Cross Commodity Market Development

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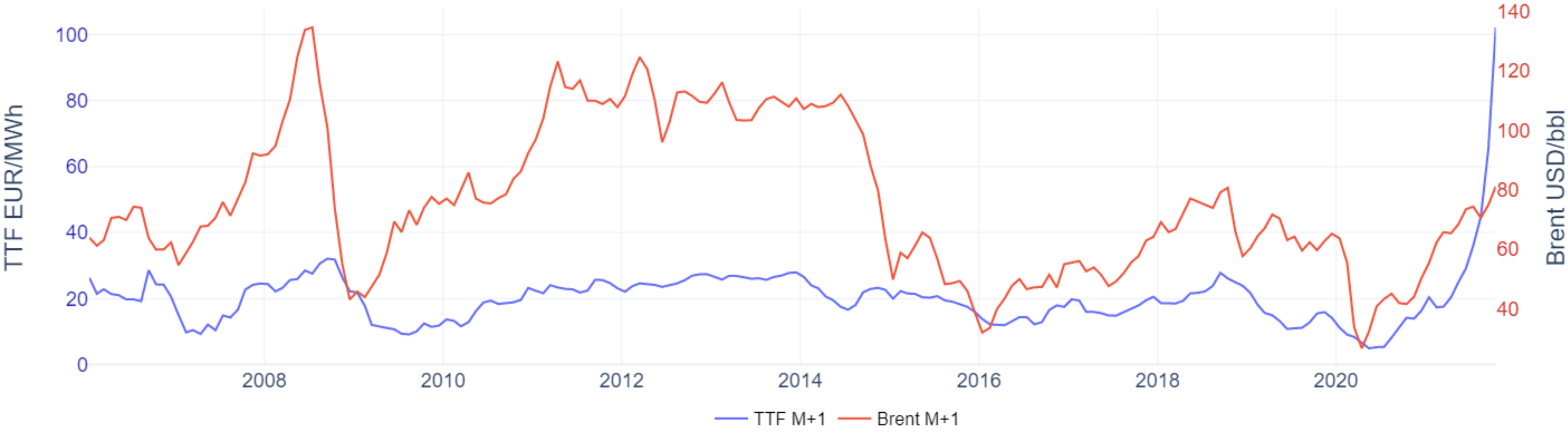
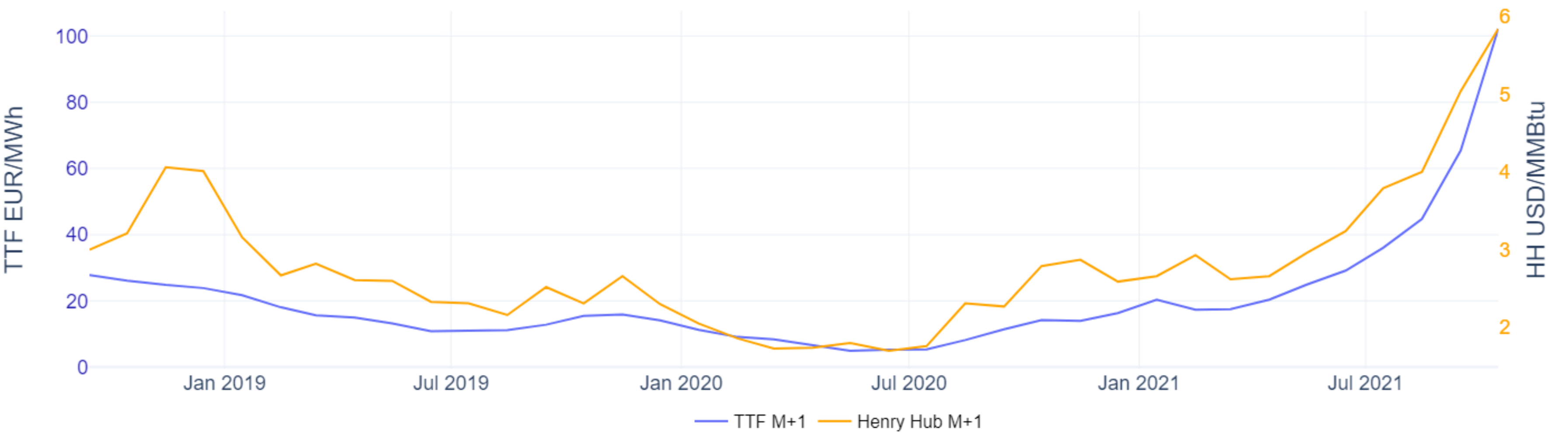
EP Commodities

Content

Commodity Market Development



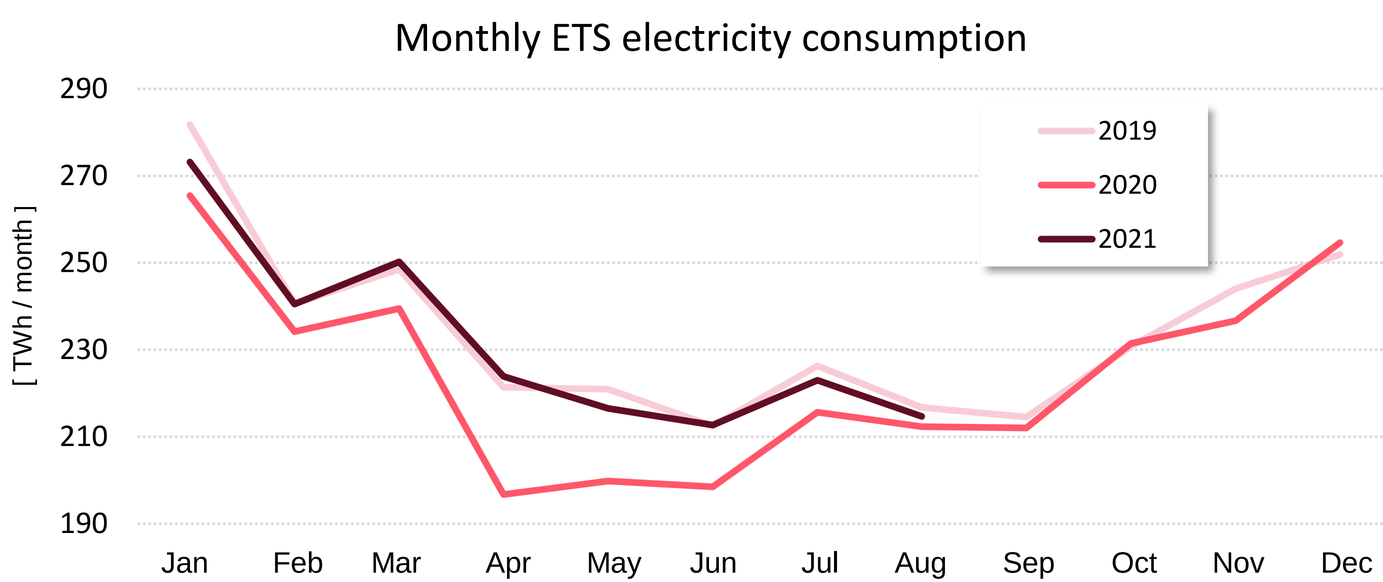
TTF and Brent are front month, shown are average future prices over calendar month



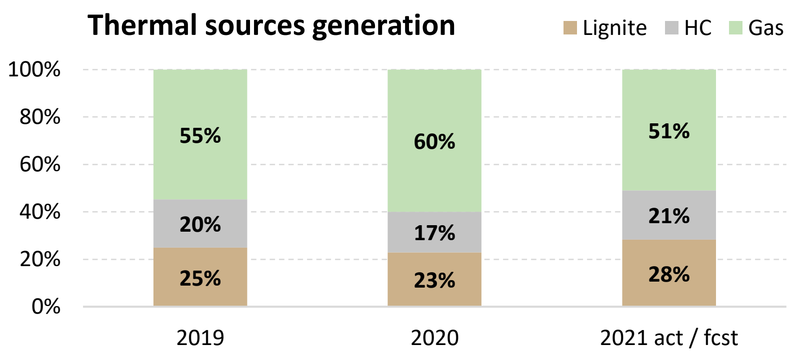
Commodity Market Development

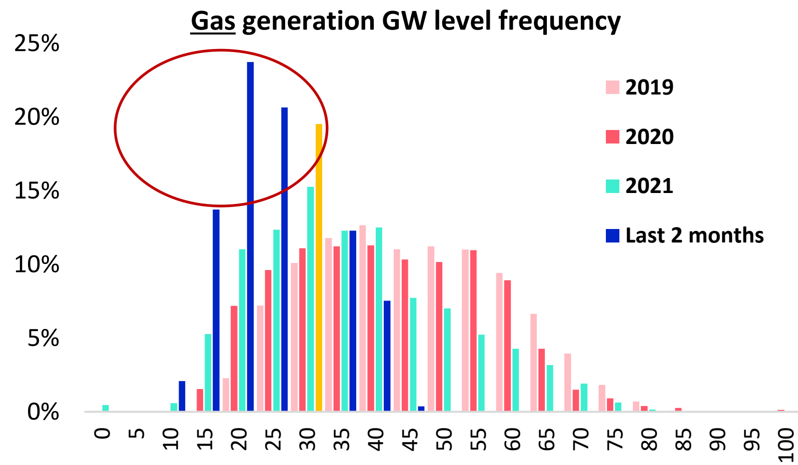
European Power Consumption

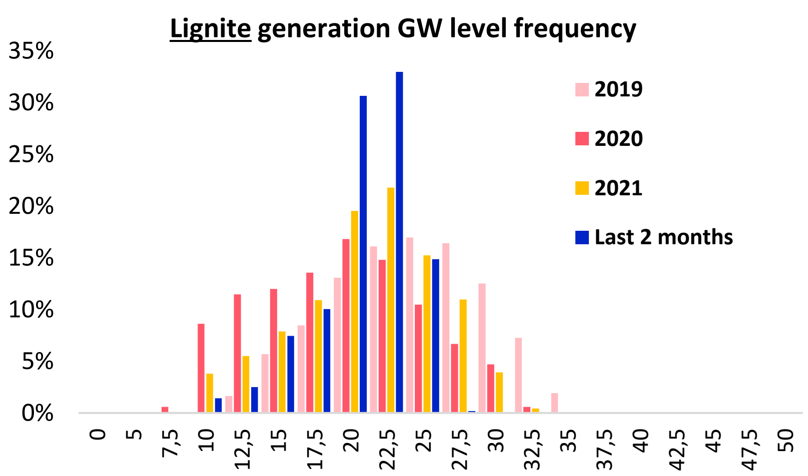
- Power consumption almost on 2019 levels (99,25% YtD)
- 2020 drop (-5,64%) resulted into 187mt lower emission demand compared to 2019
- 2021 increase (+5,18%) should lead back to similar demand compared to pre-pandemics numbers
- For next years the only reasonable forecast is full recovery to 2019 demand
- Industry allowances consumption highly correlated with power allowances consumption

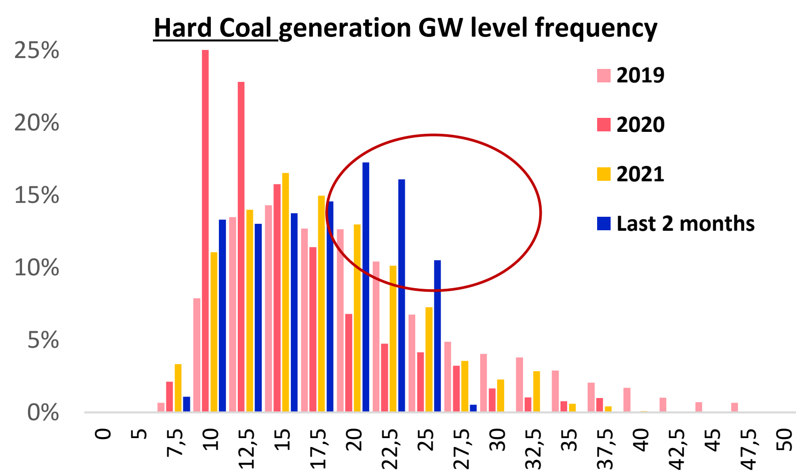


European Thermal Power Generation by Source



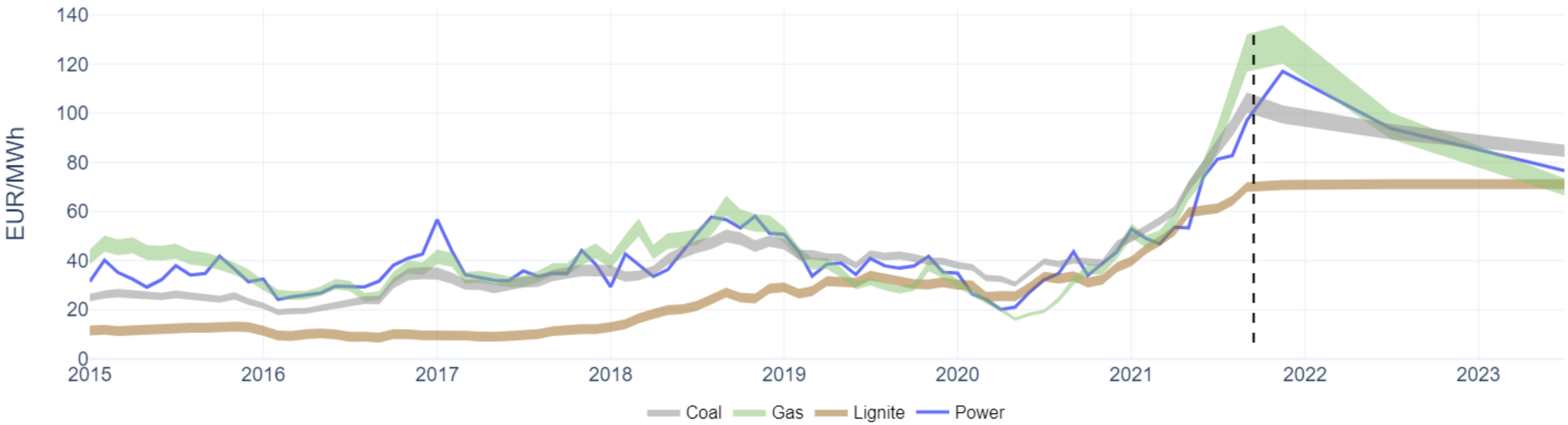




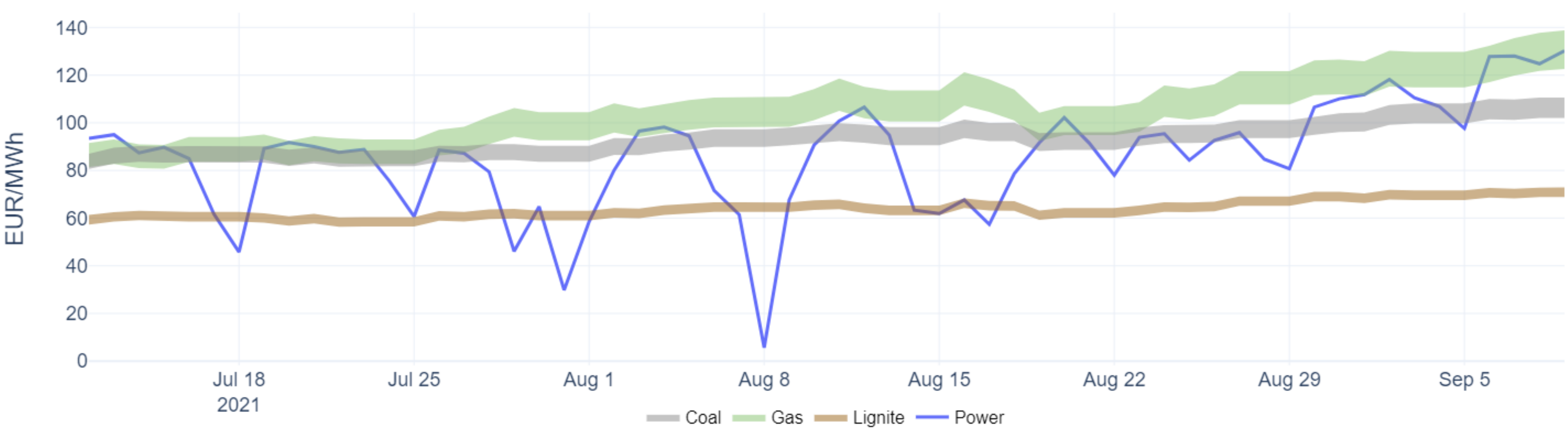


Gas Production pushed out from merit order despite increased emission prices

Cost of Power Generation



Historical prices calculated as above in monthly averages. Data as of Sep 8, 2021



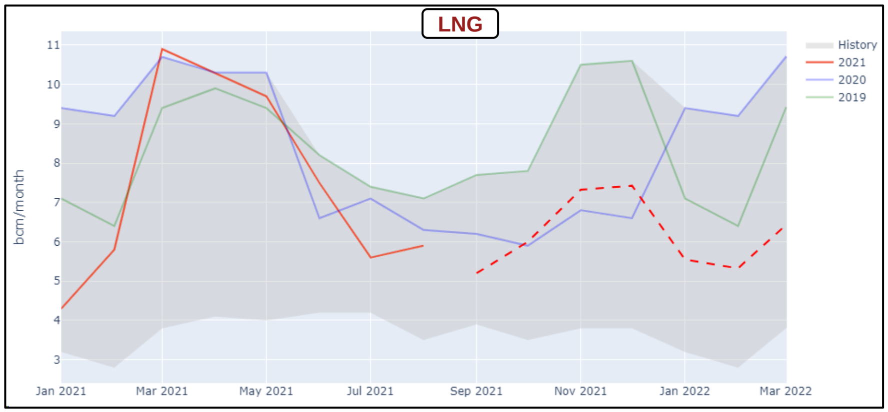
Power, gas and EUA assume spot prices; coal is front month. Data as of Sep 8, 2021

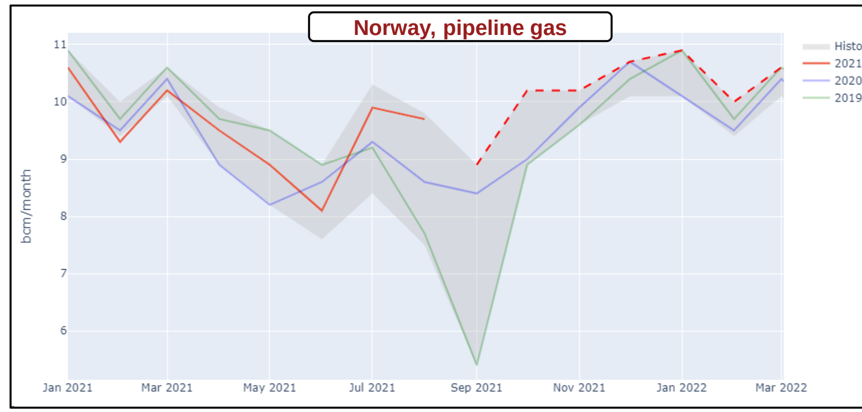
 Source: ICIS

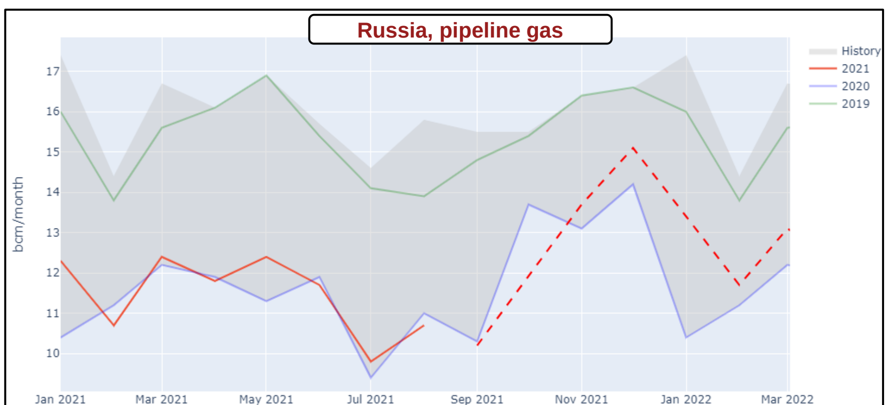
European Gas Balances

Year-to-date balance:

	Demand		Domestic		LNG		Norway		Russia		North Africa		Storage	
	bcm	*% yoy*	*bcm*	*% yoy*	*bcm*	*% yoy*	*bcm*	*% yoy*	*bcm*	*% yoy*	*bcm*	*% yoy*	*End %*	*% yoy*
2016	319		99		32		73		104		26		82	
2017	338	6	97	-2	35	10	78	6	120	16	25	-6	75	-7
2018	339	0	92	-6	33	-7	77	0	120	0	26	6	72	-3
2019	337	-1	85	-8	65	99	76	-1	122	2	18	-31	90	19
2020	318	-6	82	-4	70	8	74	-3	89	-27	14	-25	91	1
2021	338	7	71	-13	60	-15	76	3	92	3	27	100	67	-24



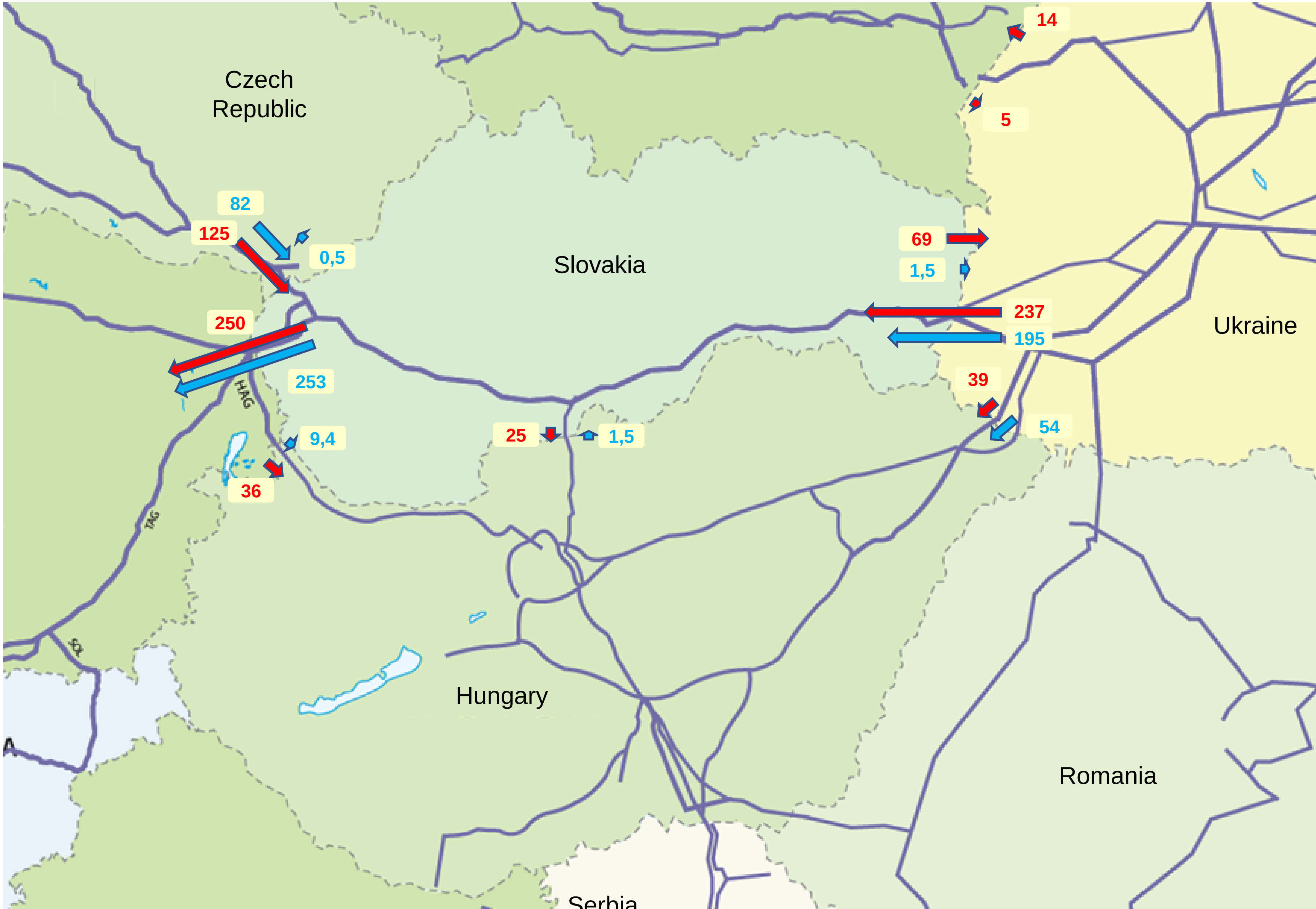




- **Domestic gas demand** fell in 2020 due to covid-19 pandemic and in 2021 recovered nearly to pre-covid levels.
- **Domestic gas production** is slowing down led by Netherlands' Groningen field production reductions.
- Record growth trend of **LNG imports** in 2019 was interrupted by covid-19 pandemic and significant volumes were in relocated in 2021 to more attractive Asian destinations (mostly to China).
- **Russian pipeline imports** went down in 2020 and remained in 2021 on 5 years record low in contrast to **Norway pipeline imports**, which maintain historical flows
- **North Africa's natural gas pipeline exports** to Europe got squeezed in 2019 by cheaper Russian supplies and a global abundance of LNG. Algeria's gas was converted into LNG and sold on the spot market.
- **Gas Storages** at record low levels.

Focus Eastern Europe: YTD Gas Flows 2021 vs. 2020

Legend:
- YTD* flows 2020 [TWh]
- YTD* flows 2021 [TWh]



* YTD: January – August

Source: ENTSOG

Gas Sector in 2021: New Projects, Milestones

- Hungary-Russia: new long-term gas supply deal
  - The new contract is to replace a 4,2 bcm/y deal that expires at the end of September 2021. For 10 years starting from October 1, 2021, with the option of extending it by a further five years, transporting gas through the second string of Gazprom's Turkish Stream pipeline, delivered onwards through Bulgaria and Serbia.
  - **In total 4,5 bcm/y of natural gas to Hungary, 3.5 billion cubic meters via Serbia and 1 billion cubic meters via Austria.**
- Trans Adriatic Pipeline pipeline
  - The TAP pipeline is supplied by natural gas from the second stage of the Shah Deniz gas field development in the Azerbaijani section of Caspian Sea through the South Caucasus Pipeline and the Trans Anatolian Pipeline (TANAP). Construction of the pipeline started in 2016 and the first Azerbaijani gas was delivered to Italy on December 30, 2020.
  - **Year-to-date gas flows in 2021 to Italy via TAP amount 44,2 TWh (~4 bcm).**
- LNG Krk terminal
  - The LNG terminal Krk was officially inaugurated on January 29, 2021, connecting it to the Croatian gas transmission system.
  - LNG terminal Krk **year-to-date gas imports amount 10,7 TWh (~1 bcm),** where more than 60% were imported from United States.

New Landscape

* GIE, ALSI

Source: ENTSOG, LNG Croatia LLC, Reuters, Argus, Gazprom