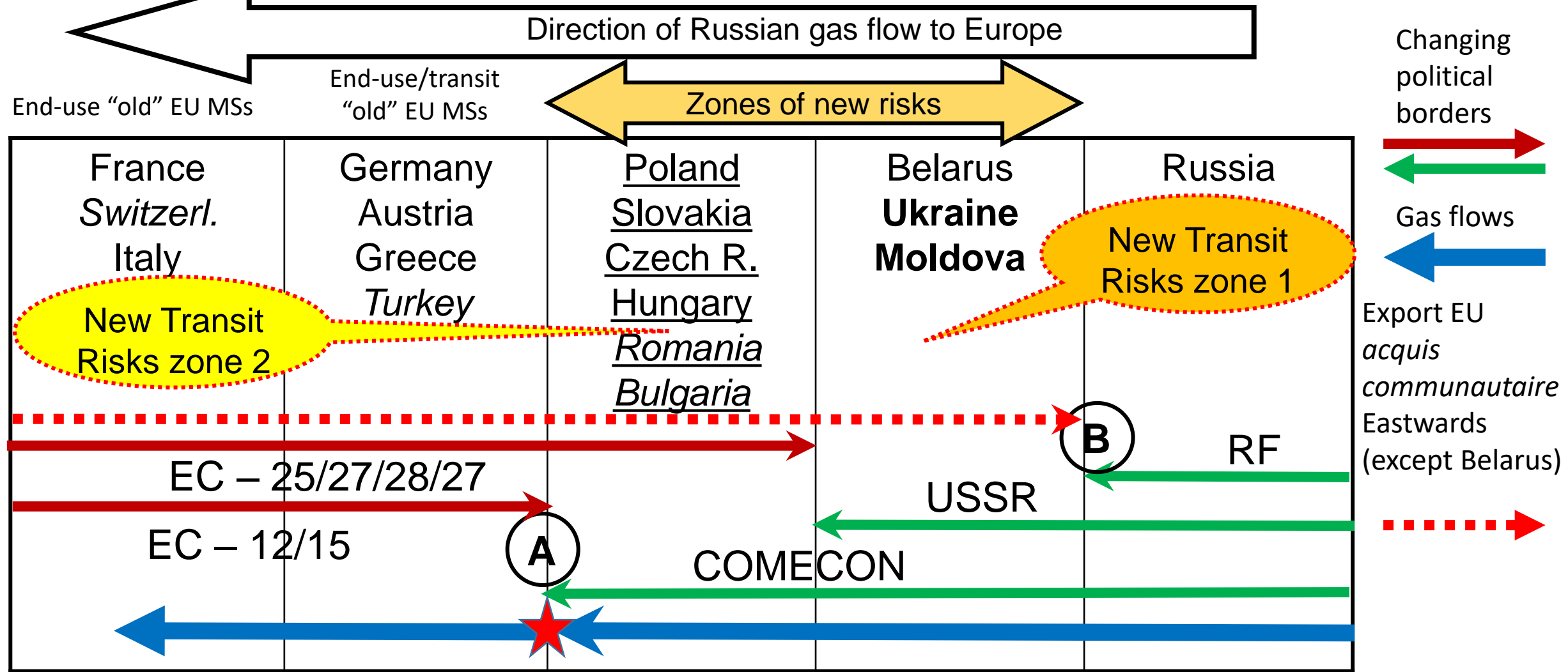
5) EU decarbonisation (COP-21 & EU New Green Deal) and its challenges for gas:

=> new risks & uncertainties for gas based on pre-determined & imbalanced perceptions in *favour of (as if clean domestic) RES-electrons & against (as if foreign dirty) NRES-molecules*

=> “Borchardt turn” (Jan'2018+) & “Three-step Aksyutin’s pathway” (July'2018+) = window of opportunities for balanced approach, if based on “technological neutrality” principle

=> area for further Russia-EU cooperative efforts in gas decarbonisation => **role of WS2 GAC**

Russian gas supplies to Europe: zones of evolving new risks & challenges for existing supplies within Russia's area of contractual responsibility post-USSR time



Italic – non-EU countries; New EU accession states: underlined – since 01.05.2004, underlined + italic – since 1.01.2007; **Bold** – FSU states members of Energy Community; ★ (A) – historical delivery points of Russian gas to the EU in LTGEC (changer title of ownership for gas); (B) – change title of ownership for pipe of Russian producer/exporter in RF-EU gas value chain

Russia-EU common interest & mechanisms for minimizing transit risks

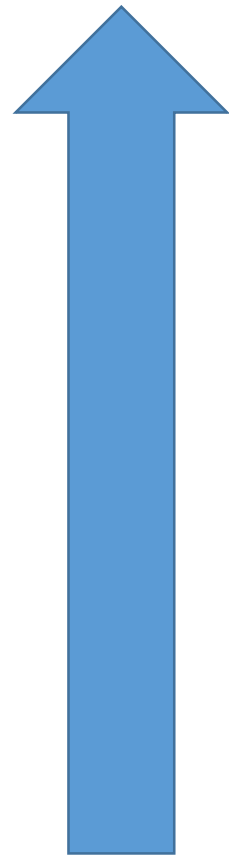
- Prior to dissolution of COMECON/USSR:

- Delivery points at COMECON-EU border, de facto no transit within COMECON (de facto single area for gas export), producer/exporter had full operational control on gas value chain from wellhead to delivery point

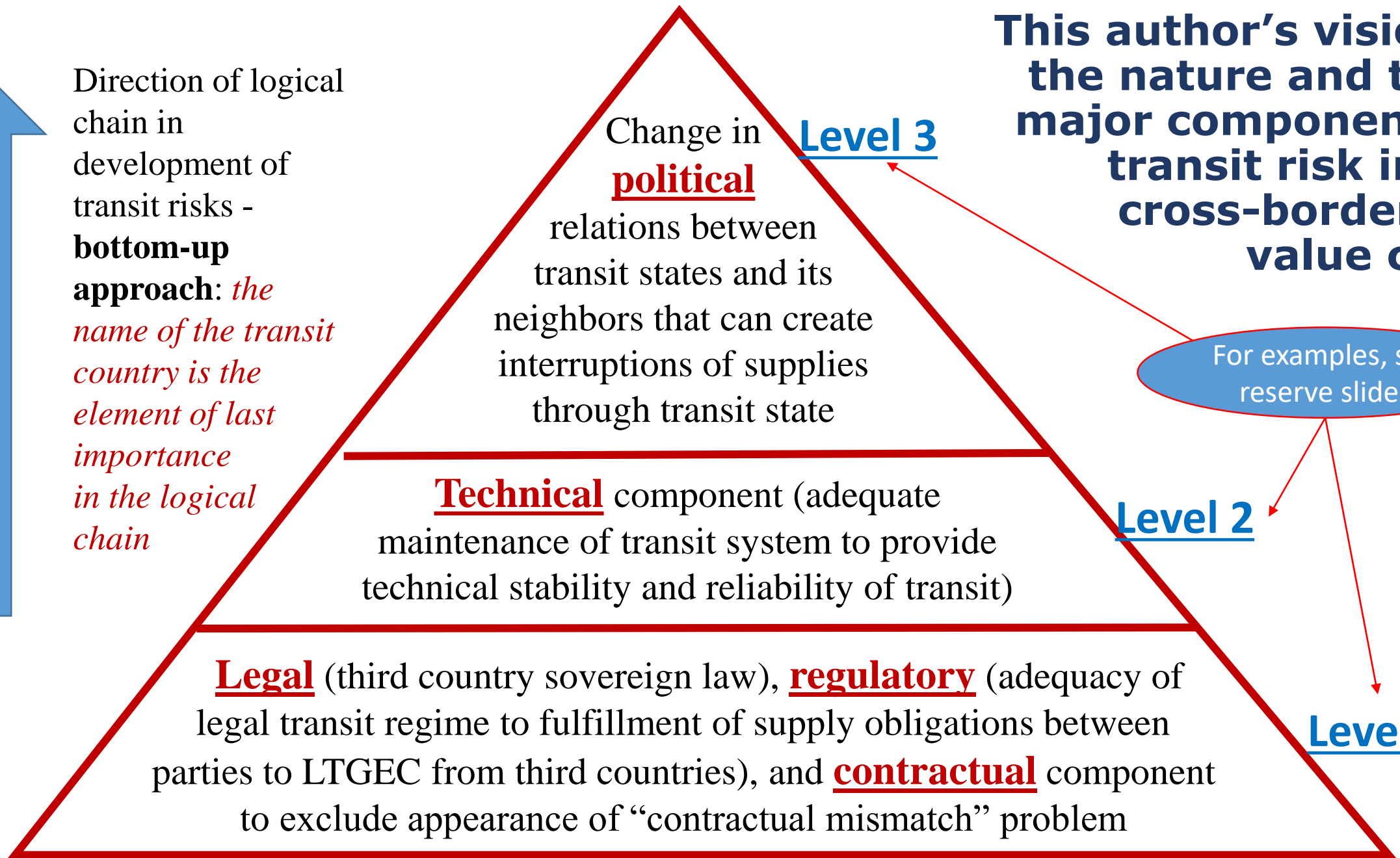
- After dissolution of COMECON/USSR:

- New sovereign independent states between producer/exporter (Russia) and the EU => producer has lost control on transit part of gas value chain (from its border to delivery points) => transit risks => acts for exporter & importer
- To minimize transit risks for importer & exporter = to diversify:
 - For importer (transit + supply risks): **multiple routes** + sources of supply (EU GTM: 3+) + suppliers
 - Though different interpretation of the term “diversification”: any one facet or all three simultaneously
 - For exporter (transit + demand risks): **multiple routes** + markets + importers
- => diversification of routes = common interest for producer/exporter & importer
=> to exclude transit totally or alternative pipelines (by-passes)

This author's vision of the nature and three major components of transit risk in the cross-border gas value chain



Direction of logical chain in development of transit risks - **bottom-up approach**: *the name of the transit country is the element of last importance in the logical chain*

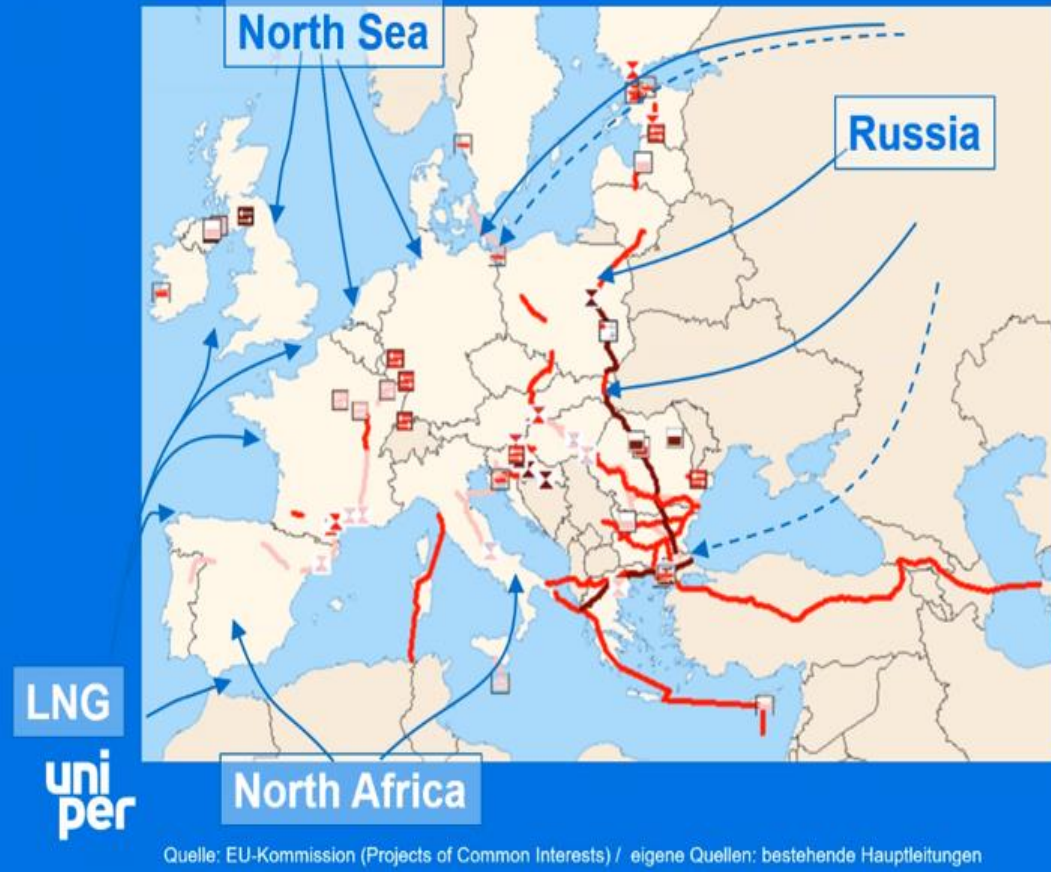
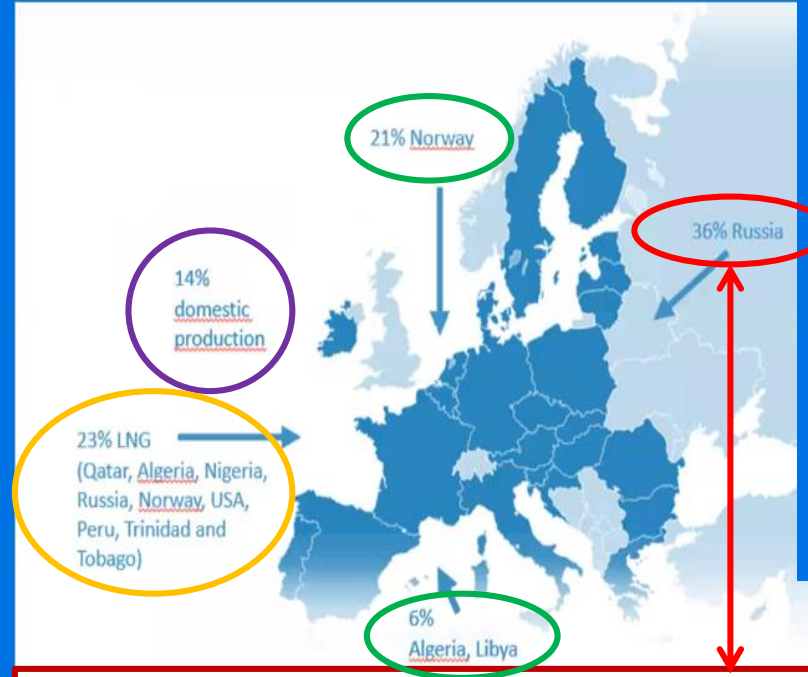


For examples, see reserve slides

Multi-facet diversification of EU gas: increasingly multiple sources of supplies, types of gas, routes & suppliers

Further diversification of supply countries and more interconnectors

Origin of natural gas in the EU internal market



Existing sources / producing countries :

- Domestic Sources
- North Sea
- Russia
- North Africa
- LNG

Zukunftstrends:

- Further export routes for Russian natural gas
- LNG from other supplier countries to Europe
- Additional interconnectors (CEE, Baltic Pipe, ...)

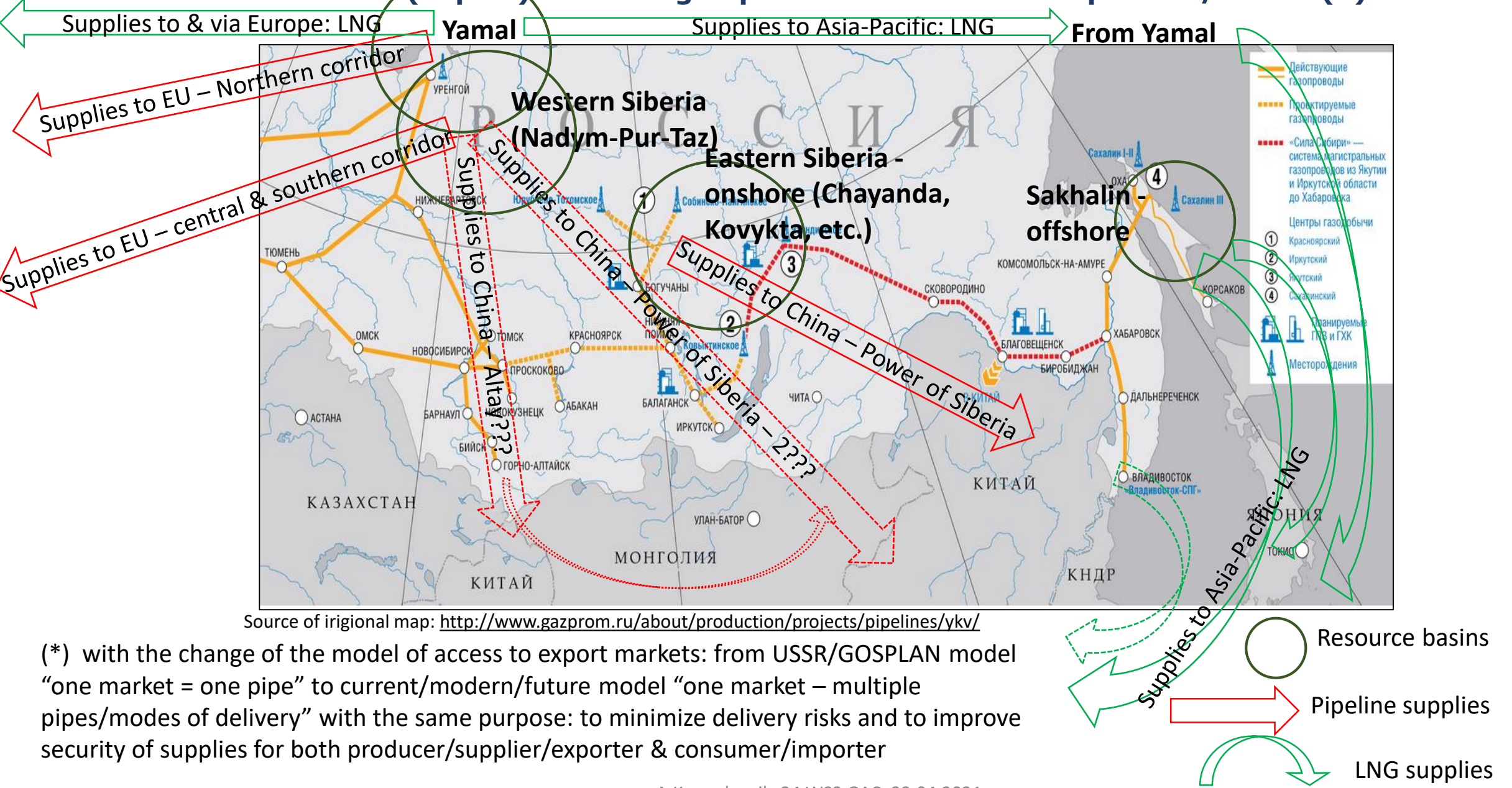
Quelle: EU Kommission, Quarterly report on European gas markets / IHS Markit, EU 27 Daten in 2020

Source: Dr. Christopf Schäfers, Uniper. Security of Supply: Role of Natural Gas and Hydrogen" // Presentation at IBC Energy Committee meeting, 20.04.2021, online.

Russian gas protects its competitive market niche at EU gas market in permanent competition with (i) EU domestic supplies, (ii) two other import EU supply sources of pipeline gas, (iii) further diversification of supply sources & pipeline routes to EU, & (iv) increasingly multiple LNG supplies from global LNG market => Russia protects it market niche at EU market within increasing global competition

Multi-facet diversification of Russian gas:

The markets for Russian gas: European (export) and Russian (domestic) = past/present; same plus Asia Pacific (export) + arbitrage operations worldwide = present/future (*)



Source of original map: <http://www.gazprom.ru/about/production/projects/pipelines/ykv/>

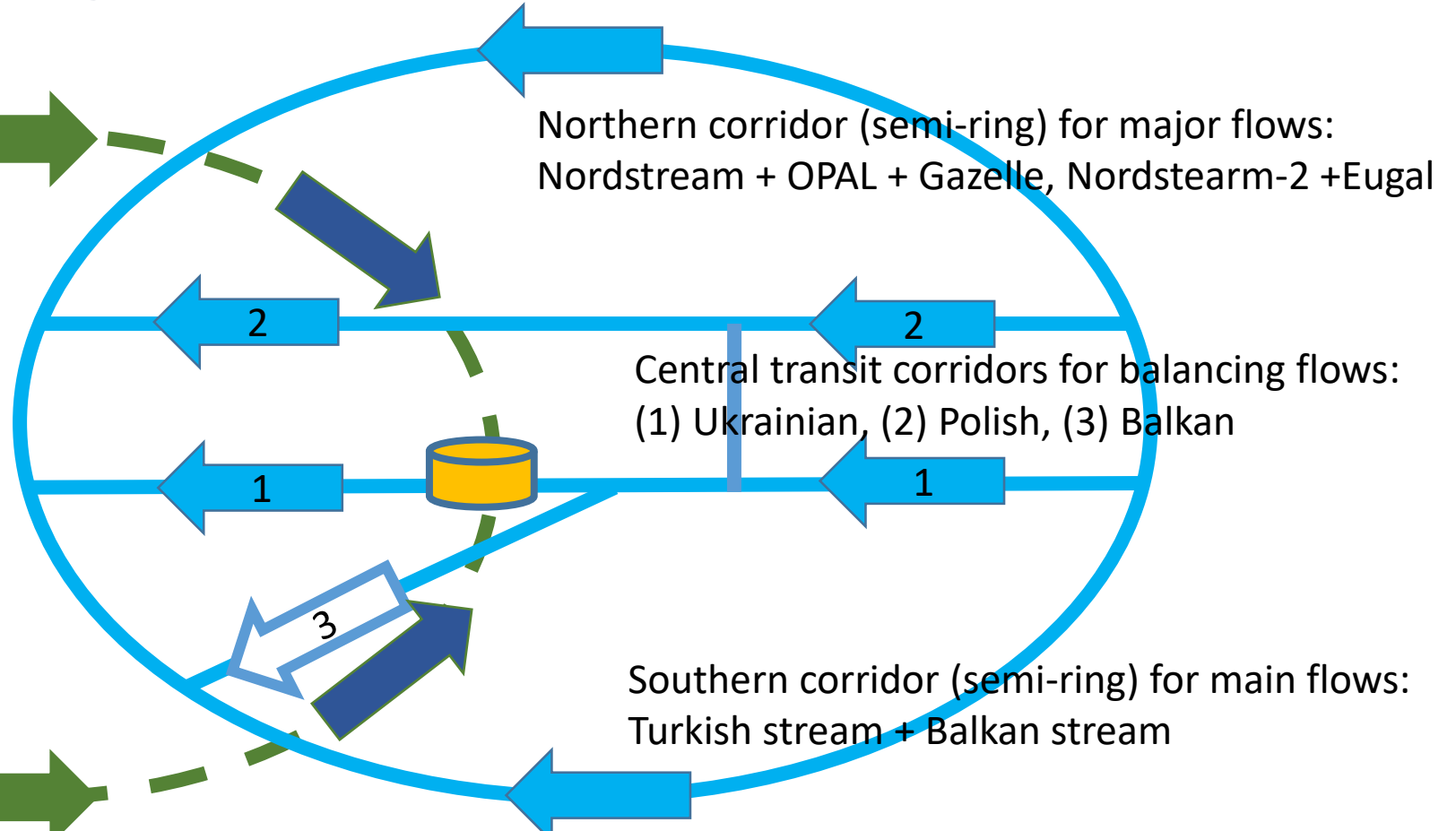
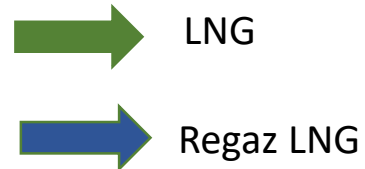
(*) with the change of the model of access to export markets: from USSR/GOSPLAN model "one market = one pipe" to current/modern/future model "one market – multiple pipes/modes of delivery" with the same purpose: to minimize delivery risks and to improve security of supplies for both producer/supplier/exporter & consumer/importer

Two rings for future European gas supplies in formation: (i) "disruptive" ring of global LNG supplies & (ii) "integral" with internal backup ring of Russian pipeline gas supplies within radial-circle gas infrastructure system (generalized scheme)

-> Europe for Russian pipeline gas supplies = target market

-> Europe for LNG supplies (incl. US LNG) = closing (bridge) market within arbitrage deals (but target market for US LNG in Eastern Europe => "to kill the competitor")

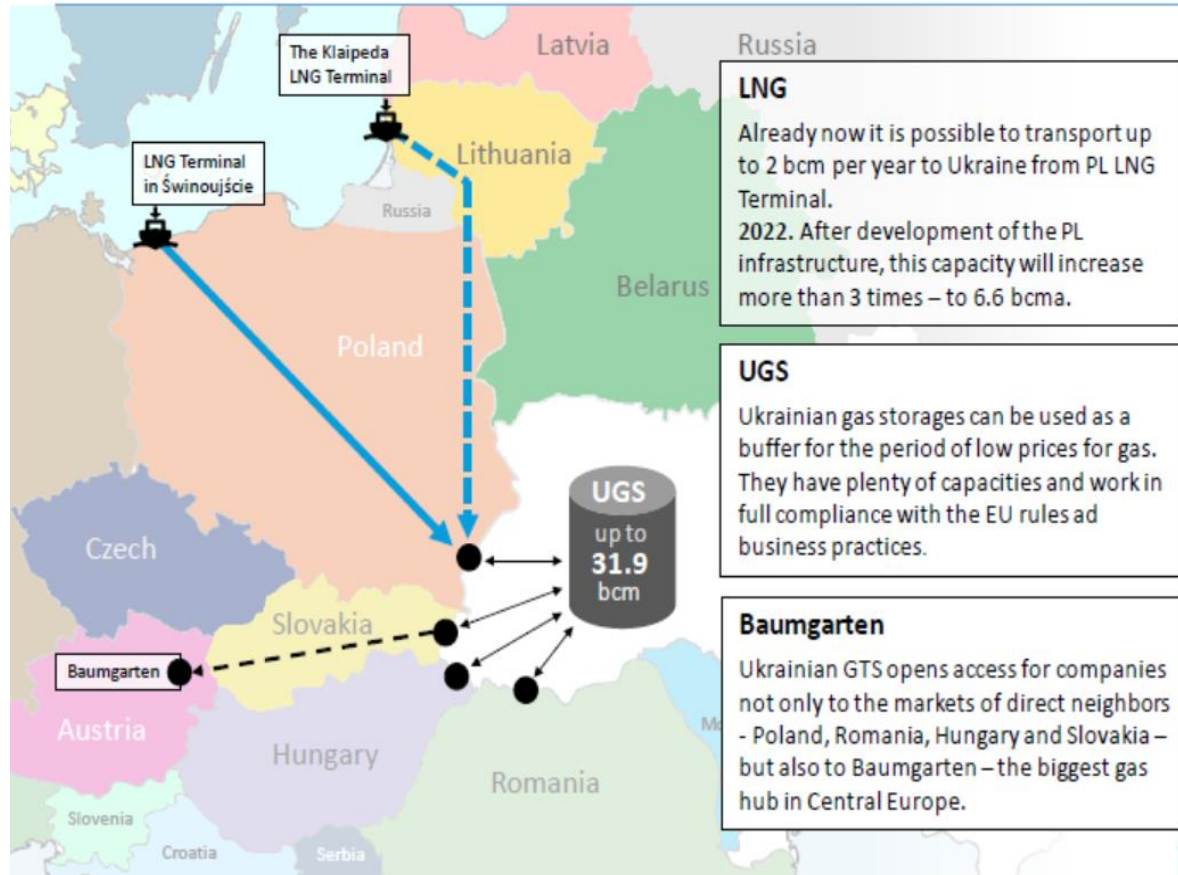
Source: A.Konoplyanik



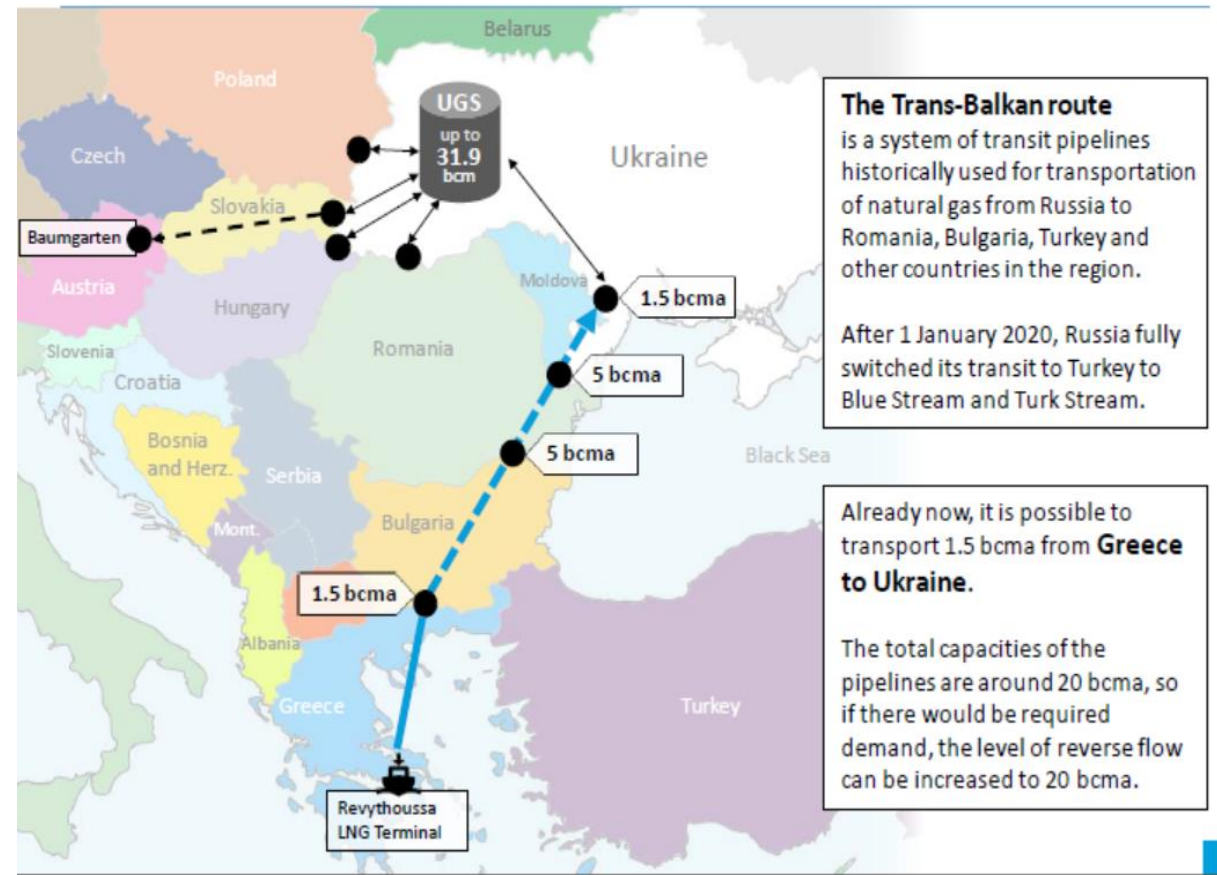
Supply ring based on LNG (incl. from US): to close loop in the East – to displace Russian gas from Eastern Europe
 Supply ring based on Russian pipeline gas: to close loop in the West – to increase security of supplies

How LNG supply ring is aimed to be closed in the Eastern part of Europe

LNG and Ukraine – “Northern direction”



LNG and Ukraine – “Southern direction”



Source: Sergii MAKOGON (CEO of Gas TSO of Ukraine, LLC). GTSOU presentation. Overview. // Presentation at webinar “Ukrainian Gas Storage Opens for Business”, LNG-Worldwide Ltd, DMG-events/World LNG & Gas Series, 10 June 2020

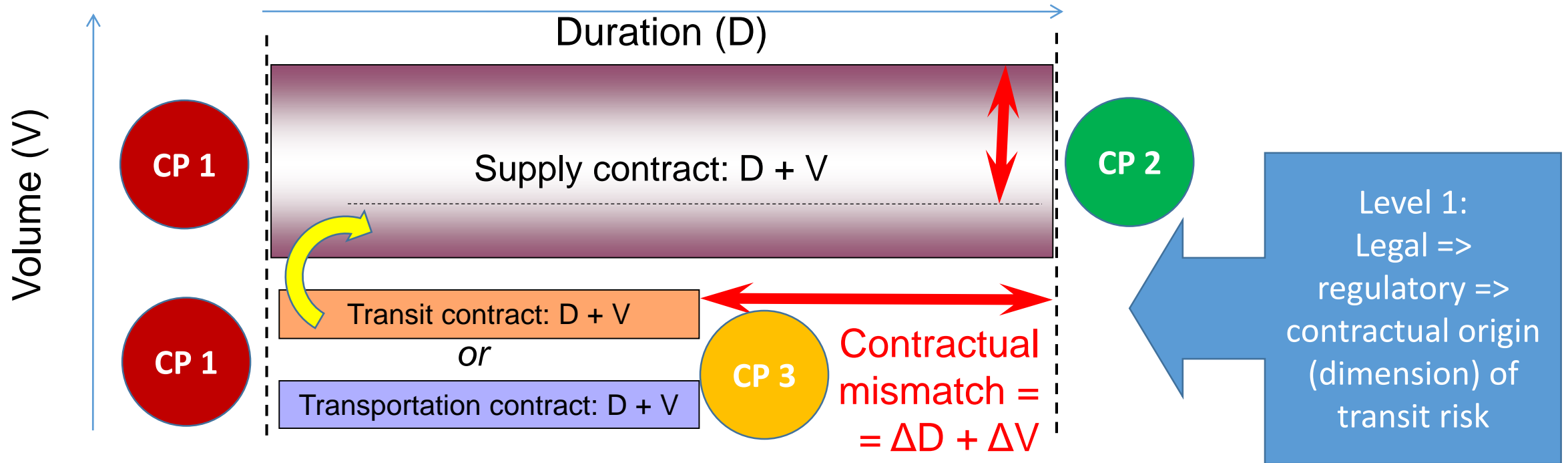
Gas business – long-term adaptability to new challenges

- Gas business has been effectively adapting to the new risks, uncertainties and challenges through many decades of its existence:
 - In more distant past – to geopolitical challenges,
 - In more recent past – to regulatory challenges,
 - Nowadays & in the coming future – to decarbonisation challenges,
 - In the longer-term future - ???
- Gas business has always survived in competitive environment in the long-term
- Presentations on last 5 years reflect just a part of longer-term trends
 - Contracts and pricing (S.Komlev)
 - Electronic trading platform (Yu.Djachenko)
 - Diversification of Pipe Gas Export Routes (A.Miroshnichenko)
- GAC mission: “to diminish common risks & challenges to the tolerable level” (P.Lowe, DG DG ENERGY, Inaugural GAC meeting, Vienna, Oct’2011)
- Yamani: “[You should always] think long-term. Once you start thinking short-term, you are in trouble because short-term thinking is only a tactic for immediate benefit”

Items for next WS2 GAC meetings – long-term development evolutionary trends into future decarbonisation path
(natural gas to survive & find its competitive niche within new types of competition - with both RES-electrons and decarbonized molecules)

Reserve slides

Level 1 issue: Contractual Mismatch Problem

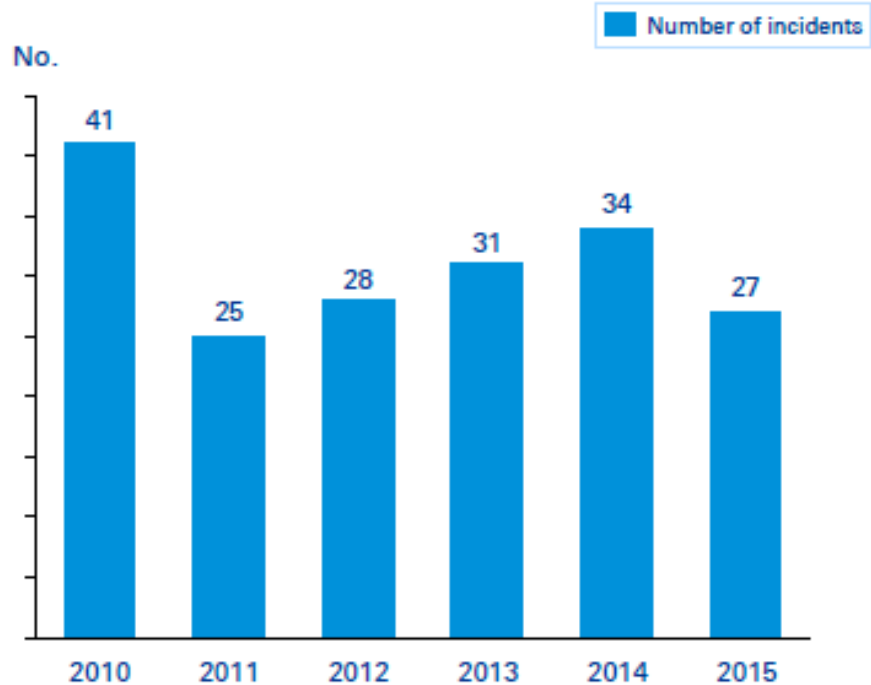


Mismatch between duration/volumes (D/V) of long term supply (delivery) contract & transit/transportation contract as integral part to fulfill delivery contract => risk of non-renewal of transit/transportation contract at **existing** capacity *or* non-creation of adequate **new** capacity => risk of non-delivery for existing/new **supply** contract (incl. arbitration consequences).

Core issue: to guarantee access to/creation of adequate transportation capacity for volume/duration of long term contracts; **shipper's contracts (booking guarantees) best financial security for debt/project financing**

Level 2 issue: Technical conditions of Ukrainian GTS (acc. to KPMG)

There was a slight improvement in 2011. but since then the number of incidents has been increasing



KPMG calculation methodology for failure index (No. of failures/(1000 km *1 bcm)):

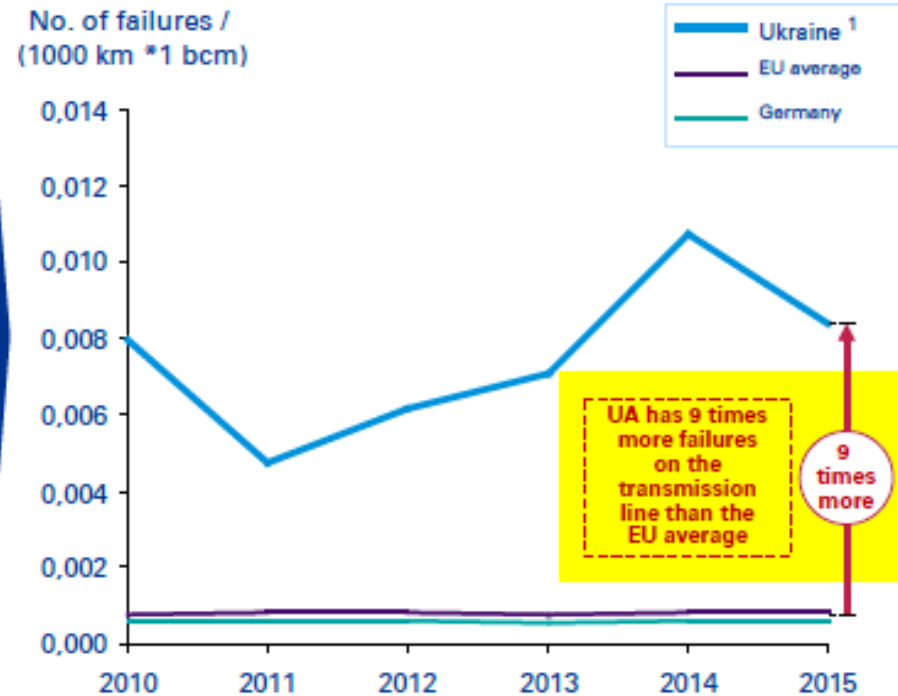
(1) Ukraine: Calculated on the basis of number of failures (published by Ukrtransgaz, 2015) and 38.5 th km long transmission system and sum of transit and net imports from Russia were taken into account.

(2) EU average: Number of incidents per 1000 km from EGIG 2015 report and quantity of imports from Eurostat Statistical Dashboard.

(3) Germany: Number of incidents per 1000 km from DVGW 2011-2015 statement and quantity of imports from Eurostat Statistical Dashboard.

Source: Ukrtransgaz Publication on Incidents on the transmission system („У 2015 році кількість відмов на магістральних газогонях України зменшилась на 21%“ Published on 2016.08.15), 9th Report of the European Gas Pipeline Incident Data Group on period 1970 – 2013 (2015); Sicherheit von Gasfernleitungen – das Technische Regelwerk im Licht der aktuellen Rechtsprechung (2011; 2013; 2015)

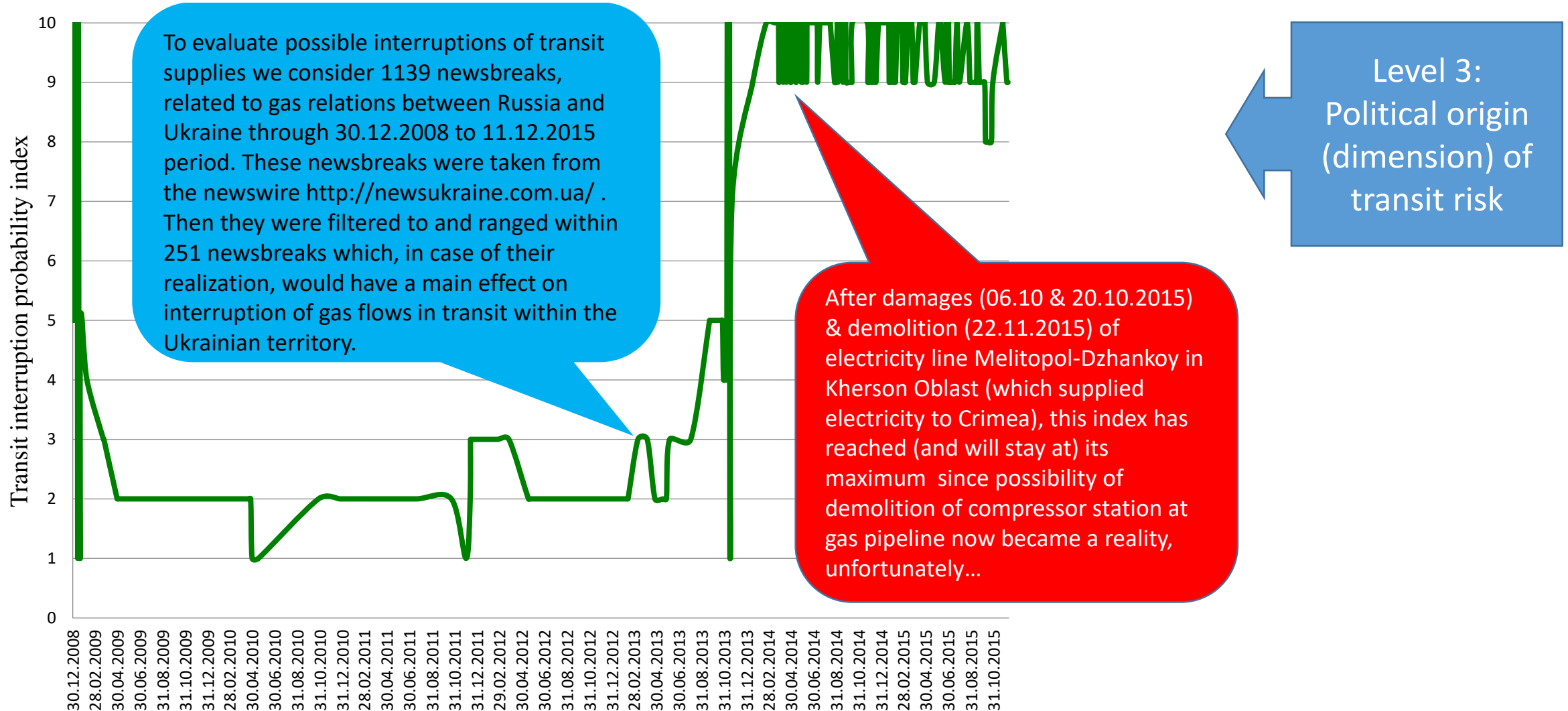
Compared to the international benchmark, Ukraine has the most failures per 1000 km times natural gas throughput



Level 2:
Technical origin
(dimension) of
transit risk

Source: Situation of the Ukrainian natural gas market and transit system. Market Study. // KPMG, 10.04.2017, p.37-38

Level 3 issue: Ukraine: "transit interruption probability" index (2009–2015)



Calculated by M.Larionova, Russian Gubkin State Oil & Gas University, Chair "International Oil & Gas Business", Master's programme 2013-2015, on methodology, jointly developed with A.Konoplyanik, based on principles of credit ratings evaluation by major international credit agencies

Thank you for your attention!

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