Part 1: Trading strategy recommendation HU-DE, HU-ITA spread

	WK44	WK45	Nov-23	Dec-23	Q1-24	Q2-24	Cal-24
Current price (EUR/MWh)	105.1	121.8	126.8	132.0	149.9	129.1	144.6
HU-DE spread (EUR/MWh)	18.5	16.0	13.8	14.0	14.3	10.0	13.0
Against settlement	4	7	3	0	5	-5	-5
Spread with counter position in:	**DE Or ITA**	**DE**	**DE Take profit**	**No good trade**	**DE Spread with Q2/Cal**	**DE**	**DE**

	Confidence to buy	Confidence of +10 means we are very confident that the price in HU will go up
	Confidence to sell	Confidence of -10 means we are very confident that the price in HU will go down

- It is very risky to keep long HU vs. short DE position or long HU vs. short ITA positions for long time since those trades are directly impacted by the ITA-DE spread development which is directly governed by the gas price.
- If gas price goes down all long HU spreads will be losing money.
- **If you made earnings on long HU positions in the last two-three weeks, consider them as a pure luck and take profits. Those earnings were mostly a consequence of the rising gas price and increase of the ITA-DE spread.**

Part 2: Update HUPX and SEE risk factors

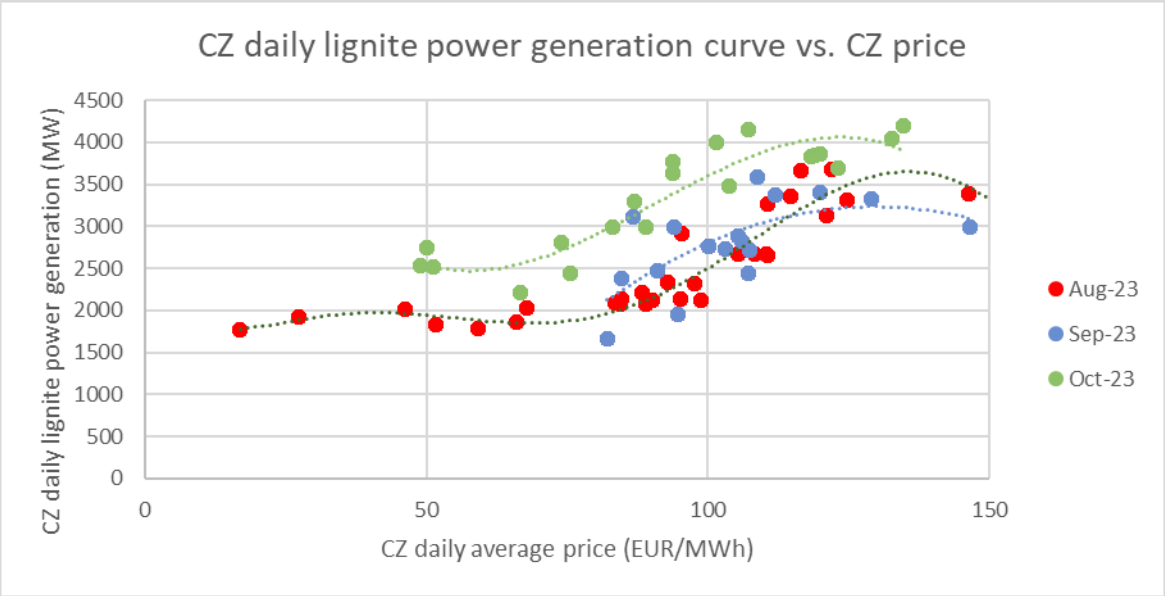
What changed in last several weeks:

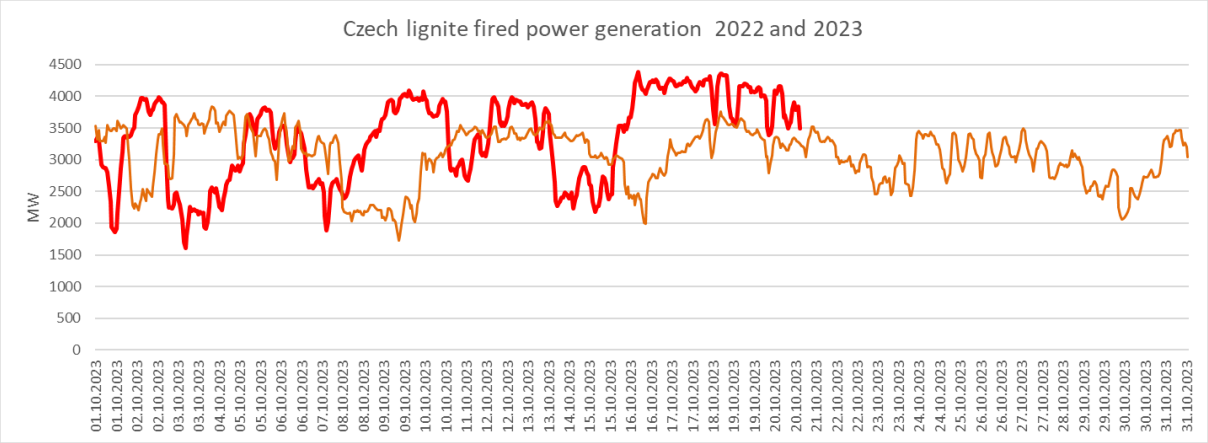
1) Czech lignite fired generation is stable at 100 EUR/MWh +- 10 EUR/MWh

Czech lignite fired generation increased, which is normal for this time of the year, but also this is due to high market prices. Czech lignite generation was moving very fast between 2000 MW and 4000 MW.

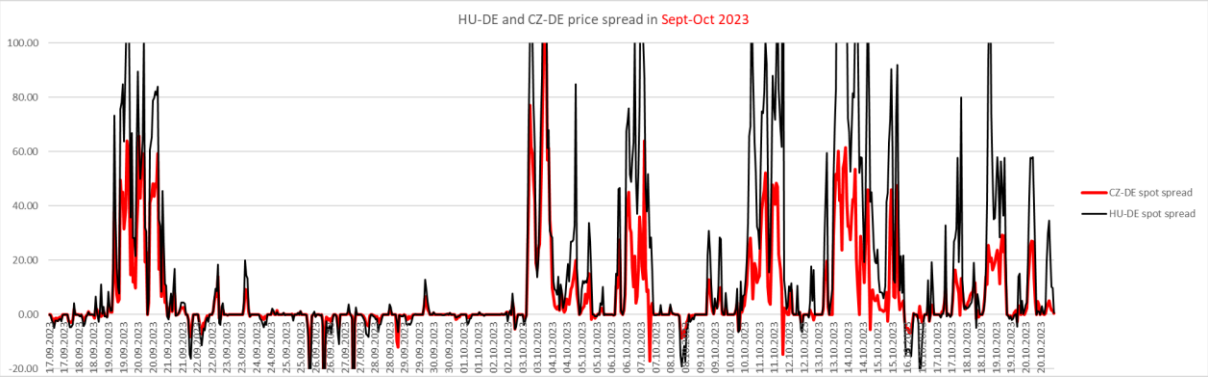
Czech lignite is much more stable around 100 EUR/MWh than in previous months. There is no sharp decline when price drops below 100-110 EUR/MWh anymore. The decline of generation with price is much slower which means that it is no big difference in expectations for Czech lignite fired power generation whether DE/CZ futures for the week are 90 EUR/MWh or 110 EUR/MWh, while before this was a big difference.

- Czech lignite fired generation and impact of market prices on Czech lignite fired power generation is not such strong factor for HUPX as it was in August and September. Only in case of daily German market price drop below 80 EUR/MWh there could be a stronger impact of that on HUPX.

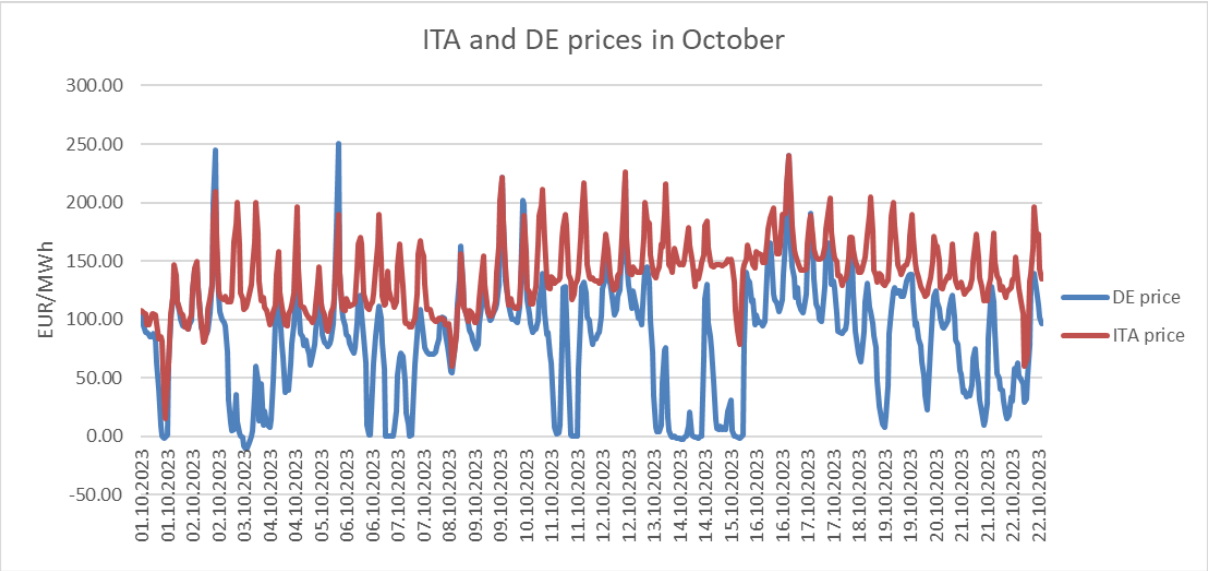




- Czech price still moves together with HUPX in the FBMC
- Czech futures for the next weeks are just 3 EUR/MWh above DE futures which is risky for short positions on Czech market.
    - <u>There is an opportunity with long CZ vs. short DE spread</u>
- Czech market has much lower risks than HUPX since it is long market, but Czech market obviously moves together with HUPX in FBMC.

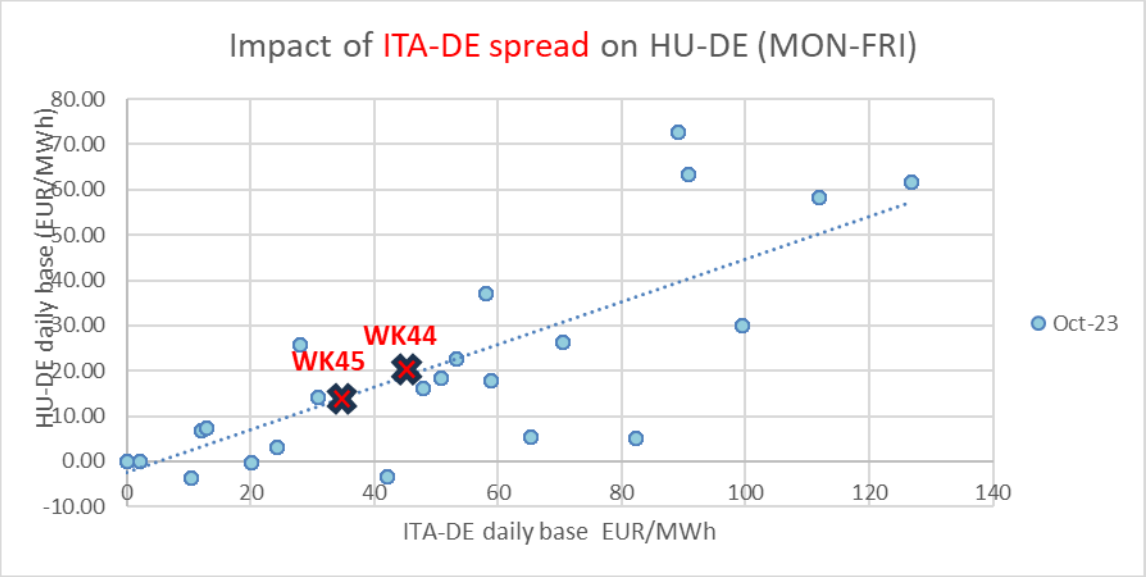


2) Huge German market volatility brings higher HU-DE spread (which is a big reason for making long HU vs. short DE spread)



ITA-DE spread makes HU-DE spread. The correlation is much better in October than in September because of higher need of HU+SEE region for imports.

Volatility was extreme in past two weeks, if it remains so high for the next two weeks, this would be bullish for HU-DE spread**.**



EUR/MWh	ITA-DE futures	ITA-DE settlement	HU-DE futures	HU-DE settlement	(HU-DE)/(ITA-DE) Settlement Ratio
WK41	**38**	**67.4**	**24**	**37.7**	**56%**
WK42	**60.6**	**54.8**	**33**	**11.4**	**21%**
WK43	**33.7**	**33.5**	**11**	**9.3**	**28%**
WK44	**47**		**18.5**		**40%**
WK45	**34**		**16**		**47%**

- HU-DE futures spread for the next two weeks are at around 40-50% of the ITA-DE futures spread., which appears as a bit risky for short HU position.
- **Long HU vs. short DE position has a potential due to high ITA-DE spread.**

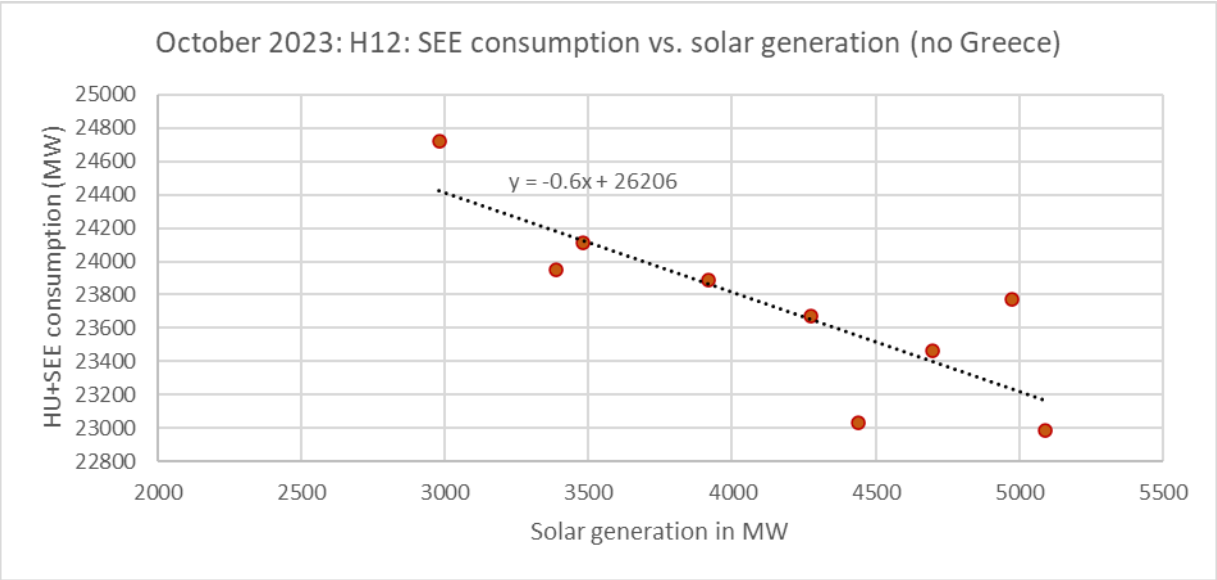
- Traders are under the influence of the previous week. Since WK41 had higher than expected HU-DE spread, they assume high HU-DE spread for WK42, but HU-DE spread in WK42 settled much below expectation. Settlement of WK42 was much lower than expected which will impact the futures spread for WK44 and WK45. **Settlement of the WK43 also started low which will make a psychological influence on traders to trade WK44 and WK45 spread low**.

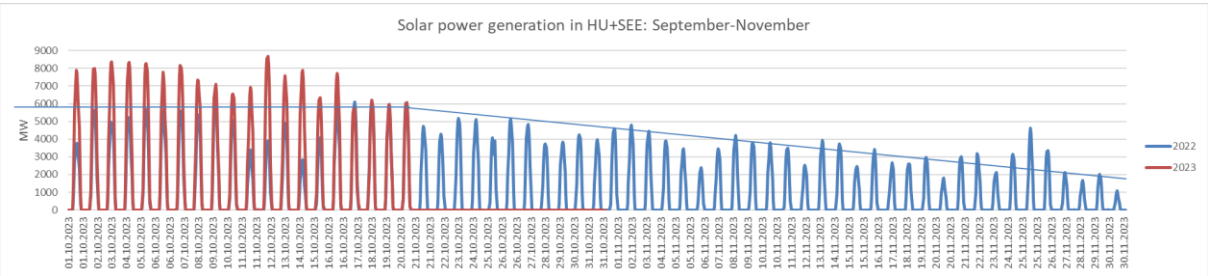
Settlement should be avoided if possible. WK42 settled much more bearish than WK41 because of higher wind and hydro generation and sudden increase of lignite fired power generation without improvement of availability nor market prices. Also French market was significantly below German market.

3) Solar generation drop vs. consumption rise.

- Around 60% of Solar generation in HU+SEE region (excluding Greece) is emended in consumption data.
- For data analysis, 1000 MW loss of solar generation leads to 600MW rise of consumption. This will be important in coming days since solar generation gets rapidly reduced now together with rising consumption due to temperature drop.

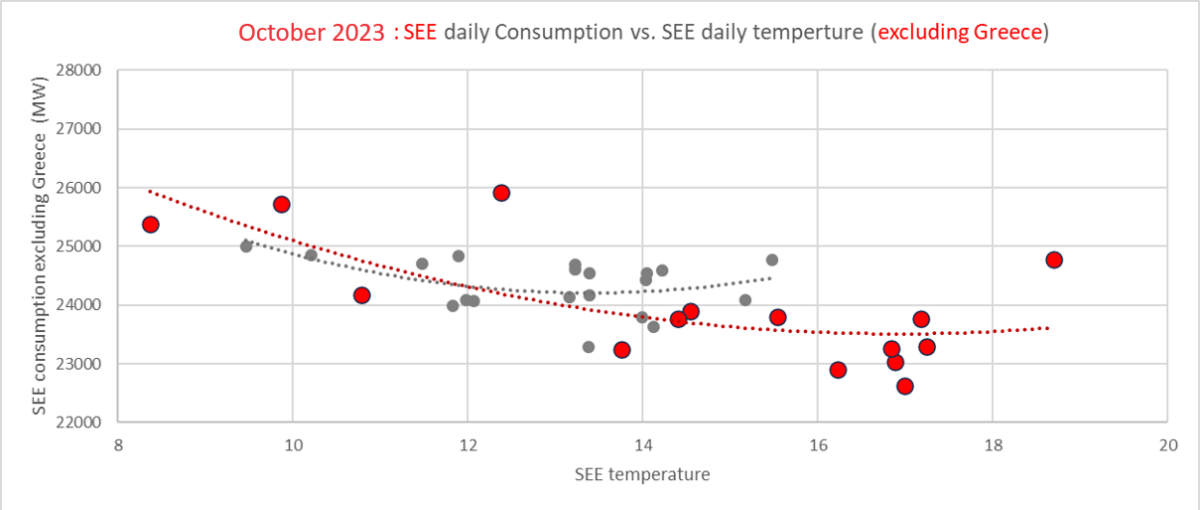
Diagram: Consumption vs. solar generation in H12 in October 2023 on days with the same temperature.

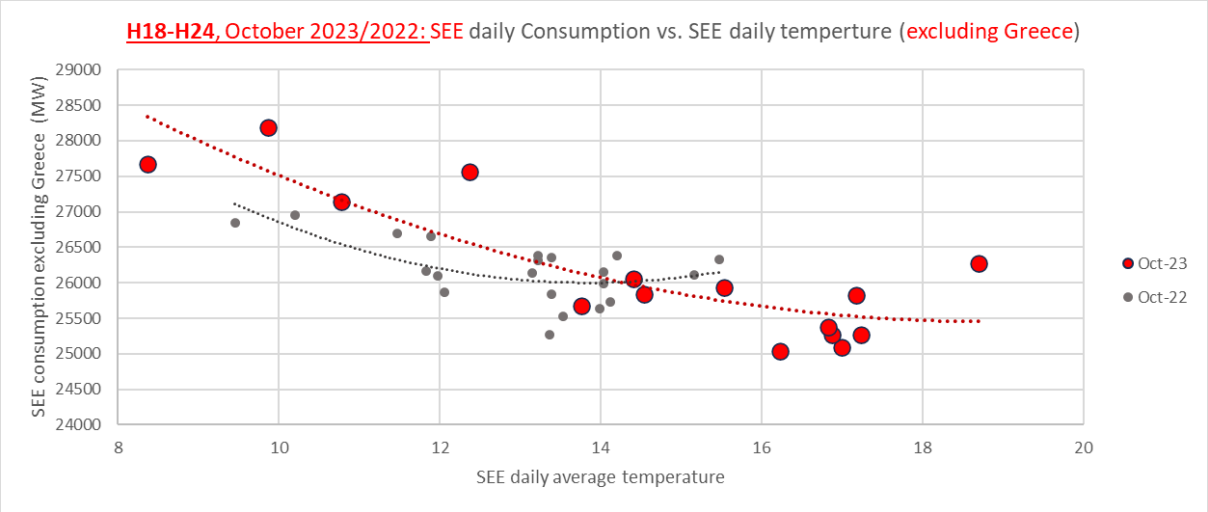


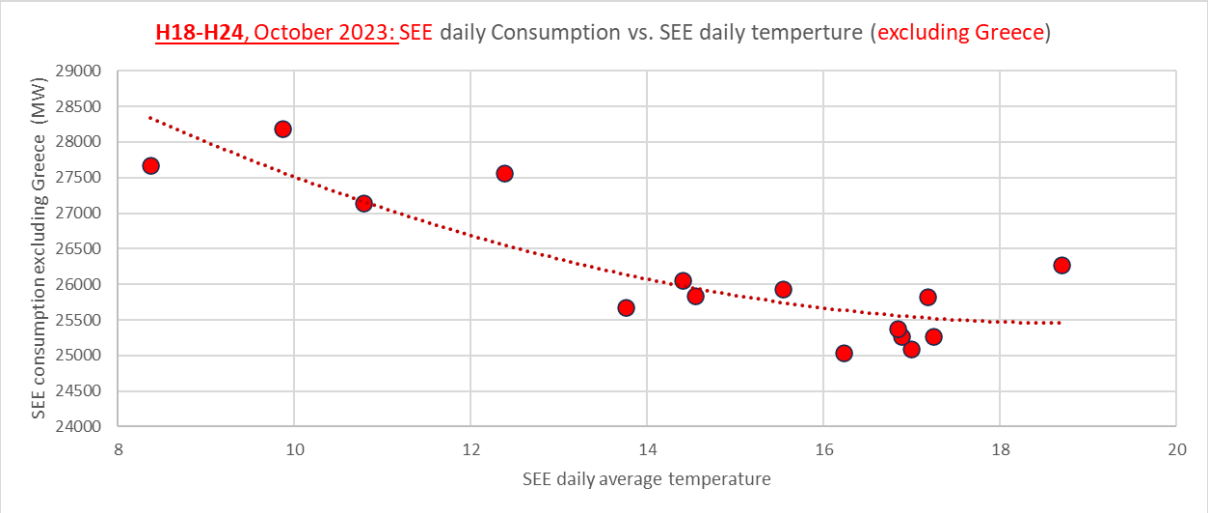


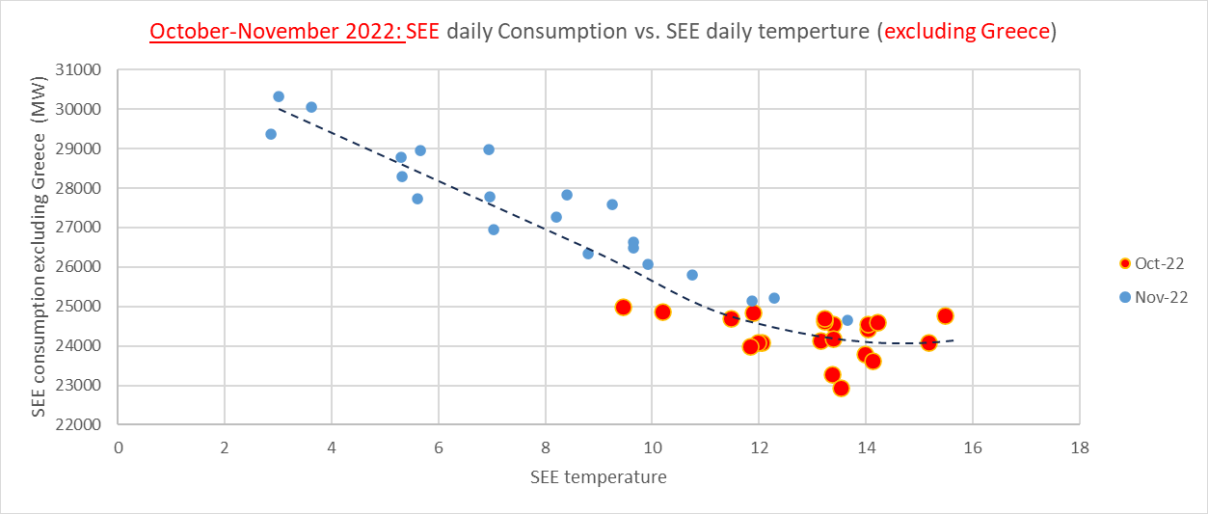
4) Temperature drop vs. consumption rise

- Temperature neutral consumption is 500-1000 MW higher than last year on colder days.
- Consumption goes up 400 MW per each °C of temperature drop







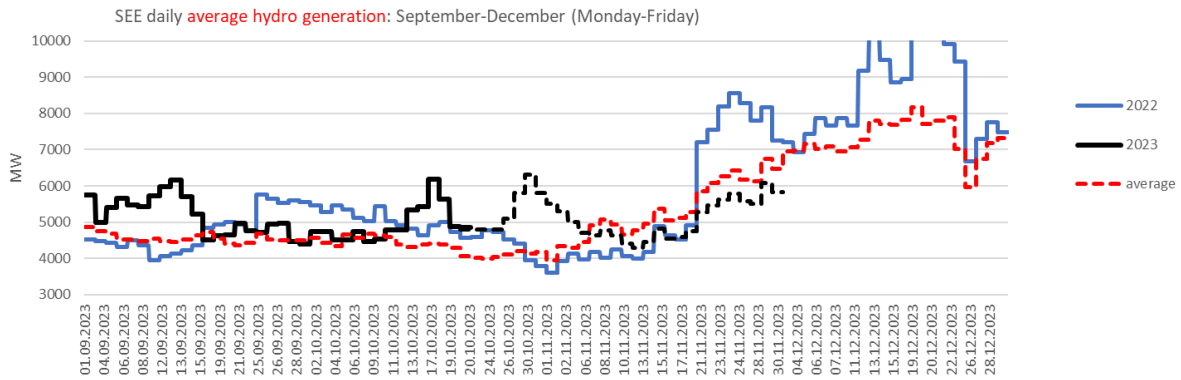


- More detailed temperature forecasts for November 2023 do not predict extremely warm weather anymore, but only 0.5-1°C above average temperatures.
- Previous forecasts were estimating 1.5 °C above average temperature for November 2023.
- November 2022 had 2 °C above average temperature

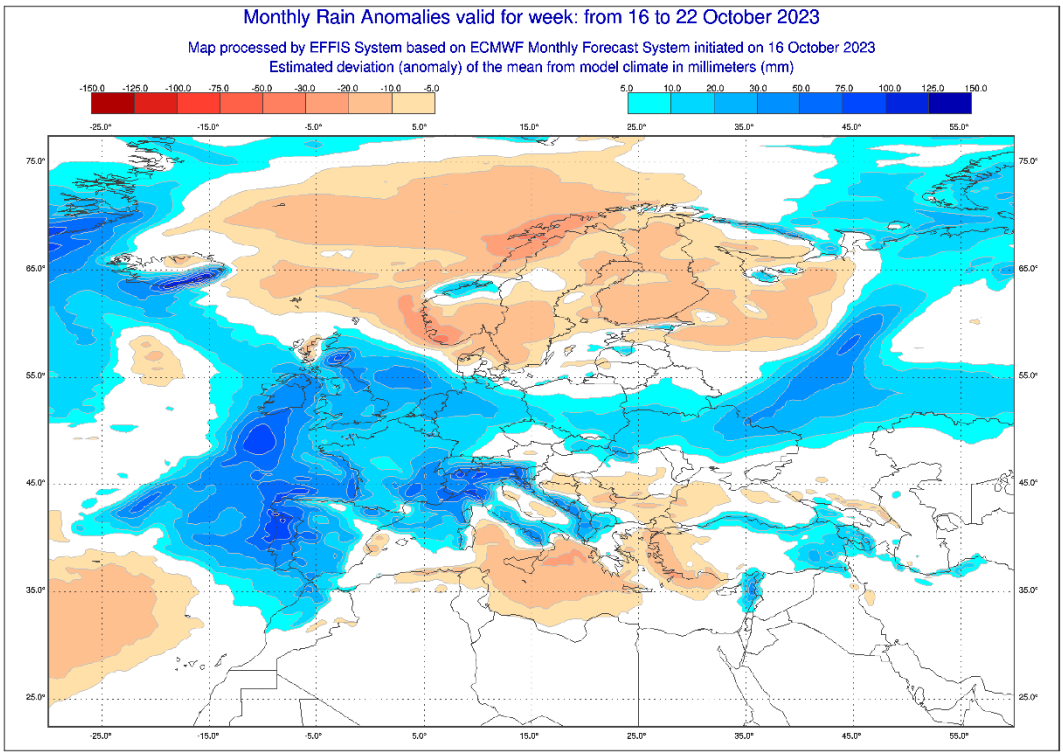
5) In October there was much more precipitation than forecasted

Precipitation in the region was over 100% higher than in October 2022, but also at around 50% of precipitation in October 2021. Hydro generation at the moment is higher than in both 2021 and 2022 at the same point in October.

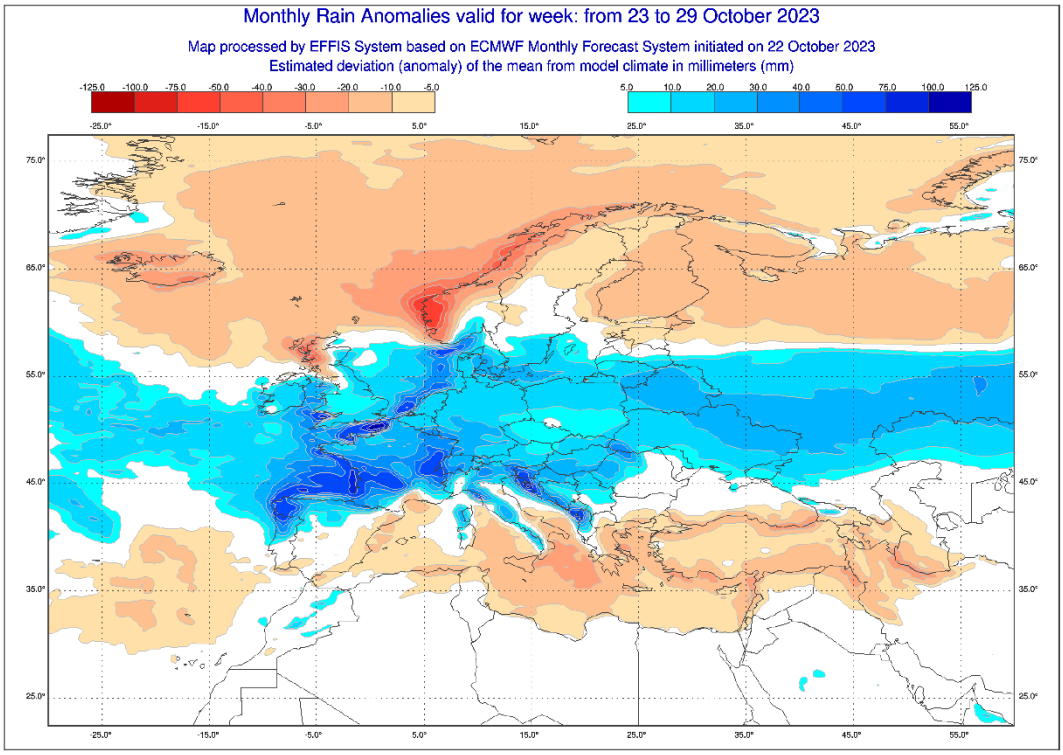
In the WK42, precipitation was significantly above average, but with very limited and very short lasting impact on hydro generation in the region.



Danube flow for the last 15 days is at 50% of the average flow for October.



- There is a very strong precipitation forecasted for the running week WK43**.** It will make very limited and very short lasting effect.

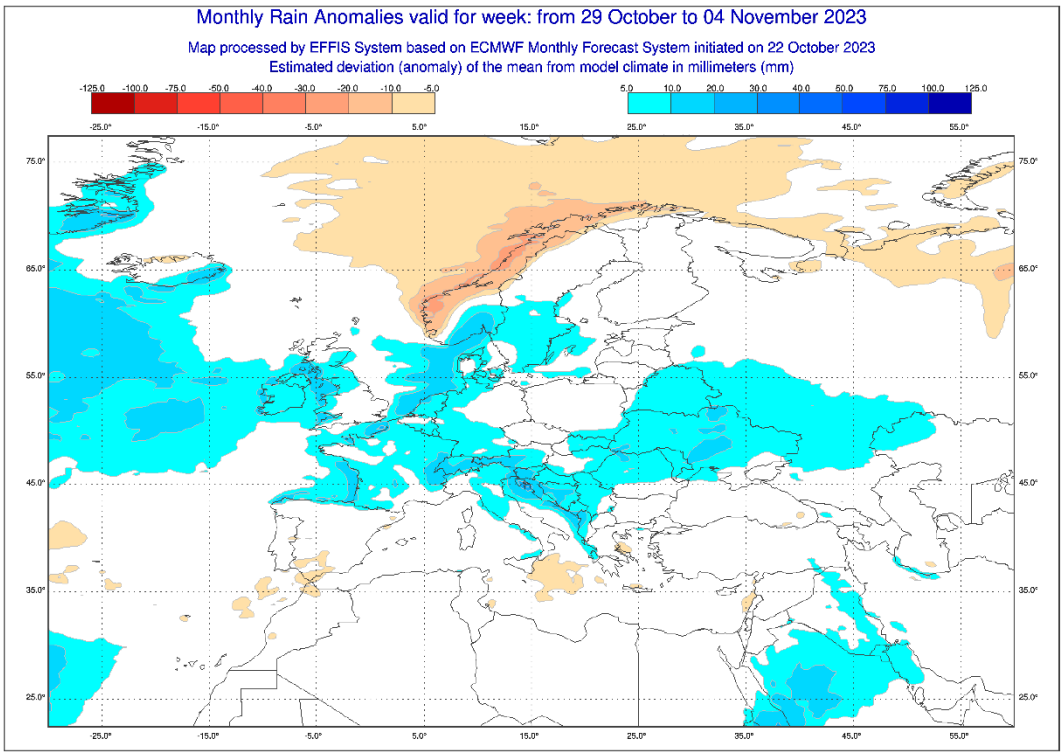


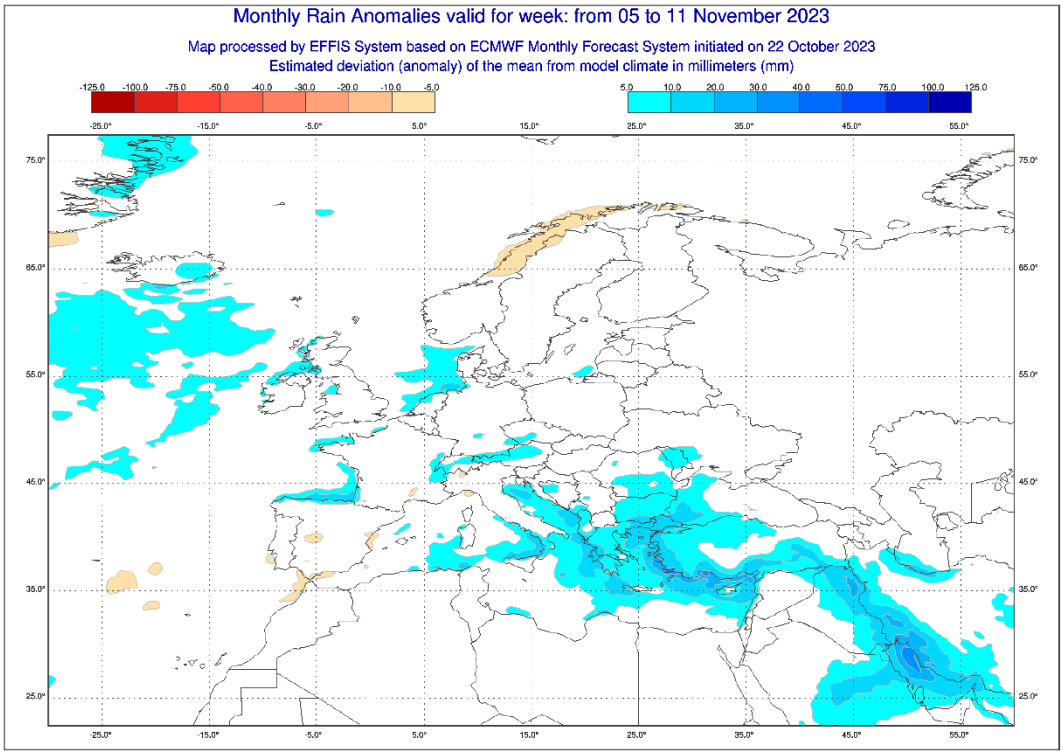
- There is above average precipitation forecasted for the first two weeks of November. However, above average precipitation in the WK43 and in November is mostly in Adriatic region, which does not necessarily have a strong impact on overall hydro generation in the region**.**

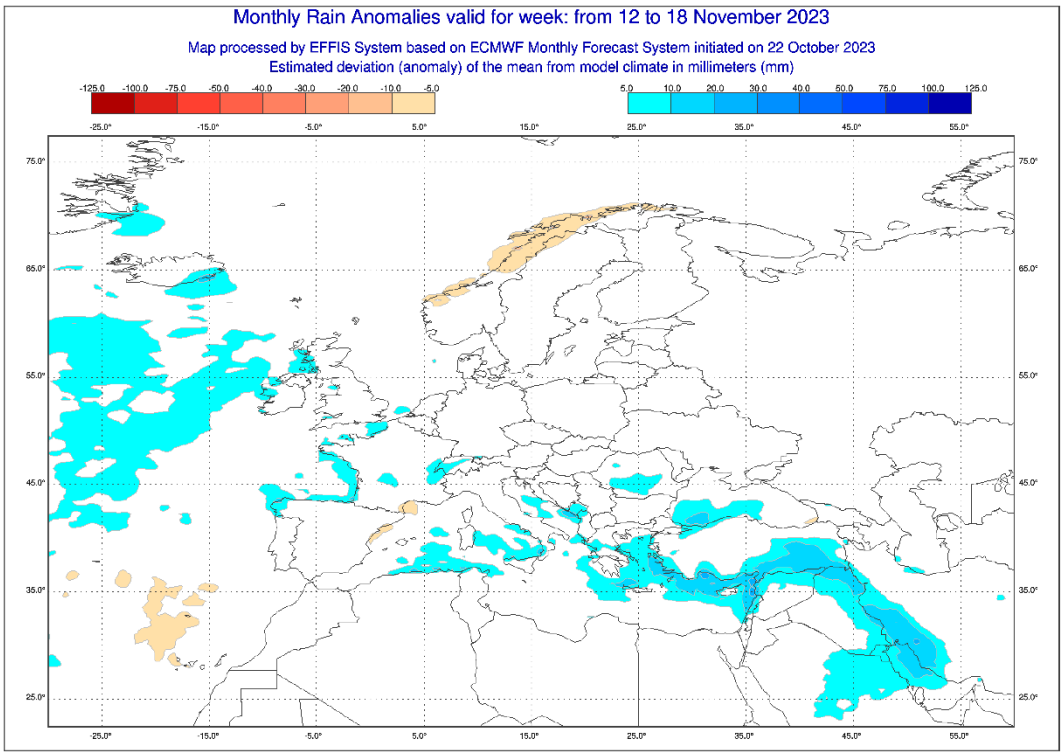
  There were years with extremely strong precipitation in Adriatic region in which the overall regional hydro generation was below average.

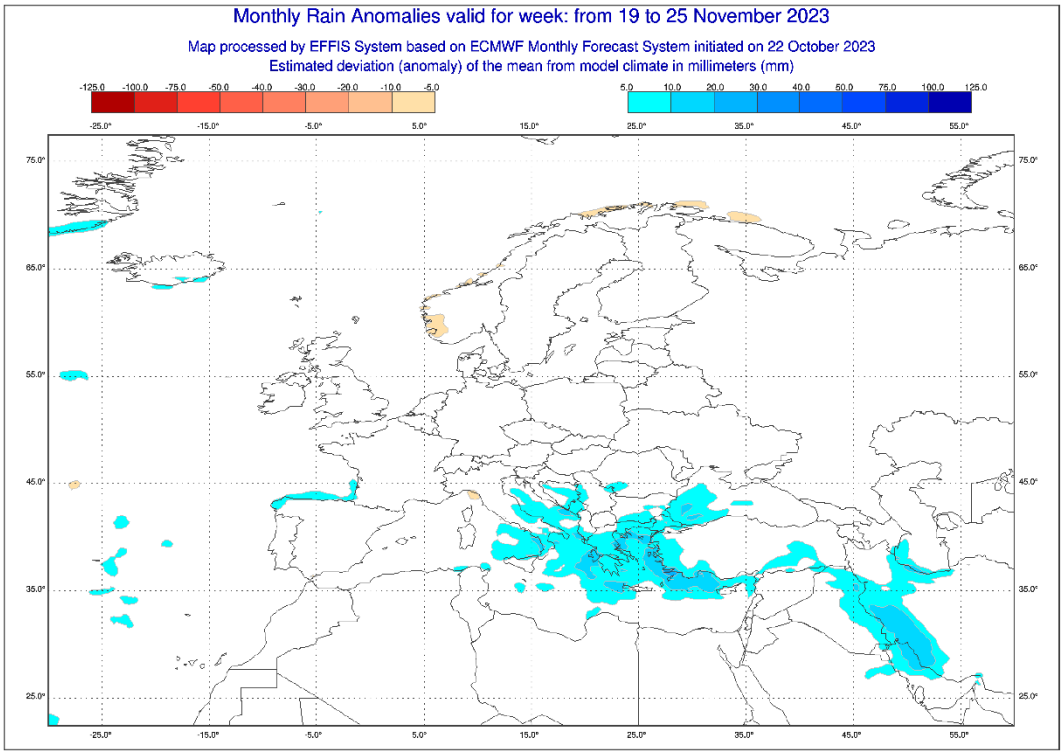
	Dubrovnik (Croatia)	Maribor (Slovenia)	Belgrade (Serbia)	SEE hydro generation (% of average for November)
Nov. 2022	190 mm	125 mm	60 mm	86%
Nov. 2021	180 mm	121 mm	88 mm	87%
Nov. 2020	10 mm	20 mm	11 mm	98%
Nov. 2019	250 mm	150 mm	50 mm	103%
Nov. 2018	237 mm	80 mm	125 mm	93%

- Precipitation forecasts for November are quite close to average and Danube flow forecast is terrible (25% below average flow for November). Therefore, it is difficult to expect a change of hydro generation which would change market conditions into bearish conditions.






Monthly Rain Anomalies valid for week: from 12 to 18 November 2023
Map processed by EFFIS System based on ECMWF Monthly Forecast System initiated on 22 October 2023
Estimated deviation (anomaly) of the mean from model climate in millimeters (mm)
-125.0 -100.0 -75.0 -50.0 -40.0 -30.0 -20.0 -10.0 -5.0
5.0 10.0 20.0 30.0 40.0 50.0 75.0 100.0 125.0


Monthly Rain Anomalies valid for week: from 19 to 25 November 2023
Map processed by EFFIS System based on ECMWF Monthly Forecast System initiated on 22 October 2023
Estimated deviation (anomaly) of the mean from model climate in millimeters (mm)
-125.0 -100.0 -75.0 -50.0 -40.0 -30.0 -20.0 -10.0 -5.0
5.0 10.0 20.0 30.0 40.0 50.0 75.0 100.0 125.0

- Important rivers have the same flow as at the same time last year.

Chart (flow on the river Drina Serbia-Bosnia)

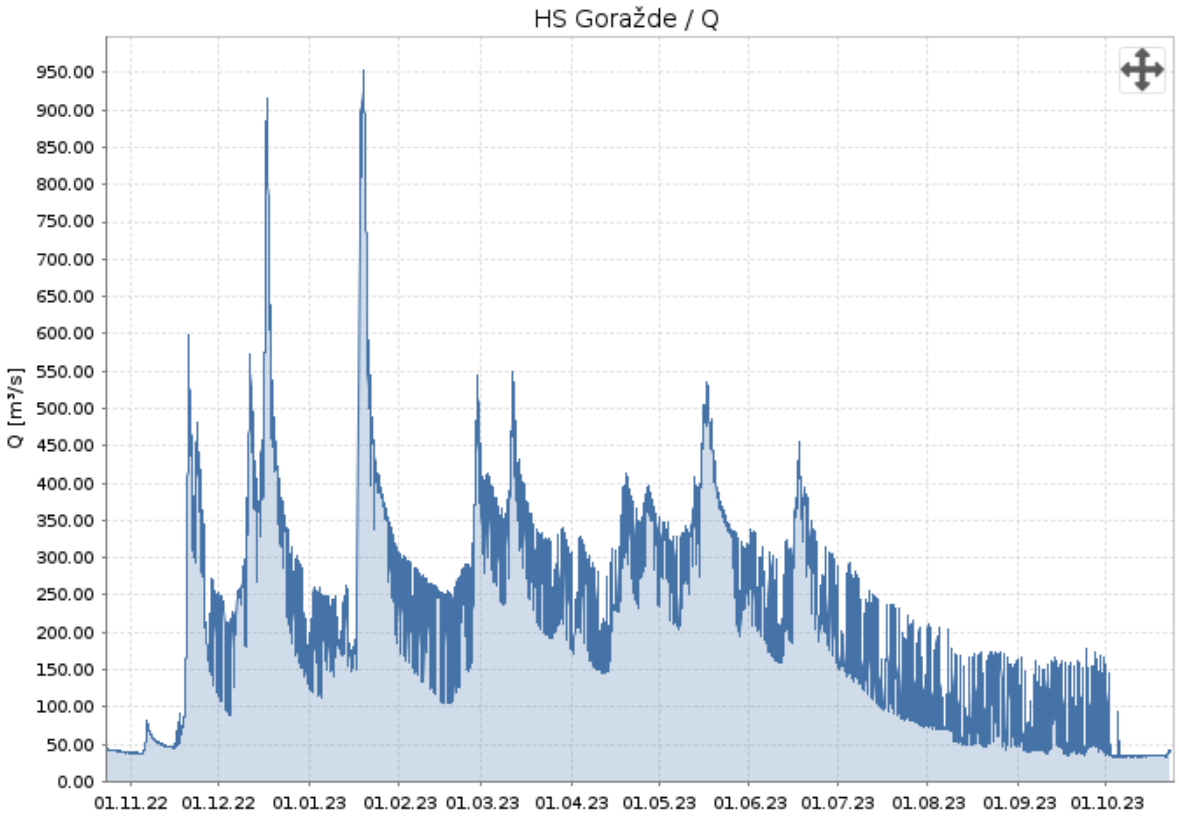
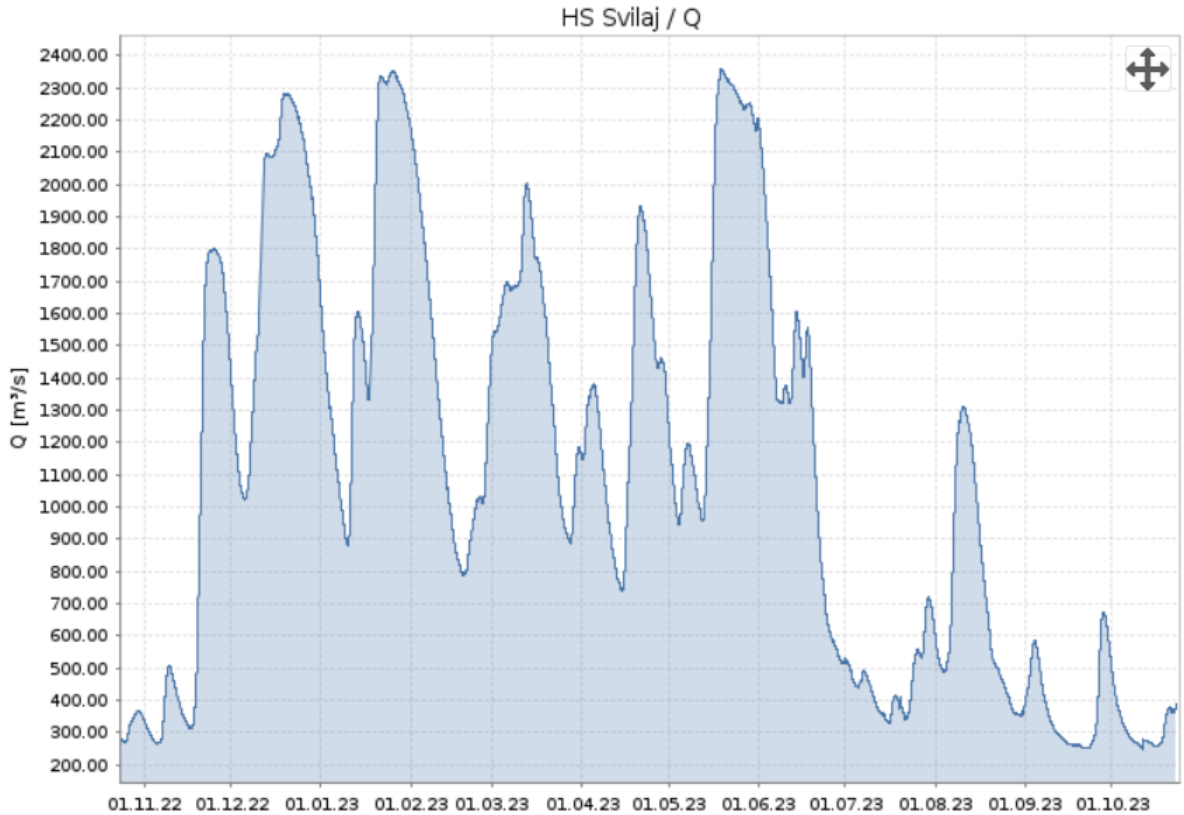


Chart (flow on the river Sava Bosnia-Croatia-Serbia)



It appears that hydro generation will be quite low in the next weeks, similar to November 2022, but without prospects to be improved in the 2nd half of November as it was the case last year.

The best assumption is that:

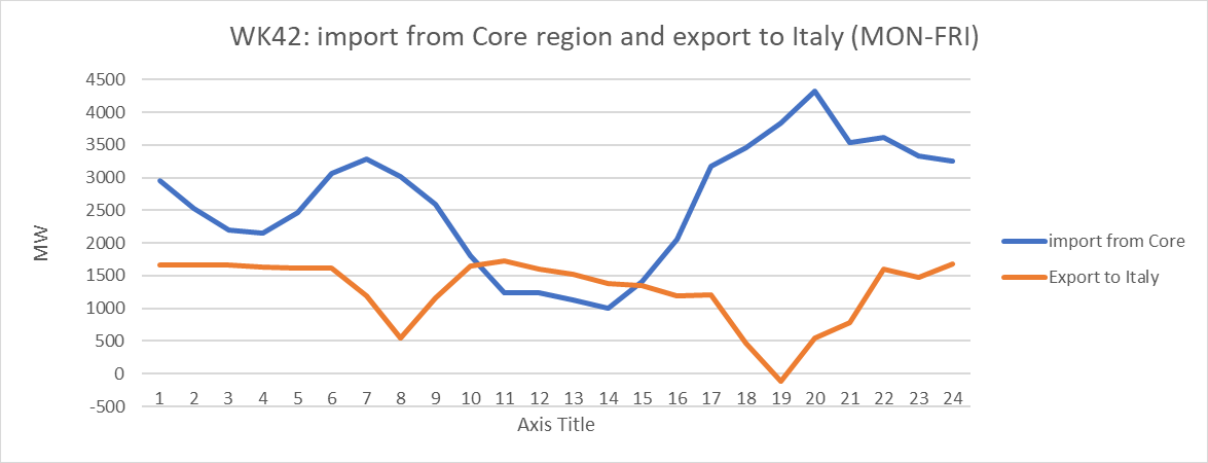
- The same hydro generation in the next two weeks as it was during October.
- Similar hydro generation in WK44 as in WK42.
- The SEE region will have the same hydro generation as last year in the first half of November
- 10% below average hydro generation in the 2nd half of November
- 2000 MW lower hydro generation than in the 2nd half of November 2022.

6) Generation-consumption balance change in the next weeks

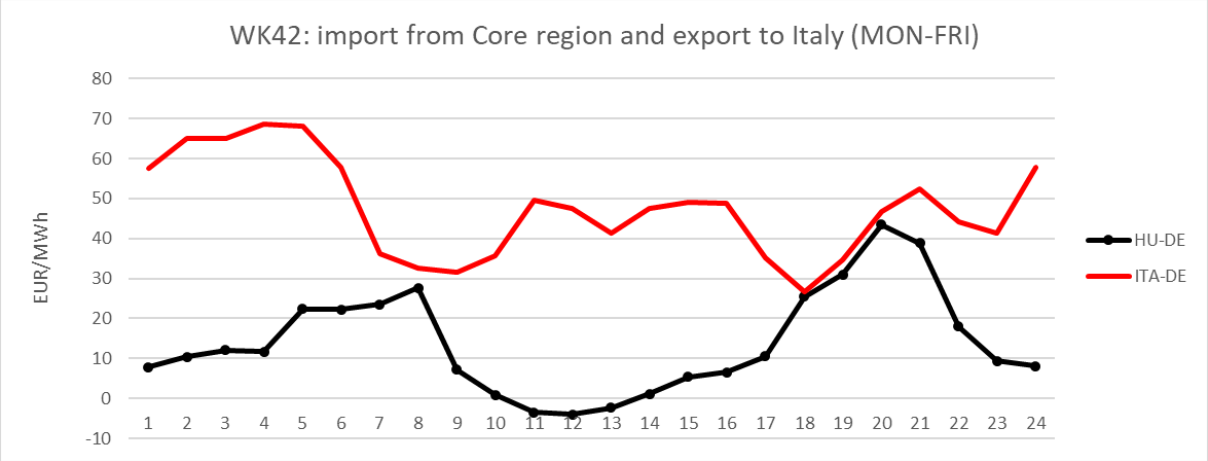
- NPP Krsko taken offline on 5 October. It is expected to reconnect the power plant to the grid in mid-November.
- NPP Kozloduy G10 maintenance is again extended until 20.11.2023.
- There will be 1700MW of nuclear power generation out of operation in the first 20 days of November, while the original plan was to have all Nuclear power plants available in the first half of November.
- Bosnian state-owned power utility EPBiH said that it has recorded a loss of some 25.5 million euros in the first nine months of 2023 primarily due to the continuous reduction in coal deliveries from EPBiH's coalmines.

In the last week, WK42 (16.10.2023-22.10.2023) everything was better than expected, nearly as good as it can be, but still HUPX settled 14 EUR/MWh above German market on working days.

- HU+SEE region imported on working days 2600 MW from Core region
- HU+SEE region exported on working days 1300 MW to Italy
- The region was just 1300 MW on average short although NPP Krsko and NPP Kozloduy were out of operation.
- Hydro power generation was surprisingly high, 600 MW higher than in WK41 and 600MW higher than in the same period last year.
- HU+SEE lignite fired generation increased by 600 MW compared to WK41 and reached output very close to WK42 of 2022.
- Czech lignite fired power generation was 700 MW higher than in the WK42 of last year.
- Greek gas fired generation was 1700 MW higher than in the WK42 of last year and 300 MW higher than in WK41 of 2023. The rise of market prices in Germany and HUPX stimulates Greek gas fired power generation.
- Wind power generation was close to average although there were several days with very low wind power generation. Wind power generation in the WK42 was higher than in previous 2 weeks of October 2023 and higher than in October 2022.



- The HU-DE spread was built in hours when imports of the region from Core were high.
- The HU-DE spread was built because ITA-DE spread is now high in critical hours (H7-H9 and H18-H24), unlike to September when ITA-DE spread was negative in critical hours. This is a big change and a bullish change for the next period. HU-DE spread in September was bearish because ITA-DE spread was negative or very low in hours when HU+SEE region needed high imports.



For the next weeks:

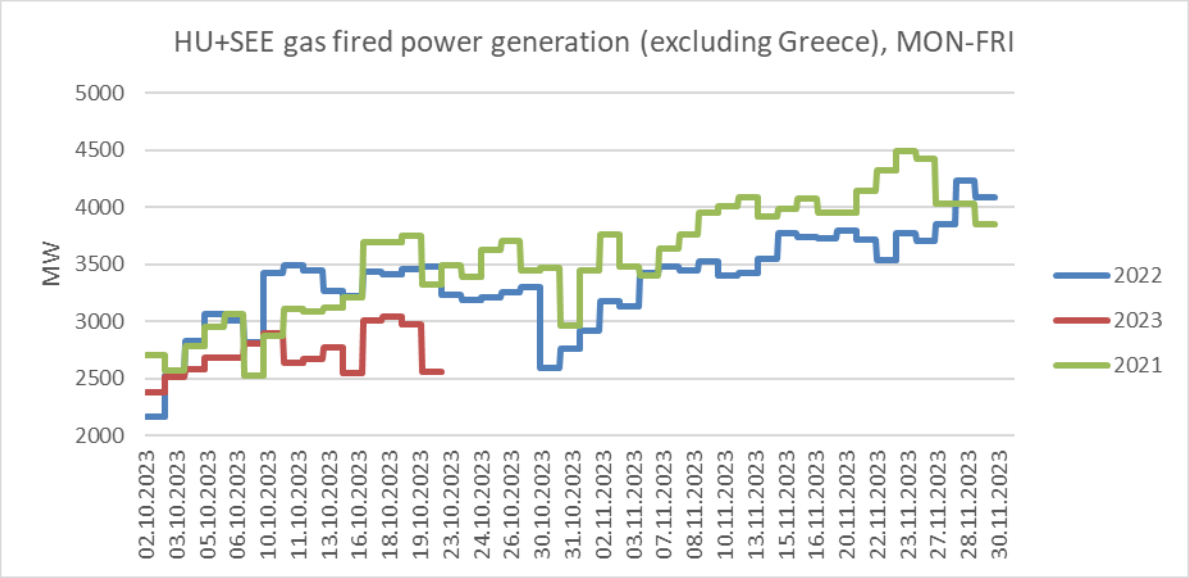
- HU and DE prices will be nearly the same as in WK42, meaning that no additional generation will be stimulated by price.
- ITA-DE spread will be 35-40 EUR/MWh for the week, which is lower than on WK42 and therefore a bit more bearish than WK42. ITA-DE spread in WK42 settled at 55 EUR/MWh.
- There is no improvement of availability until NPP Kozloduy and NPP Krsko come back in operation on 20.11.2023. Improved availability of lignite fired units in Greece and Bulgaria does not necessarily bring higher lignite fired power generation at all.
- Hydro generation will not be higher
- Coal generation will not be higher
- Wind power generation could be higher or lower since it was above average in the WK42.
- Solar generation will be lower

- Gas fired power generation should not be higher, could be even lower since with the start of November Greek gas fired units should lose price advantage against west European gas markets. Recent spot gas price rise in Western Europe did not affect behavior of Greek gas fired units which to great extent operate based on average monthly import gas price. Gas fired power generation in Greece should go down, but in the rest of HU+SEE region it could increase by 500-700 MW with heating season.

  Gas fired power generation is lower this year because Serbian gas unit does not work this October and Hungarian gas units work at lower generation capacity than last year. There are no many market reasons for such low gas fired power generation.

  This could be a possible reaction on the new Bulgarian gas transit tax, although there are no logical reasons for that. However, maybe Hungarian gas units can not adjust fast to the new cost of fuel and or maybe use some gas contract flexibilities.

  If gas fired power generation remains low for the next period, this is a significant bullish factor.



- Consumption will increase with the drop of Solar generation and with the drop of temperatures

  There should be an increase of consumption of at least 400 MW per 1°C. Average temperature in the WK42 which should result in 1000-2000 MW higher consumption in the WK45 compared to WK42 and WK43. However, the effect could be larger as the rise of consumption was very high between WK42 and WK41 for just 1.4°C temperature change.

	Absolute level				Wk-42 change vs previous weeks		
	Week 42	**Week 41**	**Week 40**	**WK-42-2022**	**Week 41**	**Week 40**	**WK-42-2022**
SEE Power	***MW AVG***						
Consumption	29,657	28,373	27,790	29,117	+1285	+1868	+541
Temperature	14.1	15.5	16.7	11.7	-1.4	-2.6	+2.3

Conclusion for the period until 20.11.2022:

- Until 20.11.2022 the only factors that will change compared to WK42 is 1000-2000MW rise of consumption which is bullish.
- The region will need more imports in coming weeks than it was the case in WK42.
- Next weeks 3 weeks are very bullish.
- Import needs will increase also in solar hours due to consumption increase and drop of solar generation.
- HU-DE spread should increase compared to WK42 in all hours, also in hours 23-24, 1-4 and 9-17 when HU-DE spread was very low on working days in WK42.
- It can not be excluded that HUPX will be settling above Italian market in hours H7-H8 and H18-H22
- HU-DE spread should be at least 50% of the ITA-DE spread.

- After 20.11.2022, market conditions will get better but will depend a lot on hydrological development in the next 3 weeks.

7) Different net positions of Core countries in FBMC and different FBMC outcomes

In the period 14.10.2023-20.10.2023 (7 days), most of the reasons for HU-DE spread and limited import of the HU+SEE region are two lines (often both lines together)

a) PL>SK border: Krosno Iskrzynia – Tarnow + Krosno Iskrzynia – Rzeszow

- The 1st greatest factor causing limitations on this line is high Polish long position
- The 2nd greatest factor causing limitations on this line is high HU+SEE import
- Austrian short position does not affect this line

- Since Polish net position significantly increased and HU+SEE imports significantly increased, this line causes HU-DE and HU-PL spreads.
- Since Austrian net position does not impact this line as much as HU+SEE net position, this overladed line causes HU-AT spread as well because Austrian imports harm this line much less than HU+SEE imports.
- For low HU-DE spread it is the best if Poland has 0 MW net position since this enables maximal imports of HU+SEE region in MW.

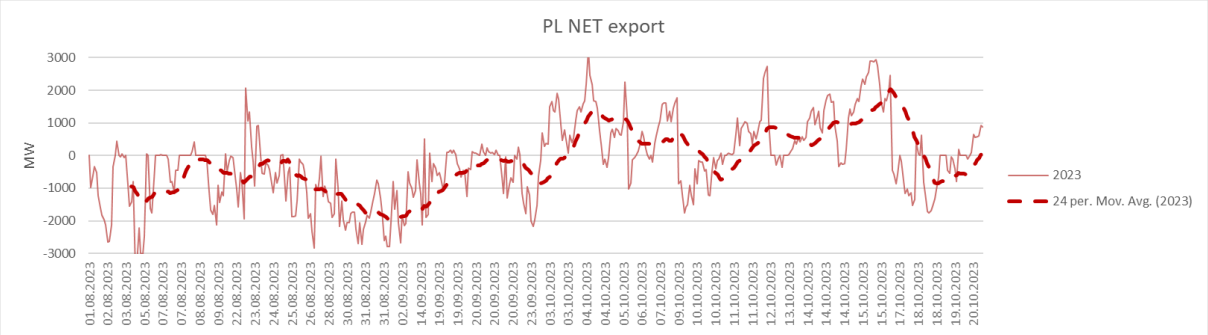
b) DE>AT border: Pleinting - St. Peter 258

- The main factor causing limitations on this line are Austrian or HU+SEE imports, both causing nearly equally strong loading of this line.
- If import of AT+HU+SEE come from western Europe, the loading of the line is stronger than when import for AT+HU+SEE can be satisfied by PL+CZ+SK exports.

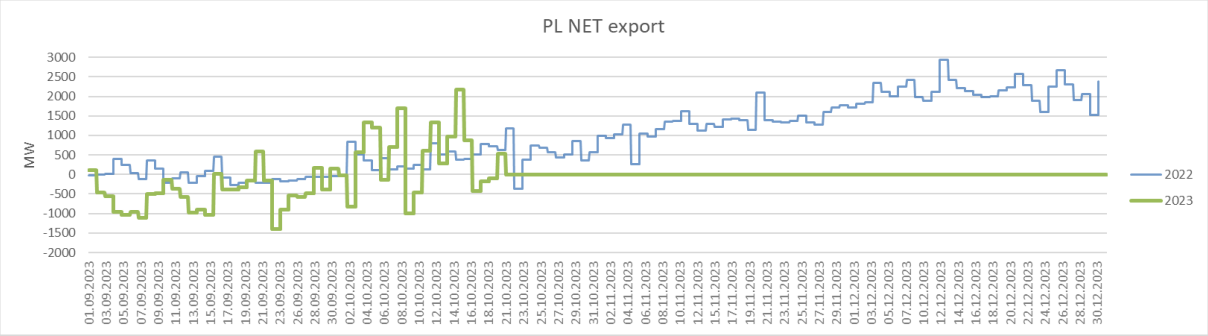
Problems for HUPX:

Issues on PL>SK border: Krosno Iskrzynia – Tarnow + Krosno Iskrzynia – Rzeszow

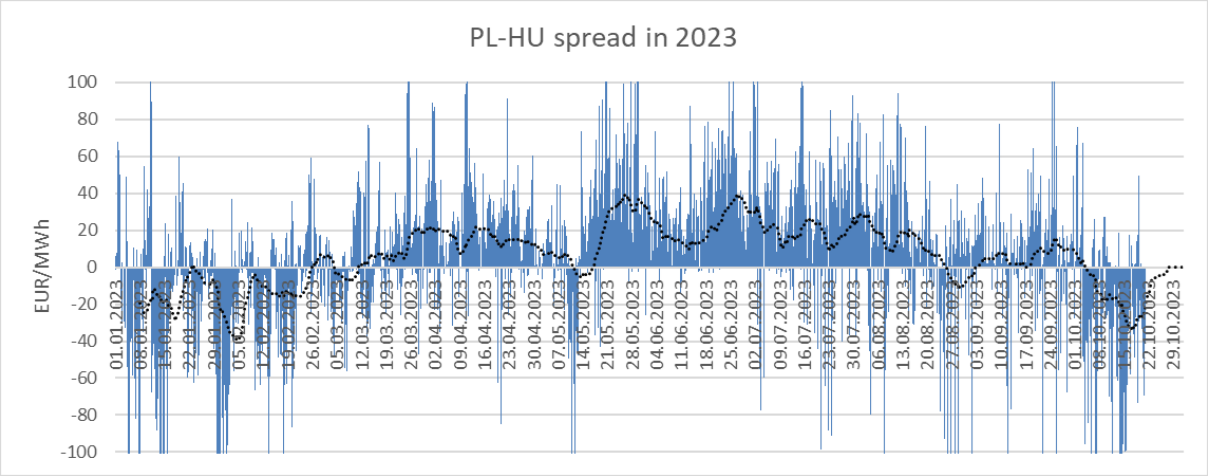
- If Poland is very long at low price (aggressively long Poland), this is bad for HUPX because total imports of HU+SEE from Poland are just 1000-1500 MW.
- If Poland is very long, then HU-AT spread appears easier since Austrian short position does not affect Polish lines that much as HU+SEE short position



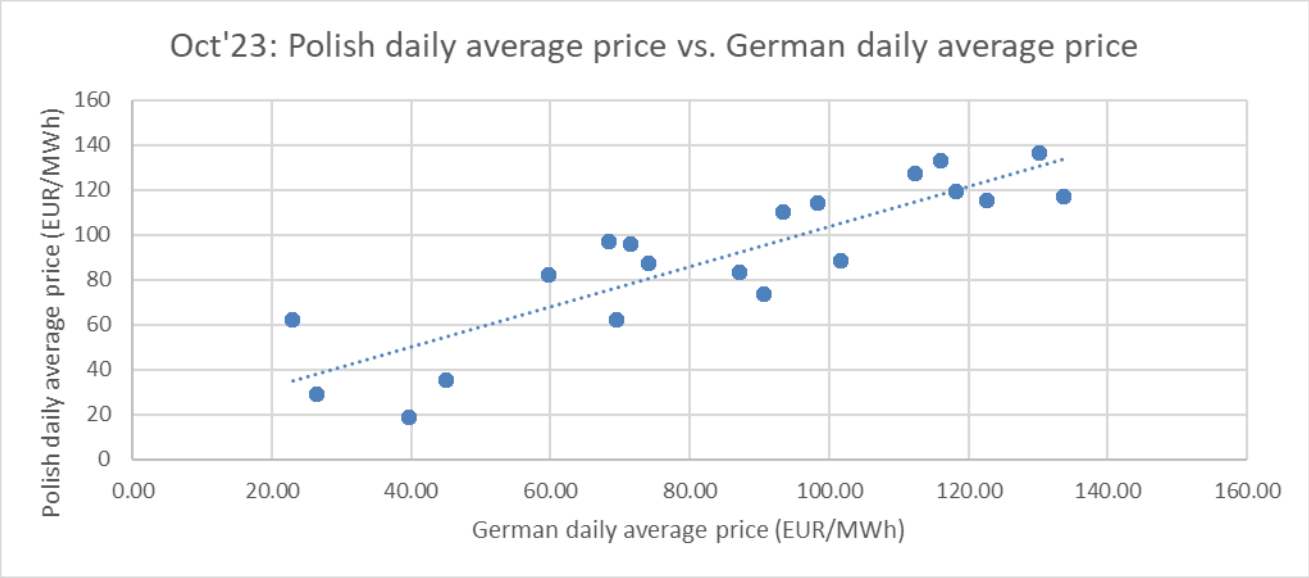
- Polish Net exports are not lower this October than it was the case last year.
- Polish net position should increase further towards November and December, as it was the case last year.



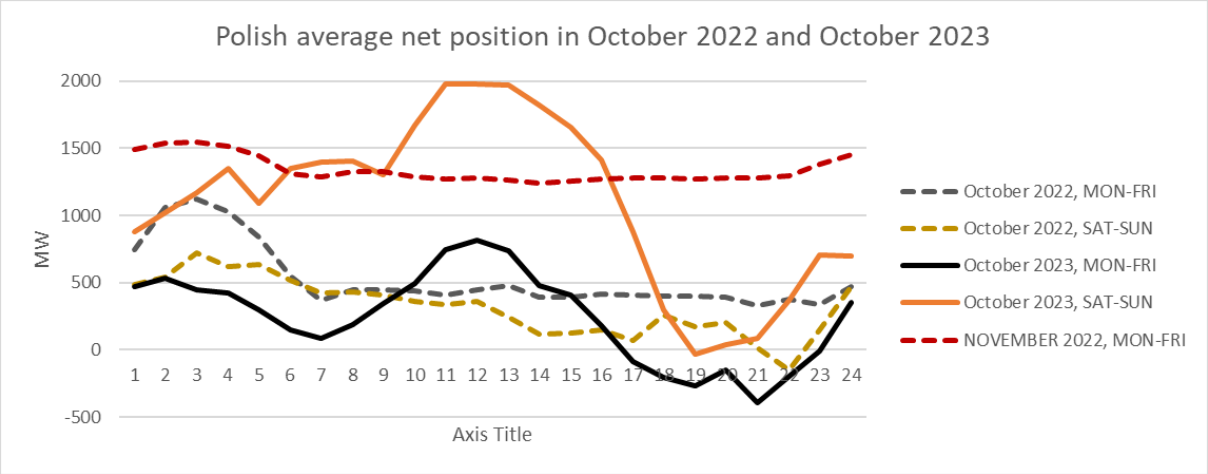
Polish price is recently nearly equal to German price, Poland does not have stable price.



Polish market follows German market in October 2023.



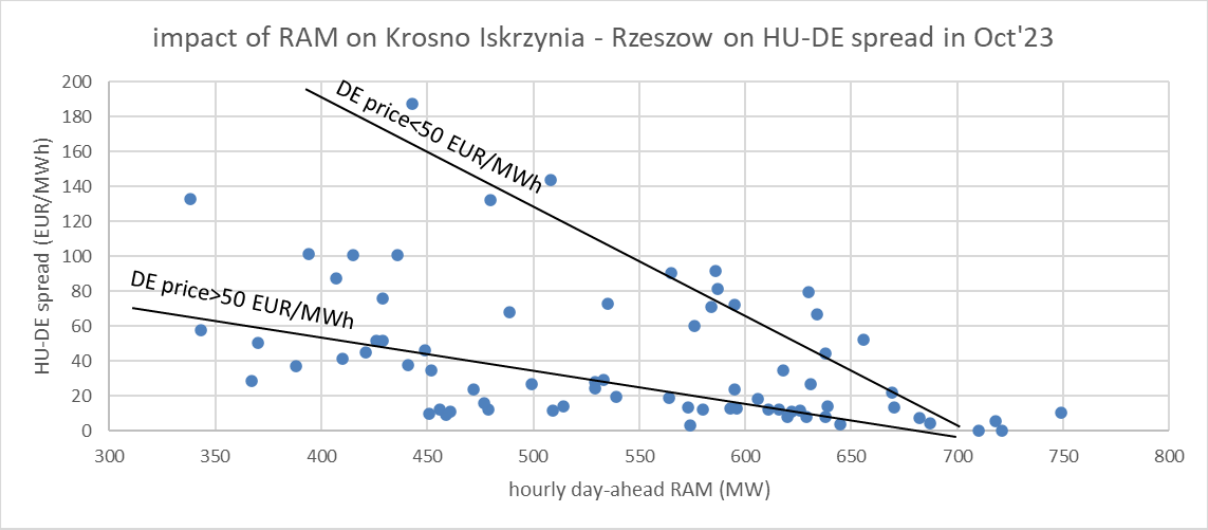
- Polish exports are still lower than last year on working days, but not on weekends. On weekends last year Polish TSO was artificially limiting Polish exports. **November should bring a big increase of the Polish net exports against October, as it was the case last year.**



Conclusion with respect to PL net position:

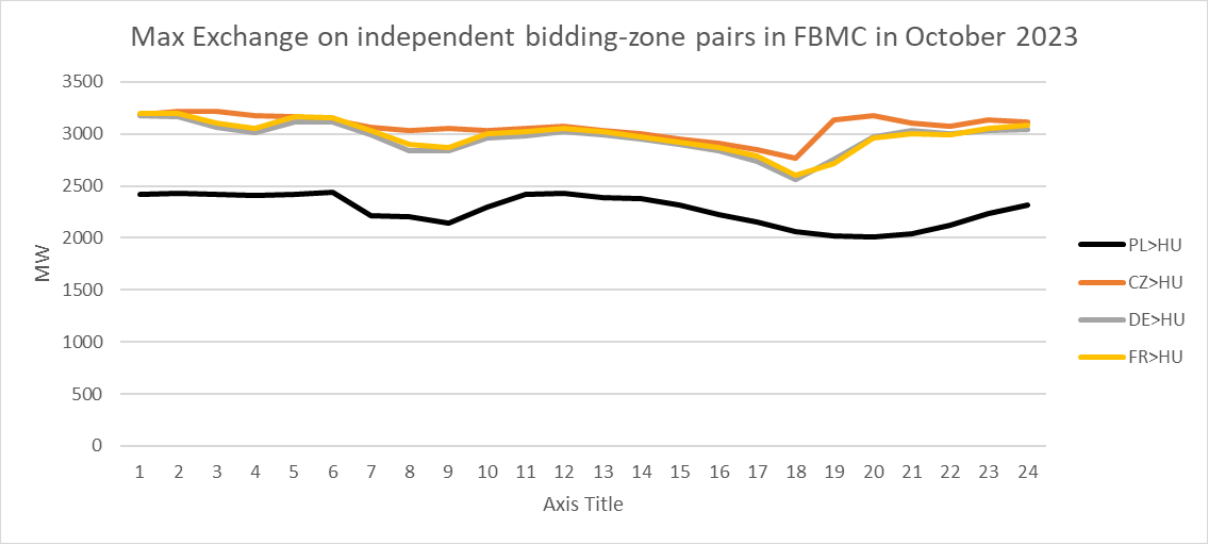
- The main problem for HUPX with the start of FBMC in June 2022 was that imports of HU+SEE region were greatly reduced. They were reduced because Polish market was the cheapest of all markets, Polish exports were high and Krosno Iskrzynia – Rzeszow line was always limiting further imports of HU+SEE. The same problem will start occurring from now on when Poland is very long. This problem did not exist since March because Poland got very short in 2023 with the drop of market prices.
- Due to high Polish net position, imports of HU+SEE will be limited, as it was the case last year.
- **In all hours in which HU+SEE is importer and Poland exporter, HUPX settles above Polish market price. For the coming months, this will always be the case.**
- HUPX will be settling above Polish market as long as Poland is long and HU+SEE an importer.
- **All HUPX risks related to Poland are nothing new nor different to October/November last year**. Those risks just did not exist in the past 6 months because Poland was importer. **We should expect similar capacity of the region for imports as it was the case last year.**

- **Advice is to daily check Polish wind and RAM on Krosno Iskrzynia – Rzeszow and if wind is high or RAM is low, then avoid short position on HUPX settlement for that day.**



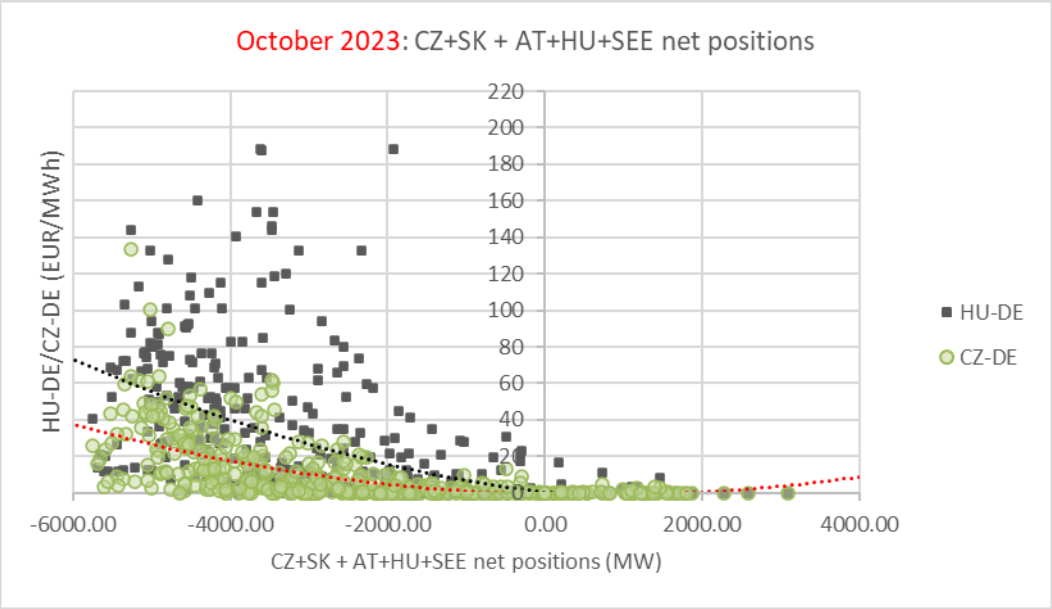
Maximal import of HU+SEE from Poland is 2000 MW. Once Polish net position gets above 2000 MW and HU+SEE imports are above 2000 MW, import capacity of the whole region from Core might get reduced. All imports above 2000 MW will come at high HU-DE spread since long Polish position consumes available grid capacity on the Krosno Iskrzynia – Rzeszow line very fast.

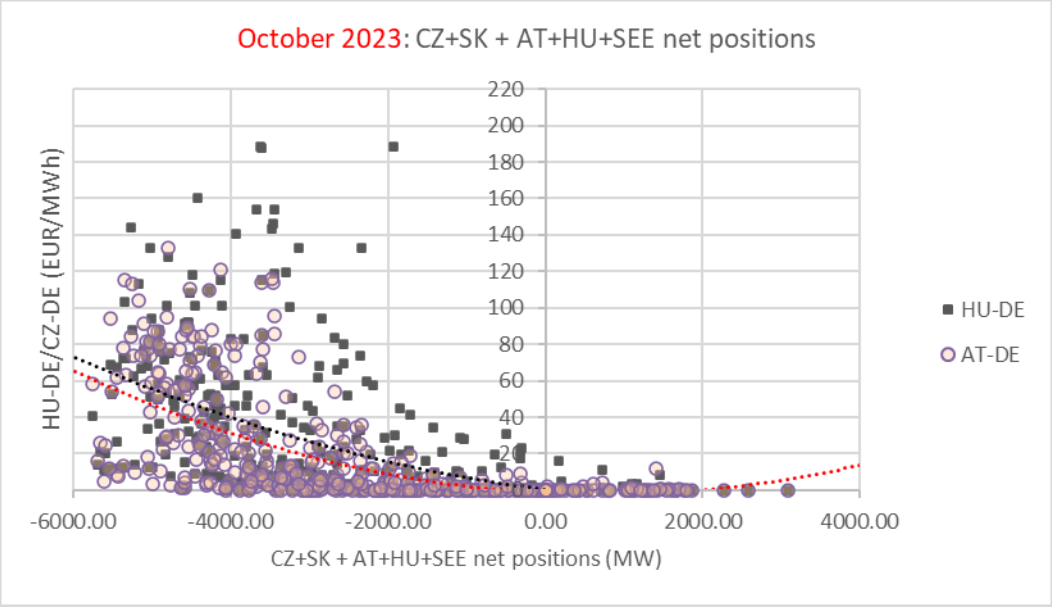
- **The first direction which gets congested will be PL>HU direction**


Max Exchange on independent bidding-zone pairs in FBMC in October 2023
3500
3000
2500
2000
1500
1000
500
0
MW
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Axis Title
PL>HU
CZ>HU
DE>HU
FR>HU

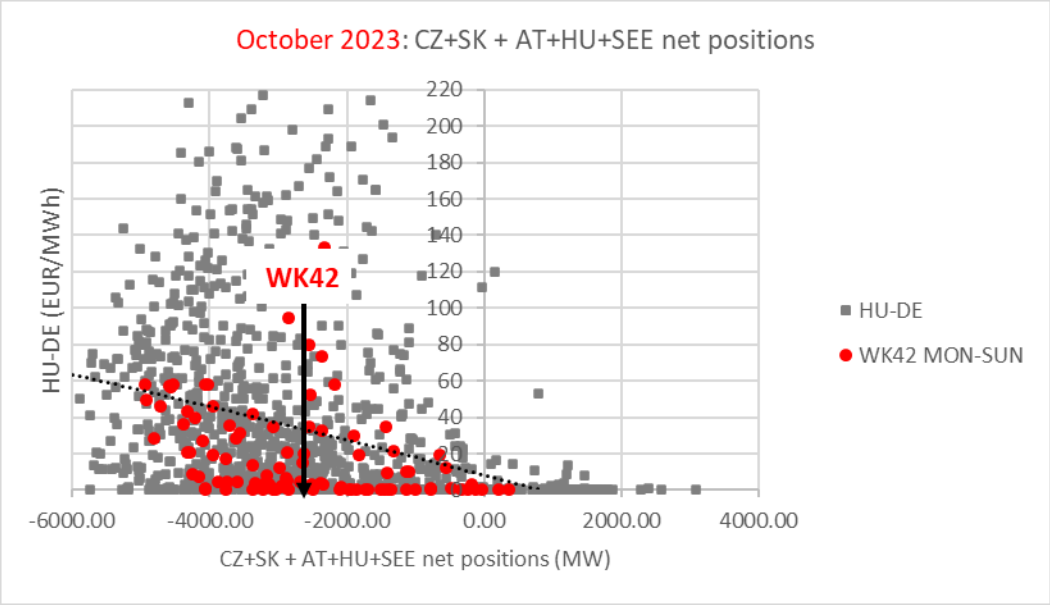
Issues on DE>AT border: Pleinting - St. Peter 258

- Austrian imports and imports of HU+SEE have nearly the same impact on loading of the DE>AT border: Pleinting - St. Peter 258.
- Czech and Slovak long position is necessary to prevent overloads of DE>AT line Pleinting - St. Peter 258. Too long Polish net position would harm PL>SK line too much. Czech and Slovak long positions should be at least as high as last year.
- If Czech+SK exports can cover imports of AT+HU+SEE, then both HU-DE and CZ-DE spread is 0 EUR/MWh.

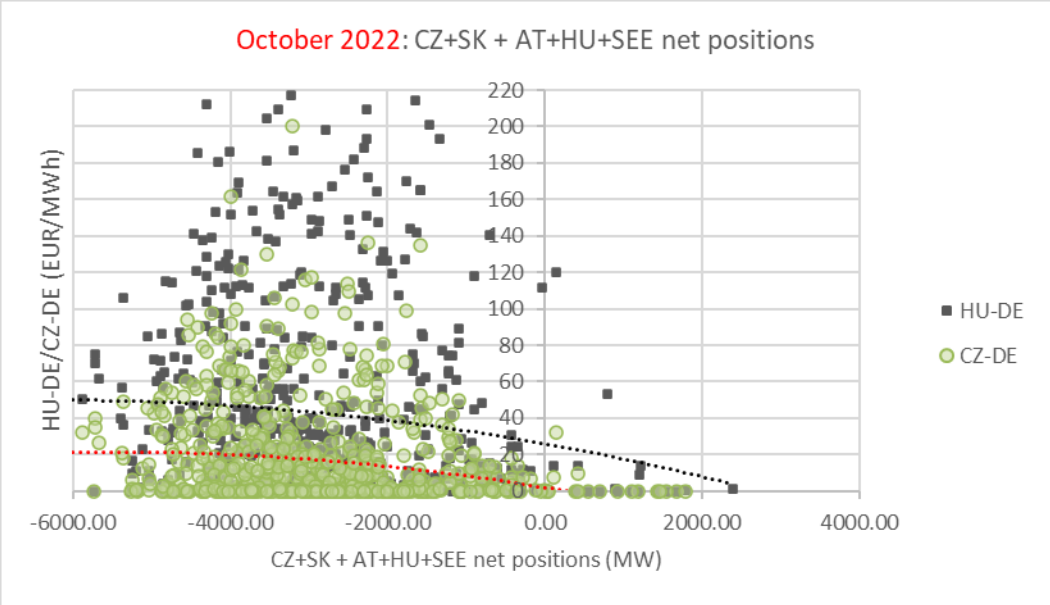




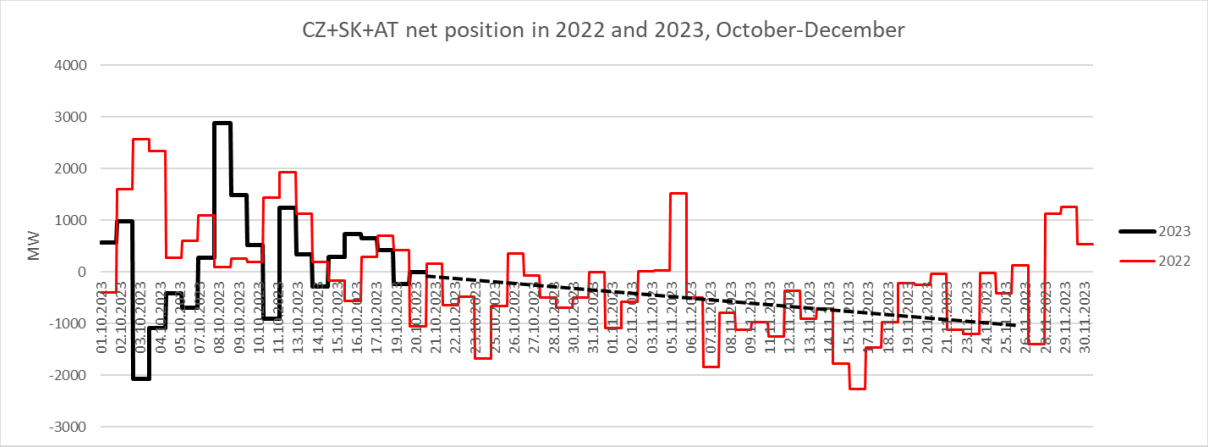
- WK42 had surprisingly good balance and surprisingly high net position of the HU+SEE region and Czech Republic. WK44 and WK45 will have worse position as much as consumption increases. This is a risk for higher than expected HU-DE spread in WK44 and WK45



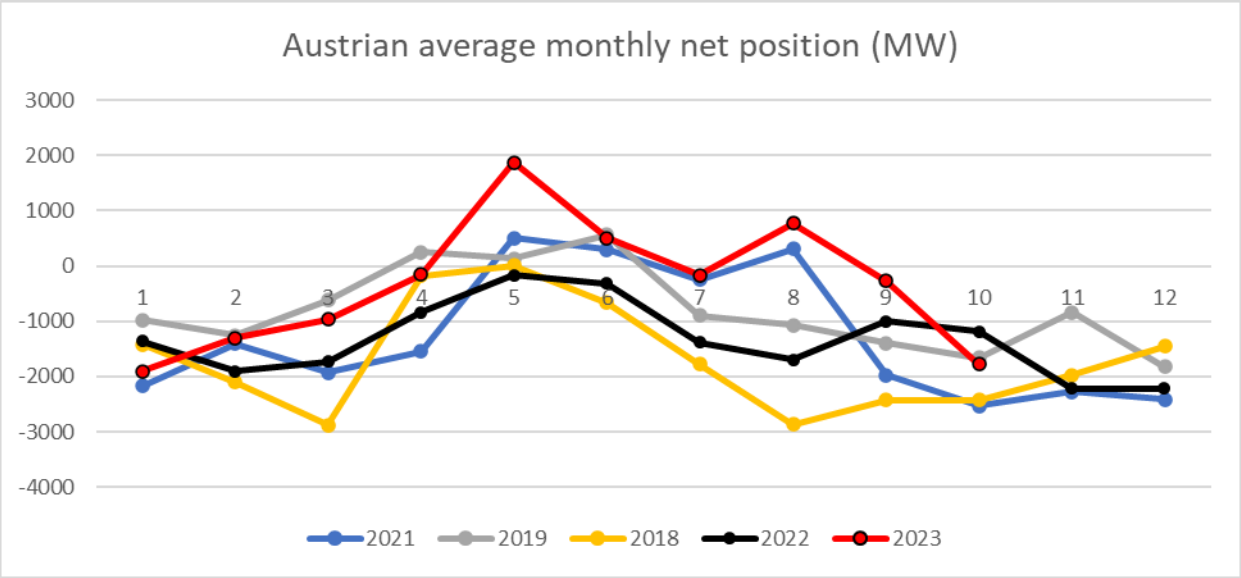
Situation was similar also last year, just the influence of French market was stronger.



- Czech net position in the next months can increase with higher lignite fired generation. Slovak net position does not change much. Austrian net position goes down in the next months.
- Altogether, the net position of Czech Republic, Austria and Slovakia on average should not be better in November 2023 and December 2023 than it was in October 2023. Net position of CZ+SK+AT should be similar as last year and should slightly decline from now on.
- HU+SEE net position will define where the position of the market will be in the next months for HU, AT and CZ markets. **HU+SEE net position should be going significantly down in the next 3 weeks.**

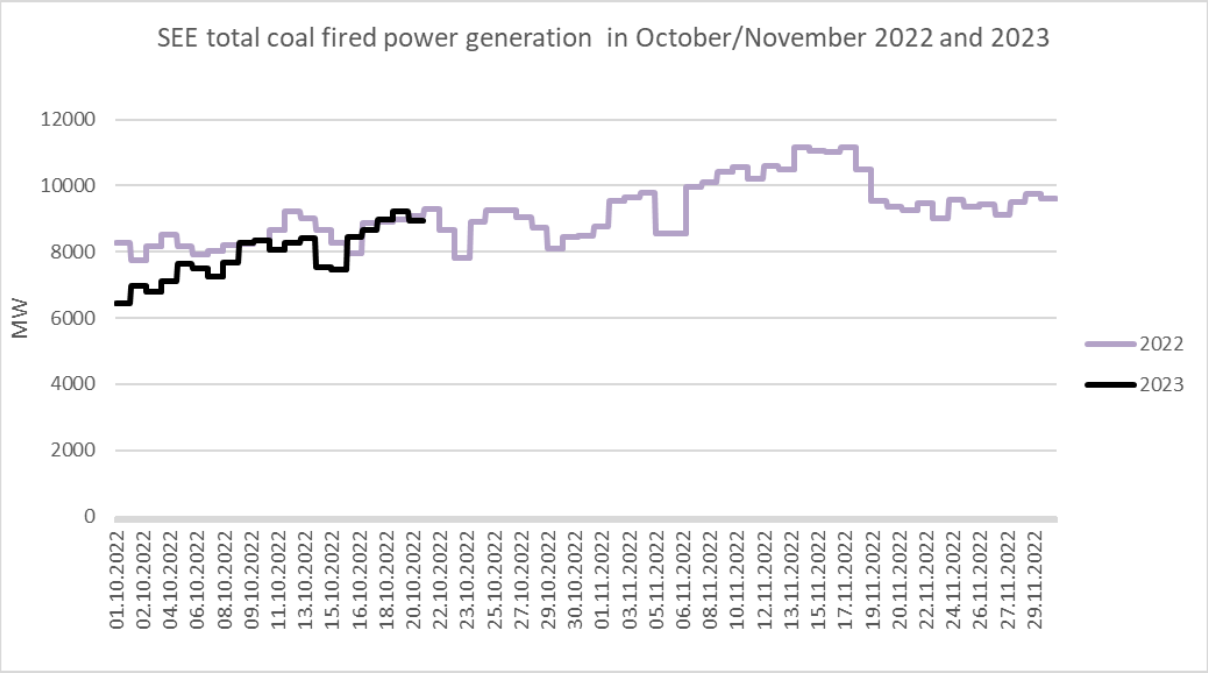


- Austrian net position is significantly down, which is causing frequent limitations on DE>AT lines in FBMC and high HU-DE and AT-DE spread. With the increase of HU+SEE imports, DE>AT line should be constantly limiting FBMC exchanges towards AT+HU+SEE.

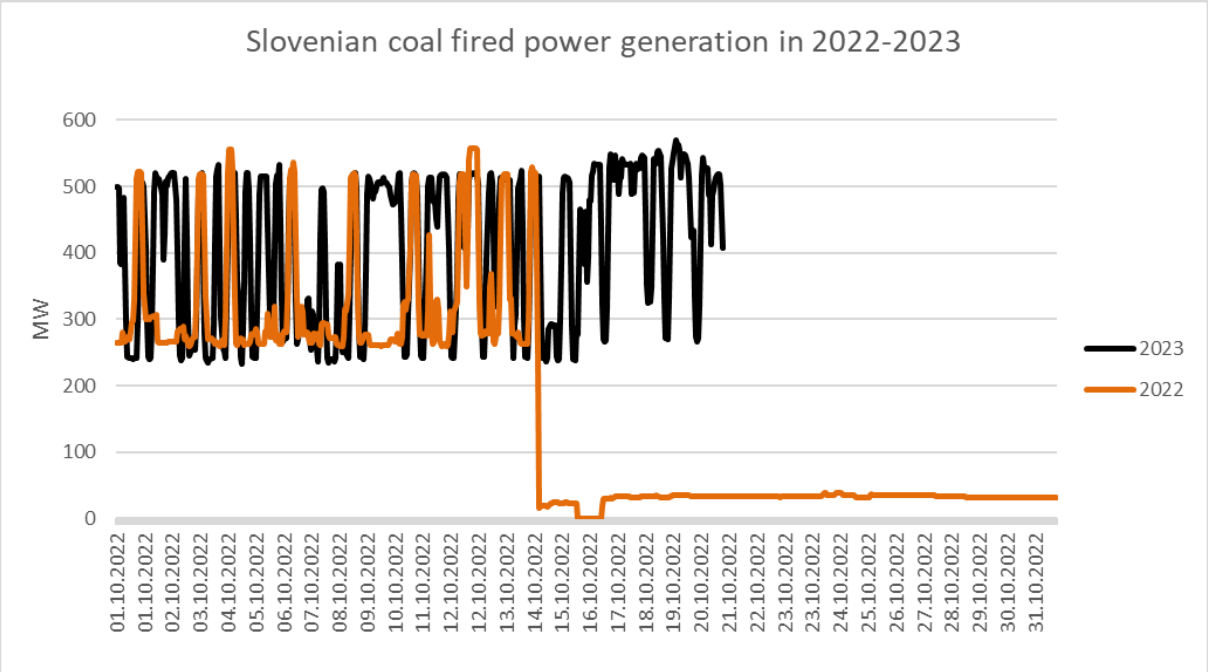


8) Coal fired power generation for the next weeks

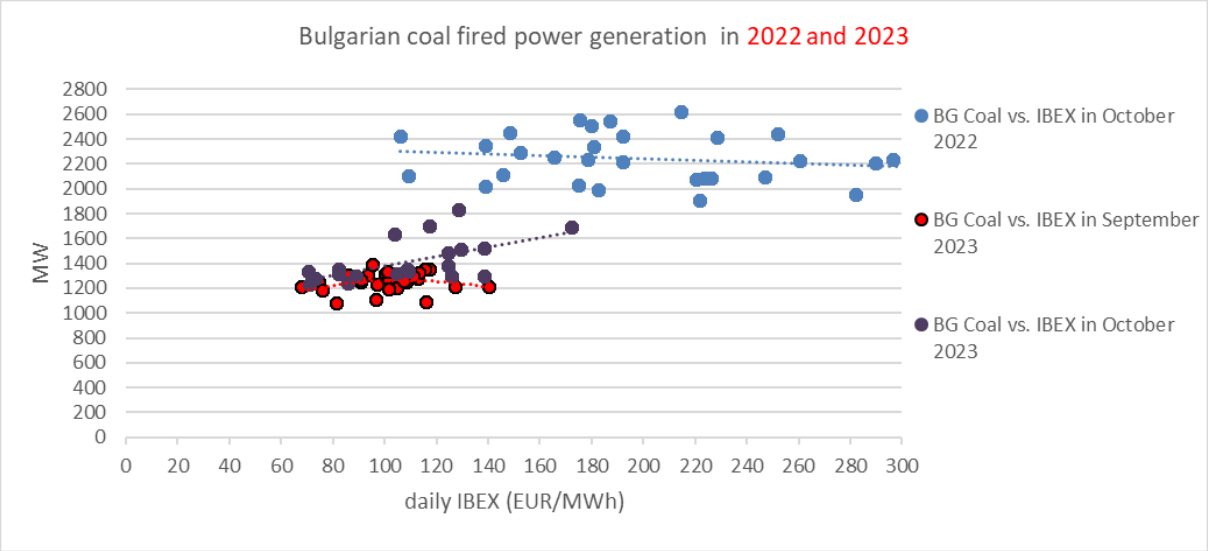
At the moment when HU+SEE lignite fired power generation is equal as it was last year, but there is no reason for further improvement of lignite fired power generation in the next weeks.



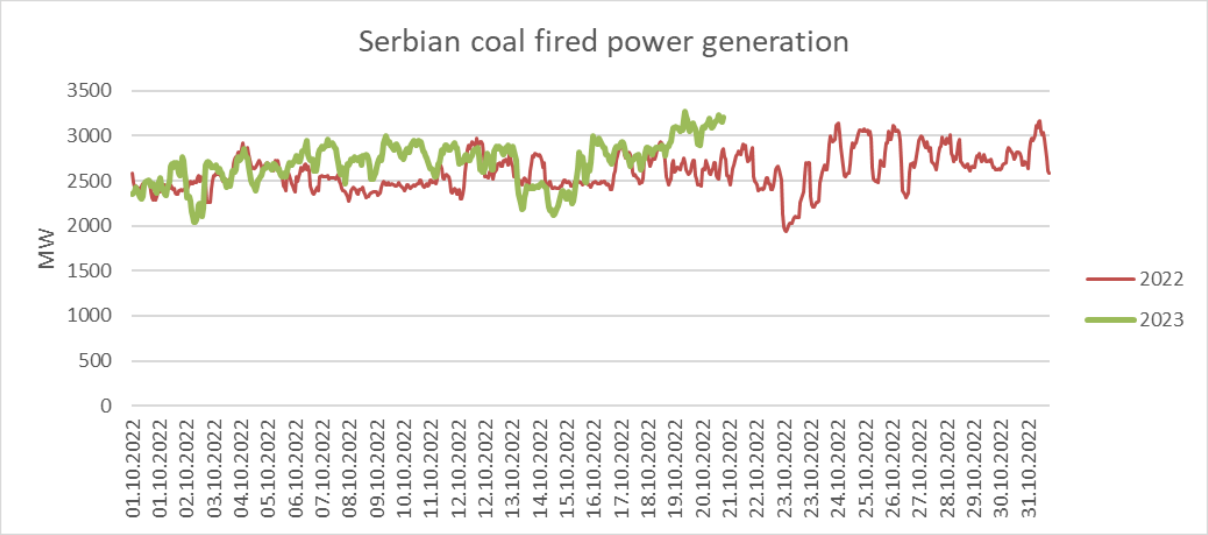
- Slovenian coal generation works 500 MW more than last year. Last year Slovenian lignite generation did not work as of middle of October thorough whole of November because of coal saving.
- Greek and Serbian lignite generation is a bit higher than last year



- Futures of weeks are not significantly higher so that Bulgarian lignite generation would increase. Bulgarian availability of lignite fired units will have only a minor improvement in the next weeks. Anyhow Bulgarian lignite fired power generation does not noticeably react on price increase so no important improvement should be expected in Bulgaria.



- Serbian lignite availability will not improve further.



Global factors – CO2

- With the recent gas price rise, coal units are now more competitive for the winter and the whole next year. This should limit further drops of CO2 price.

Global factors – gas

Reasons for gas going up for the whole winter are based on risk premiums due to:

- Possible escalation of the crisis in Israel which could impact LNG deliveries from Quatar
- Possible long extension of strikes on gas fields in Australia
- Possibility that another gas pipeline could be damaged, besides the gas pipeline between Finland and Estonia

All those risks are quite based rather on fear and not on quantitative analysis. Therefore, gas price could go down fast when the fear of certain risks gets lower, which should happen in the next several months, before the end of the winter.

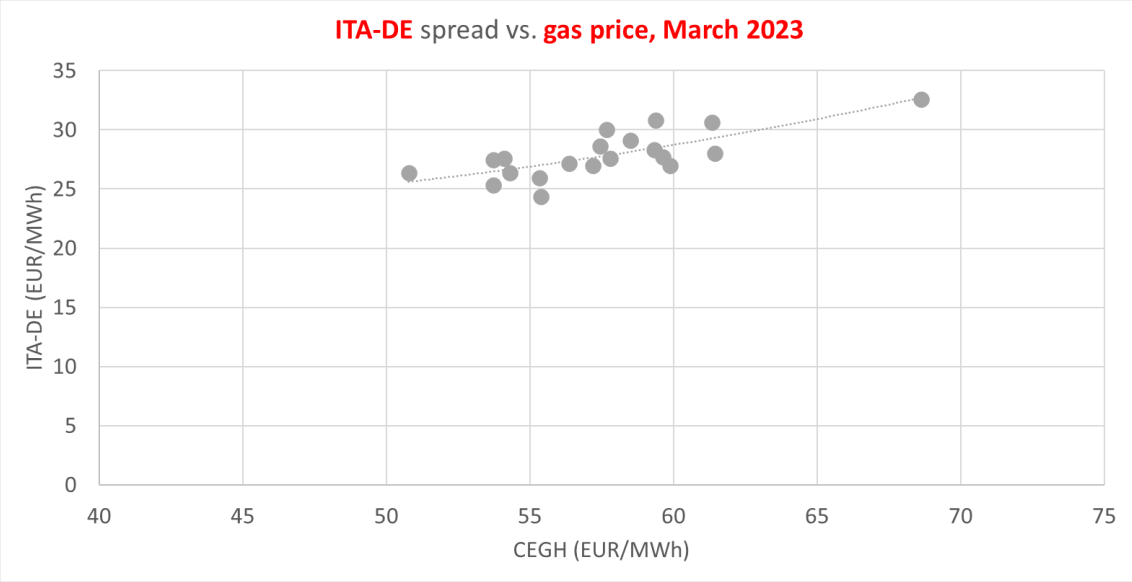
Additionally, on the bearish side for gas market:

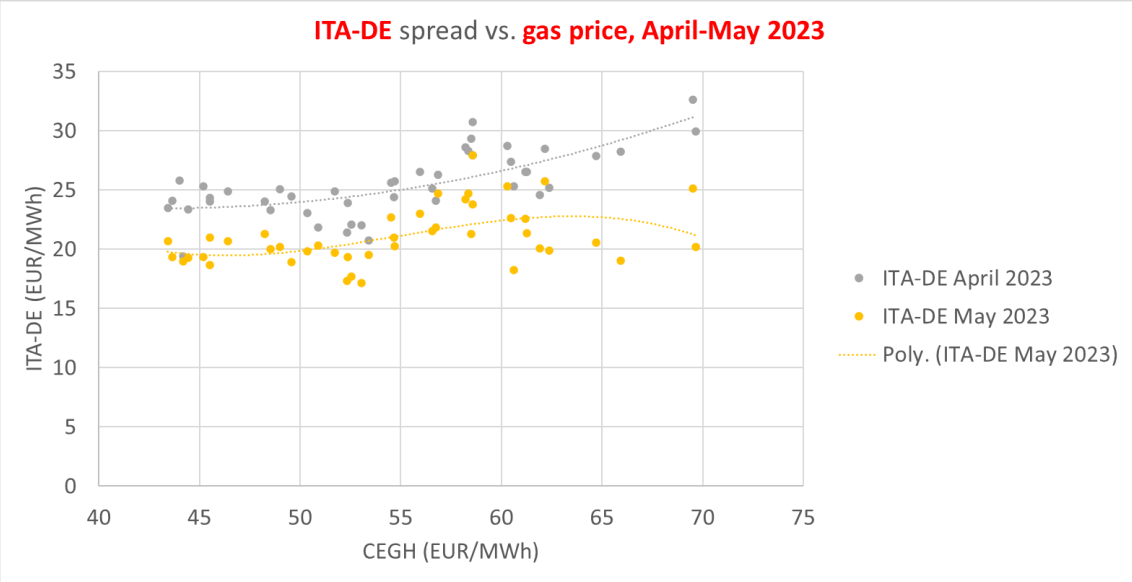
- France could be a net exporter this winter
- 1900 MW of lignite capacity from the reserve back into the German market in order to reduce stress on gas market.
- Very low gas demand
- With the recent gas price rise, coal units are now more competitive for the winter and the whole next year. This should cause gas-to-coal switching and dumping of gas demand.

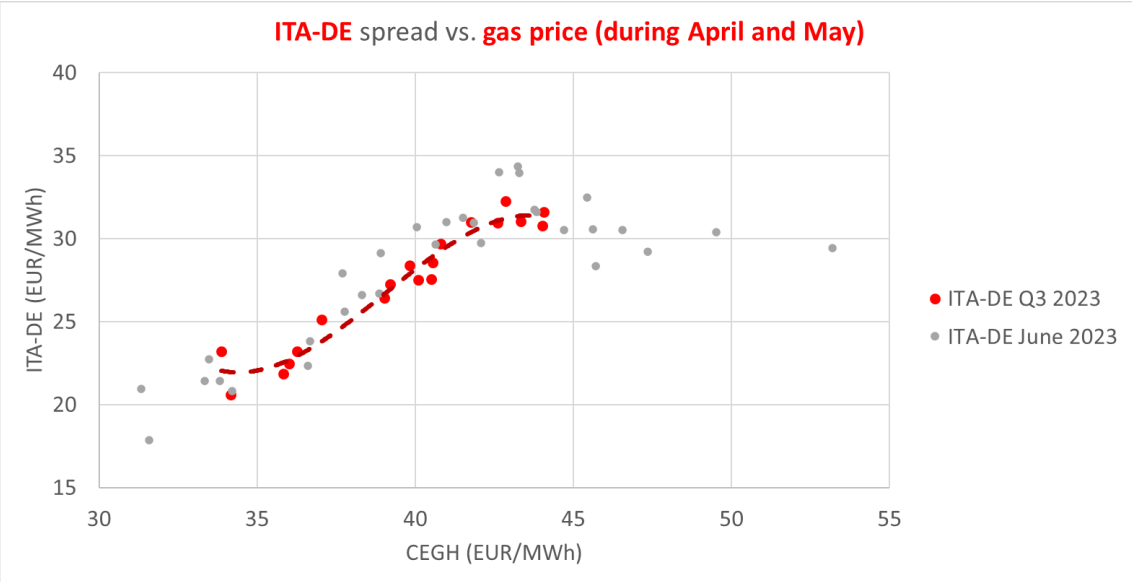
As a conclusion:

- Gas price drop can happen at any moment
- Gas price has big downside potential if it becomes clear that fears risks do not materialize.
- End of winter particularly can be a moment when gas market prices can drop
- 2024 Q2 gas is still just 2 EUR/MWh cheaper than 2024 Q1 gas. Much of the risks should not last throughout Q2.

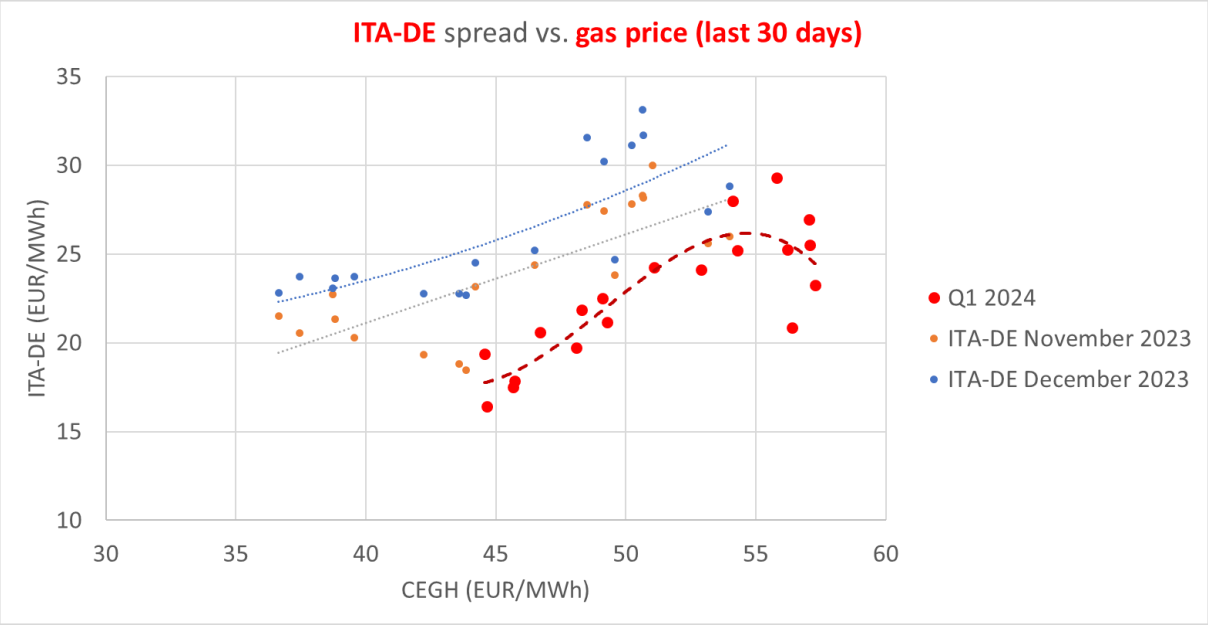
10 EUR/MWh gas price drop can result in 5-10 EUR/MWh ITA-DE spread drop. Such behavior was in place also last year.


ITA-DE spread vs. gas price, March 2023
ITA-DE (EUR/MWh)
CEGH (EUR/MWh)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75


ITA-DE spread vs. gas price, April-May 2023
ITA-DE (EUR/MWh)
CEGH (EUR/MWh)
ITA-DE April 2023
ITA-DE May 2023
Poly. (ITA-DE May 2023)


ITA-DE spread vs. gas price (during April and May)
ITA-DE (EUR/MWh)
CEGH (EUR/MWh)
ITA-DE Q3 2023
ITA-DE June 2023

Impact of gas price on ITA-DE spread in the last 30 days:

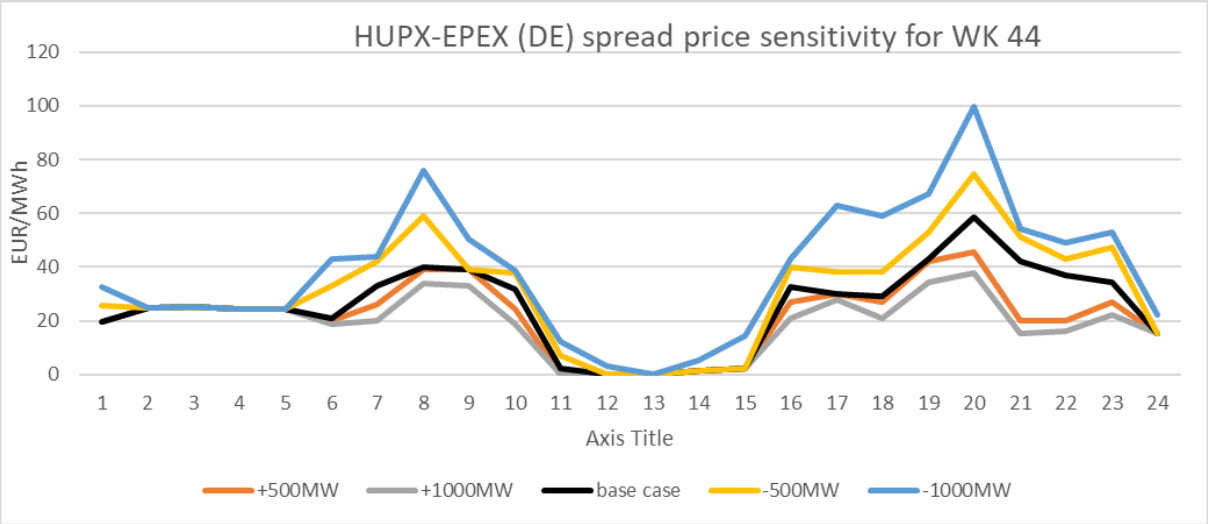


- If ITA-DE spread shrinks, HU-DE spread will shrink as well.
- Avoid keeping long HU quarterly and monthly positions for long time because gas price drop will reduce ITA-DE spread, but will not cause such low market prices to harm lignite fired power generation in SEE and Czech Republic.
- It is dangerous to keep long HU vs. short DE or long HU vs. short ITA positions for long time because gas price drop will harm them.

Bulgarian transit fee of 10.5 EUR/MWh on Russian gas should not impact Hungarian gas market and Hungarian gas fired power generation.

- Hungarian gas imports are mostly Russia>Bulgaria>Serbia>Hungary
- This fee can not affect the market price, it will have financial impact on gas shippers, but should not affect the market.
- Gas market price should not be affected since Hungary can always import gas from Austria or reduce exports to Slovakia and Ukraine. There is plenty of gas transmission capacity to equalize Hungarian and Austrian gas market prices.

Risky hours for WK 44– working days HUPX-EPEX(DE) spread



Wind deviation	base case	Wind +500MW	Wind +1000MW	Wind -500MW	Wind -1000MW
1	20	20	20	26	33
2	25	25	25	25	25
3	25	25	25	25	25
4	25	25	25	25	25
5	24	24	24	24	24
6	21	20	19	33	43
7	33	26	20	42	44
8	40	39	34	59	76
9	39	39	33	39	50
10	32	25	19	38	39
11	2	0	0	7	12
12	0	0	0	0	3
13	0	0	0	0	0
14	1	1	1	1	5
15	2	2	2	2	14
16	33	27	21	40	43
17	30	30	28	38	63
18	29	27	21	38	59
19	43	42	34	53	67
20	59	46	38	75	100
21	42	20	15	51	54
22	37	20	16	43	49
23	34	27	22	47	53
24	15	15	15	15	22
average	**26**	**22**	**19**	**31**	**39**

- Quite a lot of HU-DE spread will be built in night hours H1-H6 due to the very low German prices.
- Hours H7-H9 and H17-H23 have a high chance for settlement at Italian or above Italian market price.

WK44		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	105.1	-28.3	18.5		4
	peak	122.0	-32.0	20.0		

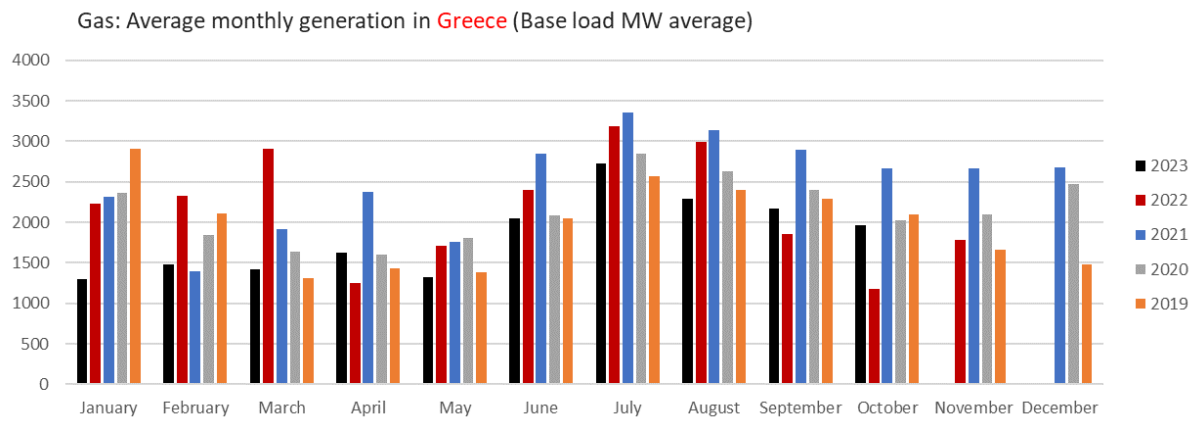
30.10-05.11.2023

- There are no bearish factors to be expected in WK44 which could make WK44 more bearish than WK42 or WK43.

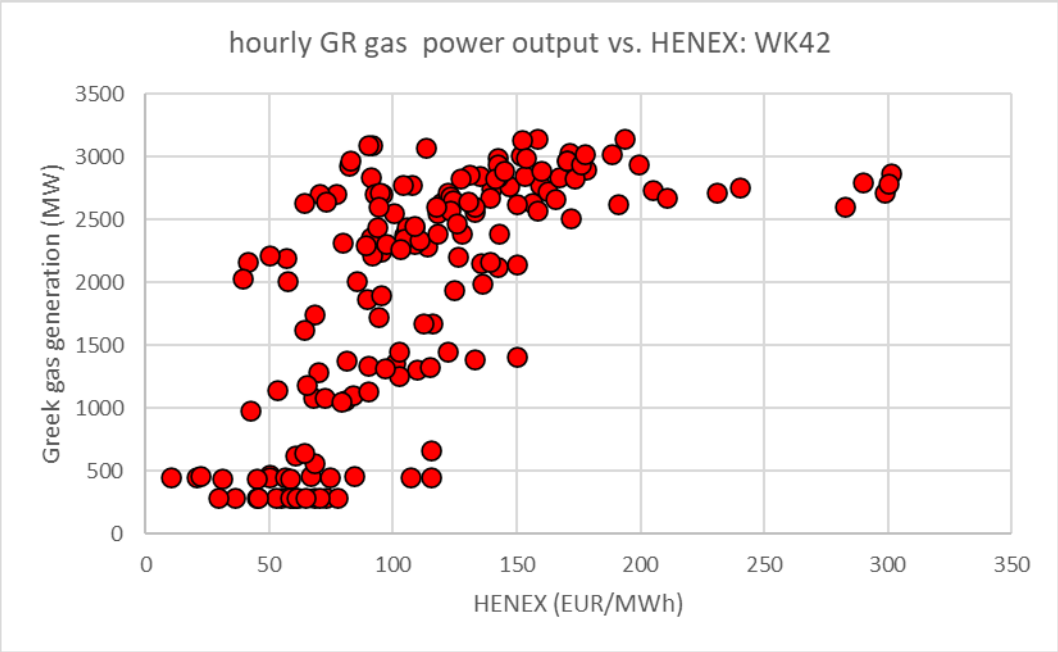
- Hydro generation should not be more than 500MW higher than in the WK42 although there is participation in the WK43.
- Coal generation will not be higher
- Solar generation will be lower
- Wind power generation should not be higher than in WK42 as it was above average in WK42.

- The main bullish factor in WK44 will be temperature and start of consumption rise due to temperature drop. Temperature should be 2.5 °C above average, similar as in the WK42 and 3°C lower than in the WK43. This will result in at least 1000 MW consumption rise against WK43, but not much higher consumption than in WK42.

- The 2nd bullish factor is that Greek gas fired power generation could go down, while there should be no significant increase of gas fired power generation in other countries. Generally, gas fired power generation in Greece in November is not higher than in October.

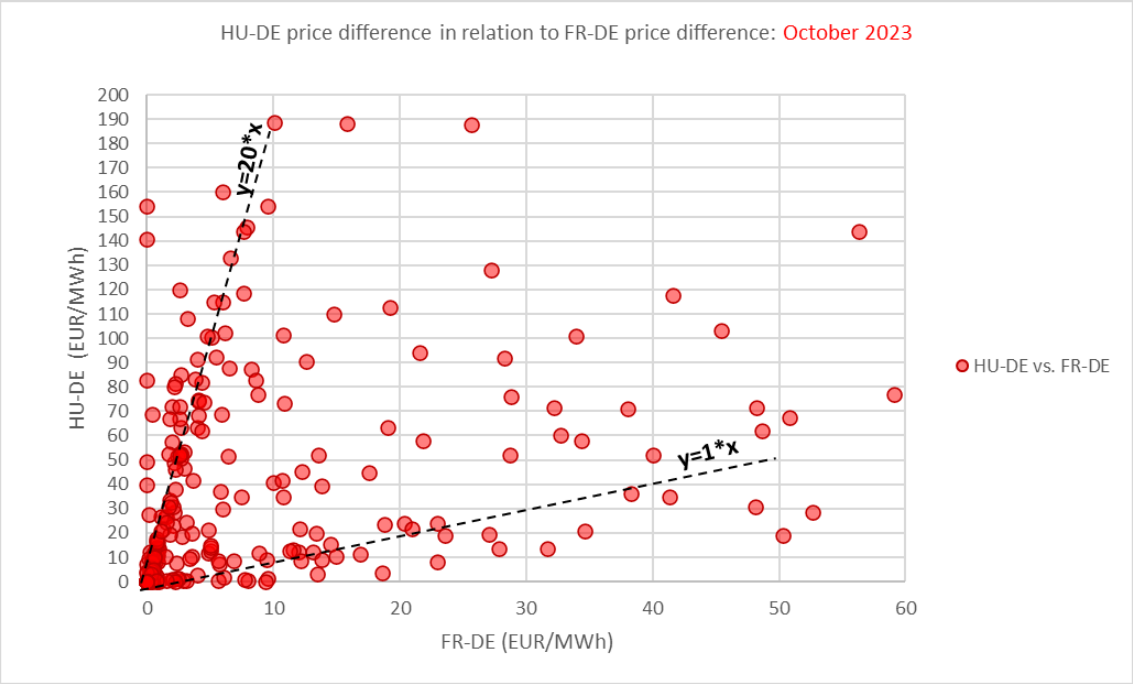


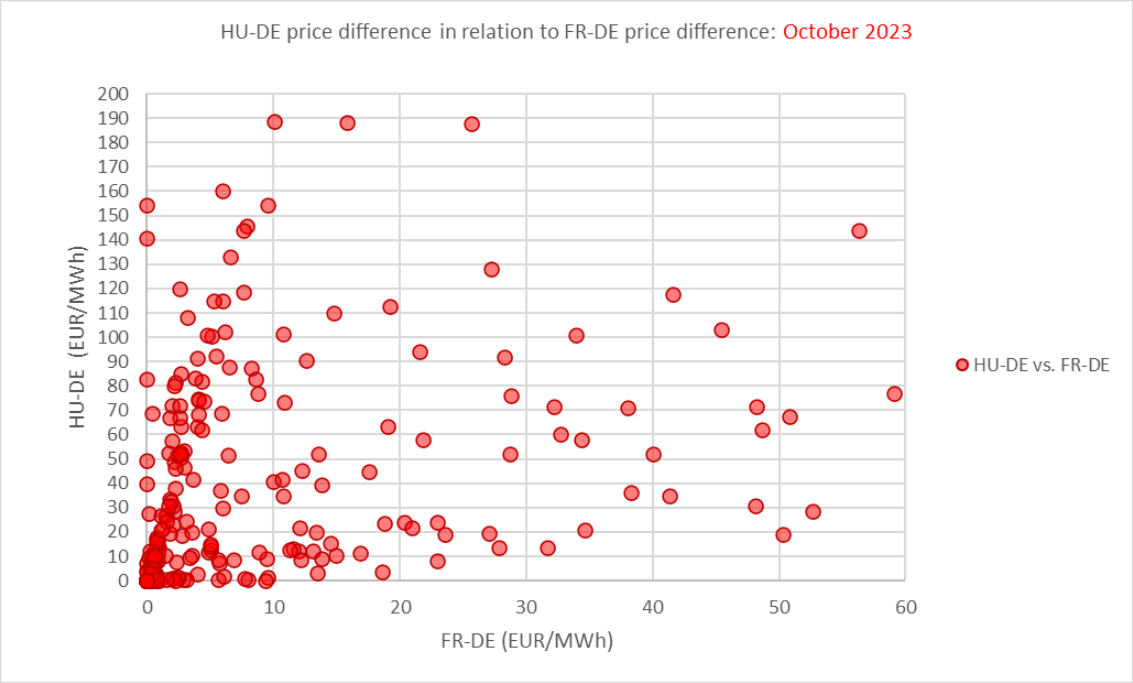
- Based on futures, working days of the WK44 should not have higher price than working days of the WK42, while Greek gas price relevant for power generation should be adjusted with the start of November. In the WK44, Greek gas units worked at very high close to maximum output already at HENEX prices of 100 EUR/MWh, which does not reflect west European market prices, especially not if the tax equal to 5% of the TTF index is added for gas used for power generation in Greece (this tax should be abolished at the beginning of 2024)



- The 3rd bullish factor is that French market for WK44 is priced above German market, while in the WK42 French market settled 11.5 EUR/MWh below German market.

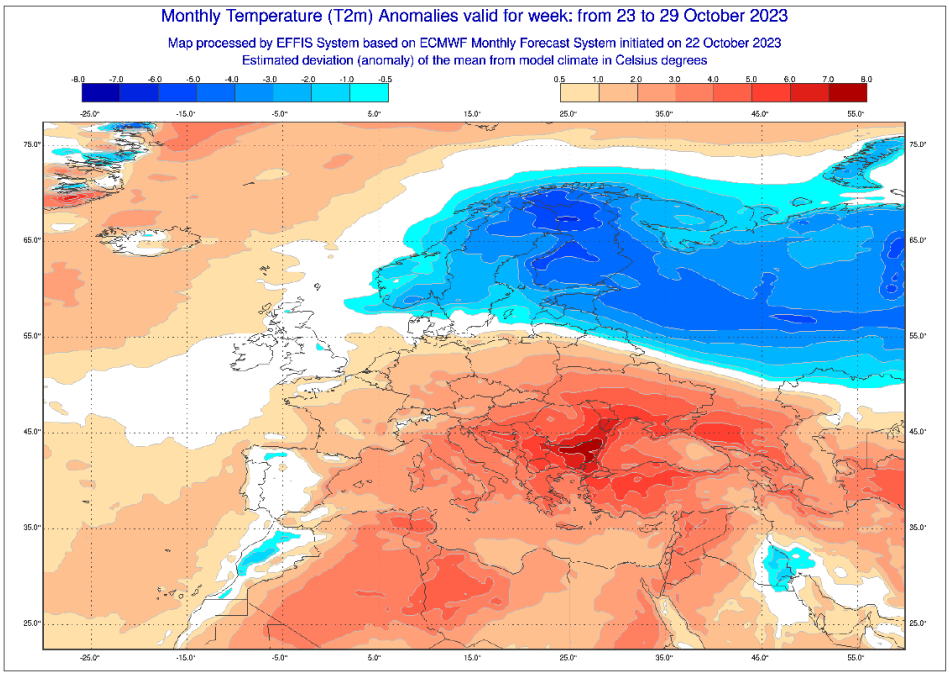
- In October 2023, there was extremely steep correlation between HUPX and French market price and very often correlation was quite linearly aligned around the line HU-DE = 20x(FR-DE)
- Such extremely steep correlations were happening at very low FR-DE spreads of below 10 EUR/MWh and in conditions when the whole east Europe was in the high deficit, mostly when HU+SEE+AT short position is much bigger than long position of CZ+PL+SK. FBMC favors exports towards French market for global optimum in such situations.

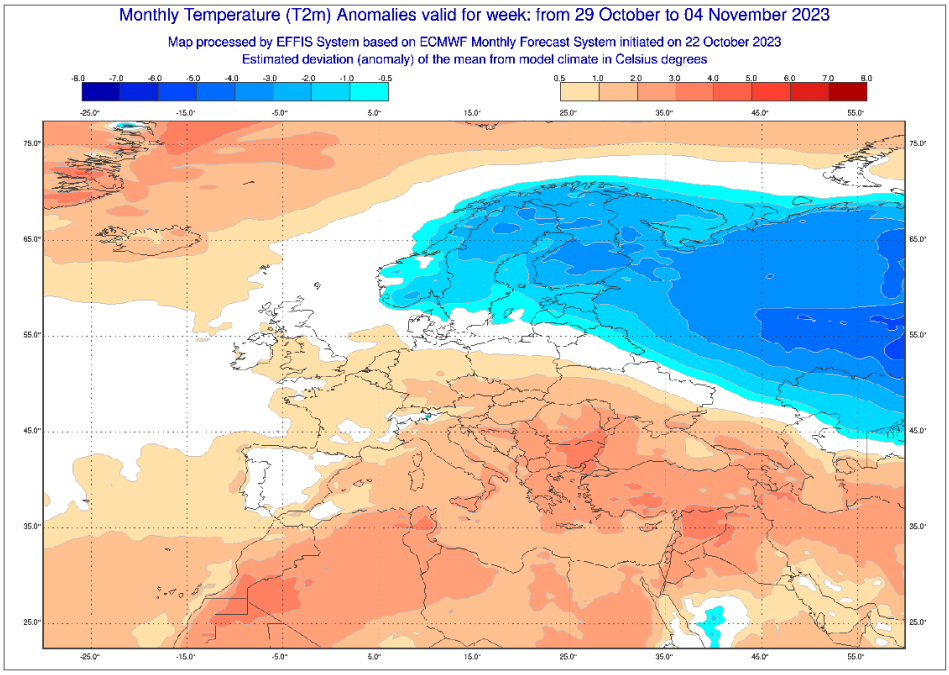




Trading strategy:

- There will be a big change in temperatures and consumption between the ongoing week WK43 and the WK44. Temperatures will drop from +5.5°C above average on +2.5°C.
- HUPX can settle bearish in the running week WK43 due to strong rain in Adriatic region, very warm weather and negative FR-DE spread. However, **none of those bearish effects of the WK43 will be present in the WK44 and WK45**.
- It is advised to go long against settlement in the WK44 and WK45, but the best moment for entering long position might be at the end of the WK43 because bearish spot settlement of the WK43 can push futures HU-DE spread for WK44 and WK45 down.
- Since German price moved yesterday by 10 EUR/MWh down, it might be reasonable to make also long HU vs. short ITA trade for WK44, in anticipation that German market overreacted and will get corrected up in next days.





<u>Change of maintenances to the previous week:</u>

Thera are no significant change of maintenances for WK44

<u>Important line maintenances:</u>

BG-RO (Dobrudja-Rahman) 01.11.2023-25.11.2023 New NTC 1250/1000

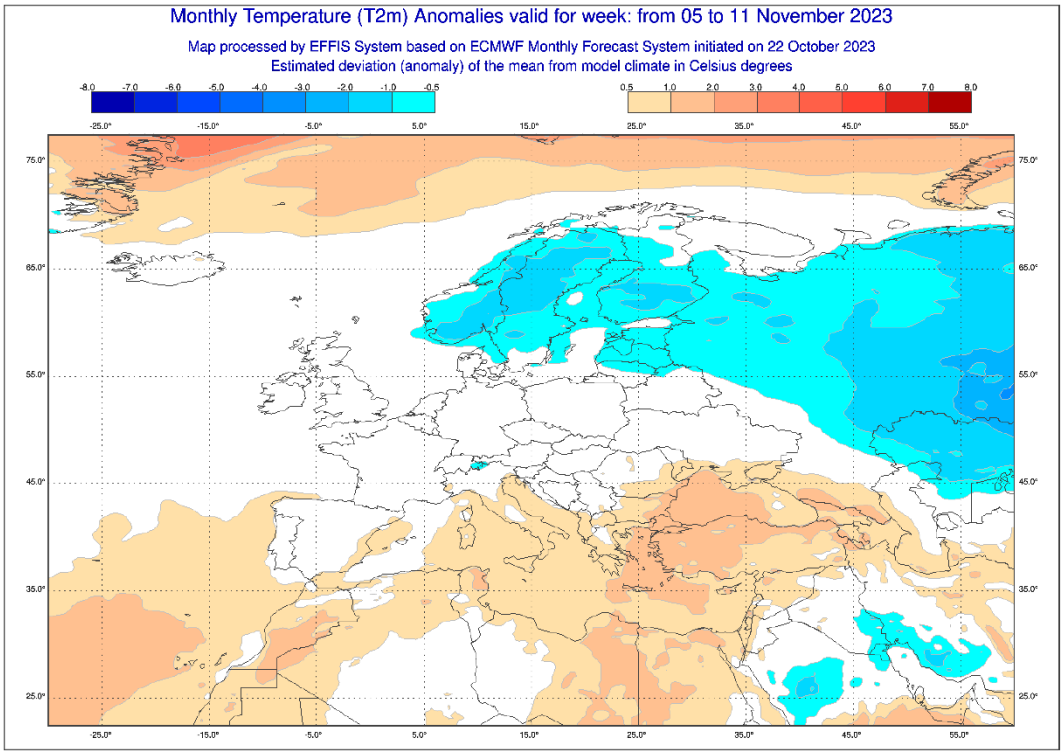
WK45		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	121.8	-18.3	16.0		7
	peak	143.0	-17.0	18.0		

06.11-12.11.2023

- There are no additional bearish effects in WK45 compared to WK44. **WK45 is more bullish than WK44**
- Consumption should certainly be much higher than in WK43 and WK42 because **temperatures will be close to average**. This will bring strong change of consumption because WK43 will have 5.5°C above average temperature and WK44 2.5 °C above average temperature. This will result in 1000-1500 MW higher consumption than in the WK43 and WK42 and around 2000 MW higher consumption than in the WK43.

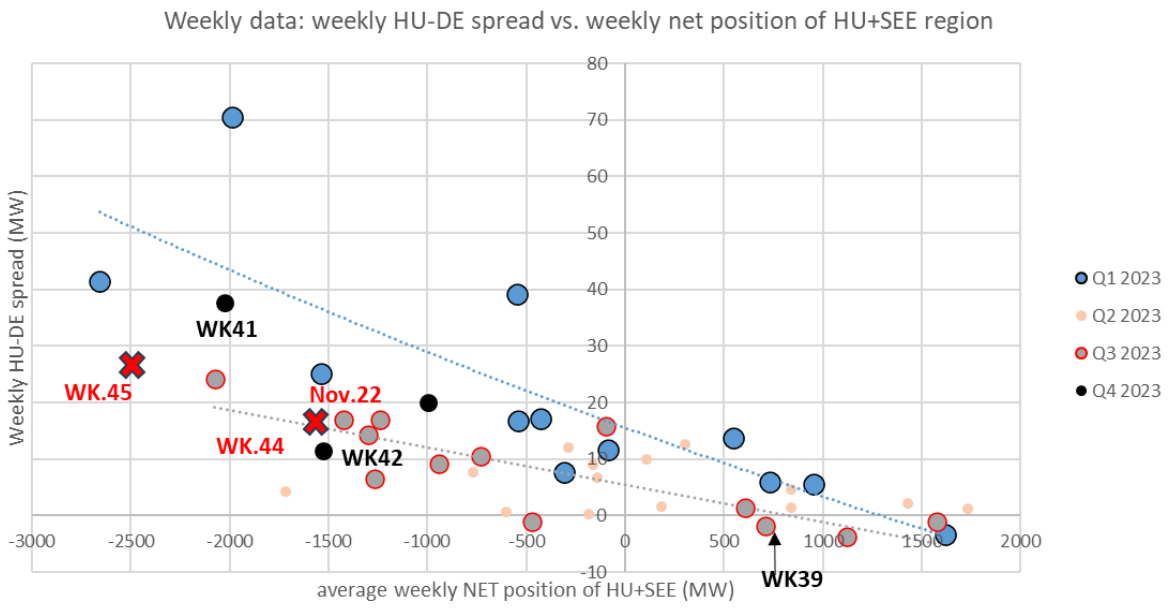
  However, the effect could be larger as the rise of consumption was very high between WK42 and WK41 for just 1.4°C temperature change.

	Absolute level				Wk-42 change vs previous weeks		
	Week 42	**Week 41**	**Week 40**	**WK-42-2022**	**Week 41**	**Week 40**	**WK-42-2022**
SEE Power	***MW AVG***						
Consumption	29,657	28,373	27,790	29,117	+1285	+1868	+541
Temperature	14.1	15.5	16.7	11.7	-1.4	-2.6	+2.3

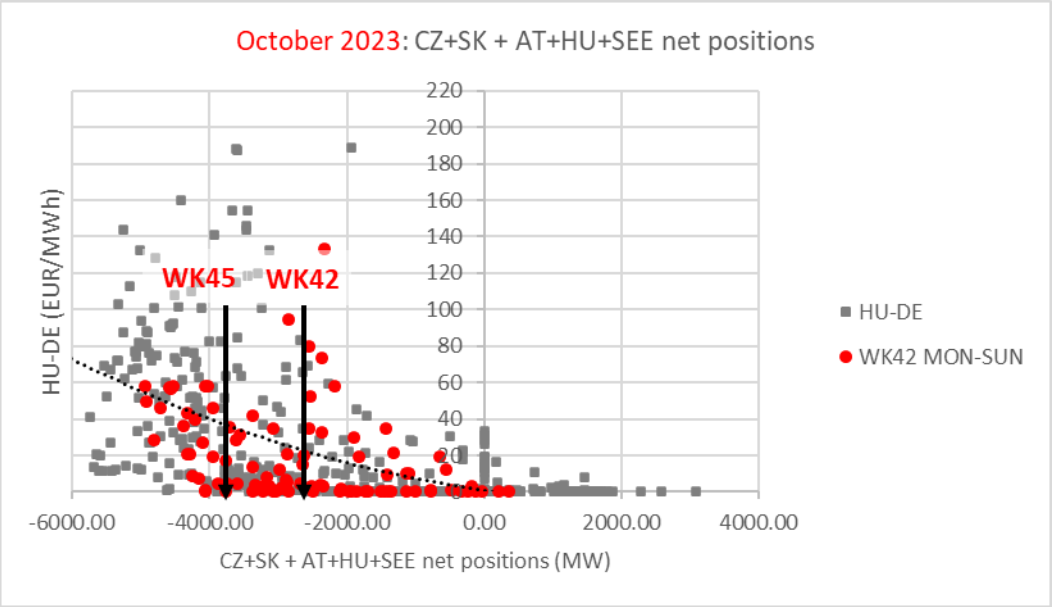


- The effect of precipitation in WK43 should diminish already and hydro generation should not be higher than in WK42, but consumption should be 1000-1500 MW higher than in the WK42.

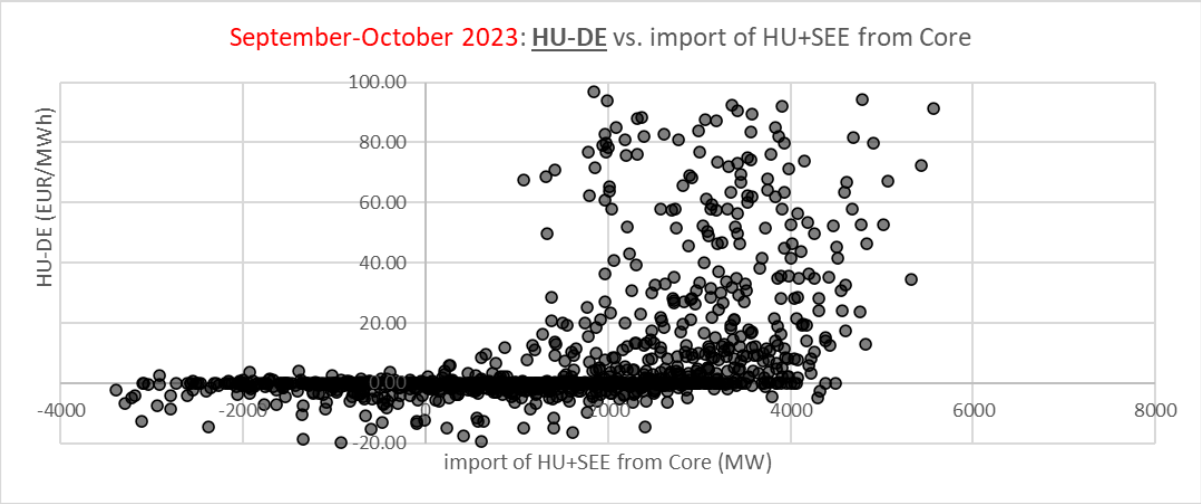
- It is advised to go long against settlement in the WK44 and WK45, but the best moment for entering long position might be at the end of the WK43 because bearish spot settlement of the WK43 can push futures HU-DE spread for WK44 and WK45 down.



The whole East Europe in the WK44 and WK45 will most likely have even shorter position than in the WK42 due to the dropping temperatures, so it can be very risky for HUPX if French market really settles above German market



Imports will be higher than in the WK42 and higher imports lead to higher HU-DE spread.



Change of maintenances to the previous week:

AG Dimitrios G5 (GR), 342 MW, 16.09.2023-12.11.2023	IN
Komotini GT01, GT02 (GR), 476 MW, 11.11.2023-30.11.2023	OUT
Bucuresti S G4 (RO), 84 MW, 03.07.2023-12.11.2023	IN

Important line maintenances:

GR-MK (L Thessa- Dubrovo) 06.11.2023-11.11.2023	New NTC 0
CZ-SK (Stupava- Sokolnice) 06.11.2023-15.11.2023	New NTC 0
BG-RO (Dobrudja-Rahman) 01.11.2023-25.11.2023	New NTC 1250/1000

Nov-23		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	126.8	-16.2	13.8	-6.9	3
	peak	152.5	-5.9	16.0		

Impact factors

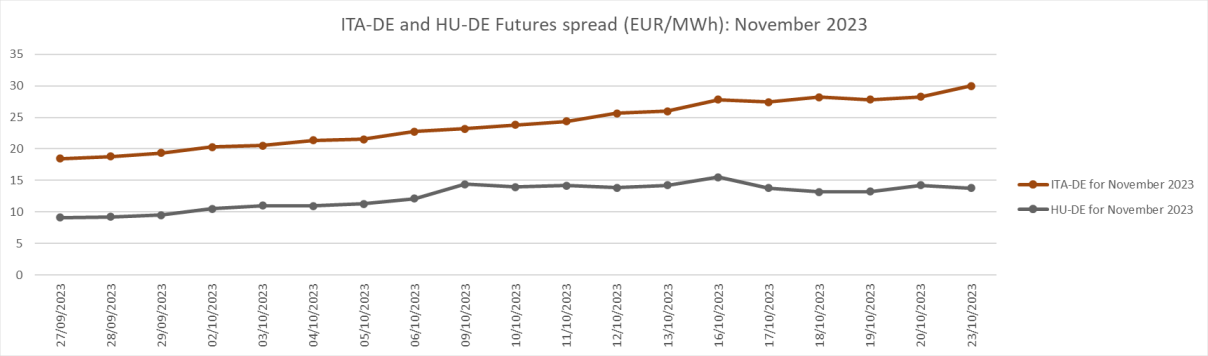
In the last two weeks November got more bullish for following reasons:

- NPP Krsko, 696MW, had an unplanned outage which will last until middle of November
- NPP Kozloduy, 1000MW, extended maintenance until 20.11.2023
- Significantly increased absolute market price did not bring much coal fired generation in Bulgaria.
- November temperature forecasts got colder.
- ITA-DE spread increased from 20 EUR/MWh on 30 EUR/MWh
- HU-DE spread increased from 11 EUR/MWh on 14 EUR/MWh (3 EUR/MWh increase)

Taking into account extended maintenances, spread increase of just 3 EUR/MWh in the last two weeks is not sufficient to cover the increased HUPX risks caused by extended maintenances and increased ITA-DE spread.

HU-DE spread went up from 11 EUR/MWh on 14 EUR/MWh since the last bi-weekly trading report. You must be aware that this happened because of the rising gas price which caused rising ITA-DE price. Therefore, **this profit of 3 EUR/MWh was consequence of luck and it is fair to take profit**.

- RISK: If gas price drops down, this will push ITA-DE spread down and reduce risks of high HUPX-EPEX(DE) spread on settlement.
- It is still better to keep long HU vs. short DE position for November
- HU-DE spread in November should settle at higher point than 50% of the ITA-DE spread.



Conclusion:

- **Advice is to take profit and avoid settlement risks and risk of gas price drop.**
- However, long HU vs. short DE positions still have strong earning potential against settlement in November, assuming that ITA-DE spread remain 30 EUR/MWh as currently futures ITA-DE spread for November is.

- Traders did not earn on short HU vs. long DE position against settlement in November since 2015. In 2015 profit on short positions was made because September was extremely high in 2015 and because of high September prices November futures went too much up.

This statistic show that traders tend to underestimate November risks.

The main reason why traders lost money on short HU vs. long DE spread in November 2021 was impact of French market on Austrian price.

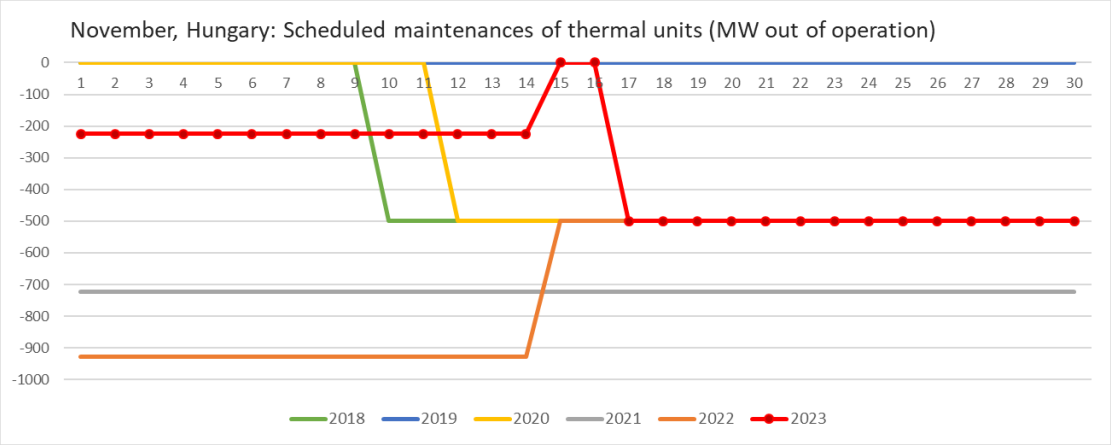
HU-DE Spread	HU-DE spread on 01.09.	HU-DE spread on 15.09.	HU-DE spread on 30.09.	settlement spread	Profit on short 01.09.	Profit on short 15.09.	Profit on short 30.09.	Hydro October	Hydro November	Temperature deviation (℃)
15-Nov	14.19	12.90	9.83	4.76	9.43	8.14	5.07	116%	88%	1.0
16-Nov	6.90	5.01	1.47	8.49	-1.59	-3.48	-7.02	117%	141%	-0.3
17-Nov	10.81	16.45	17.17	21.34	-10.53	-4.89	-4.17	81%	88%	-0.4
18-Nov	11.87	11.88	10.44	11.38	0.49	0.50	-0.94	86%	93%	1.2
19-Nov	16.70	14.67	13.04	20.01	-3.31	-5.34	-6.97	78%	103%	3.5
20-Nov	6.04	4.71	4.46	5.36	0.68	-0.65	-0.90	130%	98%	0.0
21-Nov	13.43	21.23	32.20	39.72	-26.29	-18.49	-7.52	83%	87%	1.0
22-Nov	46.46	51.09	36.00	49.11	-2.65	1.98	-13.11	88%	86%	2.0

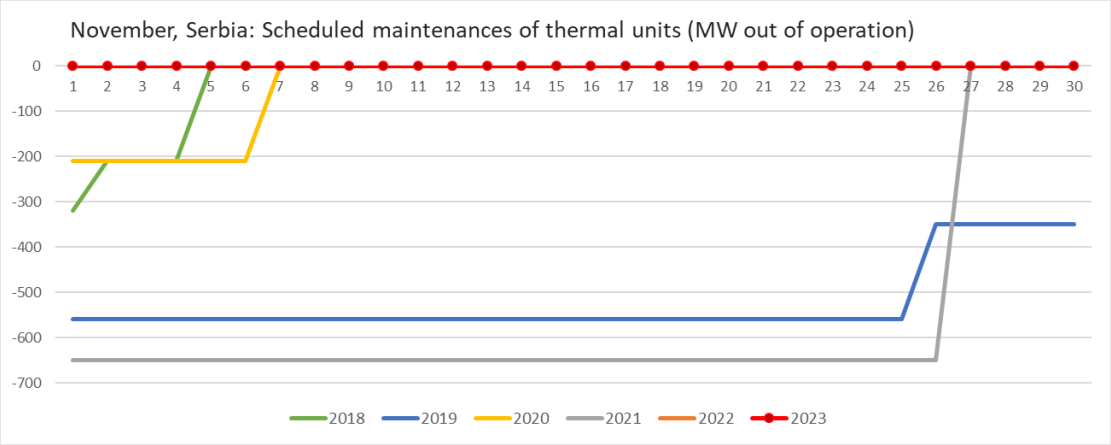
Important maintenances:

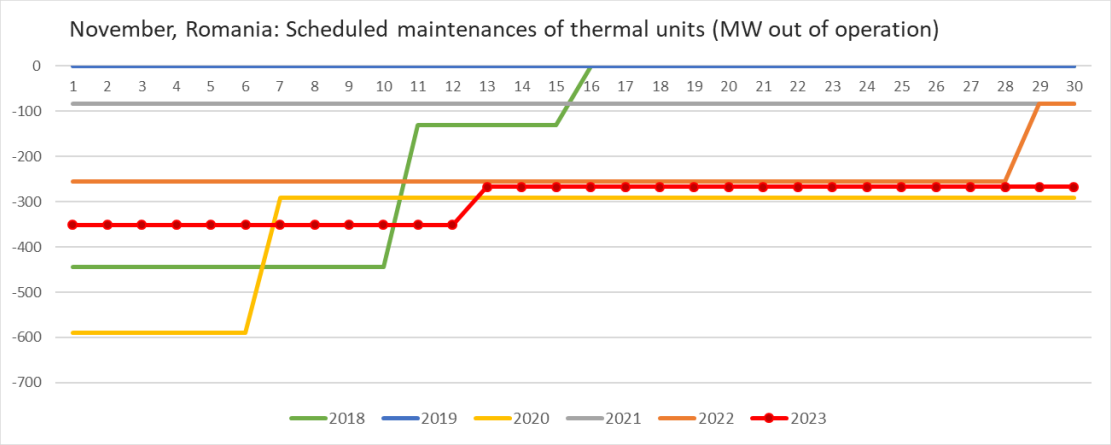
Matrai G4 (HU), 224 MW, 01.05.2023-14.11.2023	OUT
Paks G1G2 (HU), 500 MW, 17.11.2023-19.12.2023	OUT
NPP Kozloduy G10, 1040 MW, 09.10.2023-20.11.2023	OUT
Maritsa 2 G7 (BG), 218 MW, 15.10.2023-10.12.2023	OUT
Turceni G7 (RO), 267 MW, 31.05.2023-31.12.2023	OUT
Bucuresti S G3 (RO), 84 MW, 01.10.2023-12.11.2023	OUT
Aliveri G5 (GR), 417 MW, 19.08.2023-18.11.2023	OUT
K.Power (GR), 433 MW, 28.08.2023-01.12.2023	OUT
Megalopoli G4 (GR), 256 MW, 01.10.2023-30.11.2023	OUT
AG Dimitrios G5 (GR), 342 MW, 16.09.2023-12.11.2023	OUT
Komotini GT01 (HU), 238 MW, 11.11.2023-30.11.2023	OUT
Komotini GT02 (HU), 238 MW, 11.11.2023-30.11.2023	OUT

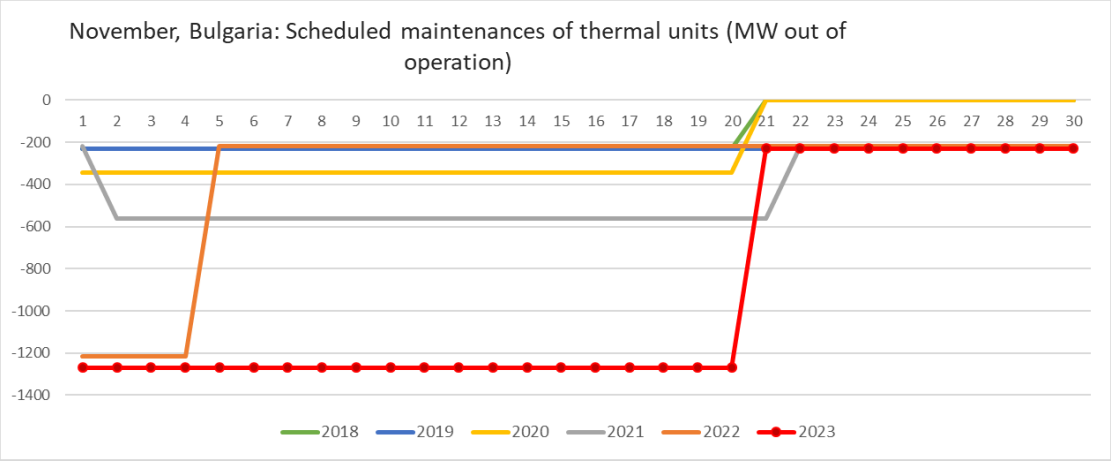
Lines maintenances:

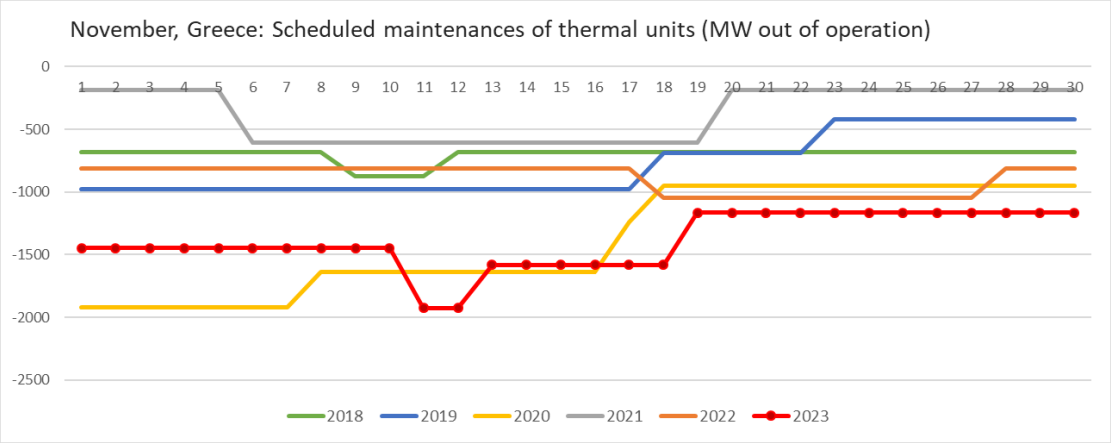
CZ-SK (Stupava-Sokolnice) 06.11.2023-10.11.2023	New NTC 1500
RO-MD (Isaccea-Vulcanesti) 13.11.2023-20.11.2023	New NTC 0
BG-RO (Dobrudja-Rahman) 01.11.2023-25.11.2023	New NTC 1000
GR-MK (Thessa-Dubrovo) 06.11.2023-11.11.2023	New NTC 0




November, Serbia: Scheduled maintenances of thermal units (MW out of operation)
0
-100
-200
-300
-400
-500
-600
-700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2018
2019
2020
2021
2022
2023


November, Romania: Scheduled maintenances of thermal units (MW out of operation)
0
-100
-200
-300
-400
-500
-600
-700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2018
2019
2020
2021
2022
2023


November, Bulgaria: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2018
2019
2020
2021
2022
2023


November, Greece: Scheduled maintenances of thermal units (MW out of operation)
0
-500
-1000
-1500
-2000
-2500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2018
2019
2020
2021
2022
2023

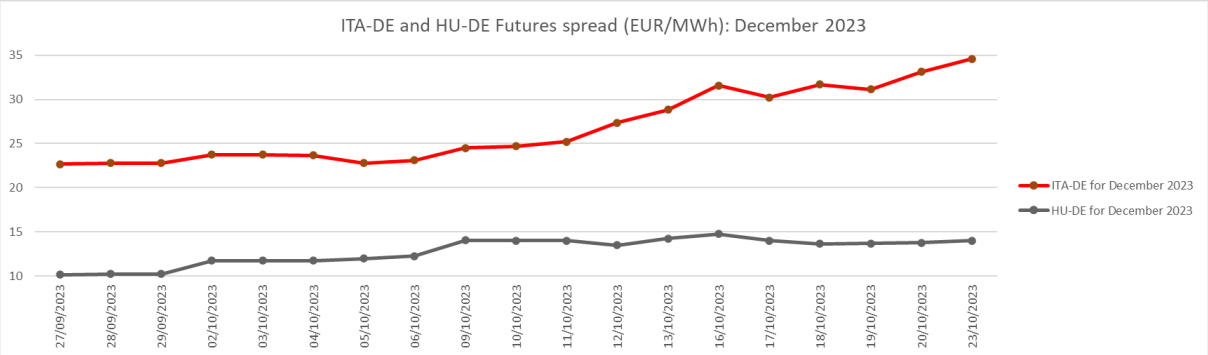
Dec-23		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	132.0	-20.6	14.0	-21.4	0
	peak	157.4	-13.5	16.0		

Impact factors:

HU+SEE market fundamentals for December got more bearish in the last two weeks:

- French-German futures spread for December went down from 17 EUR/MWh two weeks ago on 7 EUR/MWh now.
- Hydrology prospects are still the same as before
- Issues with prolonged outages of NPP Krsko and NPP Kozloduy do not affect December
- Absolute price level went 15-20 EUR/MWh up which will ensure stronger Czech lignite fired generation and potentially also higher Bulgarian and Greek lignite fired power generation since earning margin is now significantly higher.

Although regional fundamentals became more bearish, HU-DE spread increased by 2 EUR/MWh in the last two weeks, probably due to the increase of the ITA-DE spread by 10 EUR/MWh



Conclusion:

- It is difficult to say with confidence that HU-DE spread is overpriced.
- HU-DE spread went up in the last two weeks although fundamentals are more bearish. Therefore, it is not a good moment for making long position, such as long HU vs. short DE.
- It is too risky to make short HU vs. long DE because of the potentially very risky HUPX spot until the middle of November.

- French market for December collapsed and now it is just 7 EUR/MWh above German market. Therefore, a big support for long position in Hungary in December disappeared.

- If gas price goes down, ITA-DE spread will go down and HU-DE as well.

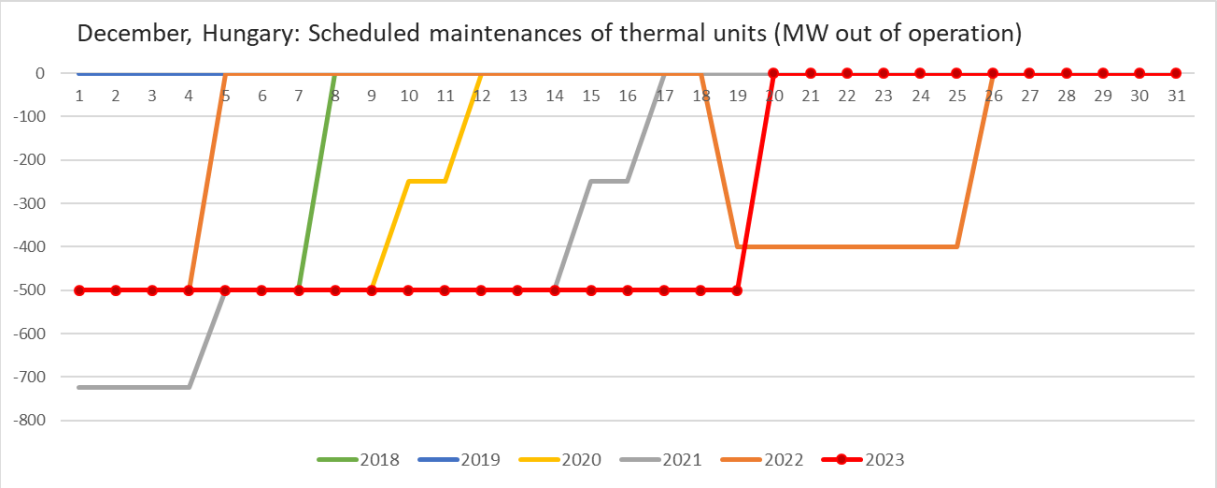
- It is most probably the best to wait at the moment and not open any position for December 2023.

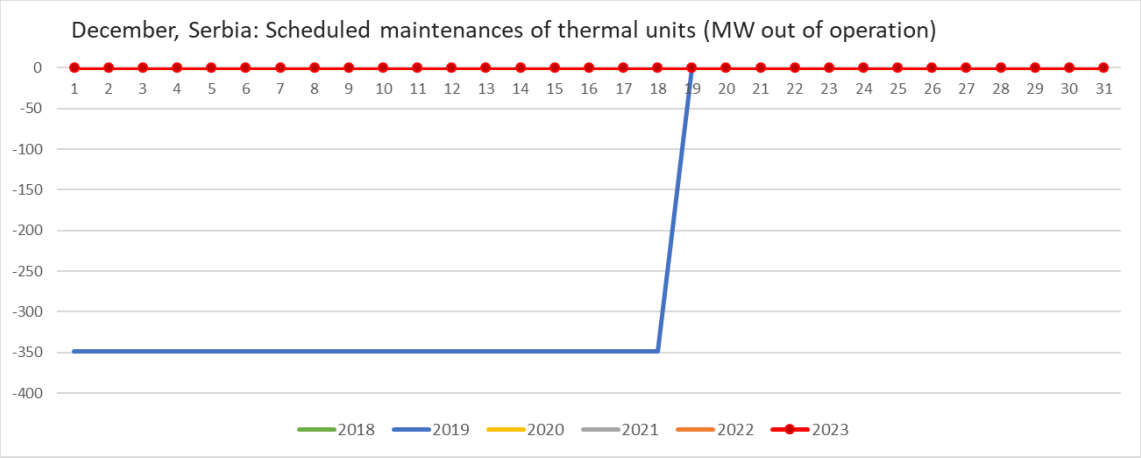
Important maintenances:

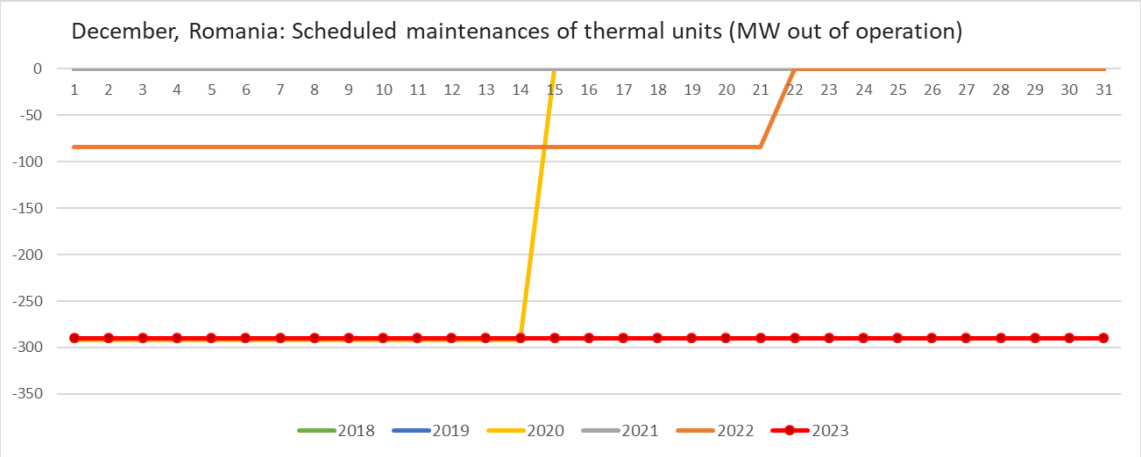
Paks G1G2 (HU), 500 MW, 17.11.2023-19.12.2023	OUT
Maritsa 2 G7 (BG), 218 MW, 15.10.2023-10.12.2023	OUT
Turceni G7 (RO), 267 MW, 31.05.2023-31.12.2023	OUT
K.Power (GR), 433 MW, 28.08.2023-10.12.2023	OUT
Lavrio G5 (GR), 377 MW, 01.12.2023-10.12.2023	OUT

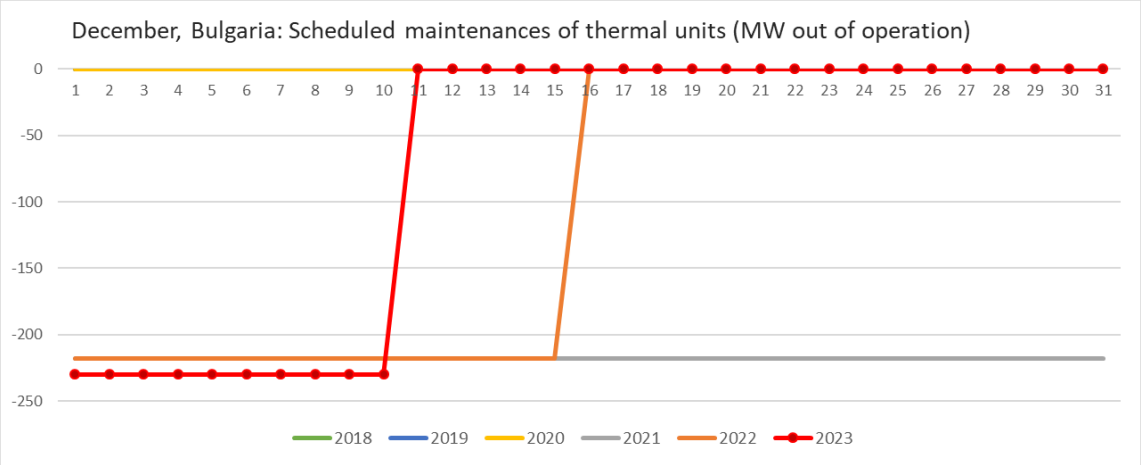
Lines maintenances:

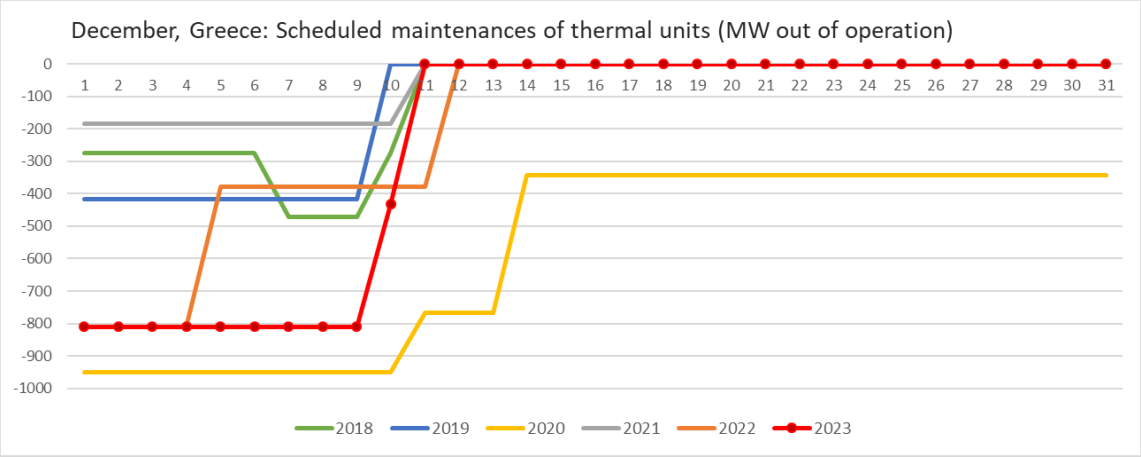
BG-RO (Tintareni – Kozloduy) 04.12.2023-16.12.2023	New NTC 1200




December, Serbia: Scheduled maintenances of thermal units (MW out of operation)
0
-50
-100
-150
-200
-250
-300
-350
-400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2018
2019
2020
2021
2022
2023


December, Romania: Scheduled maintenances of thermal units (MW out of operation)
0
-50
-100
-150
-200
-250
-300
-350
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2018
2019
2020
2021
2022
2023


December, Bulgaria: Scheduled maintenances of thermal units (MW out of operation)
0
-50
-100
-150
-200
-250
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2018
2019
2020
2021
2022
2023


December, Greece: Scheduled maintenances of thermal units (MW out of operation)
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2018
2019
2020
2021
2022
2023

Q1-24		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	149.9	-11.3	14.3	0.0	5
	peak	172.2	-4.1	16.5		

Three strategies were advised in previous bi-weekly reports **it is worth to consider taking profits**!

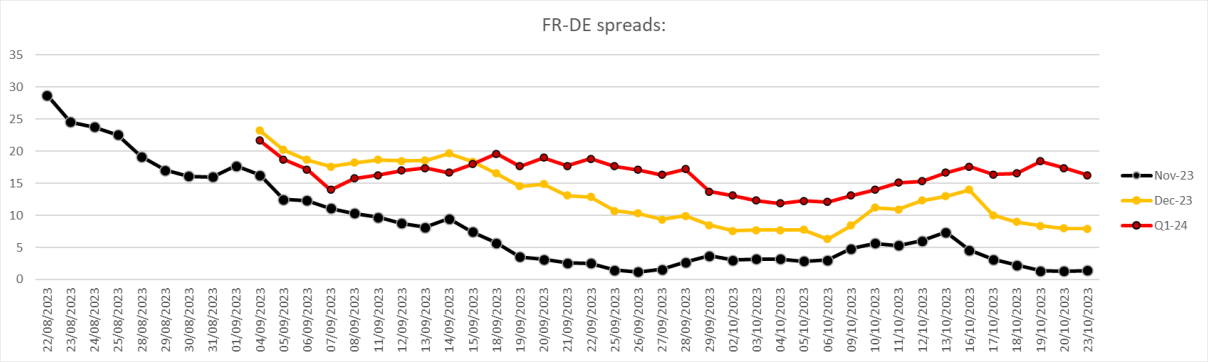
Trade 1 (earned +1.75 EUR/MWh): long HU vs. short DE for Q1:

Take profit in the 1-3 weeks!

Risks 1, If French-German spread goes further down this is reducing the potential of the strategy.

Risk 2, If gas price goes down it will not significantly impact lignite fired power generation, but will reduce ITA-DE spread and HU-DE spread will go down.

FR-DE spread for Q1 still kept value and it can start dropping any moment.



Trade 2 (loss of -0.75, still keep it): Long Q1 HU-DE spread v.s short Cal 24 HU-DE spread

100 MW long HU Q1 vs. short DE Q1

25 MW short HU Cal24 vs. long DE Cal24

It is very strange that Q1 went down in spread and all other quarters of Cal24 went up in the last two weeks. Market is probably mispricing Cal24 spread.

Trade 3 (earned +4.6 EUR/MWh): Long Q1 vs. short Q2 (no spread)

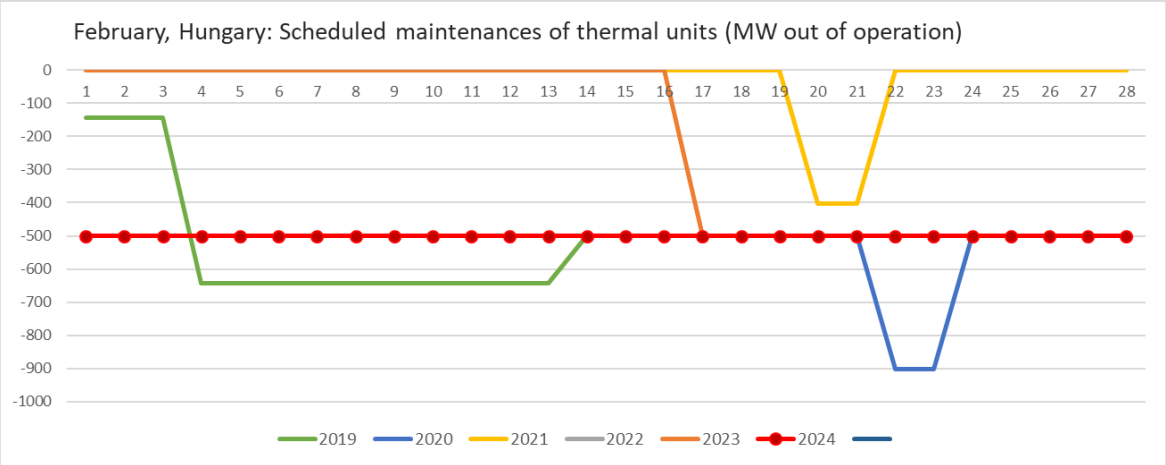
Take profit now, profits are probably partially a consequence of gas price rise!

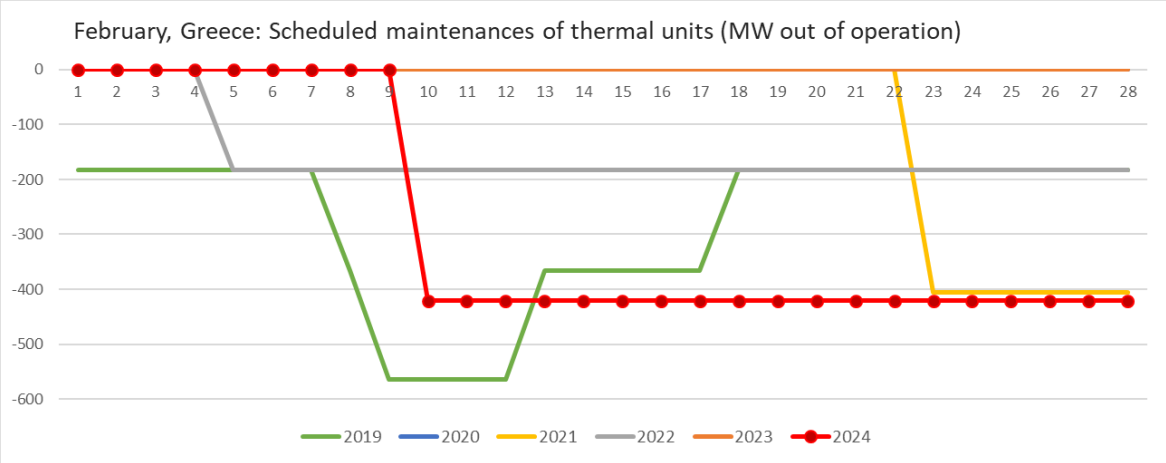
- Gas market could support this strategy: If winter is forecasted to have mild temperatures and gas and power consumption are lower than last winter due to consumption destruction, then storages will not be empty at the end of winter and why would Q1 gas have nearly the same price as Q2 gas? This appears as an opportunity for long Q1 outright vs. short Q2 outright (in Hungary or Germany)
- Extremely high solar generation in Q2 2024 can support this strategy
- Much higher risks during Q1 than during Q2 can support this strategy
- Q1 and Q2 have prices which are very close to each other This does not reflect the difference in risks.

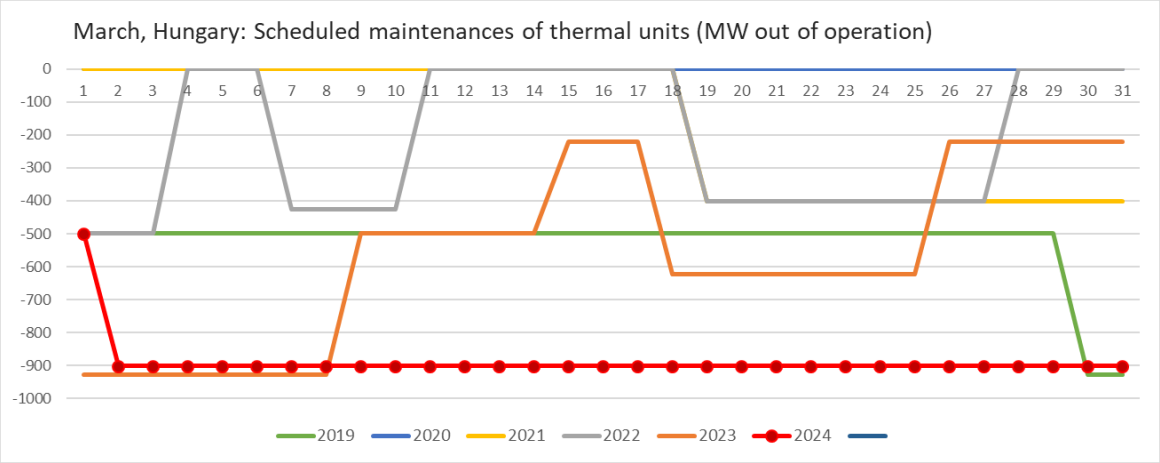
Lines maintenances:

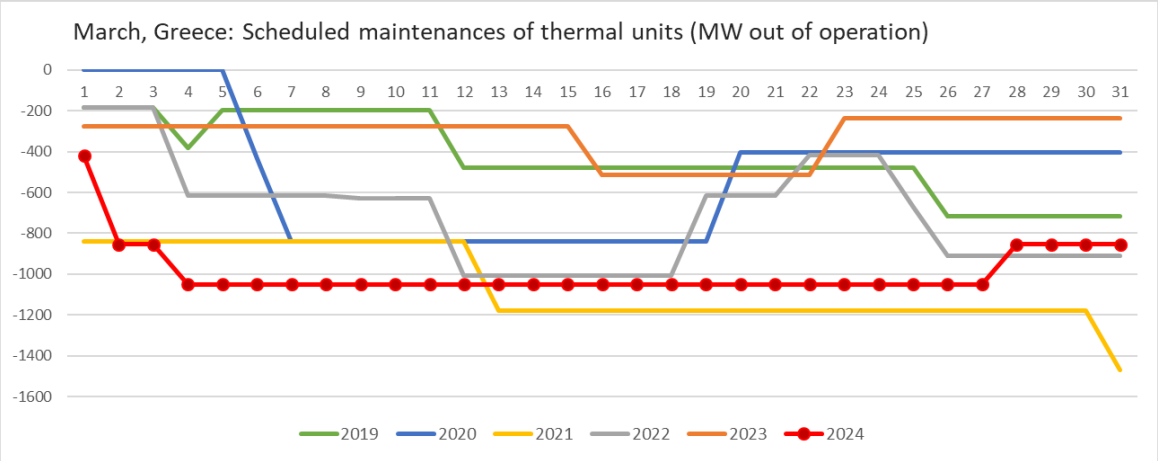
Important maintenances:

Paks G7G8 (HU), 500 MW, 01.02.2024-20.04.2024	OUT
Dunamenti G7G8 (HU), 401 MW, 01.03.2024-01.07.2024	OUT
Lavrio G4 (GR), 183 MW, 10.02.2024-19.05.2024	OUT
Komotini GT01 (GR), 238 MW, 10.02.2024-30.04.2024	OUT
Alouminio GT02 (GR), 197 MW, 03.03.2024-27.03.2024	OUT
Protegeria CC (GR), 433 MW, 01.03.2024-11.04.2024	OUT






March, Hungary: Scheduled maintenances of thermal units (MW out of operation)
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024


March, Greece: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024

Q2-24		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	110.0	-9.1	8.0	-1.2	-5
	peak	117.7	-10.3	10.0		

In the last bi-weekly report it was advised to go short Q2, but in a complex spread which would eliminate the impact of ITA-DE spread on earnings. This was a good advice because:

- ITA-DE spread moved 6.2 EUR/MWh up
- HU-DE spread moved 2 EUR/MWh up !!!
- ITA-HU spread moved 4.2 EUR/MWh up

HUPX is still priced equally as two weeks ago with respect to ITA and DE markets (in the middle between those two markets).

Any simple spread trade (short HU vs. long DE or short HU vs. long ITA) would be fully governed by the ITA-DE spread trading.

If you made a simple Q2 spread and made earnings in the last 2-3 weeks this earnings were made purely due to gas price rise and rise of ITA-DE spread. Consider this as a great luck and cash profits!

Earnings on short HU vs. long DE (or short HU vs. long ITA) would depend highly on ITA-DE spread development. In order to partially mitigate impacts of ITA-DE spread on HU-DE spread development, a good trade combination could be.

Short HU Q2 vs. long DE Q2 + long HU Q1 vs. short DE Q1

A fair assumption is that ITA-DE spread for Q2 has a rather rising potential because it is currently equal for both Q1 and Q2. With this in mind **it might be better to make short HU vs. long ITA spreads** than short HU vs. long DE spread.

Short HU Q2 vs. long ITA Q2 + long HU Q1 vs. short **ITA Q1**

Or

Short HU Q2 vs. long ITA Q2 + long HU Q1 vs. short **DE Q1**

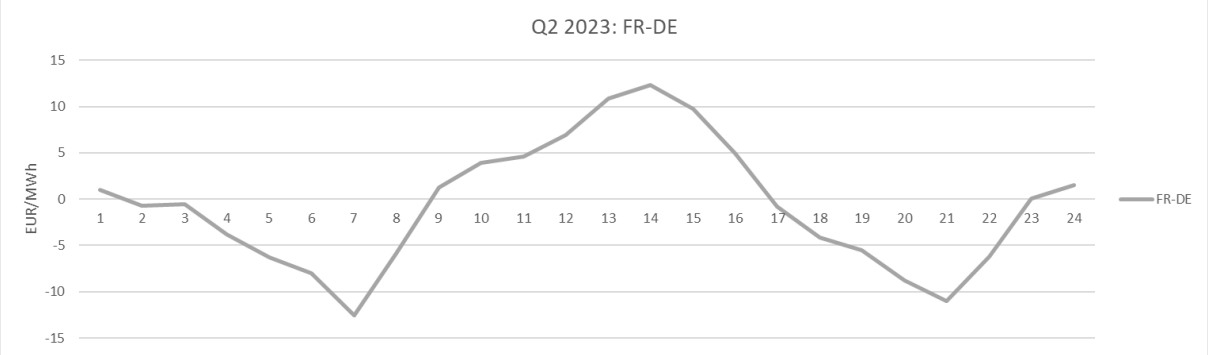
Conclusion:

Q2 2024 wil probably be more bullish than Q2 2023, but **it is rather for making short position.**

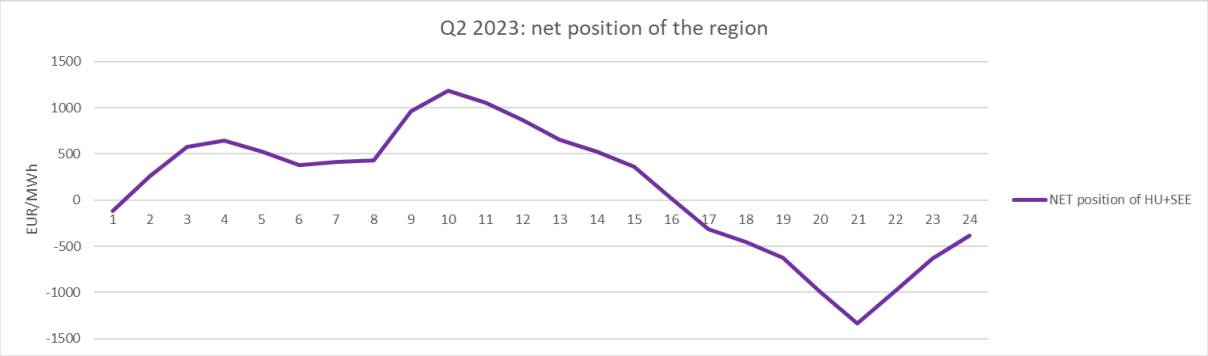
Hungarian Q2 is overpriced in relation to ITA and DE markets

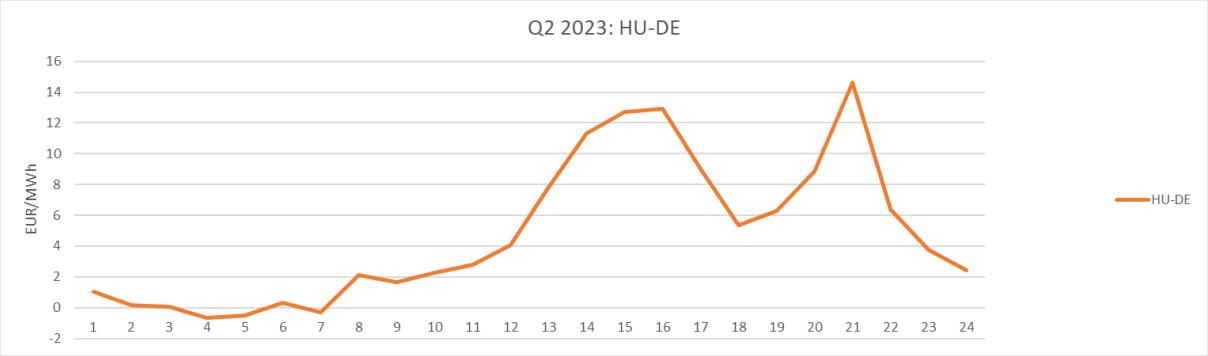
- HU-DE spread in Q2 2023 settled at 20% of the ITA-DE spread (HU-DE =4.8 EUR/MWh, ITA-DE=23 EUR/MWh
- HU-DE spread for Q2 2024 is 8 EUR/MWh and ITA-DE spread 16.5 EUR/MWh, HU-DE spread is at 50% of the ITA-DE spread. Having in mind that the main risk is that hours 19-24 settle at Italian price level, Hungarian market is rather overpriced.
- It is even possible that ITA-DE spread will be close to 0 EUR/MWh in Q2 2024 having in mind that ITA-DE futures for Q2 are much lower than ITA-DE settlement of Q2 2023. Also, recent experience shows that ITA-DE spread is even frequently negative in hours 19-24 which often leads to negative HU-DE spreads in hours 19-24. Such development would minimise risk of HU-DE sprad in hours 19-24.
- There is low risk for HU-DE spread in hours 1-18. In hours 19-24 there is a risk for high HUPX but since German market has high chance to settle at Italian price level, this minimises the risk of HU-DE spread in hours 19-24.
- Earning potential is not huge, especially if gas market price drops.

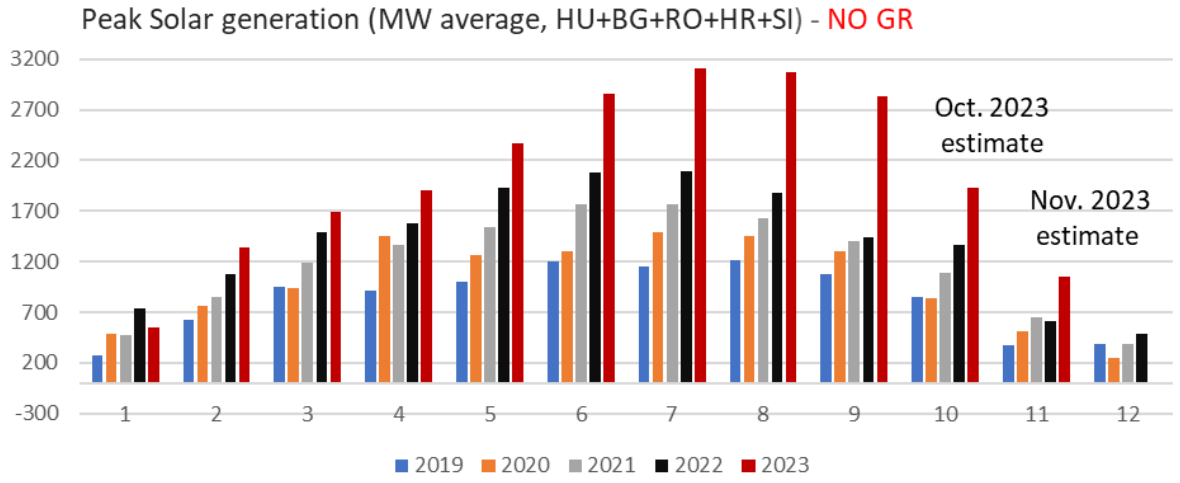
- French Q2 is below German Q2 which means that French market will not be pushing HUPX up in hours when HU+SEE is an importer in FBMC. This is similar as it was in Q2 2023.



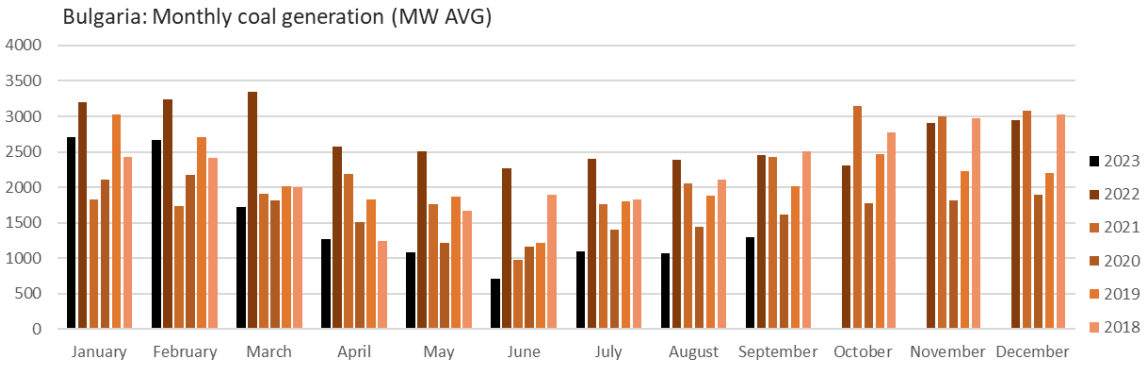
- HU+SEE region was long in sunny hours on average, the most long in hour 10, but there was still high sperad in sunny hours as well. Further increase of solar power generation should reduce HU-DE spread in sunny hours to be lower than in Q2 2022. Solar power generation outside of Greece in Q2 2023 was 27% higher than in Q2 2022, Q3 2023 had 50% higher solar generation than Q3 3033. The trend of year-on-year rise is even increaseing in the second half of 2023.

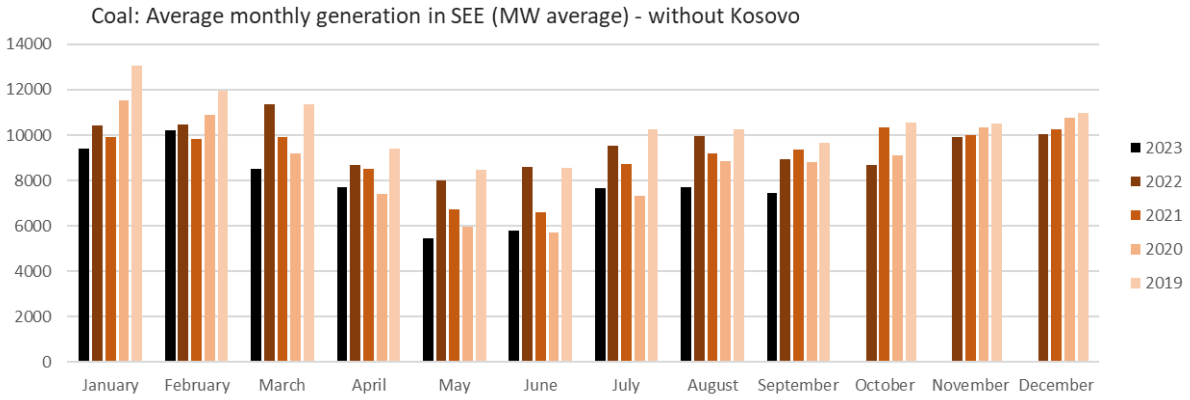




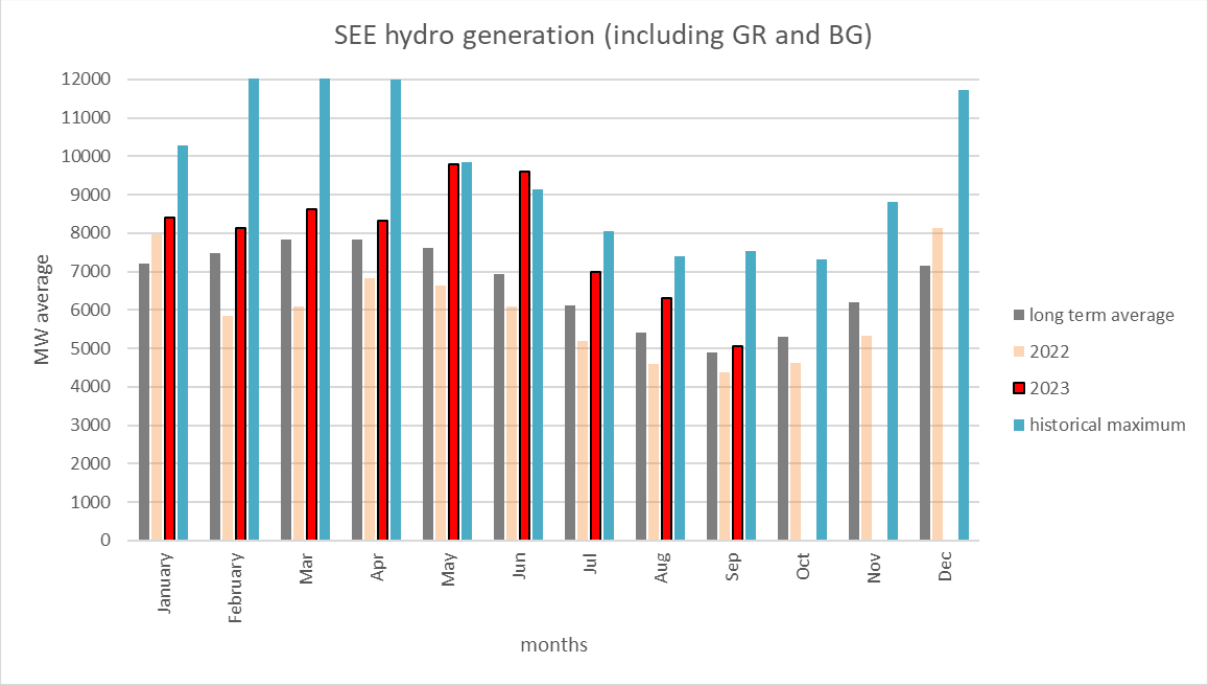


- In Q2 2023, lignite fired generation was already significantly down. Lignite fired generation in Q2 2024 should not be lower than in Q2 2023.

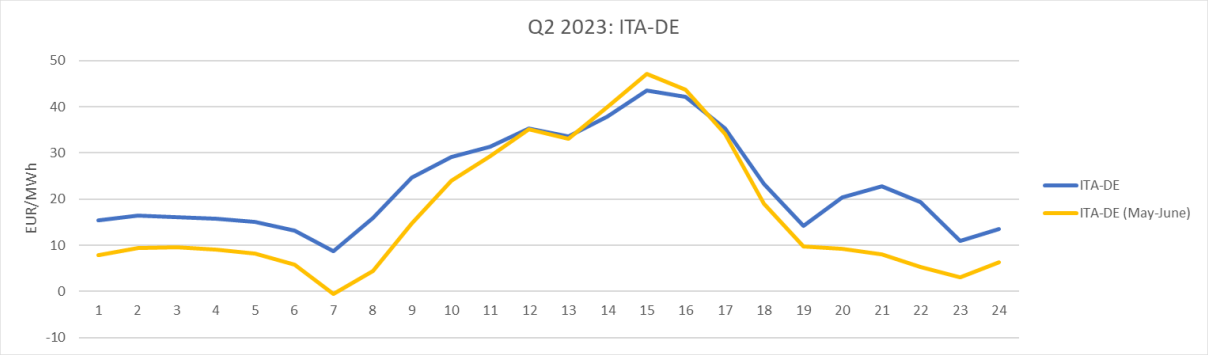


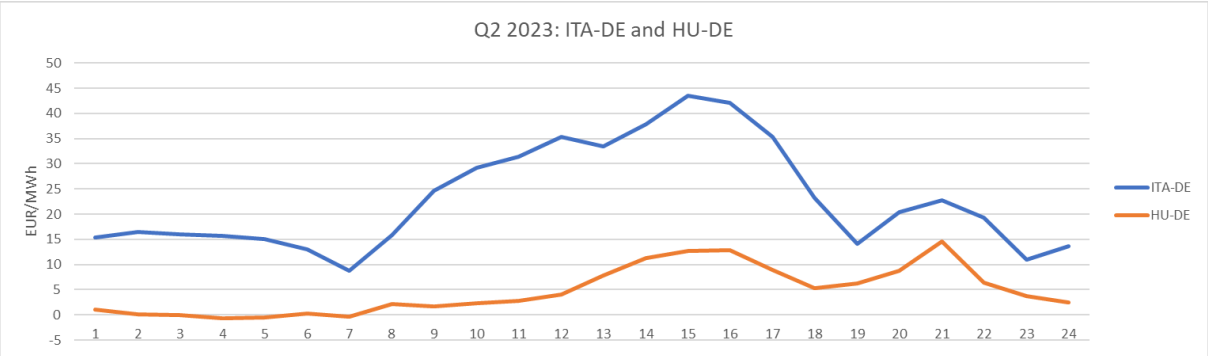


- The only seriously bullish difference is that hydro generation in Q2 2023 was extremely high, 1800 MW above average for Q2. It is still too early to estimate hydrology of Q2 2024, but it is most probably going to be lower than in Q2 2023.
- Having in mind that HU+SEE region was net long in Q2 2023, lower hydro generation will not make it so short that it will turn to be bullish.

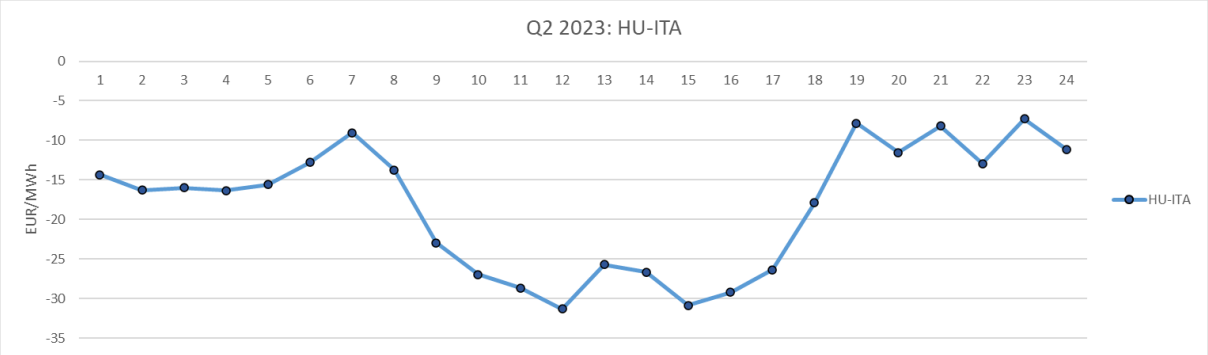


- In Q2 2023 the region was short in hours 17-24, but those were hours which anyhow had very low ITA-DE spread, so HU-DE spread was anyhow low in those hours. Similar shape of ITA-DE spread should be expected in Q2 2024.





- HUPX was well below Italian market even in hours 17-24. Lower hydro generation in Q2 2023 could push hours 17-24 at Italian price level, but this would not be too bullish on HU-DE spread.



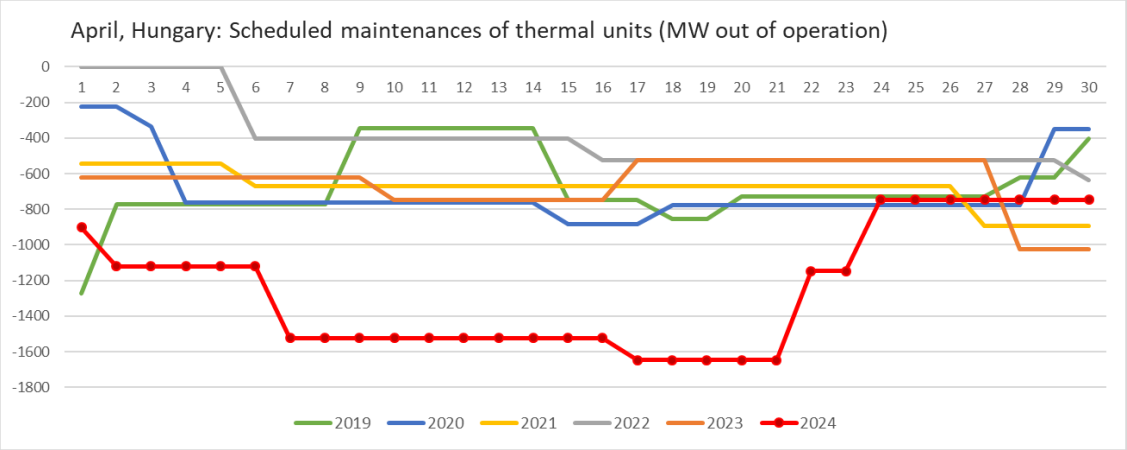
- Maintenance plan is still not firm nor finalised for Q2, but availability will be lower than in Q2 2023 because TPP Sostanj 6, 539 MW in Slovenia will be out of operation 04.05.2024-13.07.2024 and NPP Krsko, 696MW in Slovenia will be out of operation in April 2024 (still not annoucned on entso-e)

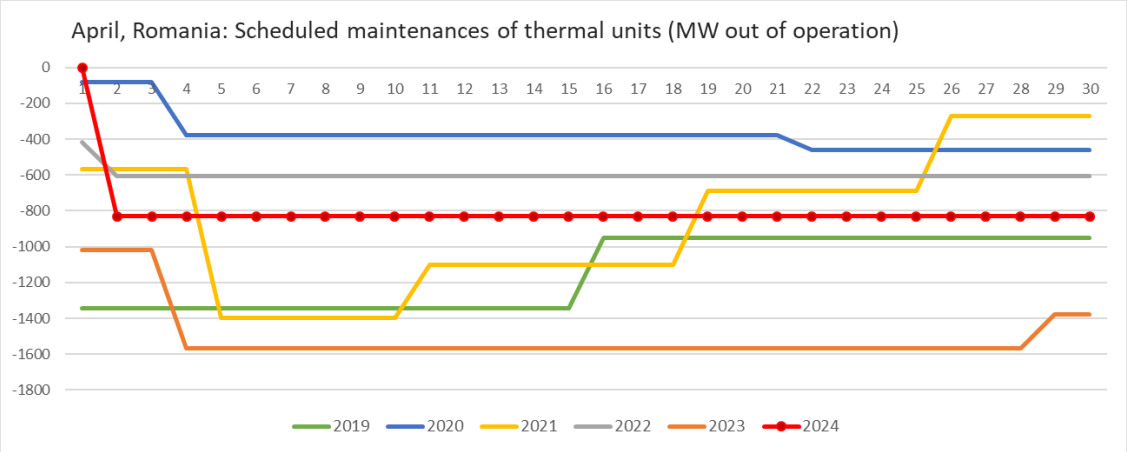
Lines maintenances:

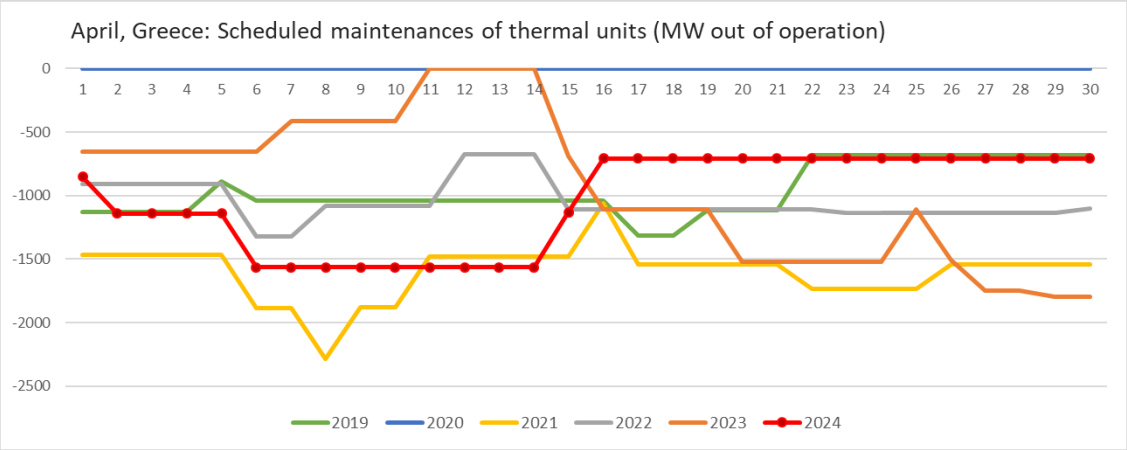
Important maintenances:

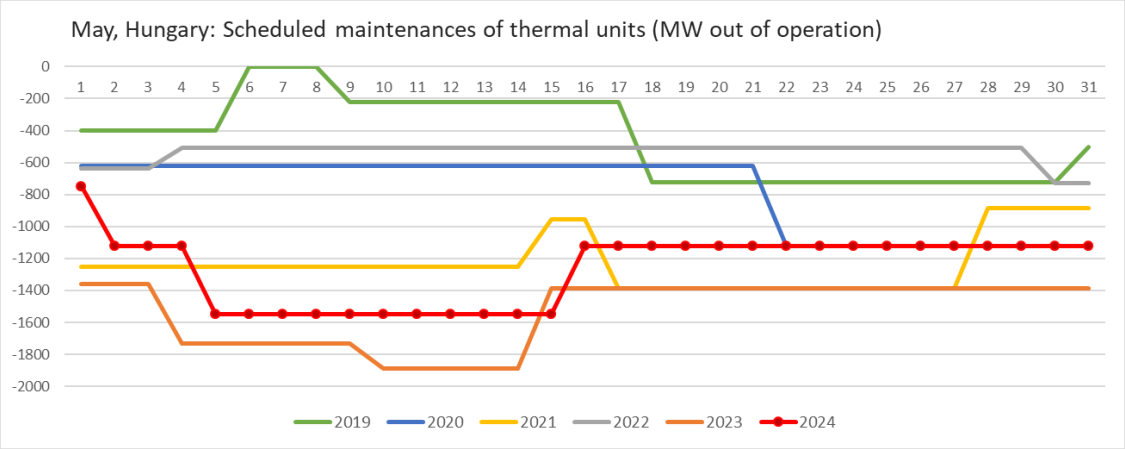
Paks G7G8 (HU), 500 MW, 01.02.2024-20.04.2024	OUT
Dunamenti G7G8 (HU), 401 MW, 01.03.2024-01.07.2024	OUT
Matrai G3 (HU), 220 MW, 01.04.2024-16.05.2024	OUT
Csapel ALL (HU), 402 MW, 06.04.2024-22.04.2024	OUT
Kelenfoldi GT (HU), 125 MW, 16.04.2024-01.05.2024	OUT
Paks G3G4 (HU), 500 MW, 01.05.2024-10.06.2024	OUT
Gony G1 (HU), 427 MW, 04.05.2024-15.05.2024	OUT
Lavrio G4 (GR), 183 MW, 10.02.2024-19.05.2024	OUT
Komotini GT01 (GR), 238 MW, 10.02.2024-30.04.2024	OUT
Protegeria CC (GR), 433 MW, 01.03.2024-11.04.2024	OUT
CCCC P. Brazi (RO), 832 MW, 01.04.2024-30.04.2024	OUT
Bucuresti S G3 (RO), 84 MW, 15.05.2024-30.06.2024	OUT
Cernavoda G1 (RO), 650 MW, 19.05.2024-08.07.2024	OUT
Craiova 2 G1 (RO), 120 MW, 01.06.2024-30.06.2024	OUT

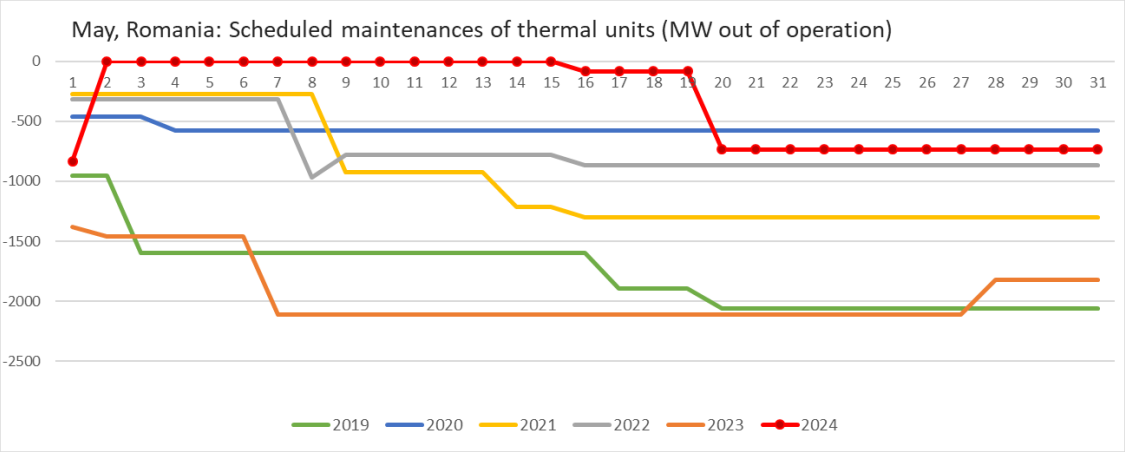
Kozloduy G9 (BG), 1040 MW, 05.05.2024-16.06.2024	OUT
TES G6 (SLO), 539 MW, 04.05.2024-14.07.2024	OUT

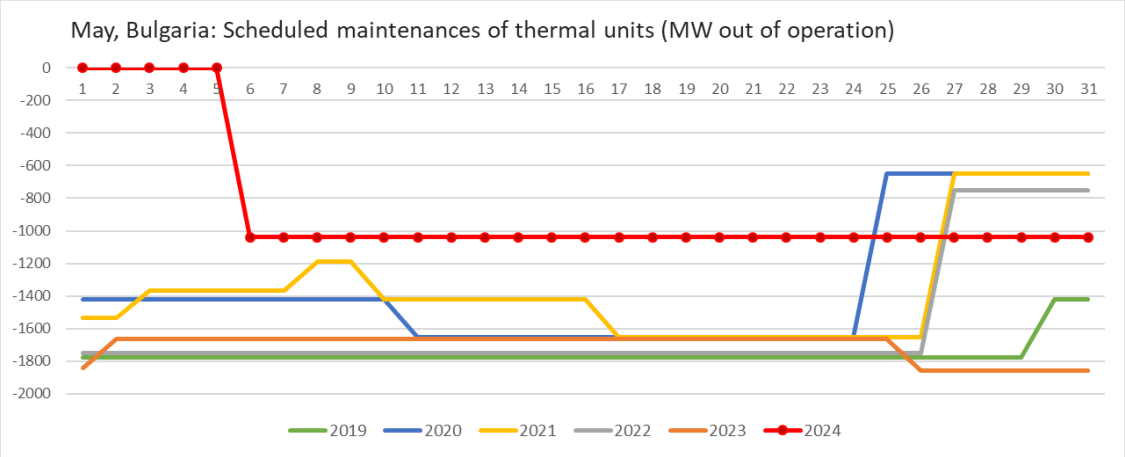


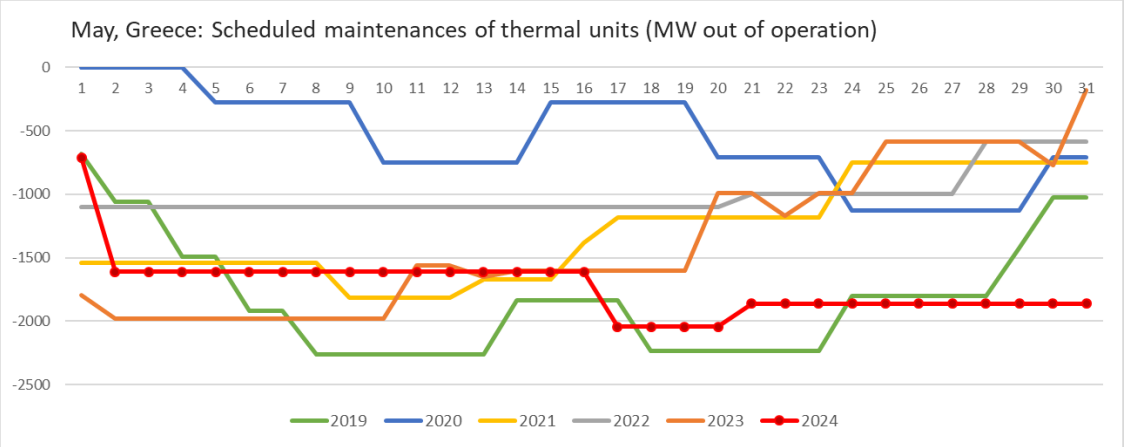


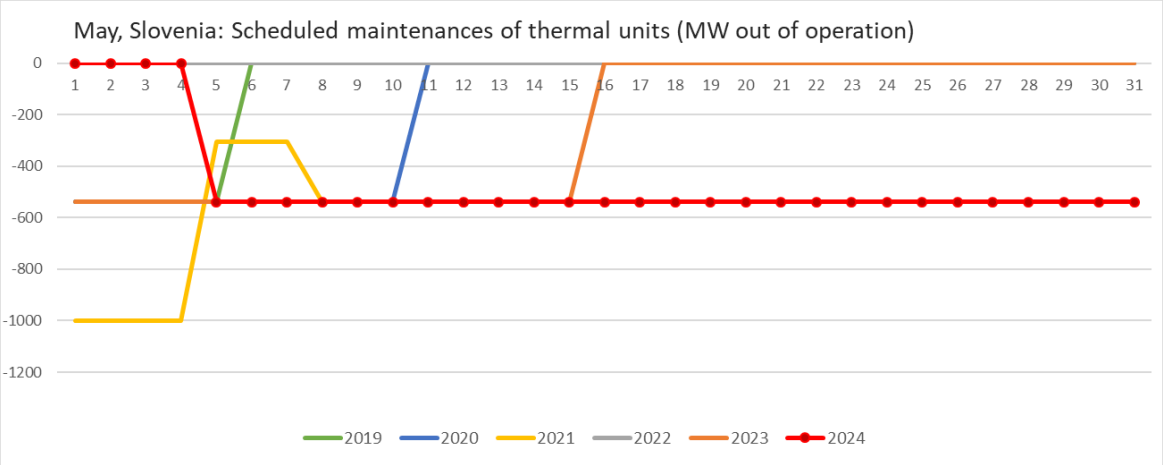


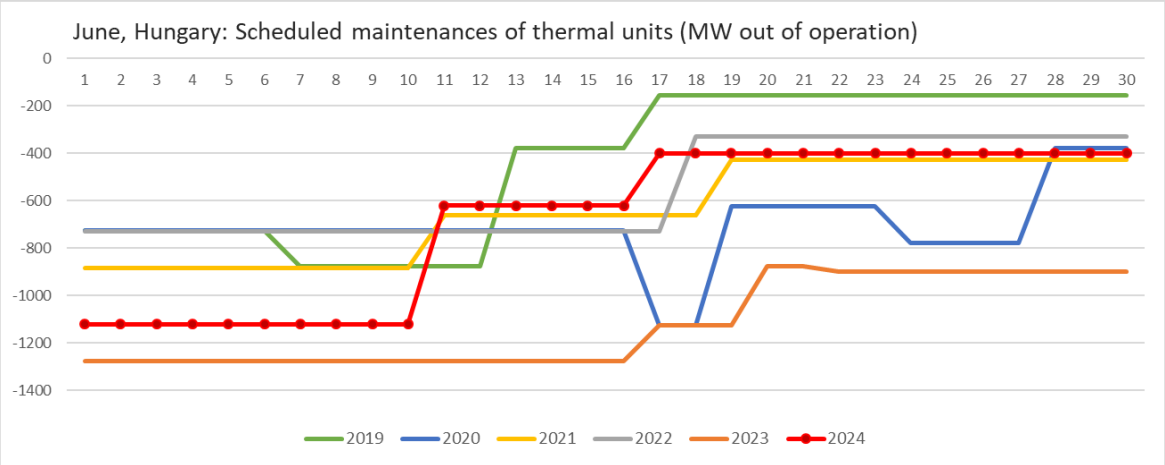

May, Hungary: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024

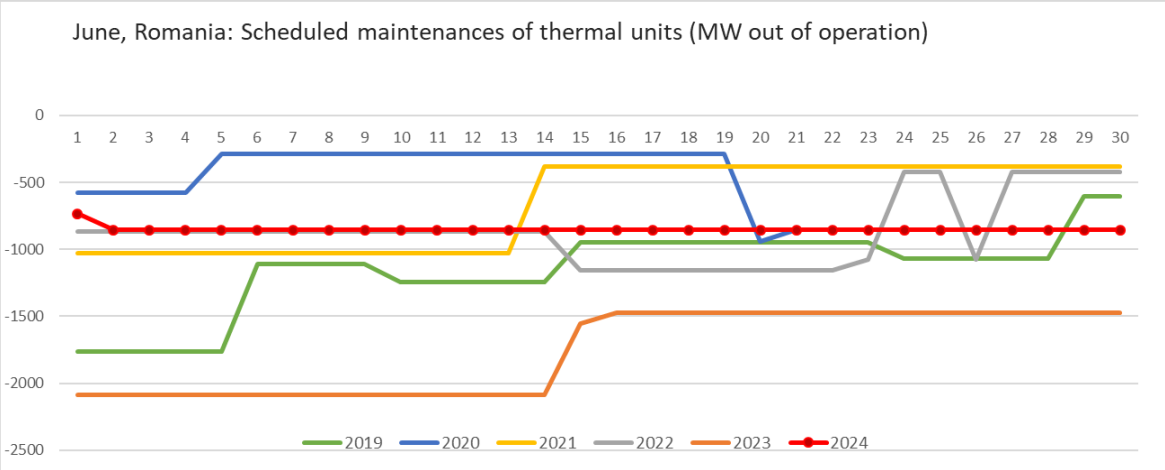

May, Romania: Scheduled maintenances of thermal units (MW out of operation)
0
-500
-1000
-1500
-2000
-2500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024

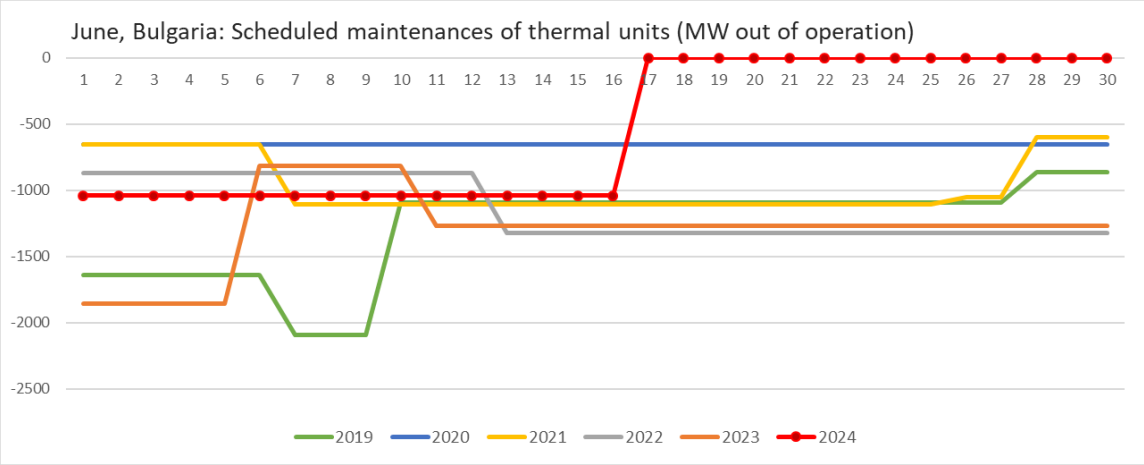

May, Bulgaria: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024

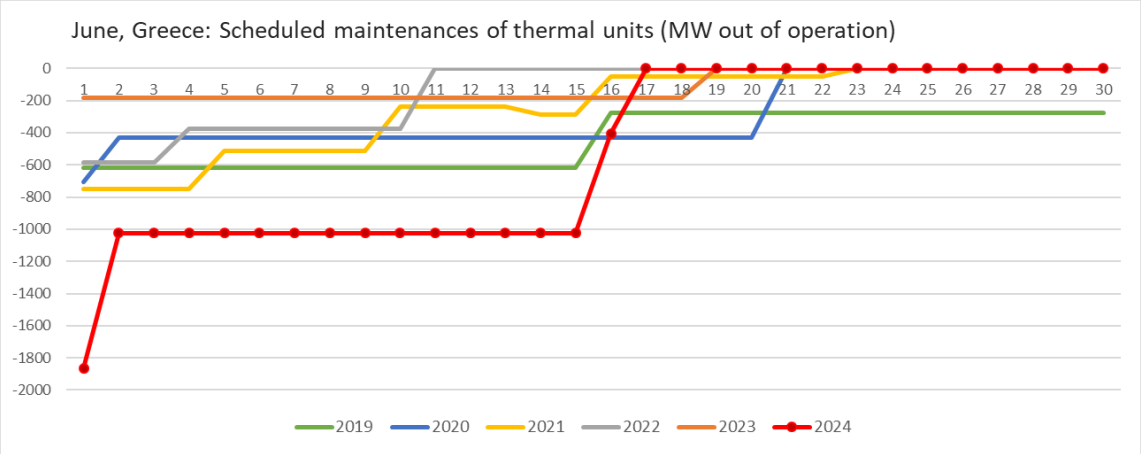

May, Greece: Scheduled maintenances of thermal units (MW out of operation)
0
-500
-1000
-1500
-2000
-2500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024

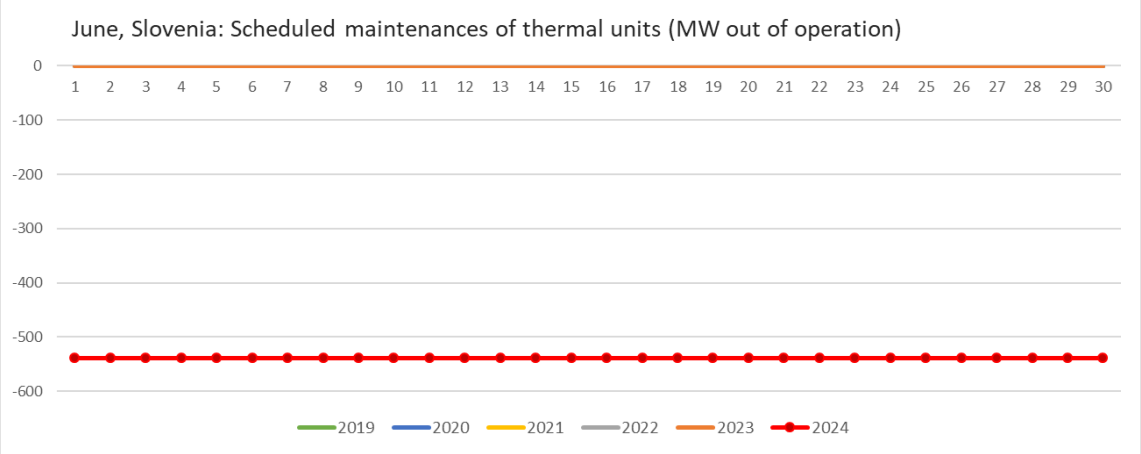

May, Slovenia: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
2024


June, Hungary: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2019
2020
2021
2022
2023
2024


June, Romania: Scheduled maintenances of thermal units (MW out of operation)
0
-500
-1000
-1500
-2000
-2500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2019
2020
2021
2022
2023
2024


June, Bulgaria: Scheduled maintenances of thermal units (MW out of operation)
0
-500
-1000
-1500
-2000
-2500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2019
2020
2021
2022
2023
2024


June, Greece: Scheduled maintenances of thermal units (MW out of operation)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2019
2020
2021
2022
2023
2024


June, Slovenia: Scheduled maintenances of thermal units (MW out of operation)
0
-100
-200
-300
-400
-500
-600
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2019
2020
2021
2022
2023
2024

Cal-24		price	HU-ITA	HU-DE	HU-GR	Buy/Sell
	base	144.6	-9.1	13.0		-5
	peak	161.9	-3.7	14.8		

Cal24 HU-DE spread is overpriced in relation to ITA-DE spread.

It is very difficult to find a good trade combination which would not be strongly impacted by the ITA-DE spread price moves.

In the last two weeks ITA-DE spread went up and HU-DE spread followed. Although Cal24 HU-DE spread is bearish, it still went up because ITA-DE spread went up.

- The best option to trade with Cal24 is **combination of long HU for Q1 vs. short HU for Cal24**. For example:

  100 MW long HU Q1 vs. short DE Q1

  25 MW short HU Cal24 vs. long DE Cal24

  This spread lost -0.75 EUR/MWh loss in the last two weeks and has 0 EUR/MWh performance in the last months. However, it is difficult to find better opportunity withing Cal24 product because Q1 HU-DE spread is 14 EUR/MWh and whole Cal24 spread is 13 EUR/MWh.

- If French-German market spread drops down for Q1, this would not be comfortable for this position, but regardless to FR-DE spread risks for Q1 and other quarters are mispriced.

Q1 and Cal24 are mispriced because:

- Market is pricing Q1 as less risky than other quarters of Cal24 in relation to HU-DE and ITA-HU spreads.
- Q1 HU-DE spread is lower than Cal24 HU-DE spread
- Q1 ITA-HU spread is higher than Cal24 ITA-HU spread
- All quarters have good enough price for profitable operation of coal units, so there is no need to price other quarters in Hungary as more risky than Q1 in relation to German and Italian markets.
- Even without French market risks, Q1 has higher risk than other quarters. The reason is that the need for costly energy in sunny hours in Q1 will be much higher than in other quarters, resulting in HUPX settlement at Italian price level in much more hours during Q1 than during other quarters.

- As it was the case last year, the main risk is that German market starts panicking and goes heavily and unreasonably above Italian market

Part 3: Historical data

	settlement				spread settlement			last forward			forward spread	
	HU	ITA	DE	GR	HU-ITA	HU-DE	HU-GR	HU	ITA	DE	HU-DE	HU-ITA
Nov.												
2015	41.5	55.1	32.4	49.6	-13.6	9.1	-8.1	44.7		35.7	9.0	
2016	40.6	58.3	38.2	43.1	-17.7	2.4	-2.5	44.5		43	1.5	
2017	60.5	65.8	40.4	70.4	-5.3	20.1	-9.9	59.5		42.3	17.2	
2018	63.7	66.6	56.7	69.3	-2.9	7.0	-5.6	67.5	68.5	57.1	10.4	
2019	43.9	48.2	41	55.4	-4.3	2.9	-11.5	54.7	50.8	41.7	13.0	3.9
2020	48.9	48.8	38.7	52.7	0.1	10.2	-3.8	41.1	42.6	36.1	5.0	-1.5
2021	215.9	225.9	176.2	228.9	-10.1	39.7	-13.0	191.7	186.2	151.3	40.5	5.5
2022	222.7	223.2	173.6	227.8	-0.5	49.1	-5.0	294.7	245.0	207.6	87.1	49.7
Dec.												
2015	42.3	55.7	27.8	51.3	-13.4	14.5	-9.0	45.1		36.3	8.8	
2016	49.1	56.4	37.5	51.1	-7.3	11.6	-2.0	41.1		38.7	2.4	
2017	40.0	65.1	30.8	56.2	-25.1	9.2	-16.2	57.8	63.9	37.6	20.2	
2018	65.1	65.2	48.1	71.3	-0.1	17.0	-6.2	72.4	71.8	60.8	11.6	
2019	41.1	43.3	32.0	59.7	-2.2	9.1	-18.6	48.6	52.5	37.4	11.2	-3.9
2020	58.2	54.0	43.5	58.9	4.1	14.7	-0.8	50.2	50.1	40.1	10.2	0.1
2021	245.8	281.2	221.1	235.4	-35.4	24.8	10.4	237.9	288.0	223.0	14.9	-50.1
2022	261.2	294.6	251.6	276.9	-33.5	9.5	-15.7	318.5	343.8	315.9	2.6	-25.3
Q1												
2015	39.7	51.8	32.1	58.3	-12.1	7.6	-18.6	44.0		36.4	7.6	
2016	31.9	39.6	25.2	44.5	-7.7	6.7	-12.6	42.3		28.5	13.8	
2017	58.3	57.5	41.3	59.1	0.8	17.0	-0.8	43.1		38.3	4.8	
2018	39.4	54.2	35.5	49.7	-14.8	3.9	-10.3	50.4	60.2	40.8	9.6	-9.8
2019	54.3	59.5	40.9	68.0	-5.2	13.4	-13.7	69.7	72.1	60.3	9.4	-2.4
2020	40.9	39.6	26.6	50.4	1.3	14.3	-9.6	52.8	51.8	40.4	12.4	1.0
2021	54.2	59.3	49.6	53.6	-5.1	4.6	0.6	59.5	62.0	51.9	7.7	-2.5
2022	229.3	249.3	184.6	238.1	-20.0	44.7	-8.8	293.2	270.0	267.0	26.2	23.2
Q2												
2015	32.5	47.9	28.3	48.5	-15.4	4.2	-16.0	38.3		30.7	7.6	
2016	29.7	34.5	24.8	40.5	-4.8	4.9	-10.8	29.0		22.9	6.1	
2017	42.1	44.9	29.8	47.2	-2.8	12.3	-5.1	36.3		29.2	7.1	
2018	41.8	53.4	36.0	55.8	-11.6	5.8	-14.0	36.1	48.1	32.8	3.3	-12.0
2019	43.3	50.9	35.8	65.5	-7.6	7.5	-22.2	46.4	51.3	38.2	8.2	-4.9
2020	26.3	24.8	20.3	32.3	1.4	6.0	-6.0	29.3	28.5	20.0	9.3	0.8
2021	66.9	73.5	59.6	70.2	-6.7	7.3	-3.3	53.3	58.8	49.1	4.3	-5.4
2022	210.2	248.9	187.0	237.3	-38.7	23.2	-27.0	260.8	267.4	247.8	13.0	-6.6
Cal												
2015	40.6	52.3	31.6	51.9	-11.7	9.0	-11.3	42.9		34.2	8.7	
2016	35.4	42.8	29.0	42.8	-7.4	6.4	-7.4	40.5		28.1	12.4	
2017	50.4	54.0	34.2	54.7	-3.6	16.2	-4.3	39.8		34.3	5.4	
2018	51.0	61.3	44.5	60.4	-10.3	6.5	-9.4	47.3	54.2	37.7	9.5	-7.0
2019	50.4	52.3	37.7	63.8	-1.9	12.7	-13.4	62.9	68.7	55.4	7.5	-5.8
2020	39.0	38.9	30.5	45.0	0.1	8.5	-6.0	54.0	52.8	41.3	12.7	1.3
2021	113.9	125.5	96.9	116.4	-11.6	17.0	-2.6	54.7	57.5	48.2	6.5	-2.9
2022	271.7	303.8	235.5	279.9	-32.2	36.2	-8.2	233.1	229.2	219.9	13.2	3.9