



# Gas and power price outlook post energy crisis

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**Austrian Energy Day, September 28th, 2023**

# VOLUE IN BRIEF

- Established in 2020
- Three business areas; **Energy, Power Grid and Infrastructure**
- Headquartered in Oslo, Norway
- Dominant position in the Nordics and rapidly growing market share in Europe
- Listed on OSE - market cap ~8 BNOK



# Insight by Value: Data & Price forecasts

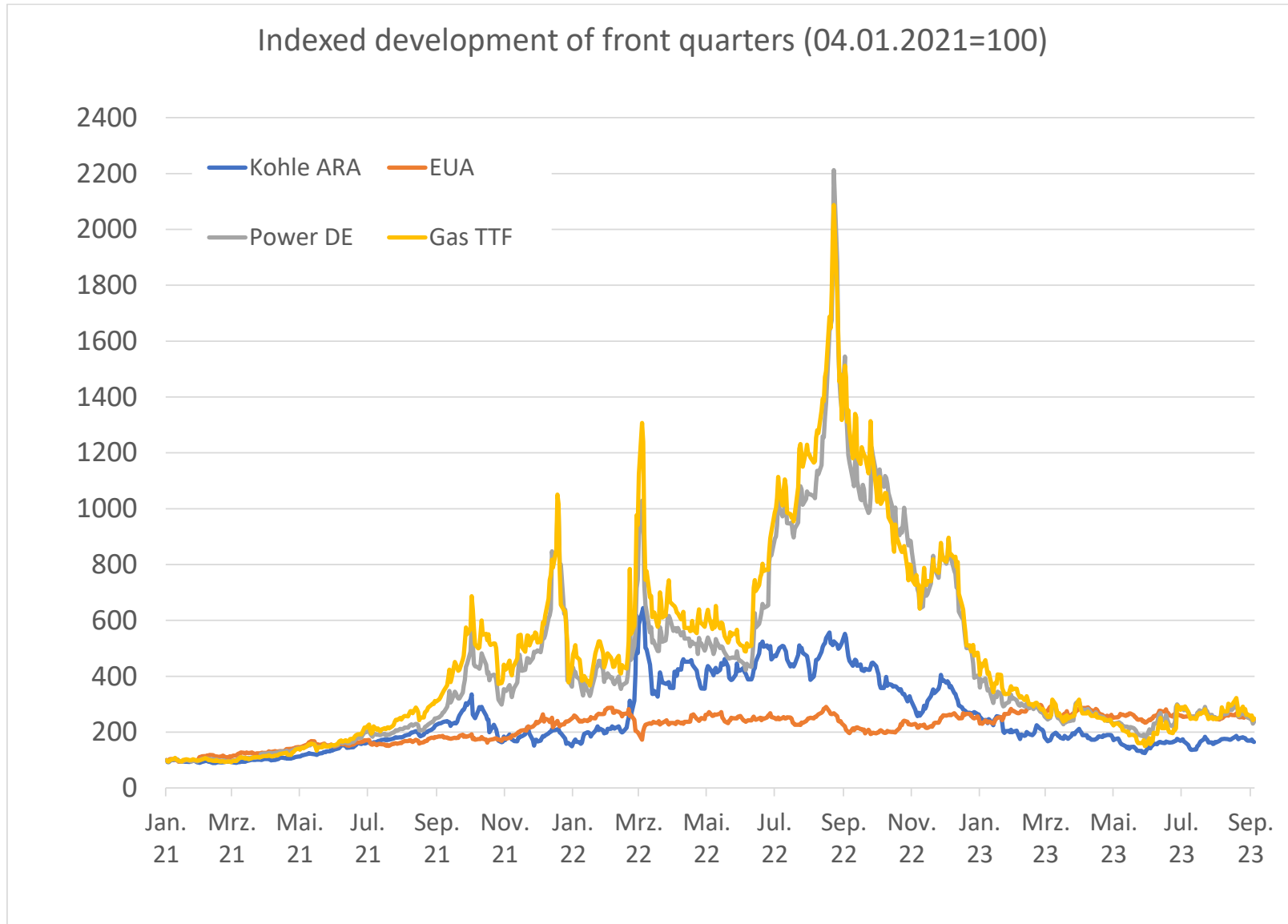
- Data
- Fundamentals
- W2F
- Power forecasting from balancing to long-term
- Fuels & carbon
- Pan European
- All in one platform
- API







# Commodity prices in comparison





Gas



# Price Decline Stopped

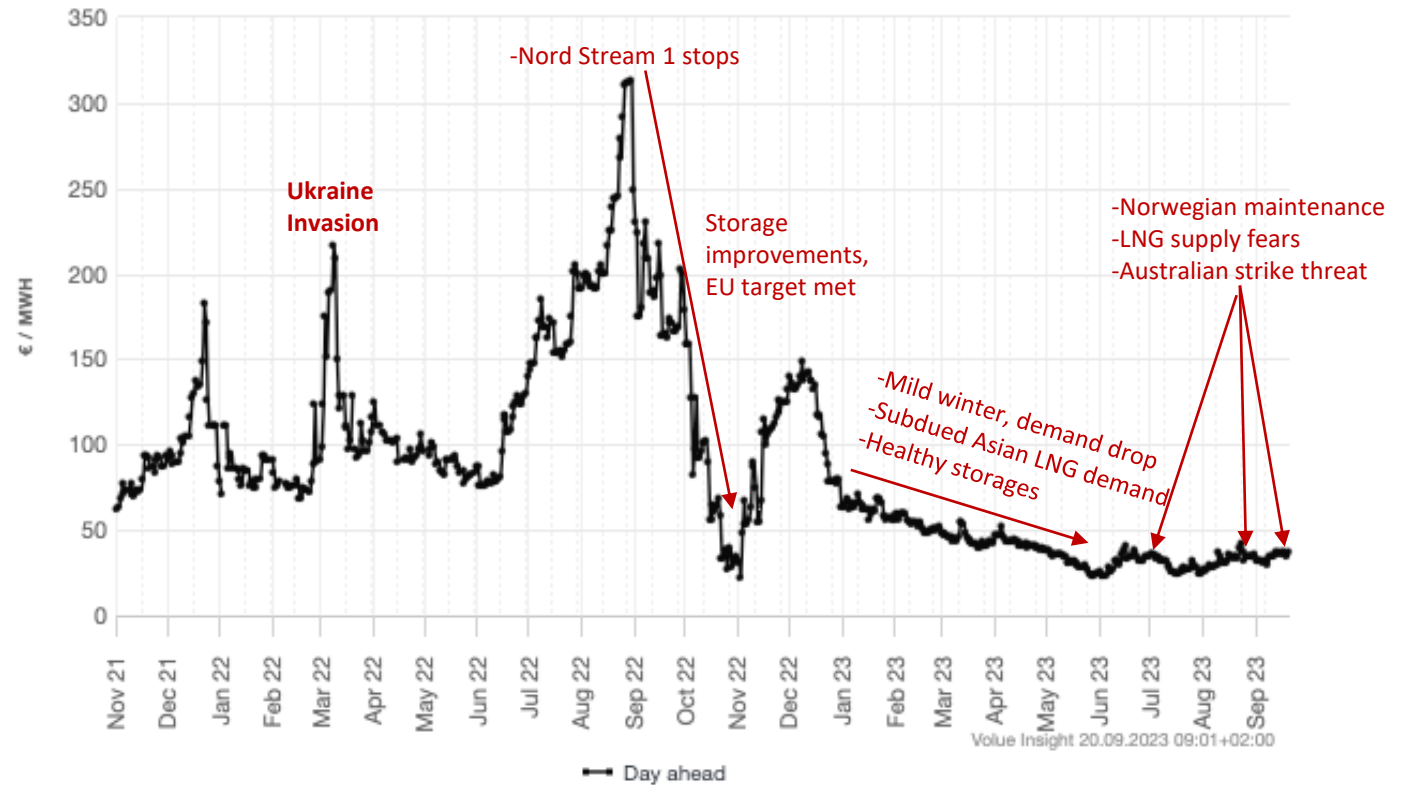
## Bearish trend

- Storages at record levels
- Mild winter
- Limited LNG competition with Asia

## Summer spikes

- Heavy maintenance in Norway
- Fears that falling prices will enable Asia to draw LNG away from Europe
- Strikes in Australia – Chevron plants covering more than 5% of global production affected

TTF - Day Ahead Price



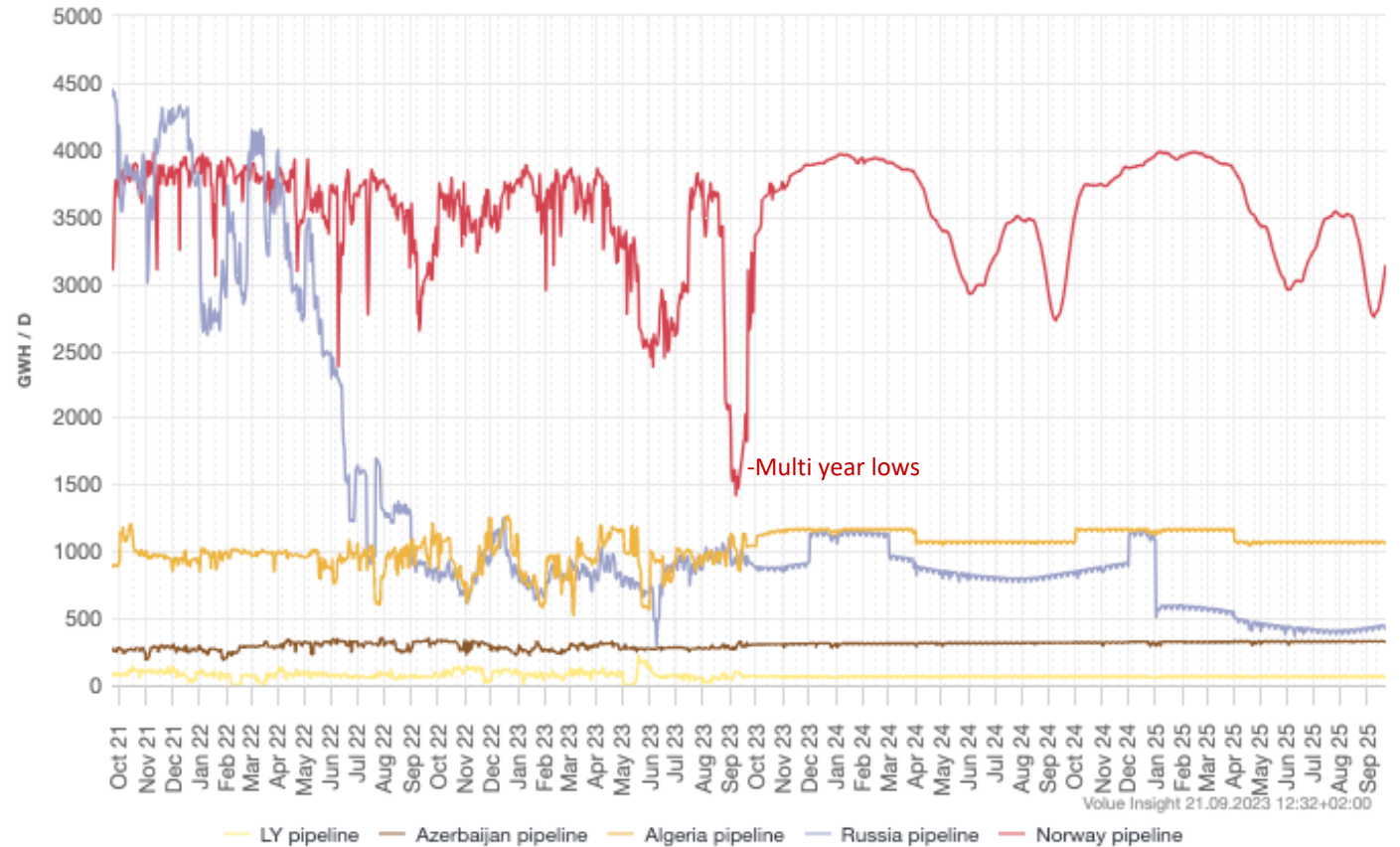
Source: EEX, Value Insight

# Pipeline – Norwegian Maintenance in Focus

## Norway

- Significant maintenance at the moment, both planned and unplanned outages.
- Stable long term expectations. NPD expects to uphold 2022 levels of roughly 122 bcm for the next 4-5 years. (2023 is expected 7% below 2022.)

European Pipeline Supply (Actual and Forecast)





# Pipeline – Norwegian Maintenance in Focus

## Norway

- Significant maintenance at the moment, both planned and unplanned outages.
- Stable long-term expectations. NPD expects to uphold 2022 levels of roughly 122 bcm for the next 4-5 years. (2023 is expected 7% below 2022.)

## Russia

- Flows stable since August last year
- Ukraine transit agreement ends after 2024
- EU aims to stop Russian imports by 2027

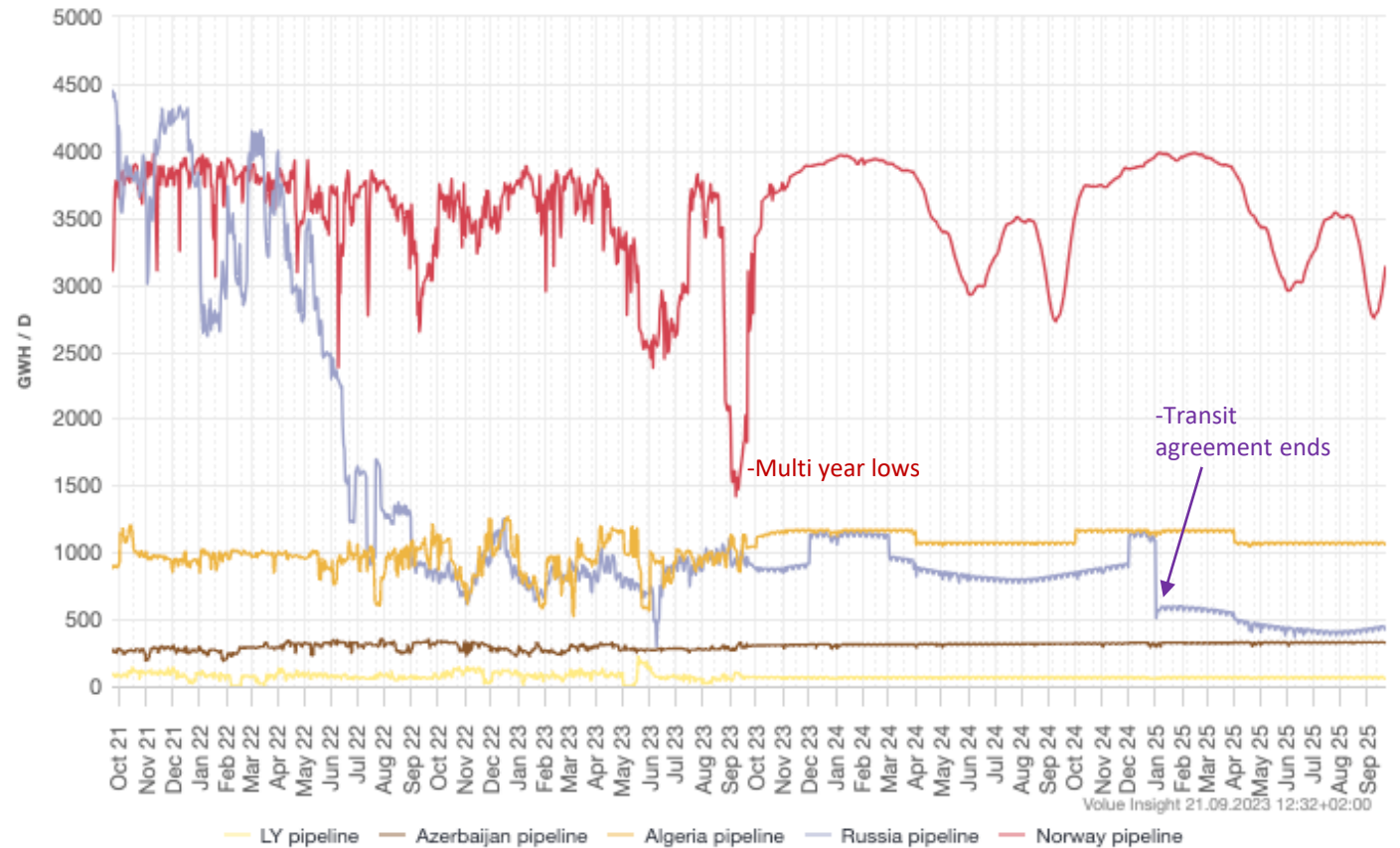
## Algeria

- Planned increase of 9 bcm per year to Italy by 2023/24

## Azerbaijan

- Plans to almost double exports to Europe to 20 bcm by 2027.

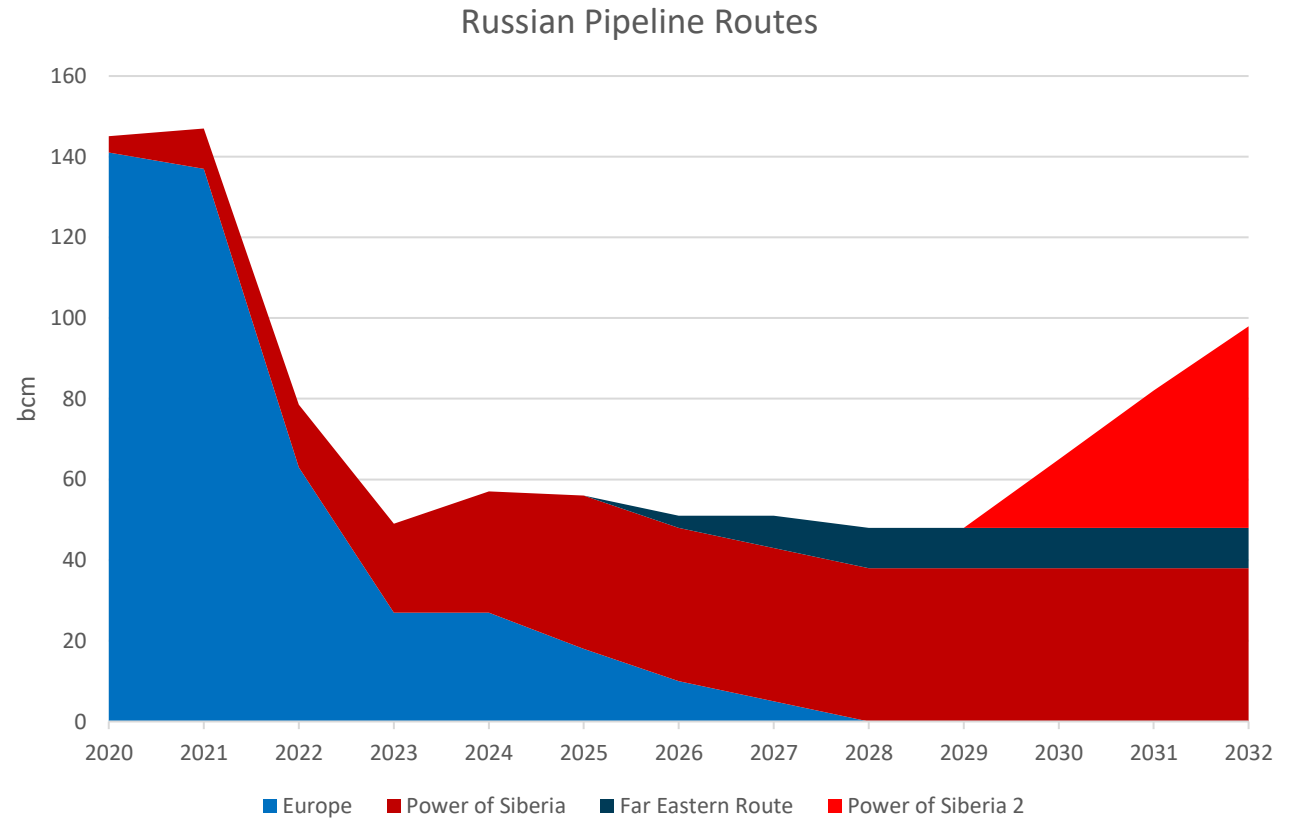
European Pipeline Supply (Actual and Forecast)



# Russian Gas Locked in

Russia has limited export pipeline export opportunities.

Planned projects will increase capacity to China.



# LNG Replacing Russian Gas

Very strong imports to Europe since the start of 2022

LNG to Europe expected to stay high in the medium term

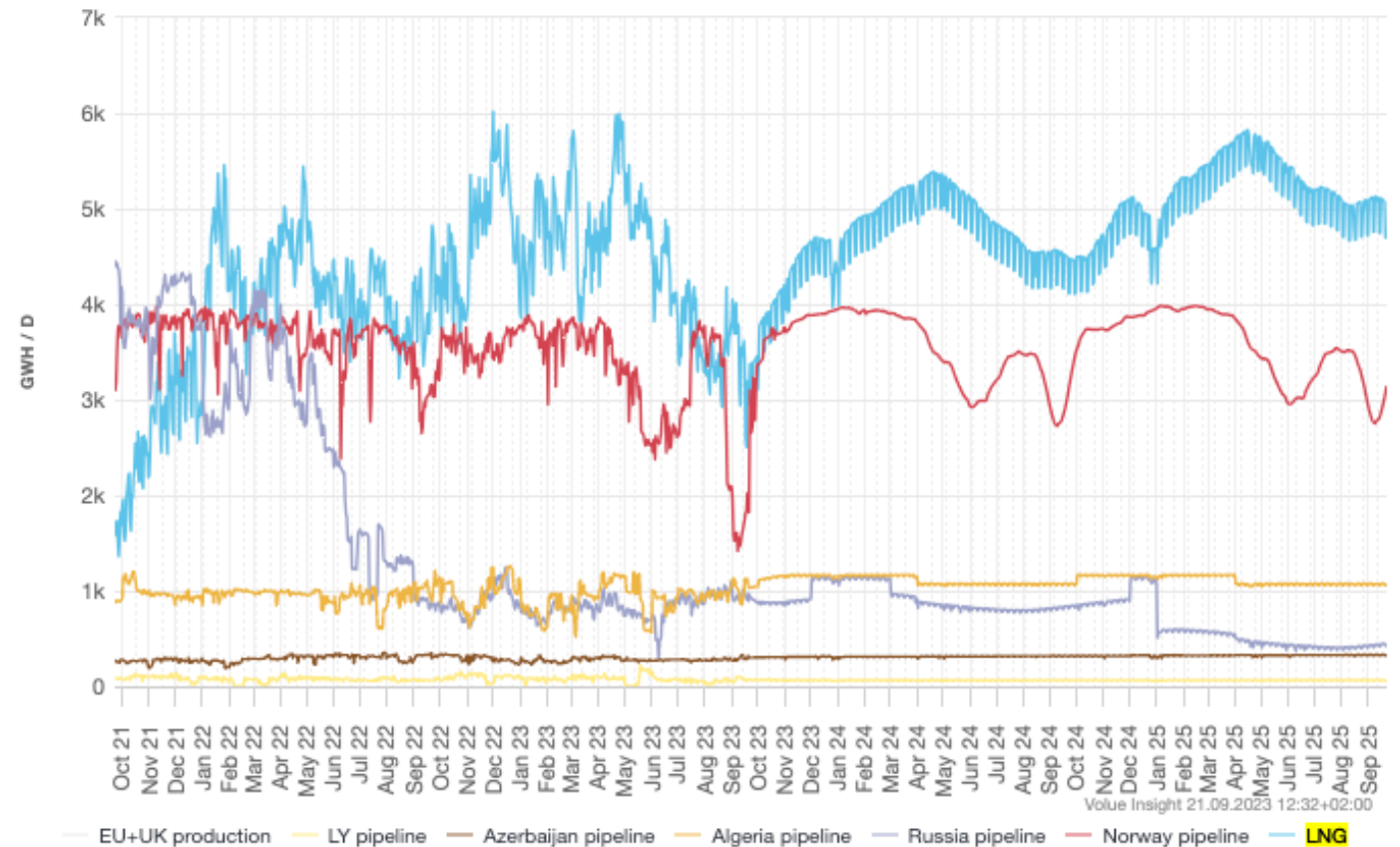
New LNG terminals in Europe enables higher imports

- 2022 -> 2025: 5700 -> 8400 GWh/d

Risk/uncertainties:

- Asian winter temperatures
- Chinese demand recovery
- Australian LNG strike (assumed to have little impact)

European Supply (Actual and Forecast)

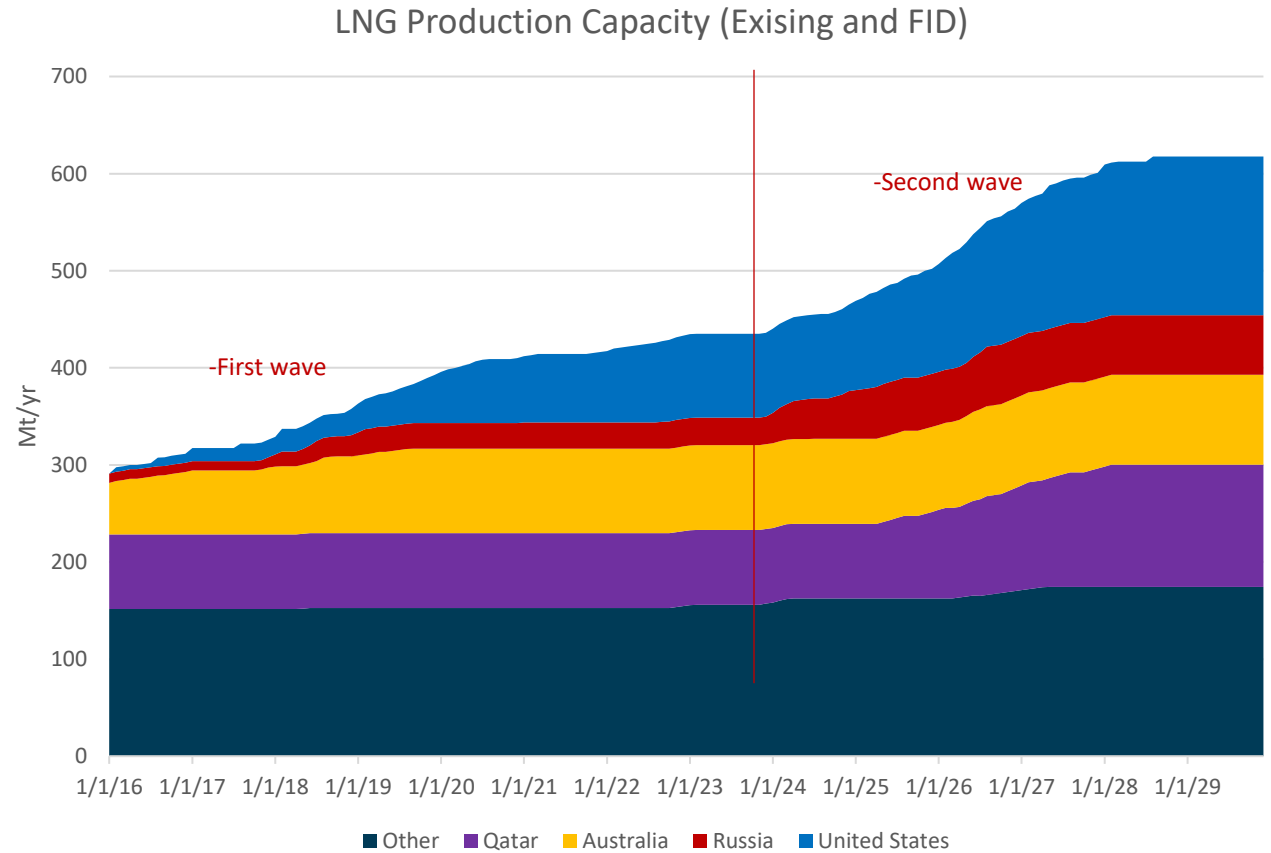




# LNG Long Term – More Supply on the Horizon

## Supply

- Slower growth between 2020-24.
- Second wave of new supply is coming in the middle of the decade with several projects in the US, Russia, Qatar and Africa.
- Pipeline: Russian pipeline exports to Asia on the rise



Source: ICE, Value Insight

# Demand Still Down

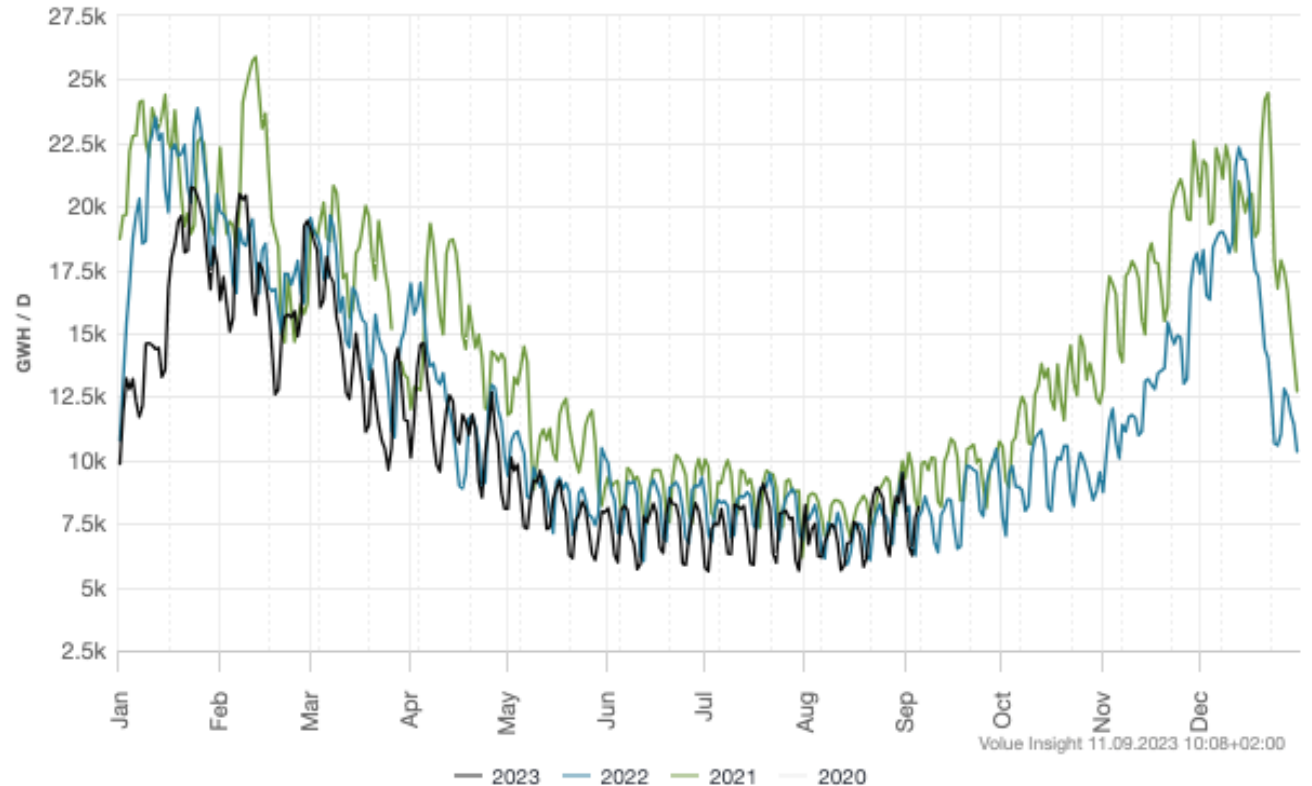
Gas demand down 15% in 2022.

- Mild weather
- Power – fuel switching, renewables growth
- Buildings - energy efficiency, savings, electrification
- Industry - fuel switching, production curtailment

Demand stabilizing, but still down from pre energy crisis levels.

- August 2023: 7348 GWh/d
- Down 1% from August 2022
- Down 11% from August 2021

European Consumption



# Storage Levels at Record Levels

EU storage levels are at seasonal highs

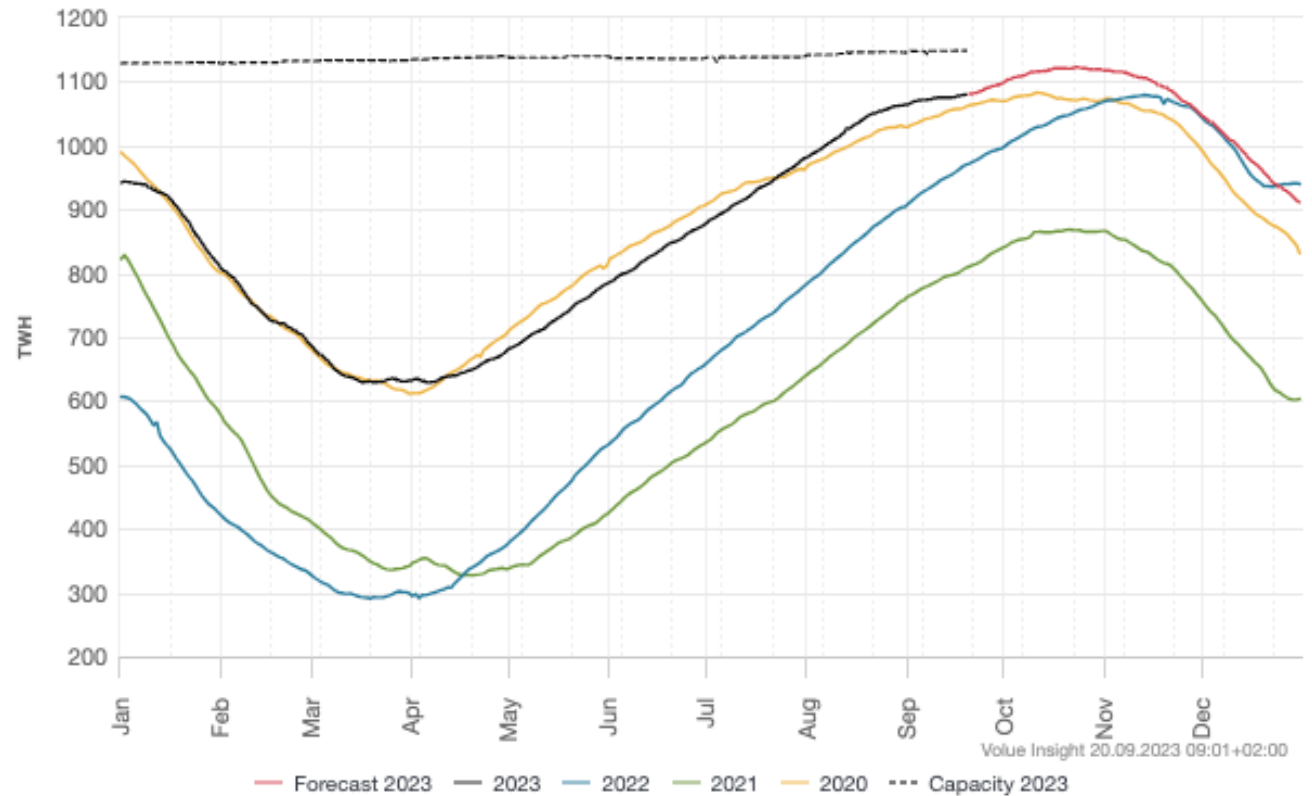
- Mild winter
- Ample LNG supplies
- Reduced consumption

EUs target of 90% filling by 1 November was reached in mid August

Slowing injections lately due to heavy Norwegian maintenance

Still, storage levels are expected to be near 100% by the end of October.

European Inventory



Value Insight 20.09.2023 09:01+02:00

Source: GIE, Value Insight



# Forward Prices

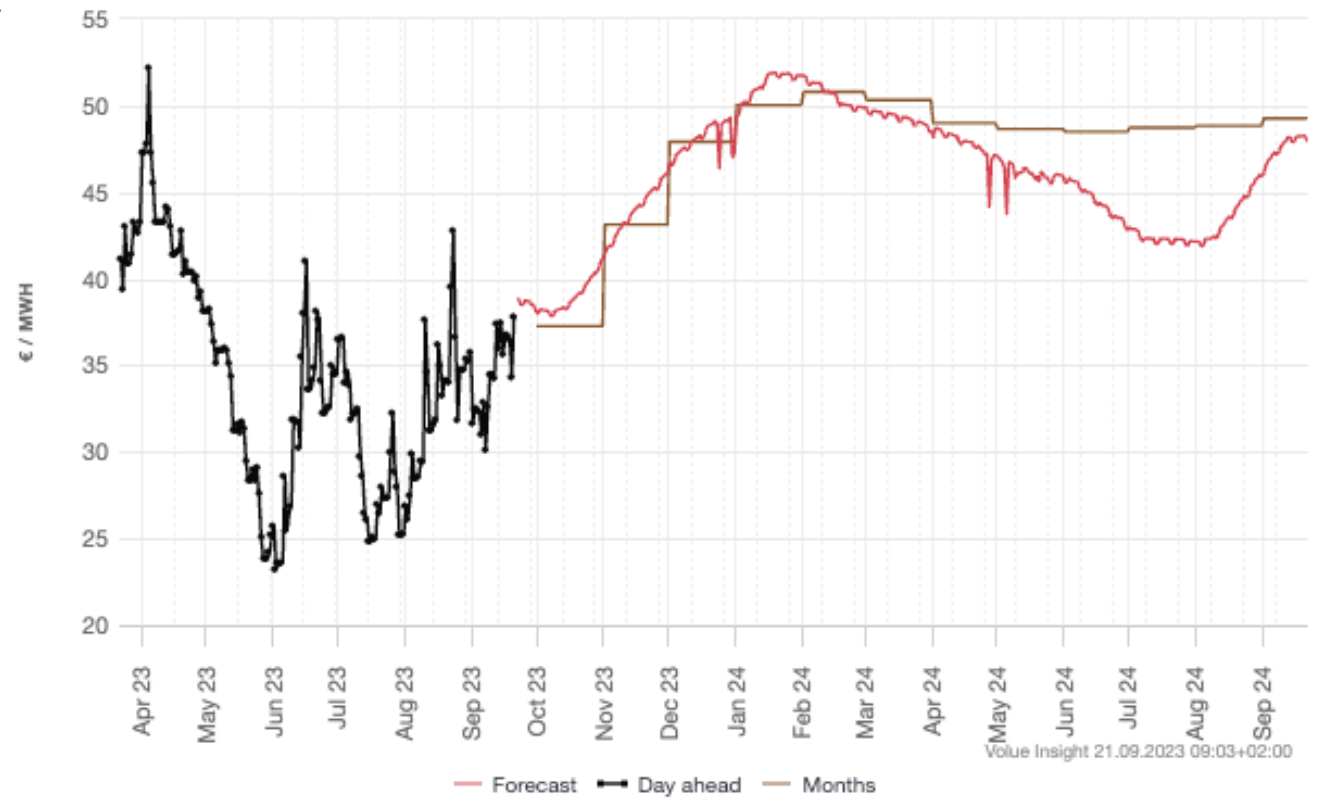
Norwegian exports have raised our October forecast

But the market is coping well with reduced supply from Norway and LNG (very healthy storages)

Potential risks:

- Ukraine transit stop
- Cold winter
- Demand recovery in Asia
- (Longer lasting Australian LNG strike)

TTF Day-ahead Prices, Forecast and Future Contracts

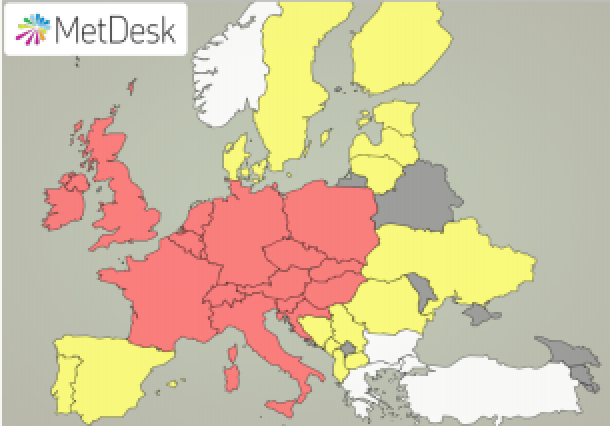


Source: ICE, NYMEX, Value Insight

# Seasonal forecast

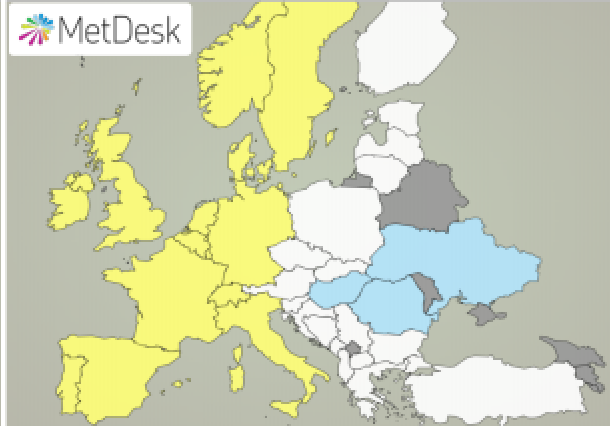
## September

2m Temperature



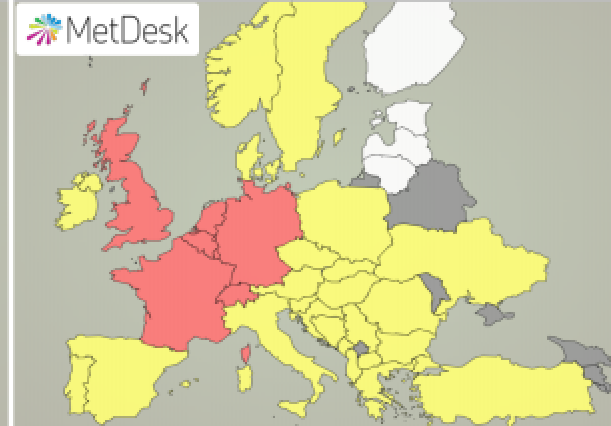
## October

2m Temperature



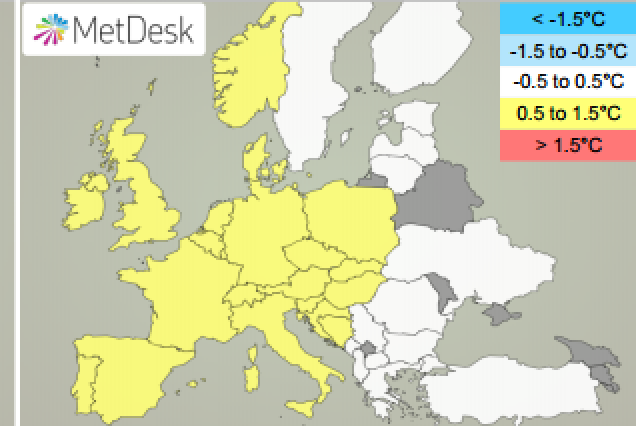
## November

2m Temperature

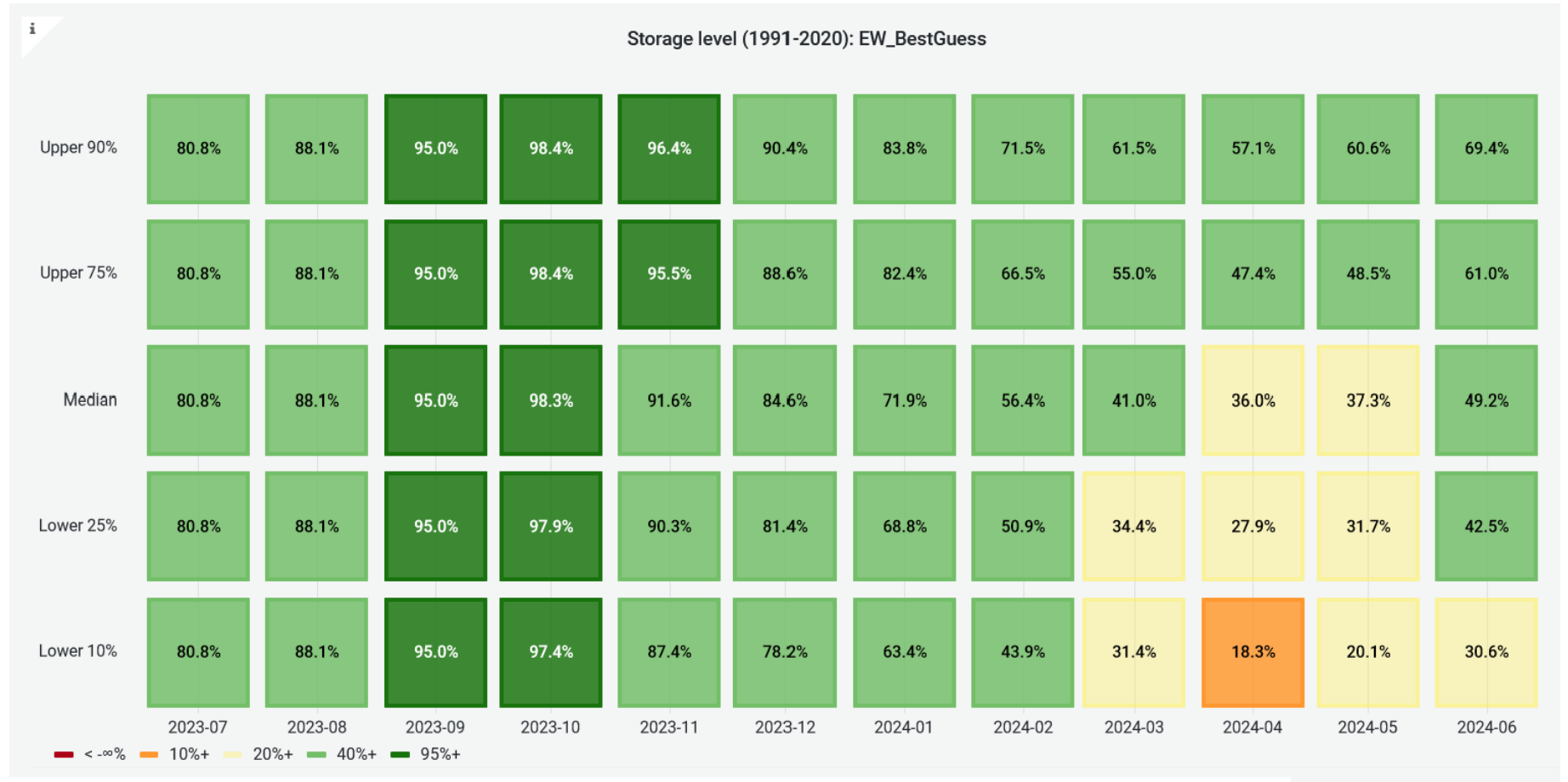


## December

2m Temperature



# Storage Scenarios



EW\_BestGuess = demand reduction by approx. 7.5% to 10% (since Q2/23), depending on radiation, windchill and price elasticity of demand.

EW\_Bull = demand reduction 0% with coldest winter only (2009/2010) since 2000, with Dec-Feb colder than normal.

EW\_Bear = demand reduction 15% with warmest winter only (2019/2020) since 2000, without any cold spell.

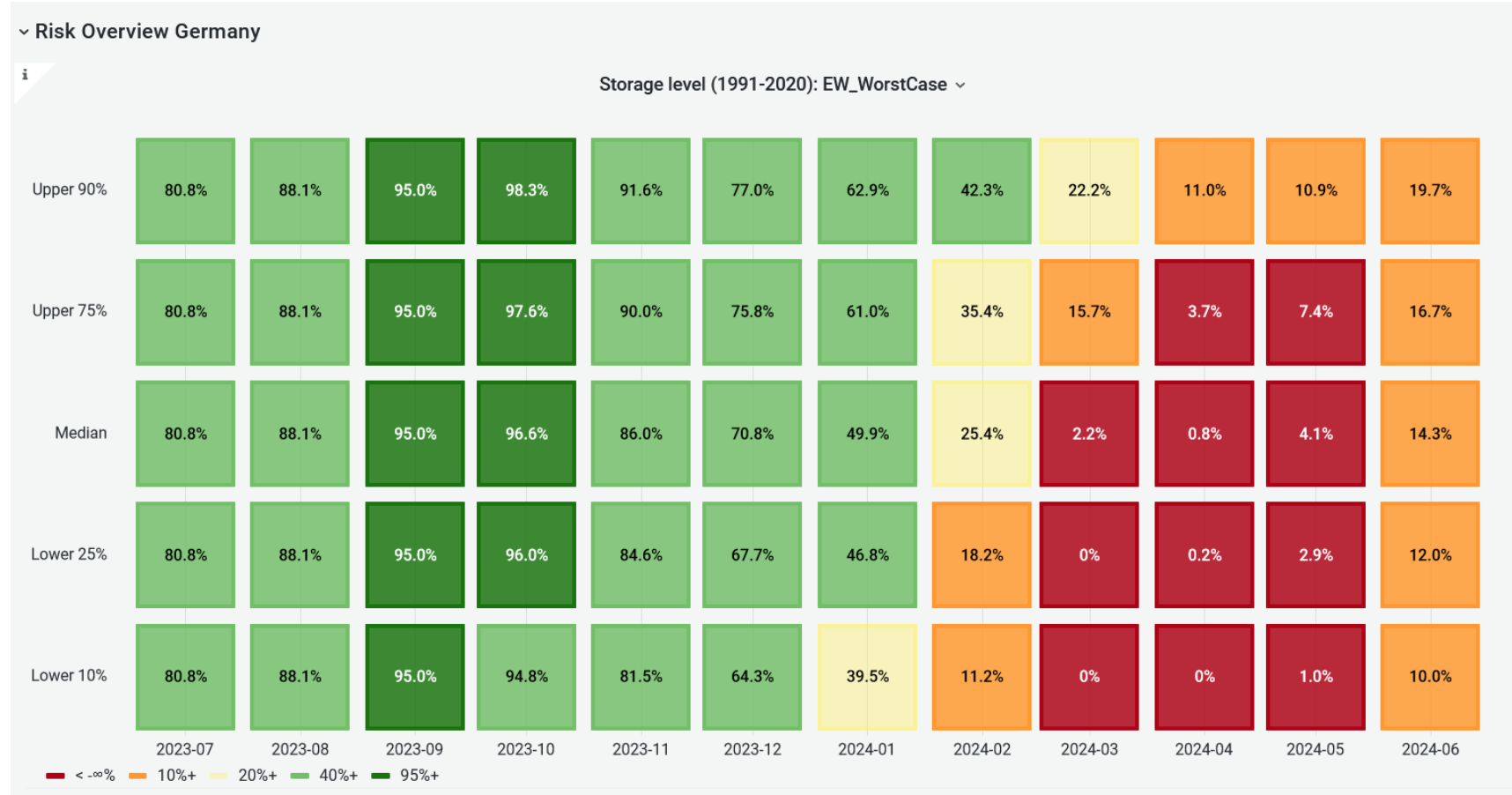
EW\_LessDemand\_00 to EW\_LessDemand\_15 = demand reduction 0%, 5%, 10% or 15%.

EW\_WorstCase = industry demand recovery and no consumer demand reduction (0%), no more pipeline gas from Russia, additional exports to Southeast Europe (via Oberkappel).

EW\_LessDemand\_(05/10)\_Export\_SE\_Europe = demand reduction 5 or 10% in line with additional exports to Southeast Europe (via Oberkappel).



# Storage Scenarios (Worst Case)



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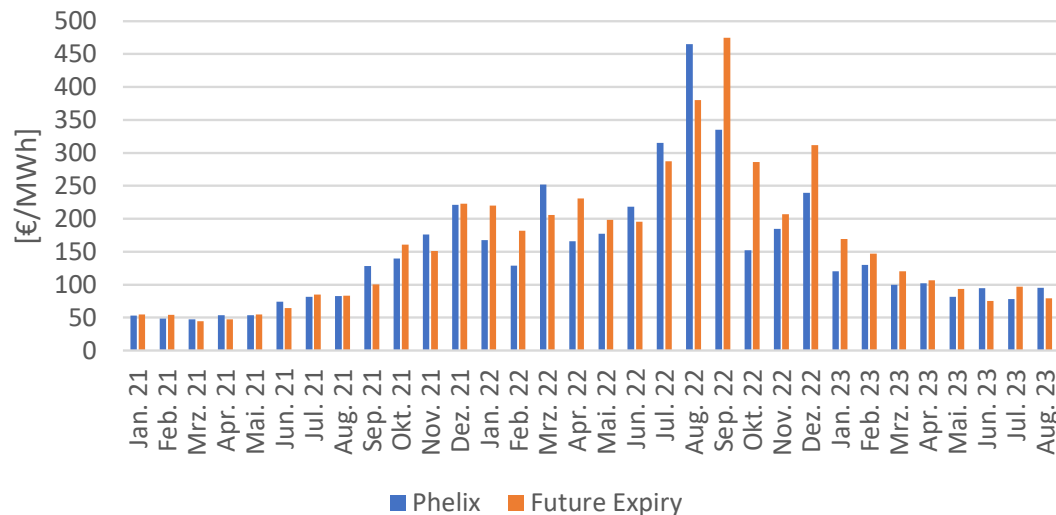


# Electricity

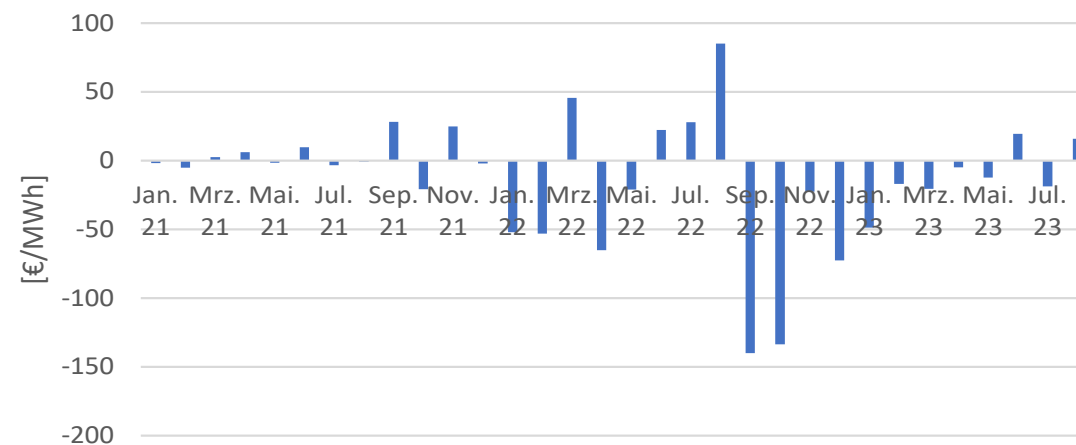
# Development Day-Ahead prices

value

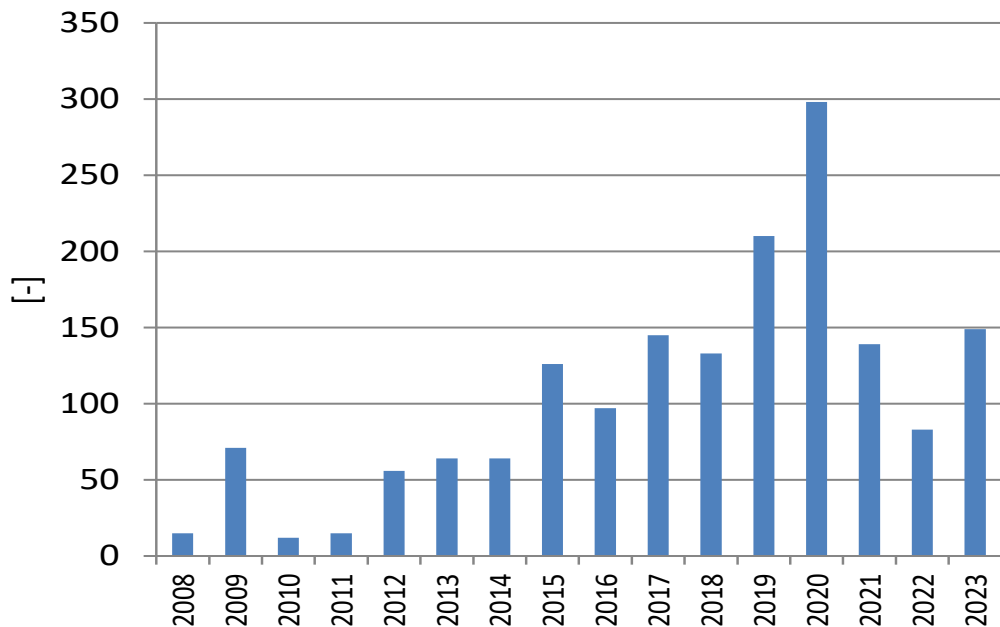
## Monthly Phelix delivery and future expiry price



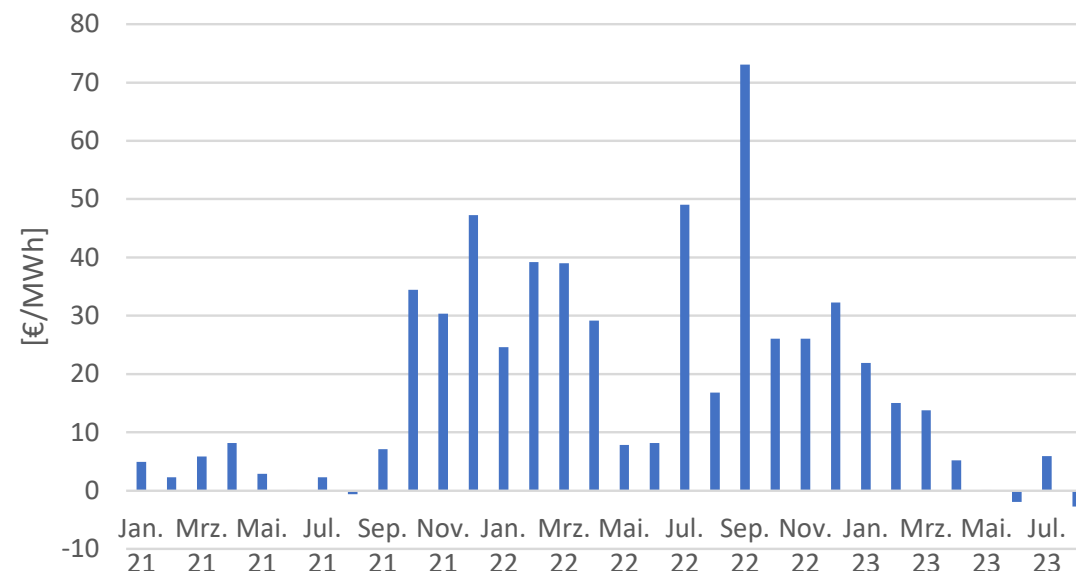
## Difference monthly Phelix delivery and future expiry price



## Number of hours with negative prices



## Difference EXAA Price and Phelix



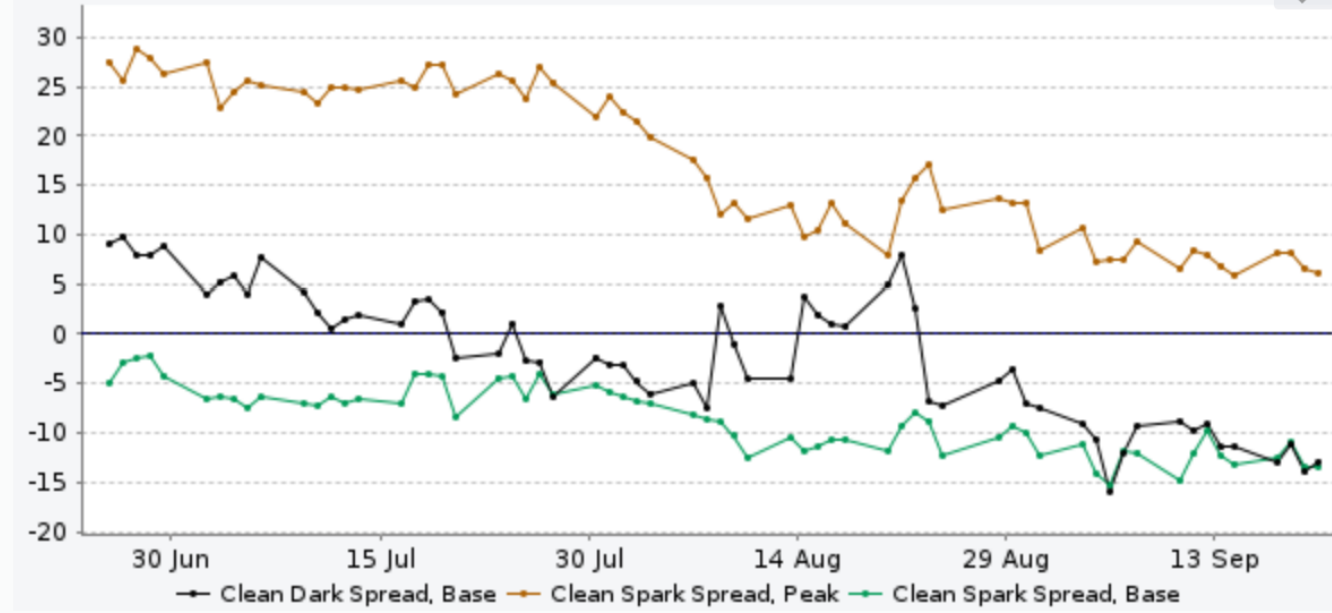


# Power prices

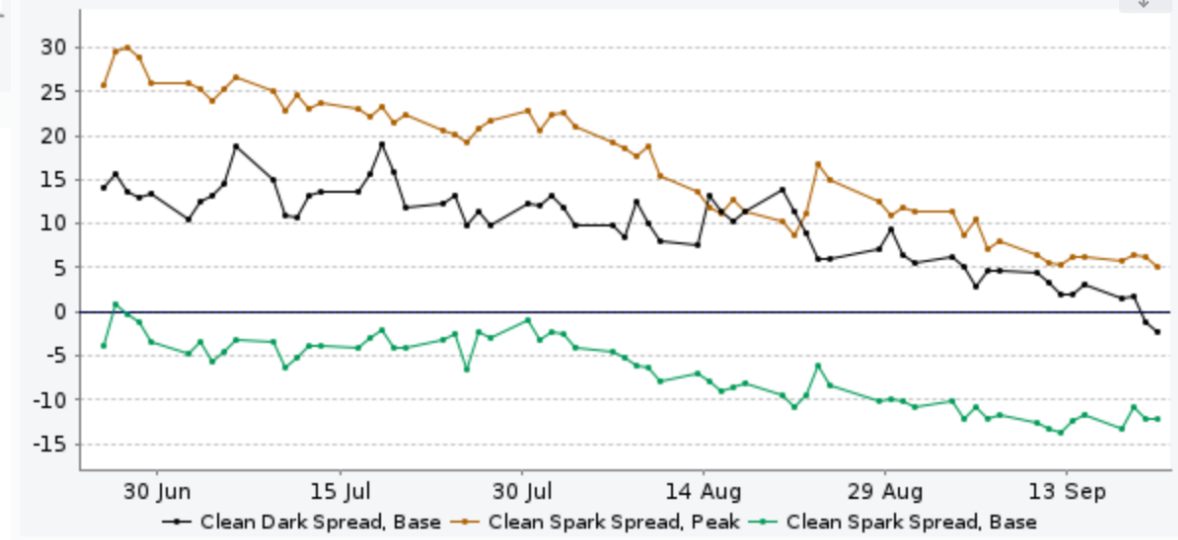


# Production costs from coal and gas

Quarter contracts, last 90 days



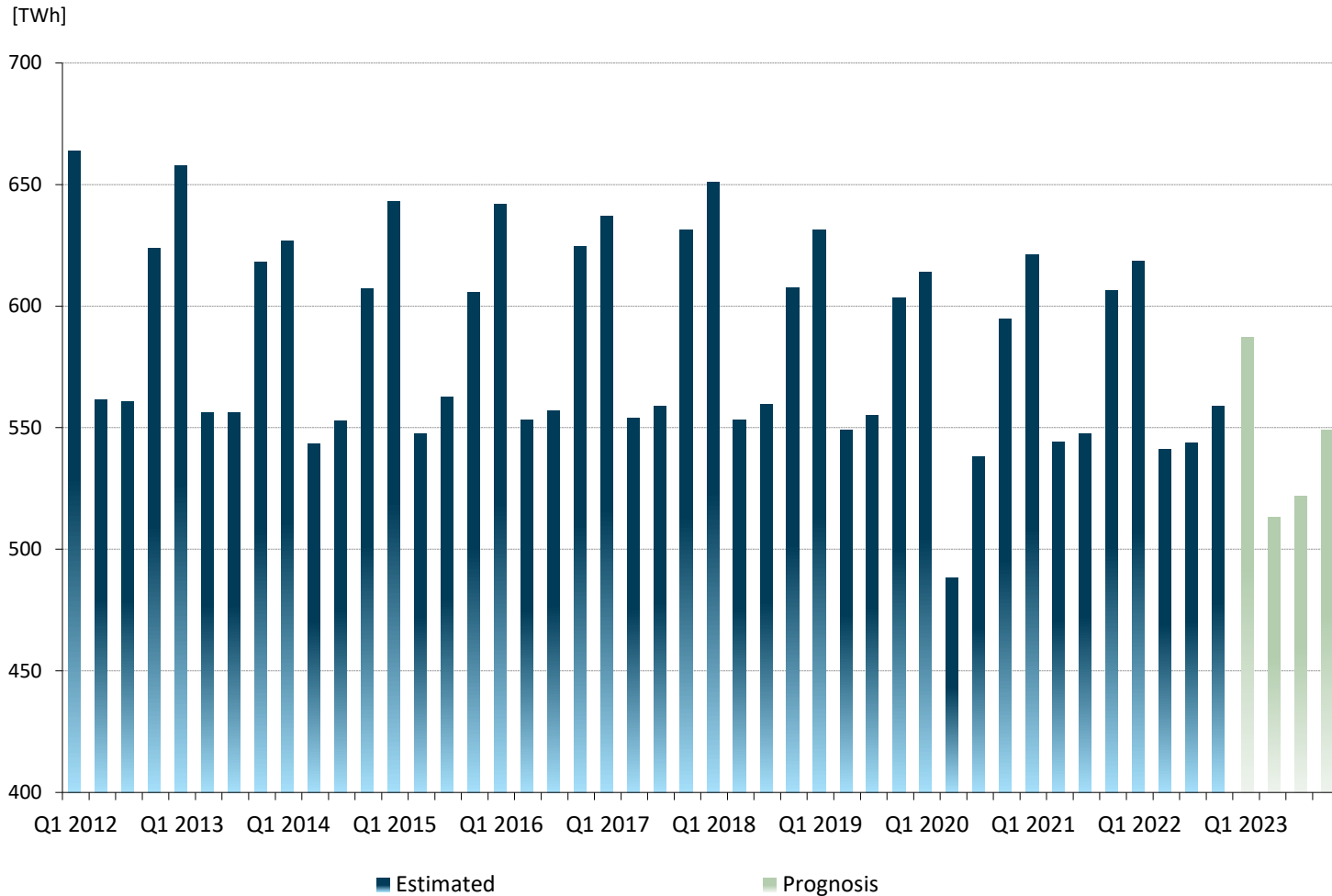
Year contracts, last 90 days





# Deteriorating development for manufacturing industries

Power consumption, ten largest EU ETS countries



- Industrial output harmed by high fuel, electricity and carbon costs; the weak output cemented back in October 2022
- EU27+UK power consumption in 2022 fell by approx 100 TWh
- Another 100 TWh of power demand decrease in 2023 is accounted for in our expectations

# Power consumption

## Consumption. Germany. GWh/h

	GWh	% of Normal		Change Previous	
				-1 w.	-1 y.
Wk 33 2023	8 489	102%		1,5%	-4,2%
Wk 34 2023	8 642	102%		1,8%	-3,5%
Wk 35 2023	8 553	100%		-1,0%	-3,0%
Wk 36 2023	8 686	101%		1,6%	-2,0%
	GWh			-1 m.	-1 y.
Mar 2023	41 781	99%		5,7%	-6,3%
Apr 2023	38 010	98%		-9,0%	-7,0%
May 2023	37 273	97%		-1,9%	-8,2%
Jun 2023	36 575	99%		-1,9%	-6,5%
Jul 2023	37 600	99%		2,8%	-6,3%
Aug 2023	37 778	101%		0,5%	-4,7%
	GWh			-1 q.	-1 y.
Q2 2022	120 597	100%		-8,6%	-1,0%
Q3 2022	117 879	100%		-2,3%	-2,5%
Q4 2022	119 622	99%		1,5%	-8,9%
Q1 2023	123 917	100%		3,6%	-6,1%
Q2 2023	111 858	98%		-9,7%	-7,2%
	TWh			-1 y.	-1 y.
2019	507,5	96%		--	--
2020	492,8	99%		-14,7	-2,9%
2021	505,2	100%		12,4	2,5%
2022	490,0	99%		-15,2	-3,0%

## Consumption. Austria. GWh/h

	GWh	% of Normal		Change Previous	
				-1 w.	-1 y.
Wk 35 2023	1 081	101%		2,3%	-1,2%
Wk 36 2023	1 025	96%		-5,2%	-8,7%
Wk 37 2023	1 051	99%		2,6%	-7,1%
Wk 38 2023	1 069	101%		1,7%	-4,9%
	GWh			-1 m.	-1 y.
Mar 2023	5 383	98%		2,0%	-9,4%
Apr 2023	5 063	102%		-5,9%	-5,0%
May 2023	4 709	99%		-7,0%	-8,2%
Jun 2023	4 215	98%		-10,5%	-13,6%
Jul 2023	4 520	101%		7,2%	-9,1%
Aug 2023	4 580	101%		1,3%	-3,5%
	GWh			-1 q.	-1 y.
Q2 2022	15 339	100%		-14,6%	-5,3%
Q3 2022	14 557	100%		-5,1%	-5,8%
Q4 2022	16 143	98%		10,9%	-7,7%
Q1 2023	16 349	97%		1,3%	-9,0%
Q2 2023	13 986	100%		-14,5%	-8,8%
	TWh			-1 y.	-1 y.
2019	66,1	111%		--	--
2020	63,8	98%		-2,3	-3,4%
2021	66,9	100%		3,1	4,9%
2022	64,0	99%		-2,9	-4,3%

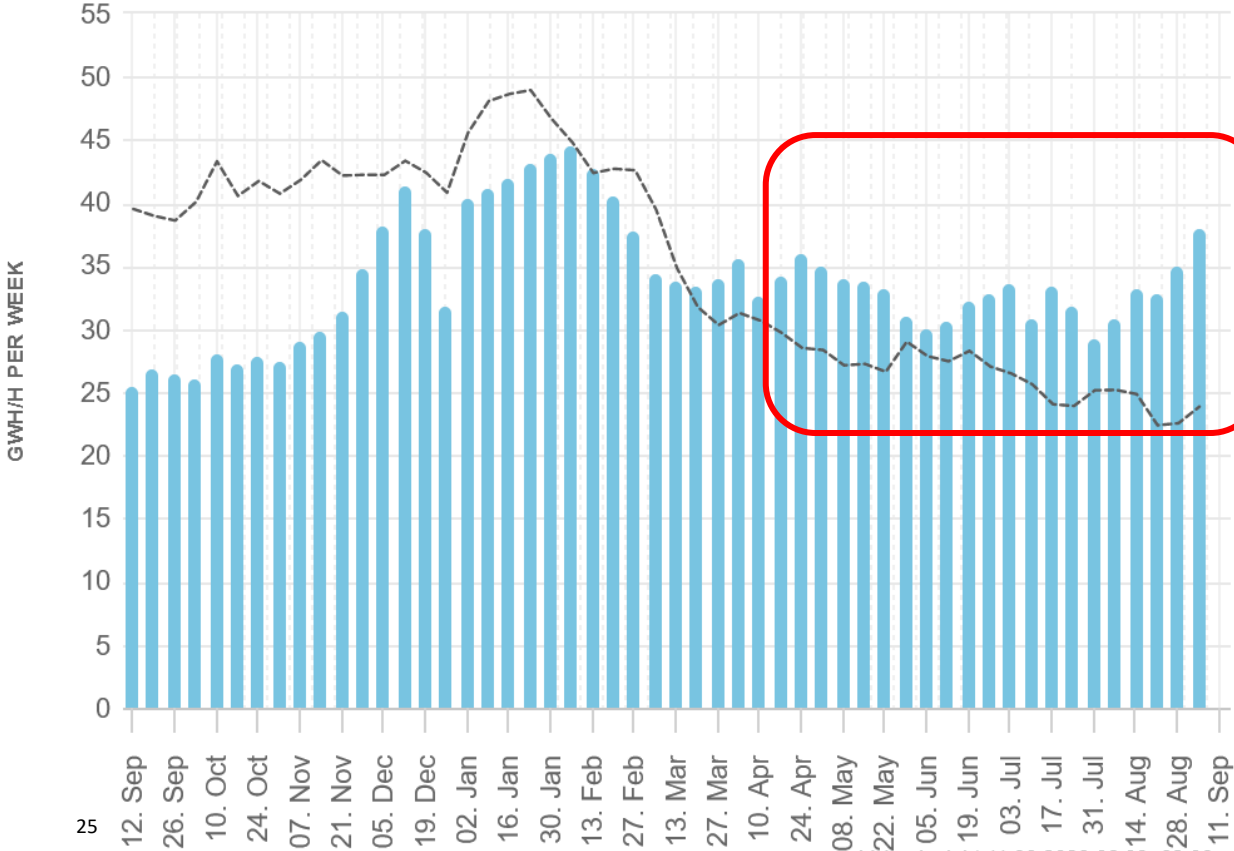
## Consumption. Central Western Europe. GWh/h

	GWh	% of Normal		Change Previous	
				-1 w.	-1 y.
Wk 33 2023	19 825	101%		-0,7%	-5,0%
Wk 34 2023	21 093	101%		6,4%	-1,9%
Wk 35 2023	20 691	99%		-1,9%	-3,3%
Wk 36 2023	20 900	100%		1,0%	-2,5%
	GWh			-1 m.	-1 y.
Mar 2023	106 638	100%		3,3%	-4,8%
Apr 2023	95 553	99%		-10,4%	-5,6%
May 2023	91 147	99%		-4,6%	-6,2%
Jun 2023	90 084	101%		-1,2%	-5,0%
Jul 2023	91 959	100%		2,1%	-5,2%
Aug 2023	90 181	100%		-1,9%	-4,5%
	GWh			-1 q.	-1 y.
Q2 2022	293 273	100%		-14,9%	-1,8%
Q3 2022	283 725	100%		-3,3%	-1,8%
Q4 2022	303 409	98%		6,9%	-9,9%
Q1 2023	324 039	99%		6,8%	-5,9%
Q2 2023	276 784	100%		-14,6%	-5,6%
	TWh			-1 y.	-1 y.
2019	1 272,7	96%		--	--
2020	1 228,4	98%		-44,2	-3,5%
2021	1 270,5	100%		42,1	3,4%
2022	1 224,9	99%		-45,7	-3,6%

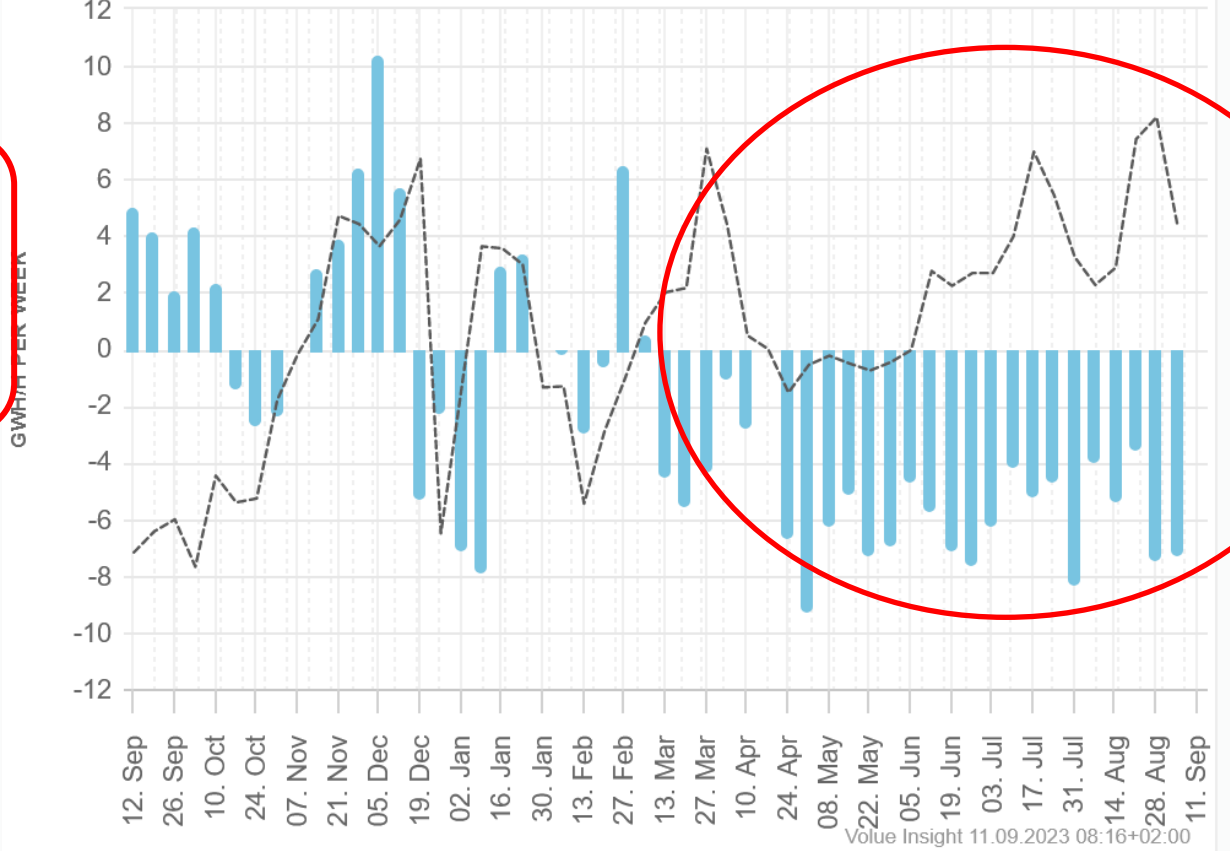
# French nuclear power

Production stronger that last year, France exporting again

Last 52 weeks. Weekly. France



Last 52 weeks. Weekly. France

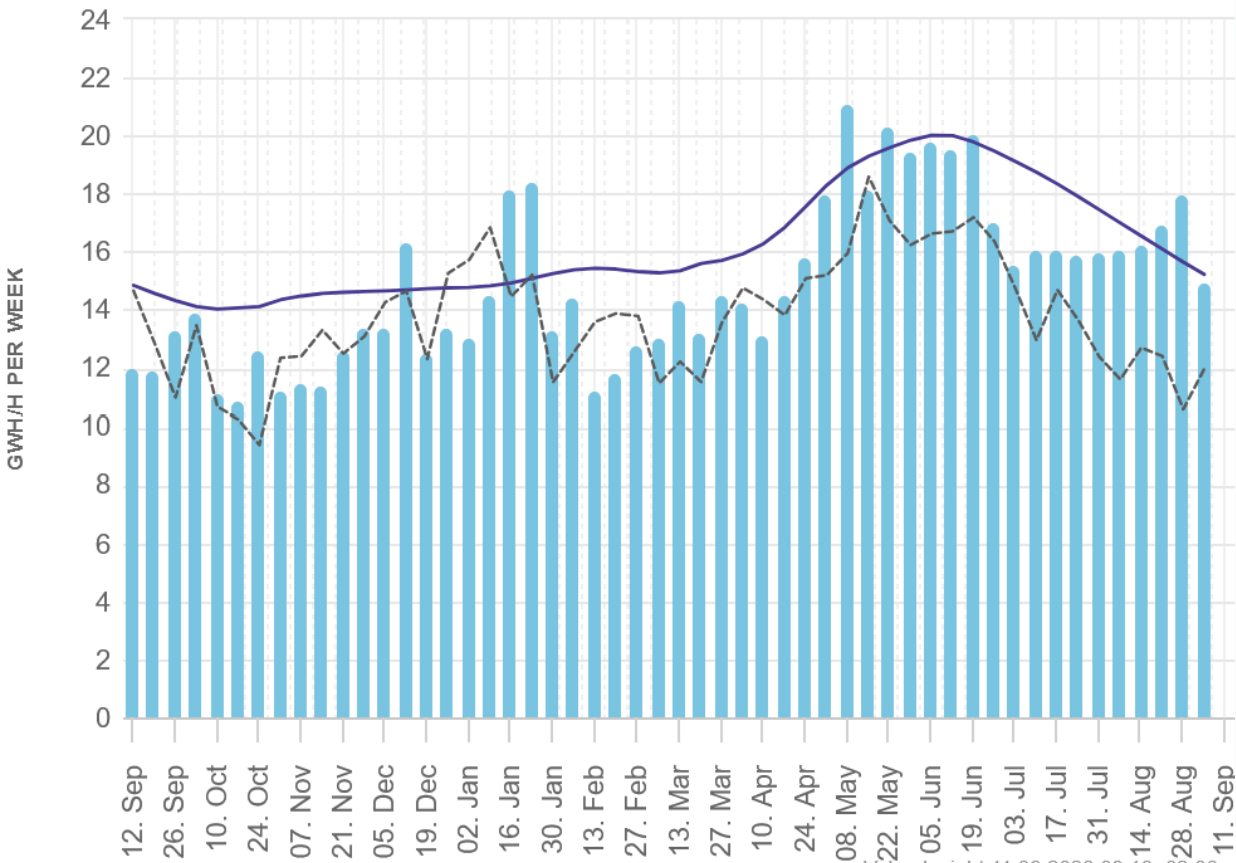


--- Actual FR -52 weeks ■ Actual FR

--- Actual FR -52 weeks ■ Actual FR

# Alpine hydro production

Last 52 weeks. Weekly. Central Western Europe



Value Insight 11.09.2023 09:10+02:00

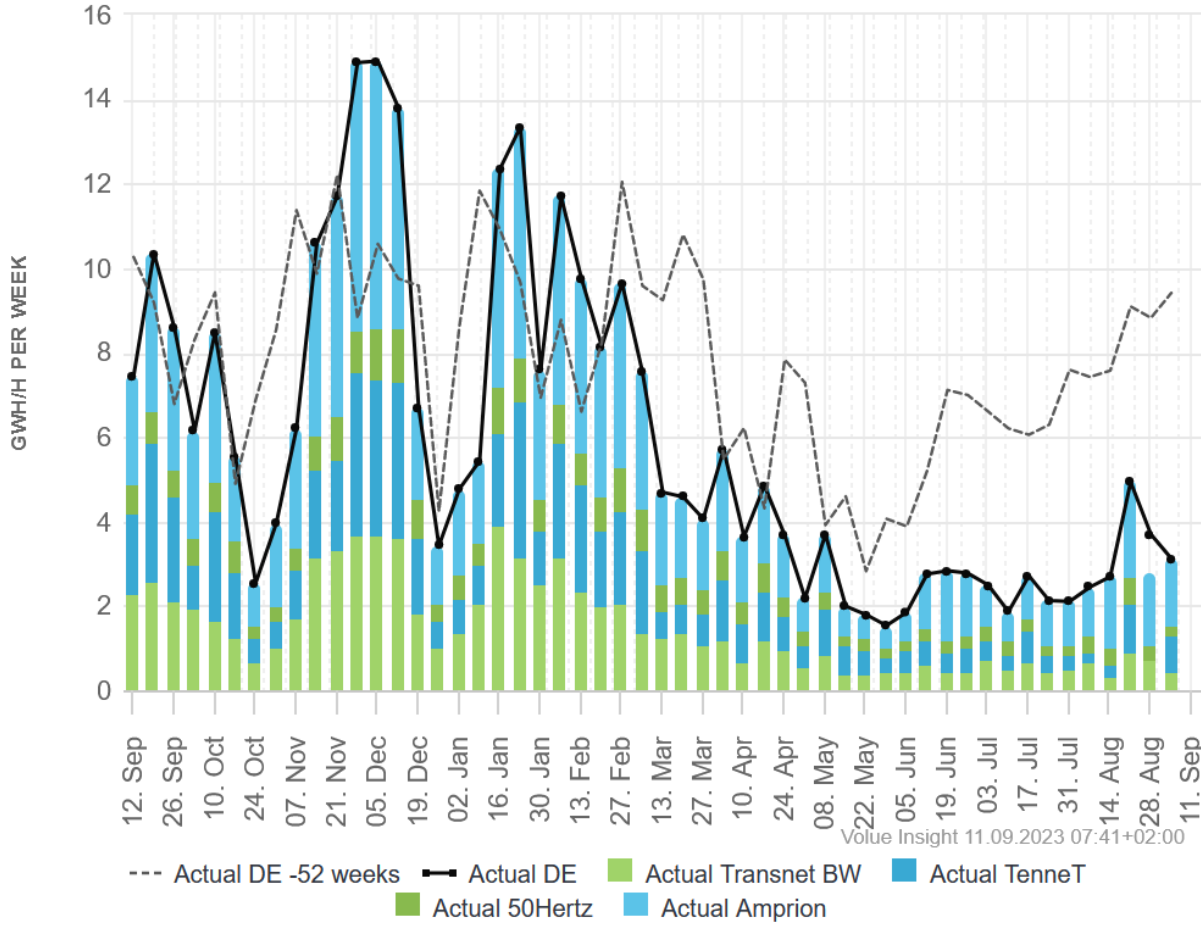
--- Actual CWE -52 weeks    — Normal CWE    ■ Actual CWE

Hydrological Balance

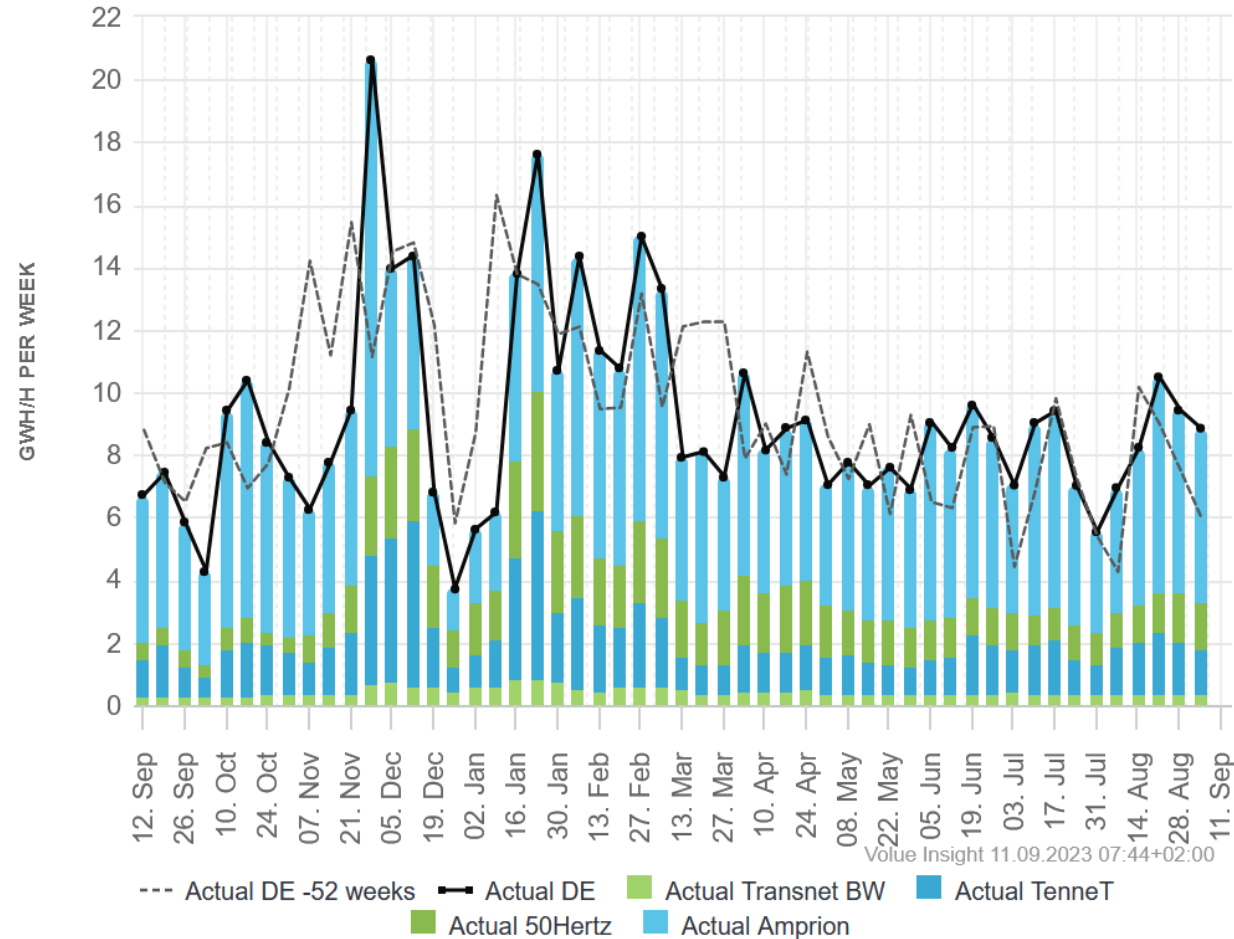


# Development of electricity production from coal and gas

Last 52 weeks. Weekly. Germany



Last 52 weeks. Weekly. Germany



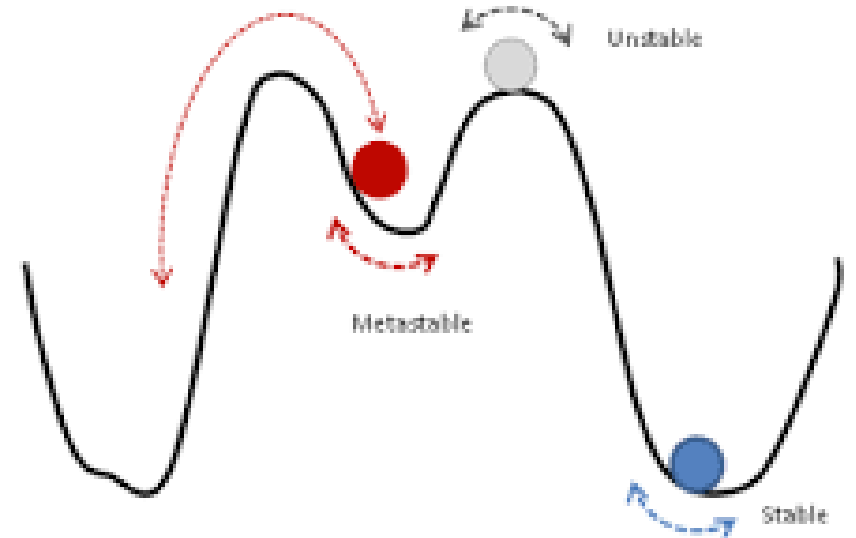


# Outlook autumn / winter 2023/2024 (gas)

value

- The situation is more relaxed than one year ago – storages are well filled and more infrastructure is in place
- Competition between Europe and Asia on the LNG market, so there will definitely be higher price levels than before the crisis.
- 50 €/MWh seems to be the magic level to attract sufficient LNG ships, coal spells in Europe and / or Asia might lead to higher risk premiums
- In April efforts will start to refill the storages, price levels will depend on their filling levels.
- Summer heatwaves in the US or Southeast Asia can also affect gas prices in Europe.
- High storage levels during the summer could let prices again drop
- The situation is still metastable but the hills on left and right are higher than last year

Figure 17: Three equilibria types



Source: Oasecra (2021)

# Outlook autumn / winter 2023/2024 (power)

value

- Alpine Hydro and French nuclear situation is better than one year ago, but three German nukes are gone
- Demand levels are on decreasing side due to weak economic data, especially in Germany
- Gas price levels will also affect power prices, electric heat demand especially in France is another price leverage

# Thank you for your attention

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