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# A role of liquefied natural gas (LNG) in the EU's energy supply: A special emphasis on the Baltic Sea region

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# A role of liquefied natural gas (LNG) in the EU's energy supply: A special emphasis on the Baltic Sea region

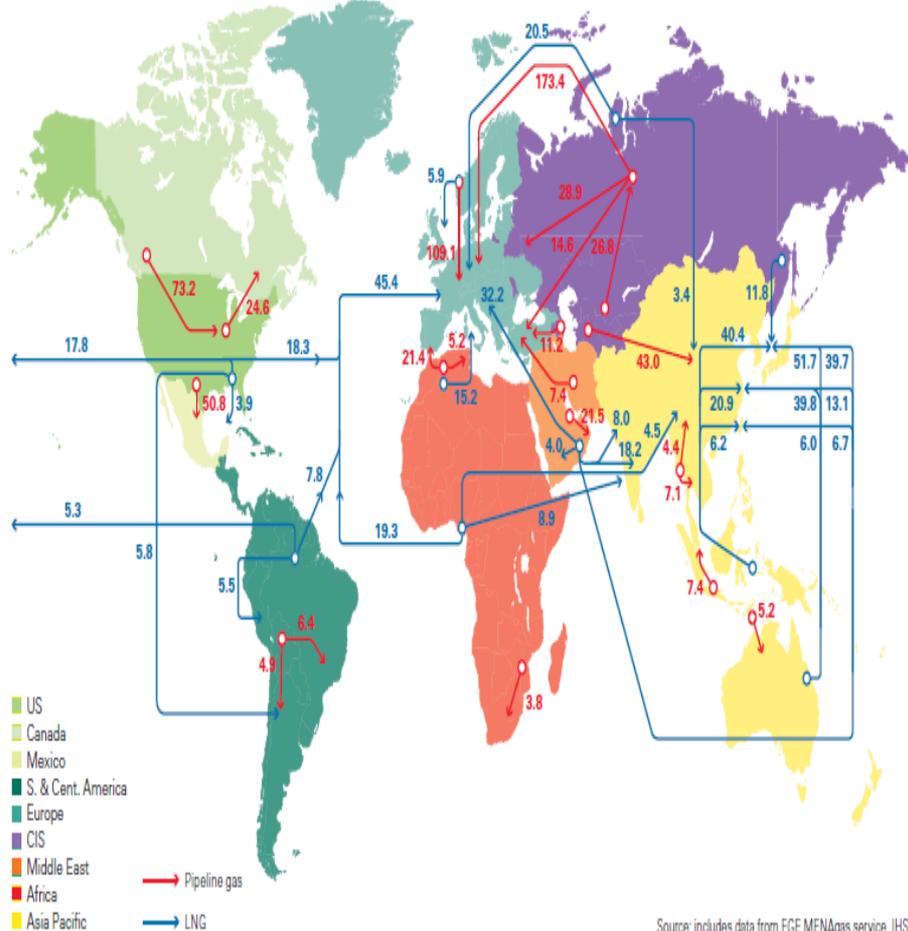
## The main pillars of the presentation:

- I) Natural gas and its role in energy consumption 2-7
- II) LNG in the EU and the Baltic Sea region 9-14
- III) Concluding remarks 15



# I) Major flows in international gas trade in 2019

Major trade movements 2019  
Trade flows worldwide (billion cubic metres)



Pipe deliveries (bcm)	From					
To	Canada	USA	Norway	Russia	Others	Total imports
North America	73.2	75.4	-	-	0.1	148.7
S. & Cent. America	-	-	-	-	12.0	12.0
Europe	-	-	109.1	188.0	174.1	471.3
CIS	-	-	-	28.9	29.7	58.5
Middle East	-	-	-	-	32.5	32.5
Africa	-	-	-	-	9.8	9.8
Asia Pacific	-	-	-	0.3	68.4	68.7
<b>Total exports</b>	<b>73.2</b>	<b>75.4</b>	<b>109.1</b>	<b>217.2</b>	<b>326.6</b>	<b>801.5</b>

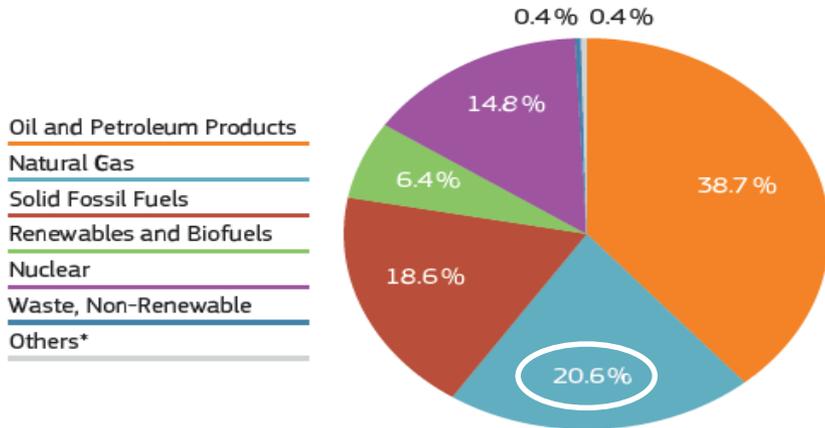
LNG deliveries (bcm)	From					
To	USA	Russia	Qatar	Australia	Others	Total imports
North America	3.9	-	-	-	4.7	8.6
S. & Cent. America	5.8	0.2	-	-	7.1	13.1
Europe	18.3	20.5	32.2	-	48.8	119.8
Middle East & Africa	1.7	0.8	2.8	0.1	4.2	9.5
Asia Pacific	17.8	17.9	72.0	104.6	226.3	334.1
<b>Total exports</b>	<b>47.5</b>	<b>39.4</b>	<b>107.1</b>	<b>104.7</b>	<b>291.1</b>	<b>485.1</b>

Russia is the world's largest natural gas exporter and Europe the world's largest importer.

# I) A role of natural gas in the EU

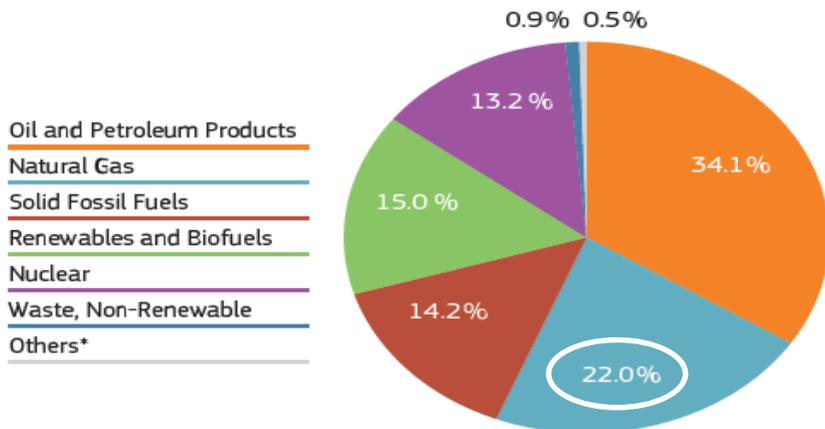
## TOTAL PRIMARY PRODUCTS 2000: 1 497.4 Mtoe

(Total Primary and Secondary Products 2000: 1 498.2 Mtoe)

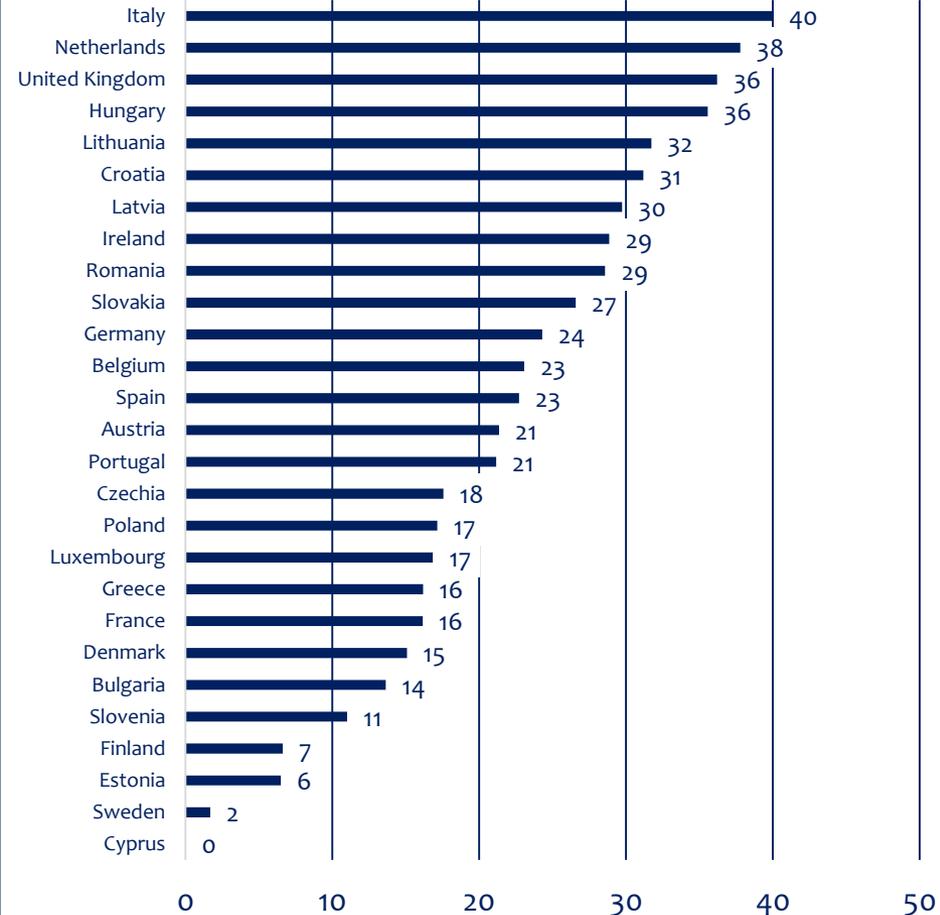


## TOTAL PRIMARY PRODUCTS 2018: 1 477.9 Mtoe

(Total Primary and Secondary Products 2018: 1 479.3 Mtoe)

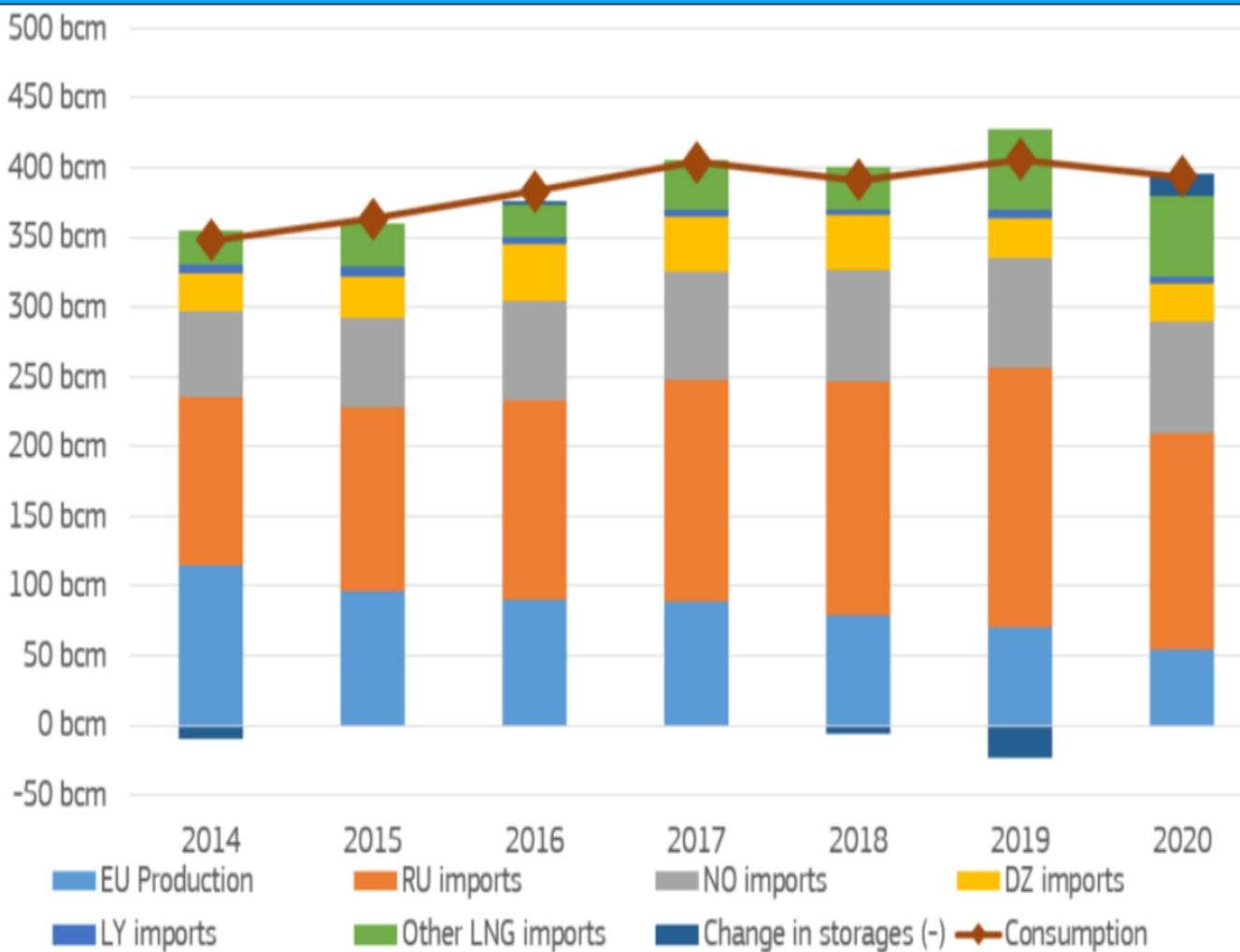


## Share of natural gas in the EU member states' primary energy consumption in 2019



The share of natural gas in the EU's energy consumption is a bit lower than in the world as a whole. A share of natural gas in the EU's energy mix increases until the impact of the Green Deal starts. Major differences in importance of natural gas among the EU member states. Malta, not included in the graph, is the most dependent on gas (50%).

# I) The EU's gas balance



## The EU's gas sector in 2020

Consumption 2020 394 bcm  
 Increase (2014-2020) +50 bcm

Production 2020 54 bcm  
 Decrease (2014-2020) -60 bcm

Import dependence 2020 86 %  
 Import dependence 2000 66 %

Gas storage capacity ca 100 bcm  
 Capacity / consumption ca 25 %

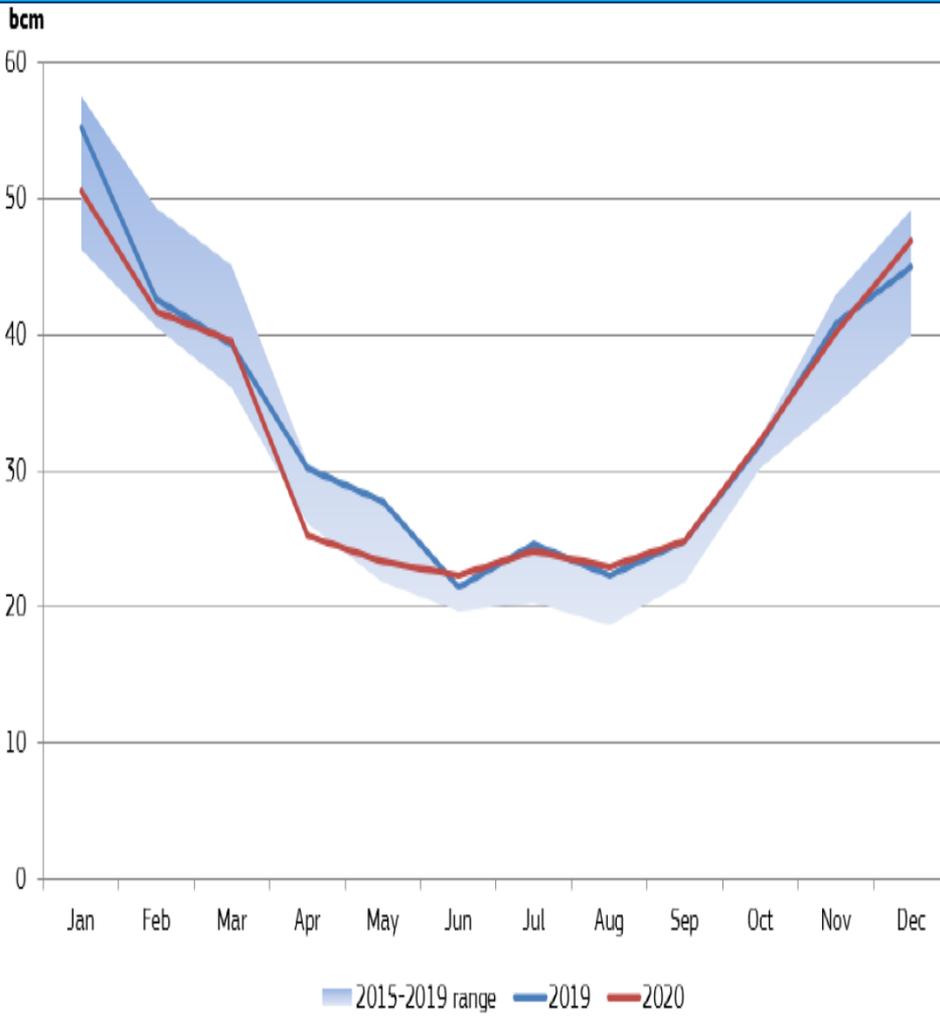
LNG terminal capacity ca 170 bcm  
 LNG imports 84 bcm  
 Terminal utilisation rate ca 50 %

RU = Russia; NO = Norway; DZ = Algeria; LY = Libya

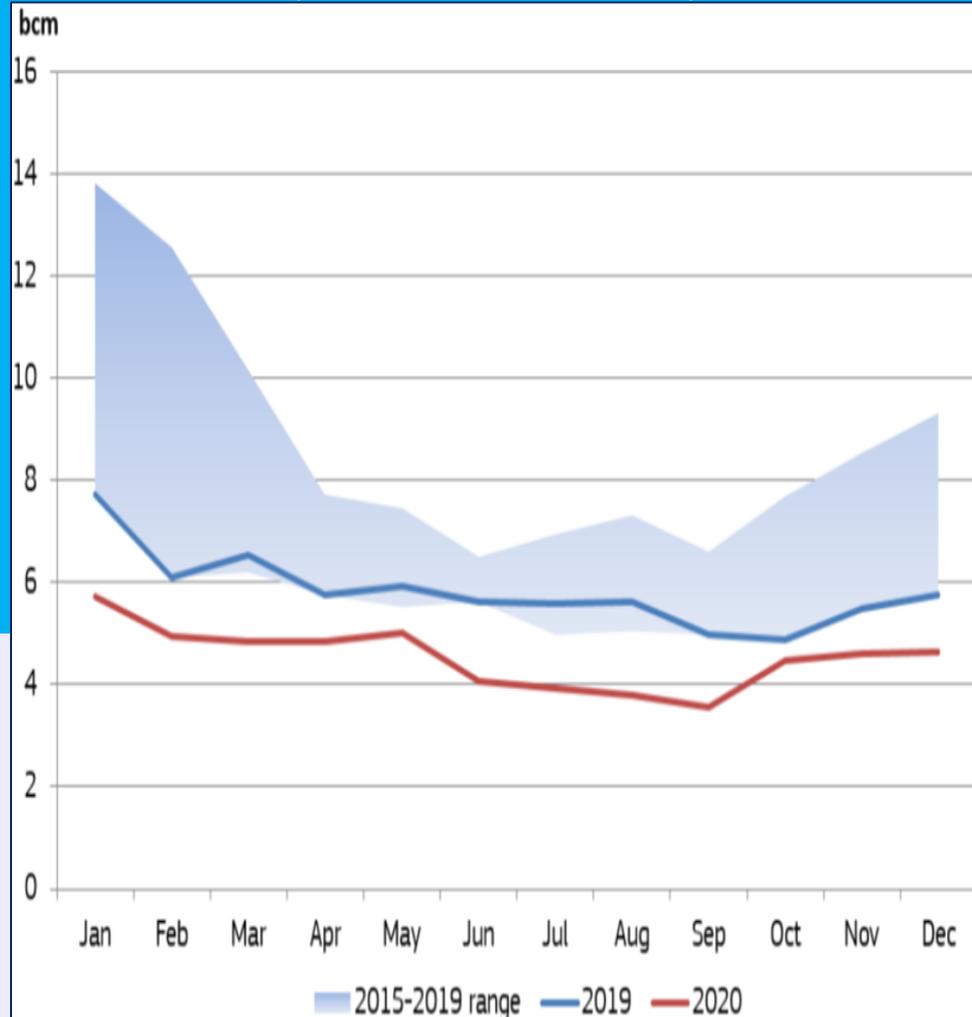
bcm = billion cubic metres

# I) The EU's monthly gas consumption and production

**Consumption**  
(note the scale difference)



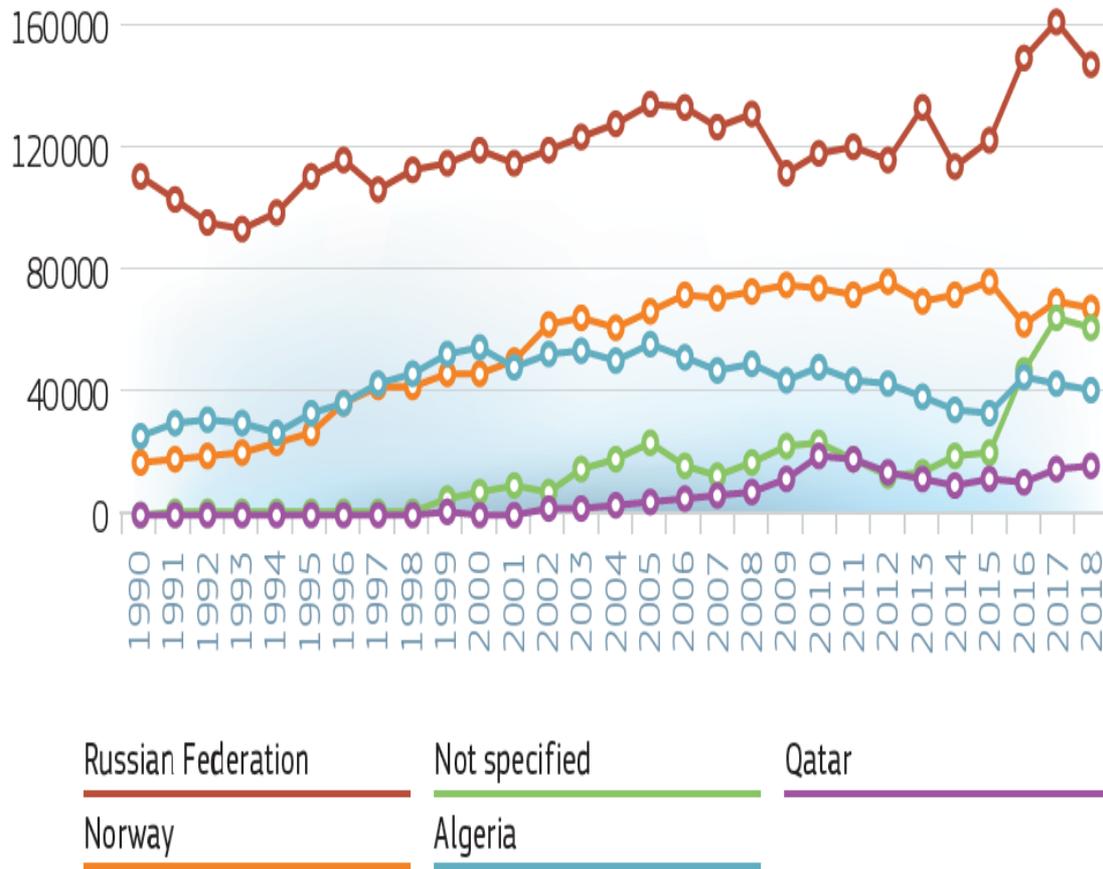
**Production**  
(note the scale difference)



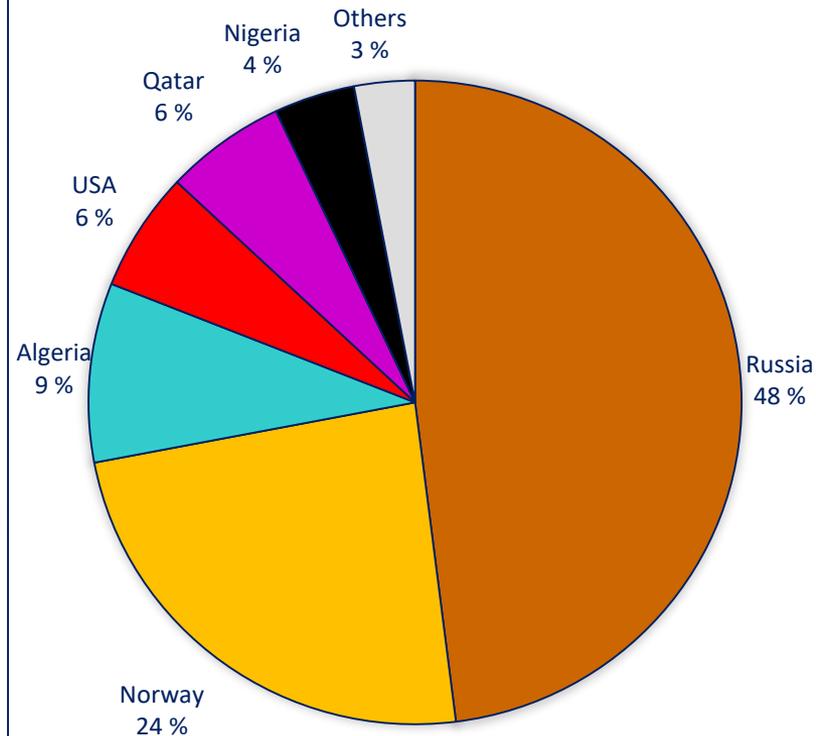
Due to the Brexit, the EU lost its largest gas producer Great Britain. Gas production drops next year due to the closure of the EU's largest gas field in Groningen, the Netherlands. Germany's phase out of nuclear power in 2022 may mean need to import 15-20 bcm more. If EU's gas storages were full, they could satisfy two winter months' gas consumption.

# I) The EU's natural gas imports

EU27\_2020 – NATURAL GAS – IMPORTS FROM EXTRA-EU  
(1990-2018) TOP 5 BY 2018 VOLUME (Mio m<sup>3</sup>)



The EU's natural gas imports in 2020  
(pipeline + LNG)



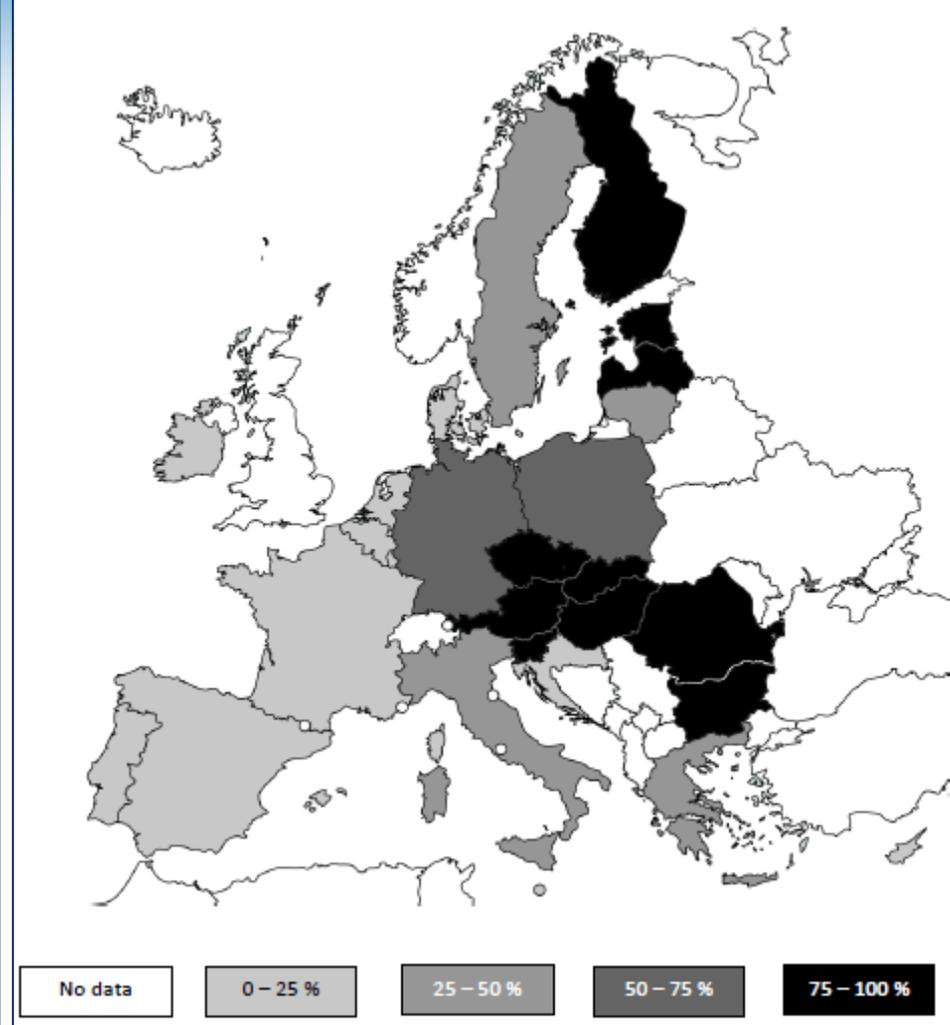
Despite the Donbass War since 2014, the EU's gas imports from Russia have increased. Russia covered a half of the EU's natural gas imports in 2020.

# I) The importance of gas and Russian gas to the EU

Share of natural gas in primary energy consumption in 2019



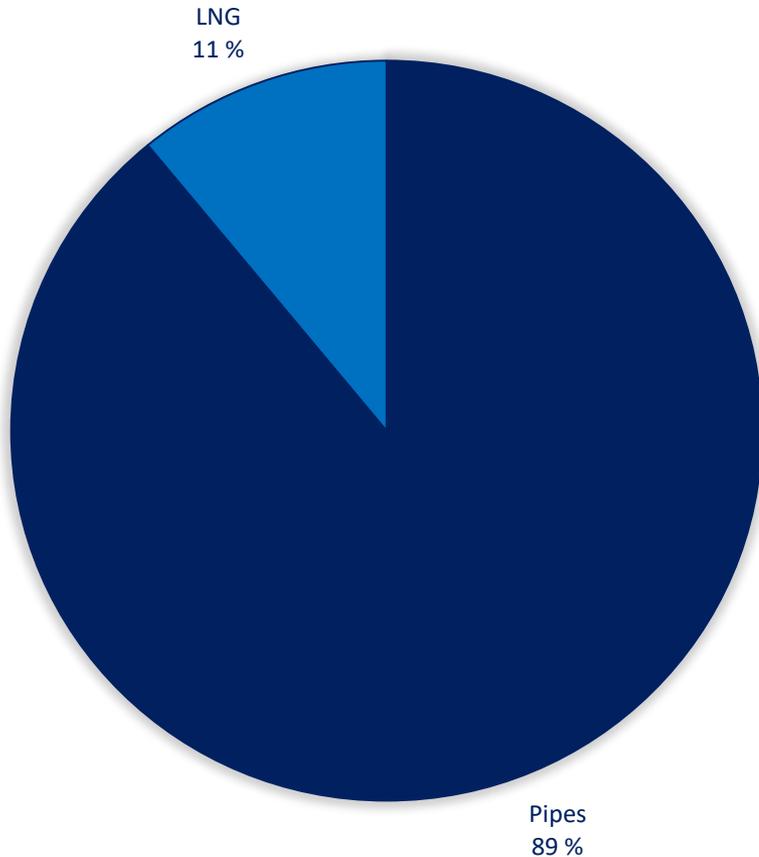
Share of Russia in natural gas imports, January-June/2020



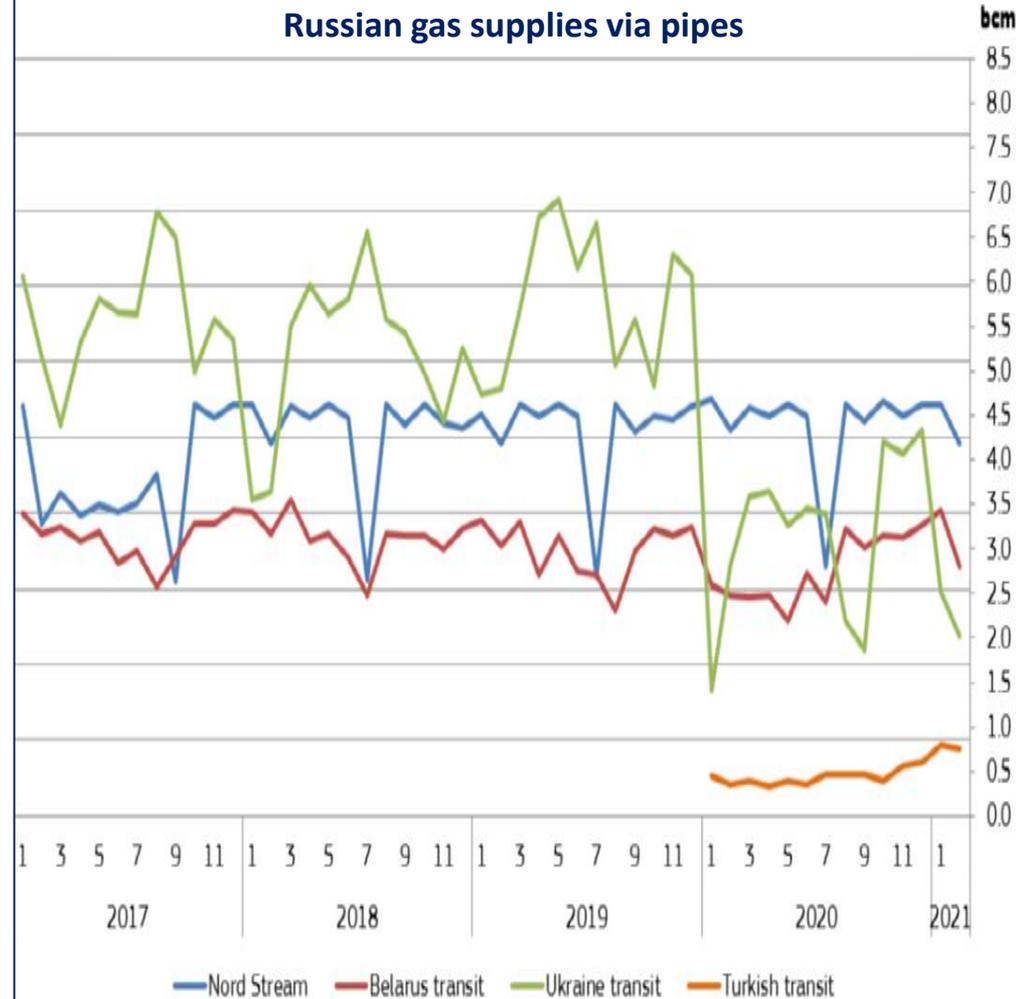
As the share of natural gas is high in the Hungarian energy consumption and Russia practically monopolises the Hungarian gas supply, Hungary is the most dependent on Russian gas within the EU. Hungary's gas consumption has doubled during the Orbán leadership.

# I) The EU's natural gas imports from Russia

Russia's gas supplies to the EU in 2020

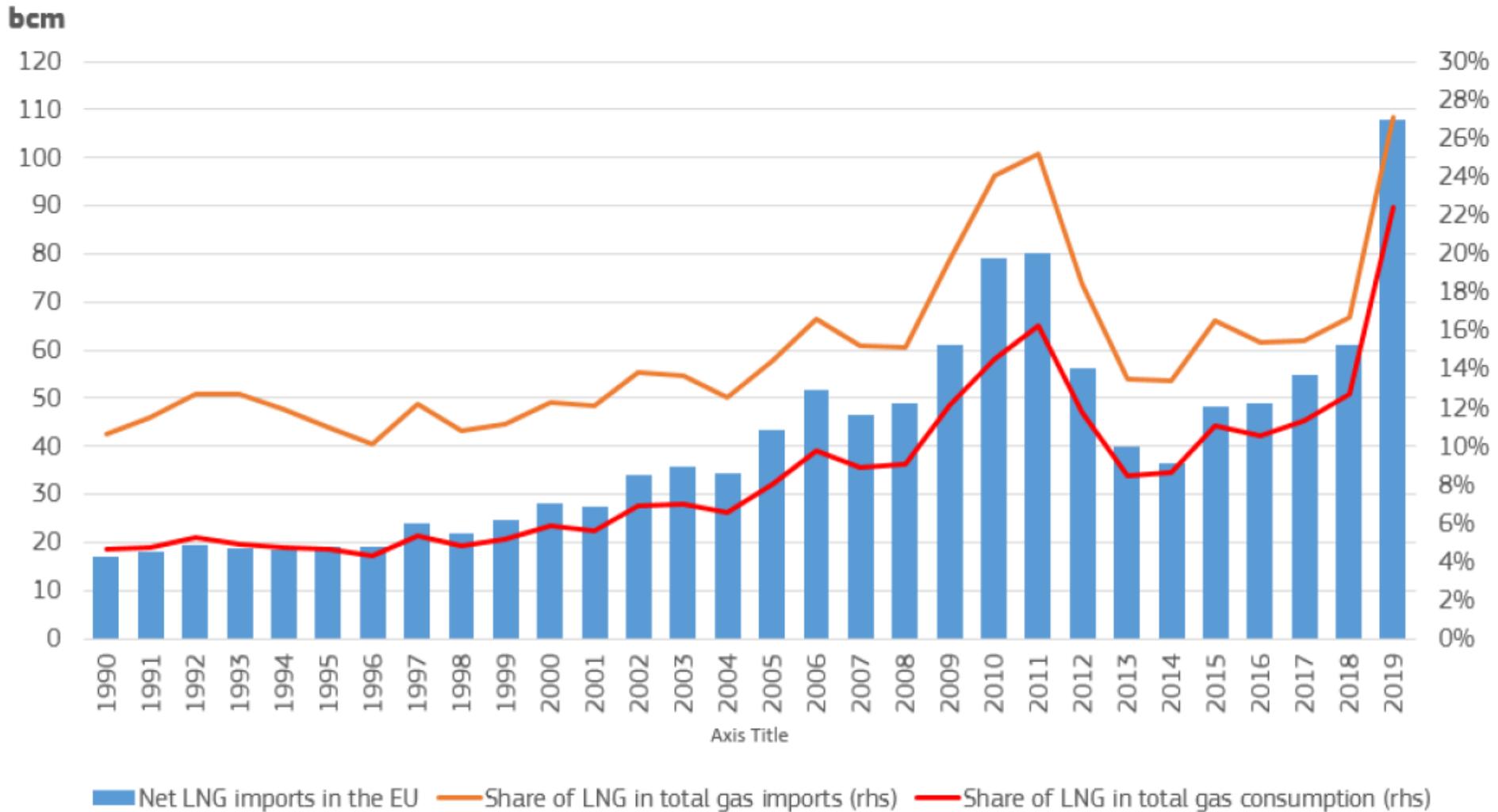


Russian gas supplies via pipes



The pipes dominate the natural gas logistics from Russia to the EU. Nord Stream (40%) became the largest supply route from Russia to the EU in 2020. The Ukraine transit covered 30%. Before Nord Stream, the share of the Ukraine transit was approximately 80%. Russia and Ukraine have agreed on annual 40 bcm deliveries during the period 2021-2024.

## II) Importance of LNG in EU's gas imports & consumption

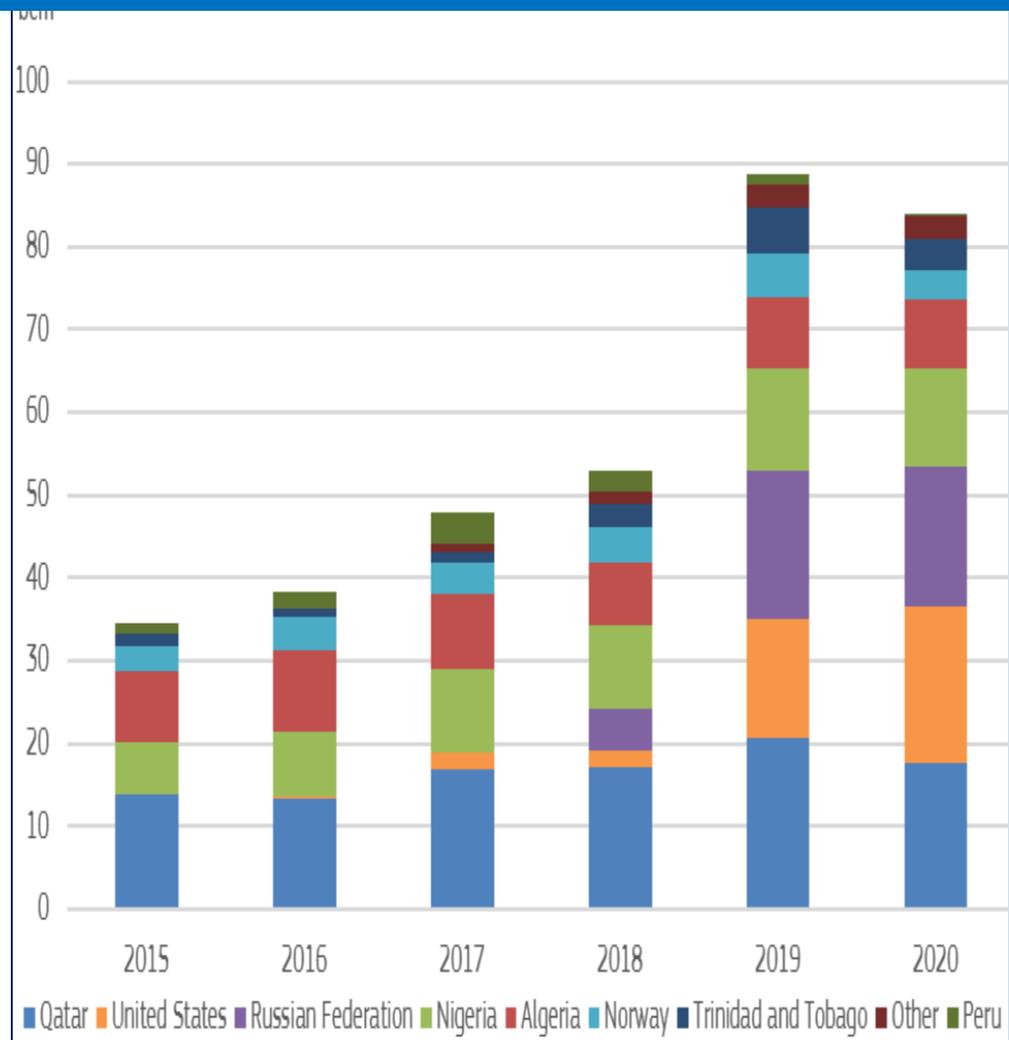
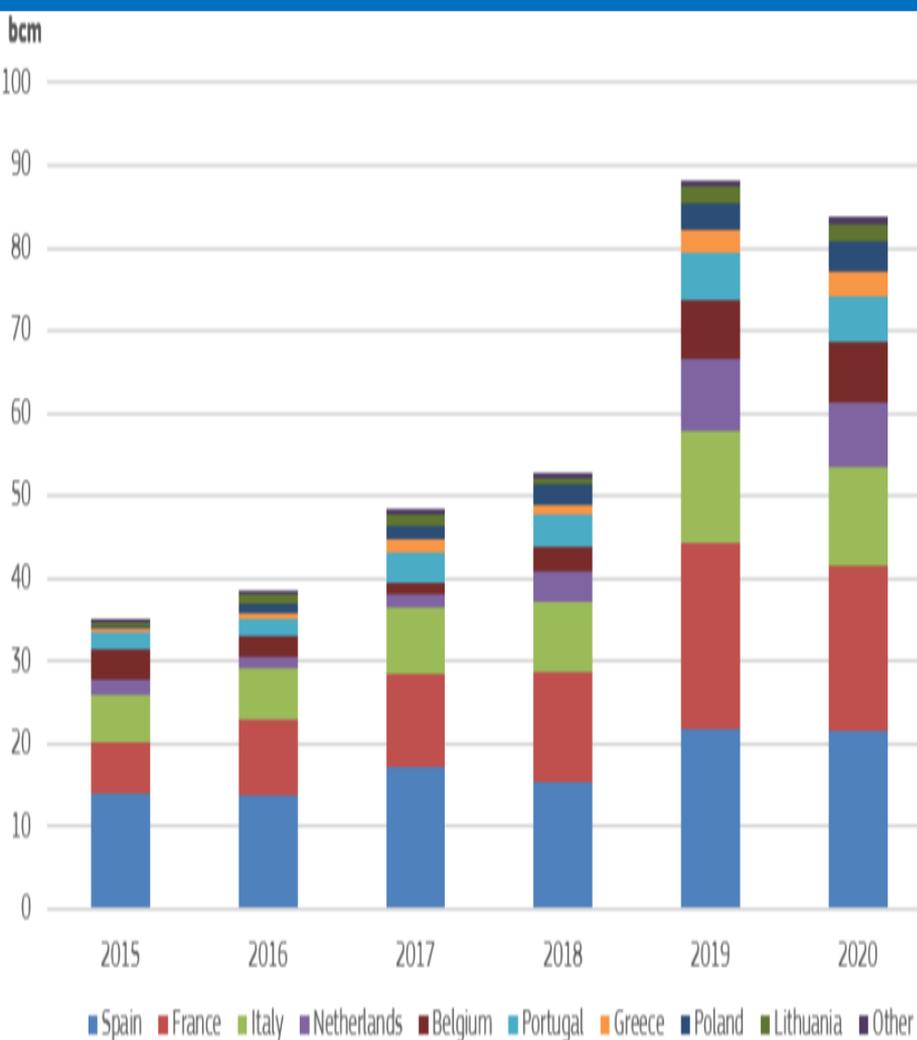


LNG accounted for a quarter of the EU's total natural gas imports in 2020.  
20 years earlier, the corresponding proportion was a bit over 10%.

## II) Natural gas imports and the LNG share in 2019

	Natural gas imports (bcm)	LNG share in gas imports (%)	Three main LNG suppliers and their share
Austria	14.2	0	No access to the sea.
Belgium	23.2	29	Qatar (65%), Russia (28%), USA (5%)
Bulgaria	2.9	0	No published plans to build LNG terminal.
Croatia	2.0	0	Croatia opened its LNG terminal in January 2021.
Cyprus	0.0	0	Cyprus will open its LNG terminal in 2022.
Czechia	9.5	0	No access to the sea.
Denmark	1.1	0	No published plans to build LNG terminal.
Estonia	0.5	5	No data – probably LNG fuel for vessels.
Finland	2.6	7	Russia (64%), Norway (21%), re-exports received (14%)
France	55.0	37	Russia (32%), Nigeria (19%), Algeria (17%)
Germany	94.8	0	Plans to build 3 large-scale and 1 medium-scale LNG terminal.
Greece	5.2	54	Algeria (19%), Qatar (19%), Norway (19%)
Hungary	18.6	0	No access to the sea.
Ireland	2.9	0	Plans to build 2 LNG terminals stopped in January 2021.
Italy	71.1	19	Qatar (48%), Algeria (22%), USA (12 %)
Latvia	1.4	0	LNG's share was 0.2%
Lithuania	2.7	57	Norway (71%), Russia (22%), USA (5%)
Luxembourg	0.8	0	No access to the sea.
Malta	0.4	100	Trinidad and Tobago (68%), Norway (16%), Egypt (14%)
Netherlands	59.3	18	Russia (53%), USA (25%), Peru (6%)
Poland	17.7	20	Qatar (68%), USA (27%), Norway (5%)
Portugal	6.1	92	Nigeria (58%), USA (23%), Qatar (12%)
Romania	2.7	0	No published plans to build LNG terminal.
Slovakia	6.7	0	No access to the sea.
Slovenia	0.9	0	No published plans to build LNG terminal.
Spain	37.2	58	Qatar (20%), Nigeria (20%), USA (20%)
Sweden	1.1	28	Norway (38%), Russia (31%), re-exports received (31%)

## II) The EU member states' LNG imports and suppliers



Spain, France, Italy, the Netherlands and Belgium accounted for more than 80% of the EU's LNG imports in 2020. In turn, the USA (19 bcm), Qatar (18 bcm) and Russia (17 bcm) formed over 60% of the EU's LNG supplies.

## II) The EU's large-scale LNG receiving terminals

Country	Name	Start-up year	Annual capacity	Capacity / gas consumption 2019
Belgium	Zeebrugge LNG	1987	9 bcm	52 %
Croatia	Krk LNG	2021	3 bcm	90 %
France	Fos-Tonkin LNG	1972	3 bcm	78 %
	Montoir-de-Bretagne LNG	1980	10 bcm	
	Fos Cavaou LNG	2010	8 bcm	
	Dunkerque LNG	2016	13 bcm	
Greece	Revithoussa LNG	2000	7 bcm	137 %
Italy	Panigaglia LNG	1971	3 bcm	21 %
	Porto Levante LNG (OS)	2009	8 bcm	
	FSRU OLT Offshore LNG Toscana (F)	2013	4 bcm	
Lithuania	FSRU Independence (F)	2014	4 bcm	182 %
Netherlands	Gate terminal Rotterdam	2011	12 bcm	33 %
Poland	Świnoujście LNG	2016	5 bcm	25 %
Portugal	Sines LNG	2004	8 bcm	131 %
Spain	Barcelona LNG	1968	17 bcm	175 %
	Huelva LNG	1988	12 bcm	
	Cartagena LNG	1989	12 bcm	
	Bilbao LNG	2003	9 bcm	
	Sagunto LNG	2006	9 bcm	
	Mugardos LNG	2007	4 bcm	

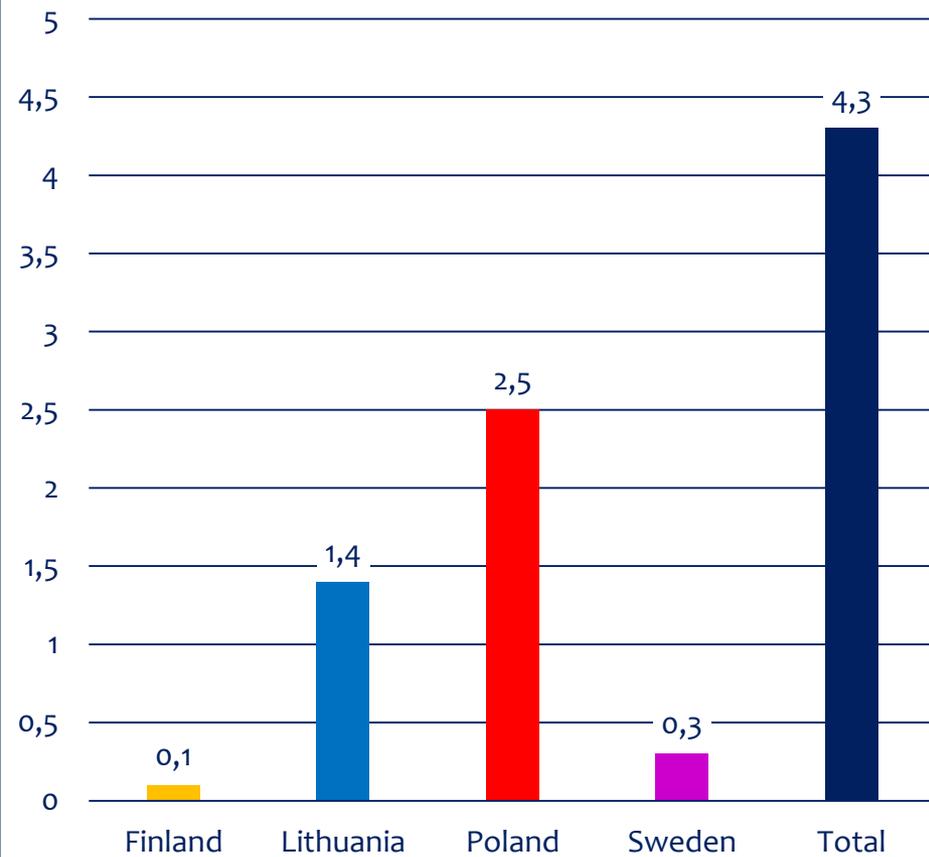
In the Baltic Sea basin, Lithuania, Poland and Russia (the Kaliningrad region) have large-scale LNG receiving terminals. Finland and Sweden have opened a handful of small-scale and medium-scale LNG import ports.

# II) LNG terminals & their plans in Baltic Sea region in 2019

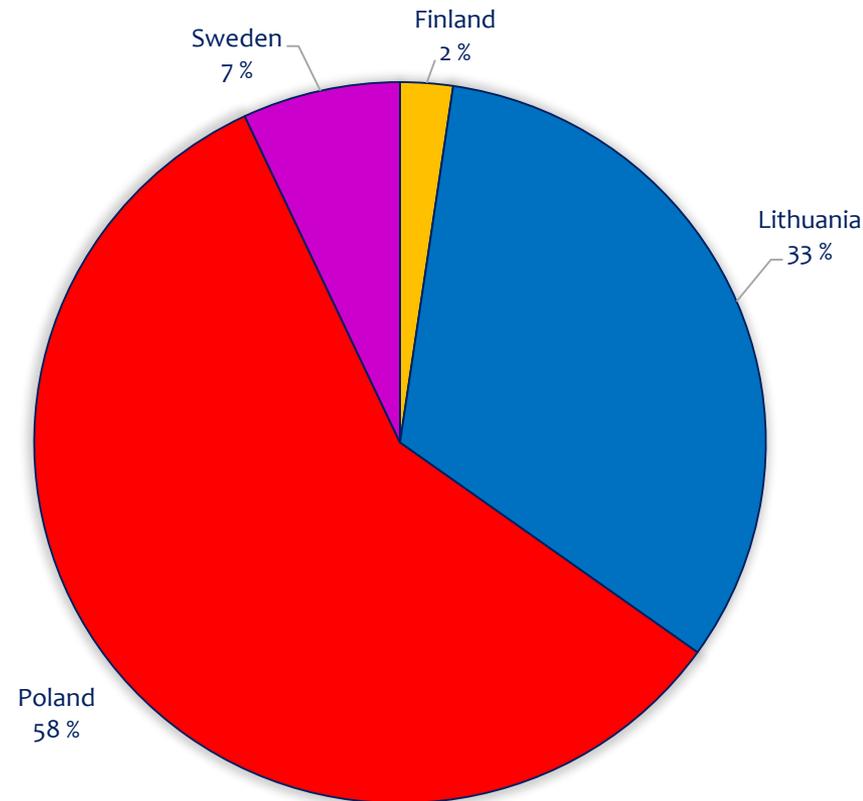


## II) LNG imports in the Baltic Sea region in 2019

LNG imports in 2019  
(million tonnes)



Share in the LNG imports of the Baltic Sea  
region in 2019



As Estonian and Latvian LNG imports were so small, they have not been included in the graphs above. Moreover, Russia has built a large-scale floating LNG unit for the Kaliningrad region in January 2019. However, the unit is not used, but it was rented to LNG shipments between Africa and Asia in the beginning of 2021.

# III) Concluding remarks

## The European Union

- Extremely high dependence on Russian gas and other forms of energy (gas 50%, coal 40%, oil 30%, uranium 20%)
- Dutch gas production decreases dramatically in 2022
- Germany's nuclear power plants to be closed in 2022
- Poland aims to become the gas hub of Eastern Europe
- Green Deal with a hydrogen revolution goes ahead

## Ukraine

- Stopped importing gas from Russia in November 2015
- Ukraine has enough spare gas pipe capacity to transport the volumes designed for Nord Stream 2 (55 bcm)
- If the gas transit via Ukraine ends, Ukraine cannot take a part of the transit gas as "a reverse flow"
- Large underground gas storages (32 bcm) – Ukraine's accession to the EU energy frameworks continues

## North America

- USA is by far the largest gas producer in the world
- USA was third largest LNG exporter in the world in 2019
- USA was the largest LNG supplier to the EU in 2020
- 1/5 of the US LNG exports landed in the EU in Q4/2020
- US LNG exports form 1% of the US overall exports to EU (LNG not big business but a support to Nato members)
- December 2019 sanctions to Nord Stream 2 – are new sanctions to be expected next month ?
- Canada boom comes (LNG export plans over 300 bcm) ?

## Russia

- Geopolitics is back (due to Kaliningrad LNG terminal, Russia no longer dependent on the Belarus gas transit)
- Russia gets less than 5% of its federal budget revenues from the sales of natural gas to the EU
- Russia's reserve fund is five times bigger than revenues Russia received from its total gas exports in 2020 (gas is more of geopolitical tool than "a cash cow")
- the EU27's share in the Russian overall exports dropped from 51% in 2013 to 34% in 2020
- aggressive foreign policy (Georgia 2008 & Ukraine 2014+)
- The West considers the annexation of Crimea illegal
- The recent movements of the Russian military forces towards the Russian-Ukrainian border do not build trust

## Norway

- A fire incident in the Hammerfest plant in September 2020 (LNG exports from Norway to the EU stopped)
- Norway's gas reserves are just 5% of those of Russia
- Norway's gas production decreases in the 2030's

## China

- Increasingly dependent on imported gas, but China's dependence on Russia is far away from that of the EU
- Russia's gas pipe (Sila Sibiry) to China ran at extremely low capacity in 2020 (10-15 % of the pipe's full capacity) – however, Russia aims to extend its export pipes to China

Спасибо за внимание  
Будьте здоровы

## BP Statistical Review of World Energy 2020

<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-full-report.pdf>

## 2020 World LNG Report

<https://www.igu.org/resources/2020-world-lng-report/>

## GIIGNL Annual Report 2020

[https://giignl.org/sites/default/files/PUBLIC\\_AREA/Publications/giignl\\_-\\_2020\\_annual\\_report\\_-\\_04082020.pdf](https://giignl.org/sites/default/files/PUBLIC_AREA/Publications/giignl_-_2020_annual_report_-_04082020.pdf)

## EU energy in figures 2020

[https://ec.europa.eu/energy/data-analysis/energy-statistical-pocketbook\\_en](https://ec.europa.eu/energy/data-analysis/energy-statistical-pocketbook_en)

## EU Gas Market Reports

[https://ec.europa.eu/energy/data-analysis/market-analysis\\_en](https://ec.europa.eu/energy/data-analysis/market-analysis_en)

## LNG Map of Europe

[https://www.gje.eu/download/maps/2019/GIE\\_LNG\\_2019\\_Ao\\_1189x841\\_FULL\\_Final3.pdf](https://www.gje.eu/download/maps/2019/GIE_LNG_2019_Ao_1189x841_FULL_Final3.pdf)

## Natural gas in the Baltic Sea region: A special emphasis on liquefied natural gas (LNG)

[https://www.researchgate.net/publication/343350581\\_Natural\\_gas\\_in\\_the\\_Baltic\\_Sea\\_region\\_A\\_special\\_emphasis\\_on\\_liquefied\\_natural\\_gas\\_LNG](https://www.researchgate.net/publication/343350581_Natural_gas_in_the_Baltic_Sea_region_A_special_emphasis_on_liquefied_natural_gas_LNG)



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