HUPX and SEE Trading Tool

Month ahead HUPX forecast, 15.07.2024

AUGUST 2024

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TRADING ADVICE

Hungarian futures for August 2024 are currently traded at 106.8 EUR/MWh, 36 EUR/MWh above German market futures and 6.9 EUR/MWh above Italian (PUN) market futures.

Due to uncontrollable risks for HUPX and OPCOM in August we can not advise short trading positions for Hungarian and Romanian markets in August 2024, but for other SEE markets we advise short position. For Hungarian and Romanian markets a long position is advised due to transmission grid risks in Flow Based Market Coupling.

Current HUPX futures price for August of 106.8 EUR/MWh is sufficiently high for all markets except for HUPX. HUPX itself can have uncontrollable risks in August.

There is a trading opportunity for August in trading long position on Hungarian market against short position on other SEE markets which are all currently priced at the similar price level. This also includes long HU vs. short GR trade position.

- **The need for energy in the region of Hungary+SEE+Greece in August will be much lower than in the WK28.** Lower need for energy will eliminate the need for activation of high priced selling offers in hours H19-H24
- However, **the reduced need for energy might not affect HUPX prices that much in the first half of August** because of simultaneous maintenance of two Hungarian cross-border lines (AT-HU line and SK-HU line) which will greatly reduce the possibility of Hungarian market to import energy in Flow Based Market Coupling.
- Market conditions will be much more stressed than last year and there were periods of August last year when HUPX had extremely high prices. Due to the high risk of uncontrollable HUPX-EPEX(DE) price spread settlement during the period with heat waves and during the period of strong maintenance of transmission lines, it is advised to make long position in Hungary in spread with short position on the German market.
- HU+SEE region will have much lower prices and risks in August than in WK28, but this will not necessarily be the case for HUPX. The reasons why HUPX should be higher than other markets also in August (particularly in the 1st half of August) are similar as for the WK28 (07.07.2024-14.07.2024).
- HUPX in WK28 was extremely high because there are no sufficient Hungarian market selling offers and because Flow Based Market Coupling can not assign more imports to Hungarian bidding zone because of transmission grid conditions! The same will be the case in the first half of August due to simultaneous maintenance of two Hungarian cross-border transmission lines with Slovakia and with Austria.
- Additionally, Serbian>Hungarian available transfer capacity on monthly auctions is 0 MW.

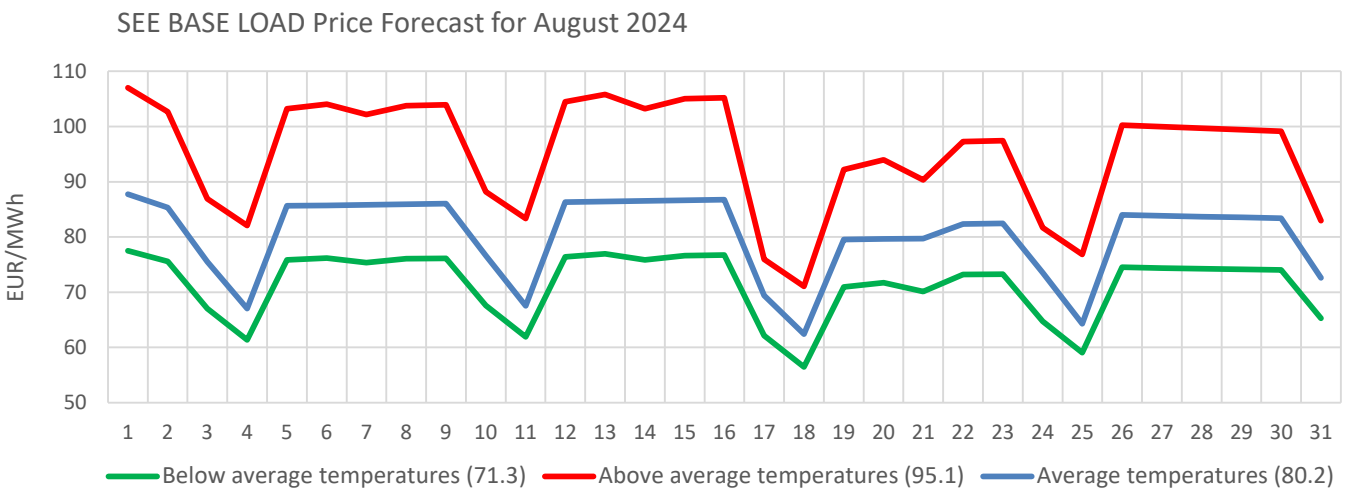
It is not possible to estimate the effect of simultaneous maintenance of two Hungarian cross-border lines on HUPX and OPCOM prices in the Flow Based Market Coupling during the first 16 days of August. Therefore, the forecast of prices is related to all other markets except for HUPX and OPCOM. HUPX and OPCOM prices will be higher but it is not possible to estimate how much higher.

Important: Forecast is not for HUPX settlement, HUPX settlement can have uncontrollable risks and proper price estimate for HUPX can not be made due to potentially huge sensitivity of HUPX itself.

All SEE markets except Hungary and Romania should have similar prices presented below:

August 2024 SEE-DE price spread forecast	2°C below average temperatures	Average temperatures	2°C above average temperatures
SEE Base Load	**71.3** EUR/MWh	**80.2** EUR/MWh	**95.1** EUR/MWh
SEE-DE Base Spread	**DE+ 0.5** EUR/MWh	**DE+ 9.4** EUR/MWh	**DE + 24.3** EUR/MWh

* Daily price forecast per scenario is located in Excel file



CONSUMPTION IN AUGUST 2024

Average consumption in August 2024 will be highly dependent on weather conditions, but it should be lower than in July 2024.

Consumption in HU+SEE region (excluding Greece)

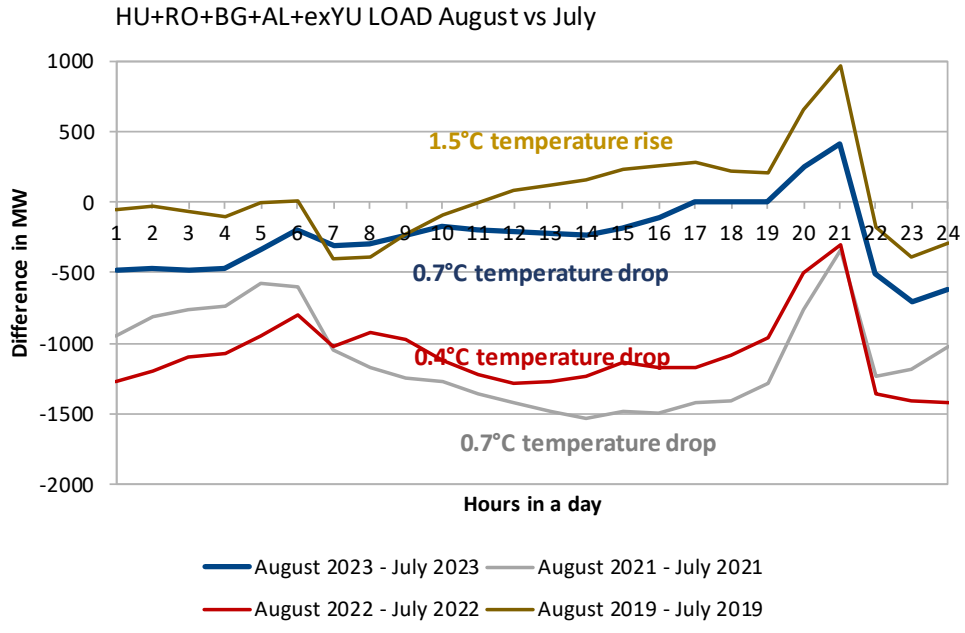
- Consumption in Hungary and SEE usually lower in August than in July for two reasons:
  - Average temperature in August is lower than in July
  - Even if temperature in August is higher than in July, Consumption can still be lower than in July) example of August-July 2019.

In case of very hot August and not so hot July, as it was the case in the year 2019, consumption in August can be in average equal as in July. August 2019 had 1-1.5°C higher temperature than July 2019 (including Greece) and consumption equal as in in July, but higher than in July in hours H19-H21.

July 2023 was quite warm (among 5 warmest moths of July in the last 30 years). In the last 30 years there was no August which had so high temperatures as July 2023 had. **A very solid assumption would be that temperature in August 2024 will not be higher than temperature in July 2023 was.**

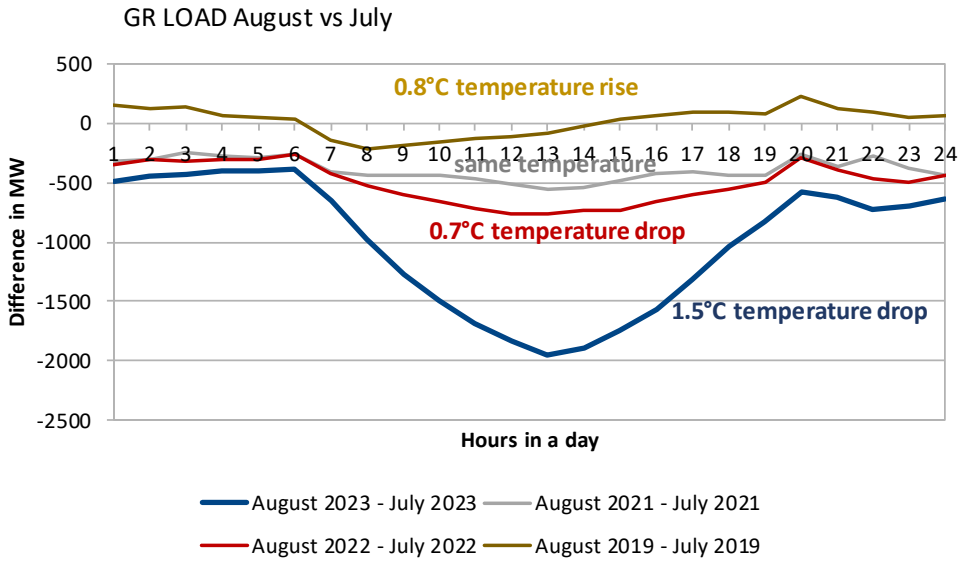
Consumption in Hungary and SEE in August is lower than in July even in years when both months have the same average temperature.

July 2024 will have 2-2.5°C higher temperatures than July 2023 and most probably will be the warmest July ever recorded. Therefore, August 2024 should have clearly lower temperatures than July and much lower consumption. However, there are no historical data which would show what would happen with consumption in August when temperature 2-2,5°C lower than in July.



Consumption in Greece:

Consumption in Grece in August is lower than in July even if both months have the same average temperature.



If temperatures in Greece in August 2024 would be the same as in August 2023, temperature in Greece in August 2024 would be 2°C lower than in July 2024, which would result in huge reduction of consumption.

August 2023 had much lower temperature than July 2023 in Greece which resulted in huge decline of consumption in August in Greece and much less stressed HUPX prices in August than in July.

If temperatures in Greece in August 2024 are equal to August 2019 (the warmest August in recent years), temperature would still be 1.2°C lower than in July 2024, which would result in nearly as high consumption drop between August 2024 and July 2024 as it was last year. Consumption in August 2024 in Greece should be at least 400MW lower than in July in night hours and 1000MW lower than in July 2024 in day-hours.

Temperatures in July 2023 in Greece were historical high for July, with the longest ever recorded heat wave in Greece. **Temperatures in August 2024 in Greece cannot reach the same level of temperatures as in July 2023**.

Consumption in Greece in August can be higher than in August 2023, but not higher than in July 2023.

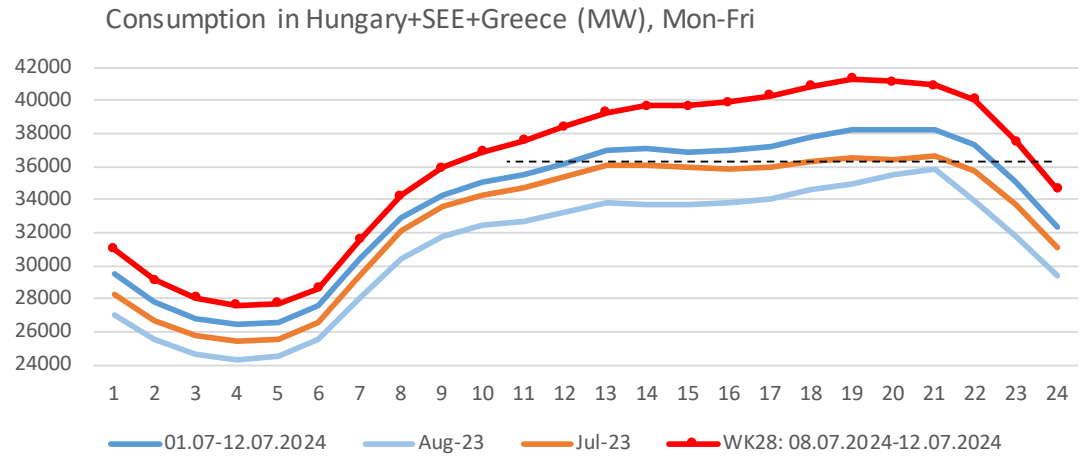
Consumption for the whole region of Hungary+SEE+Greece:

There is too much fear on the market due to extremely high temperatures in July 2023.

Temperature in August 2024 in any case cannot exceed temperatures of July 2023. Even if temperatures in August reach temperature of July 2023, consumption in August 2024 should still be 500-1000MW lower than in July 2023.

- In a bullish, worst-case scenario, Consumption in August 2024 would be just 500MW lower than in July 2023, resulting in 1100MW higher consumption than in August 2023.
- In a bearish scenario with still very high temperatures (as forecasted), consumption in the HU+SEE region would be roughly equal to consumption of August 2023.

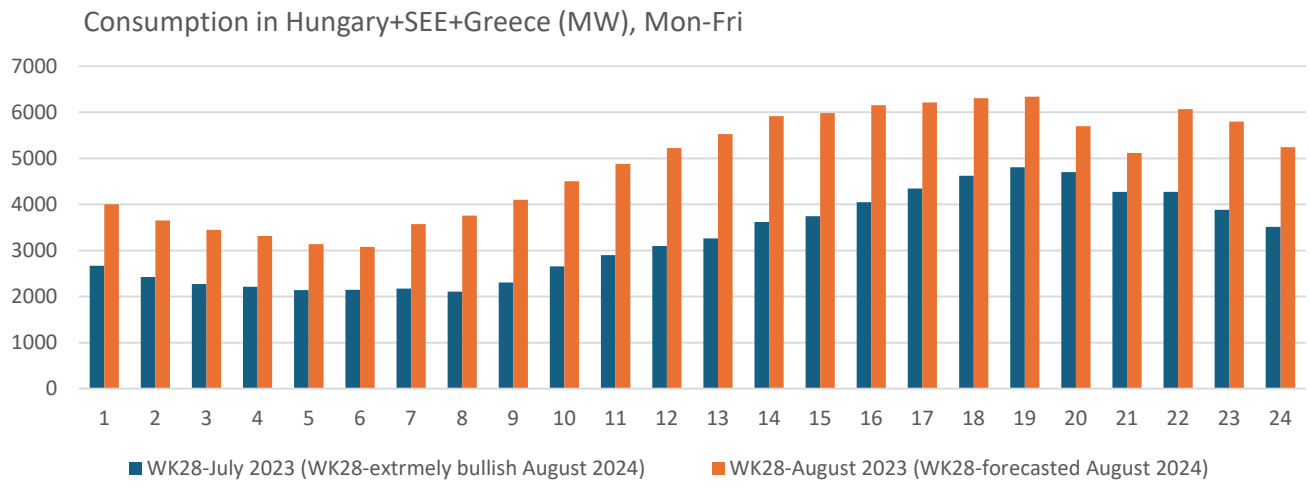
Consumption which the HU+SEE region is experiencing currently in July 2024 has to be considered as exceptional out of range market condition.



Market conditions which HU+SEE region is experiencing at the moment have nothing in common with market conditions in August 2024.

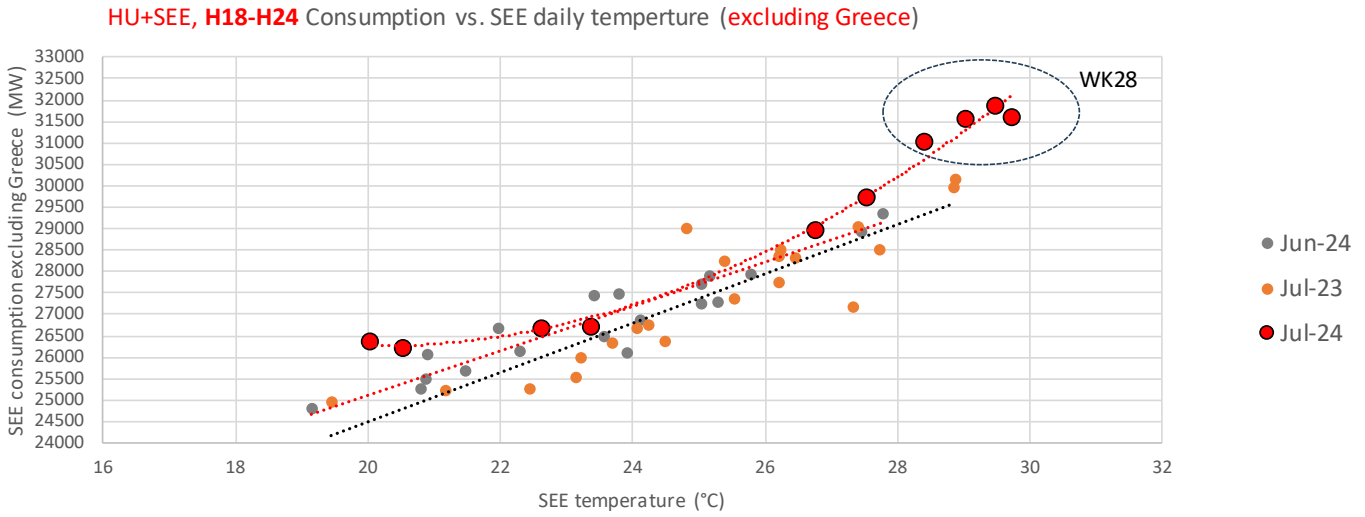
Average consumption in August 2024 will be much lower than in the WK28 (08.07.2024-14.07.2024):

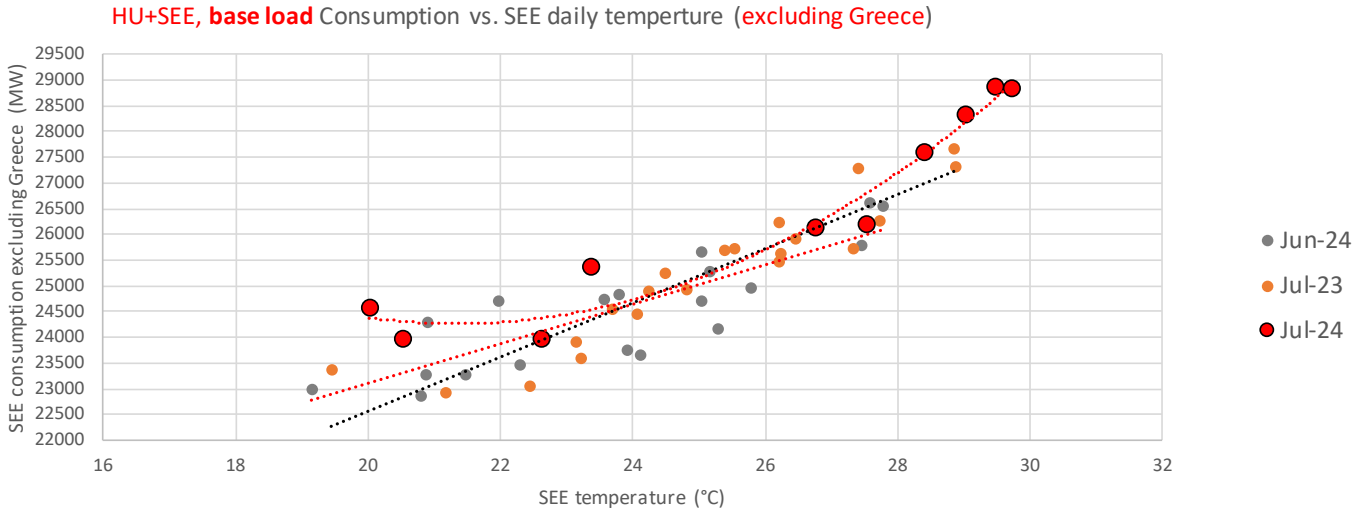
- Most importantly, at least 4000MW lower than in WK28 in hours H19-H24
- 1000-2500MW lower in hours H1-H17



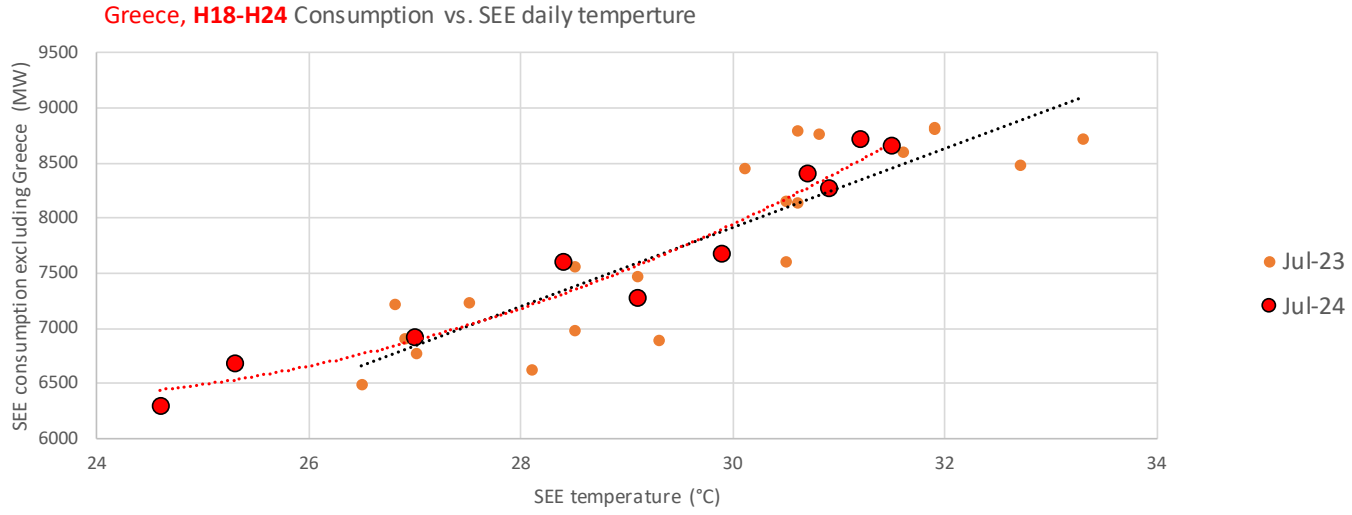
Impact of temperatures:

In the period 08.07.2024-12.07.2024, consumption in HU+SEE region was extremely high and even 1500MW higher than for the same temperature last year, due to long duration of the heat wave.

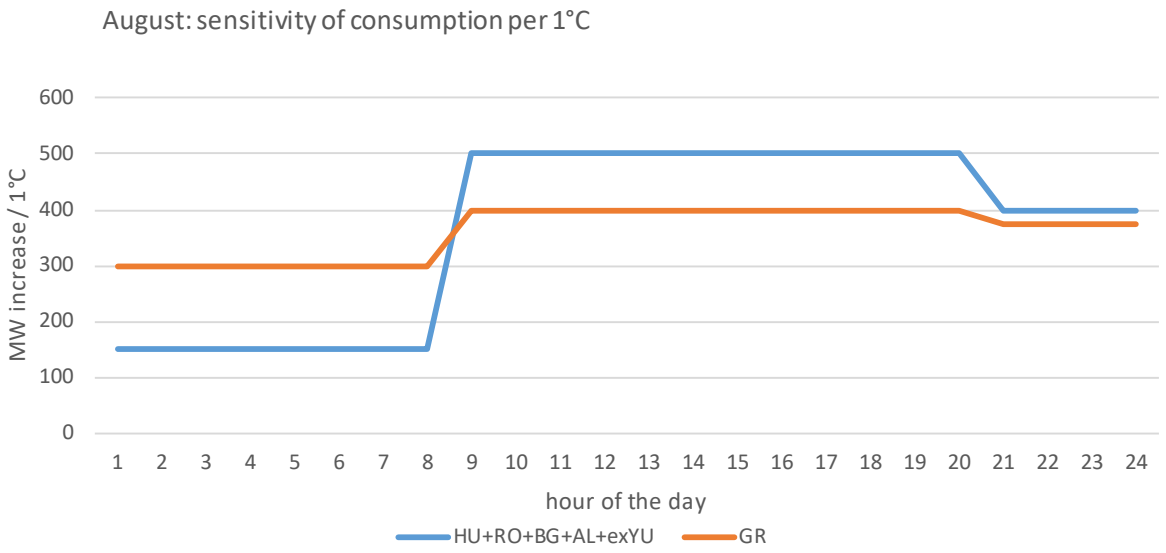




In Greece, consumption is the same as last year for the same temperature.

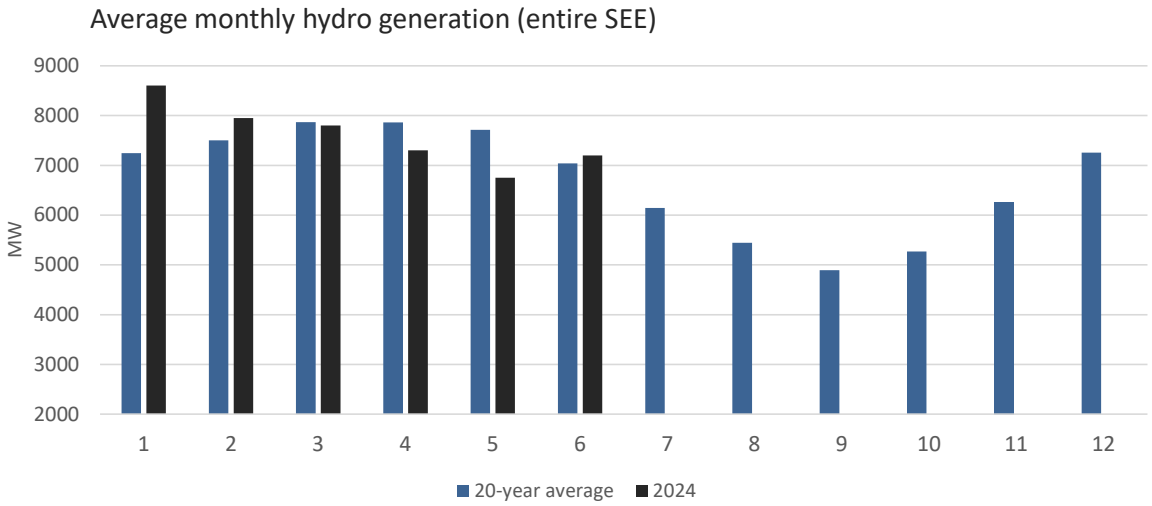


- Sensitivity of consumption on temperatures in August is similar as in June. One should count with 800-900 MW consumption change per 1°C of temperature change.



HYDRO GENERATION IN AUGUST 2024

- Hydro generation in August is roughly 1600 MW lower than in June and 700 MW lower than in July. The decline of hydro generation is one of the main price drivers during August.



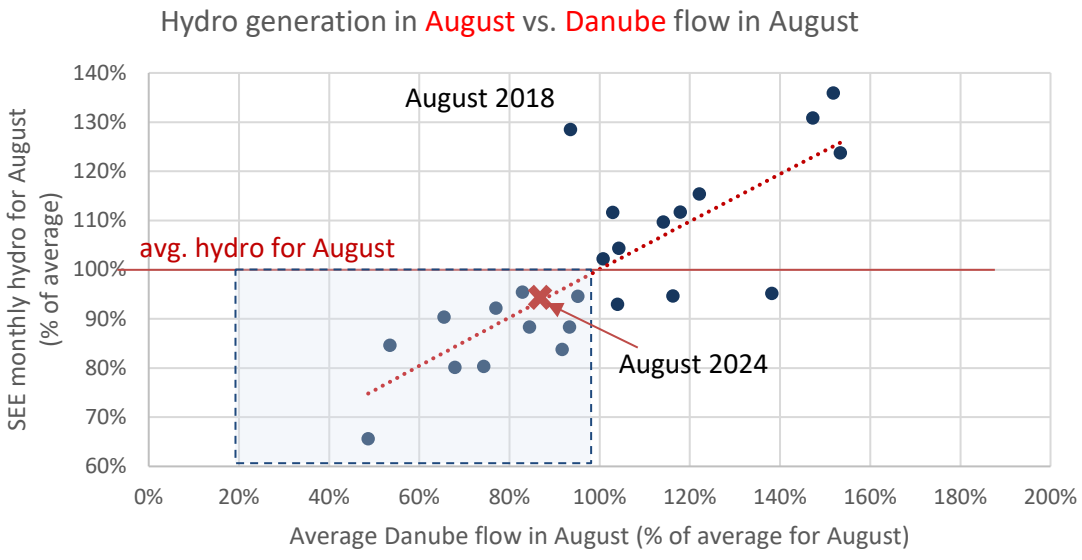
The only case when hydro generation in August 2024 should decline more than 1600 MW against June and more than 700 MW against July would be extremely hot and dry weather in either July or August.

In the year 2012, the decline of hydro generation in August was higher than average while hydrological conditions in June 2012 were similar as in June 2024, but both July and August had extremely hot and extremely dry conditions.

July 2024 has extremely hot and very dry conditions, so higher than average decline of hydro generation can be expected:

- Hydro generation in August should be 2000MW lower than in June and 1000MW lower than in July.

- Danube is the most important indicator of hydro generation in August. In each year (except 2018), below average Danube flow in August resulted in below average hydro generation for August. Danube flow for August has 10% below average forecast, indicating 5% below average hydro generation for August.



- 5% below average hydro generation for August would result in average hydro generation of 5170 MW
- 2000 MW lower hydro generation than in June 2024 (due to stronger decline of hydro generation with dry and hot weather) would result in 5000MW average hydro generation.

There are no reasons to expect extremely bad hydro generation. Hydro generation in August 2024 should be:

- around 2000-2200 MW lower than in June 2024
- around 1200 MW lower than in August last year.
- Altogether up to 10% below average hydro generation for August.

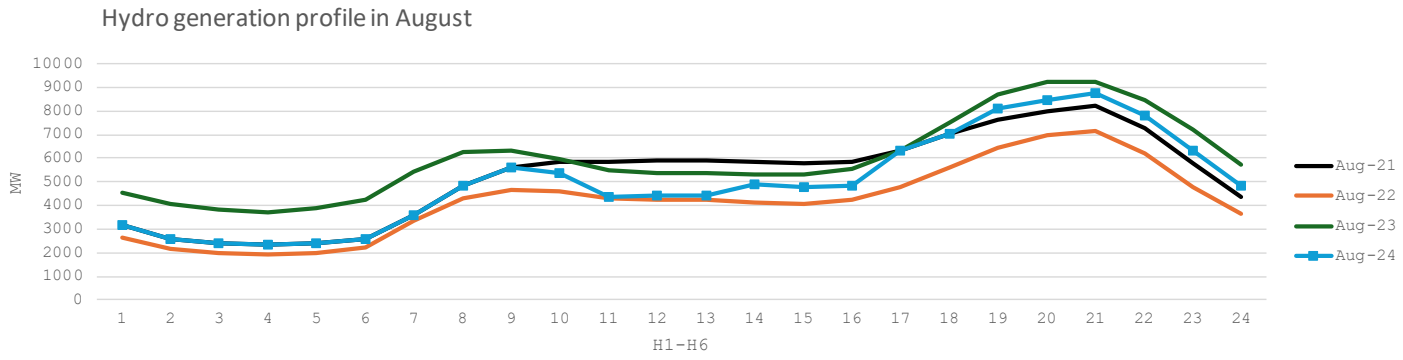
It is important to remember that hydro generation in August last year was excellent and that temperatures were not extremely high although they were above average!!!

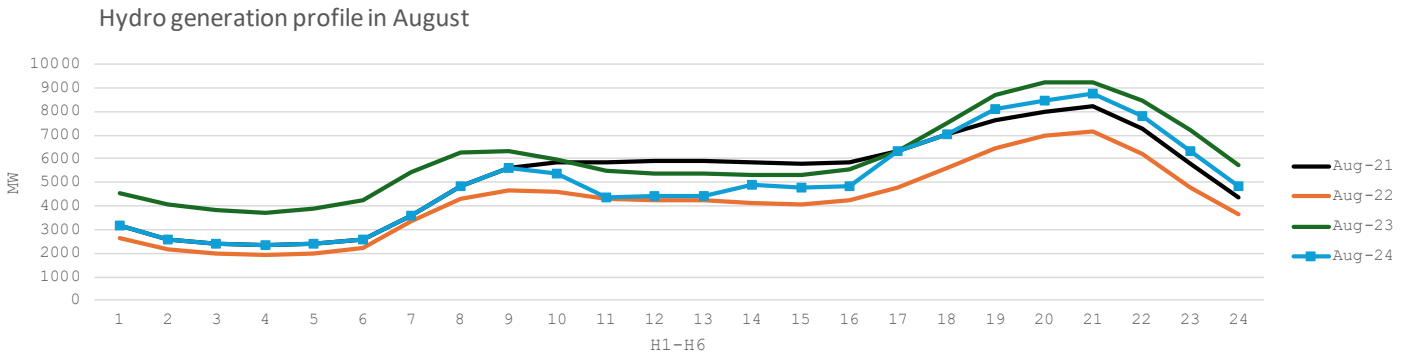
Additional risk factor could be rising temperature of water in Danube which would demand reduced output of at least NPP Paks.

SEE Hydro generation should not be extremely bad as it was in August 2022, but also not extremely good as it was in August 2023. Hydro generation should be similar to August 2021, i.e. close to average.

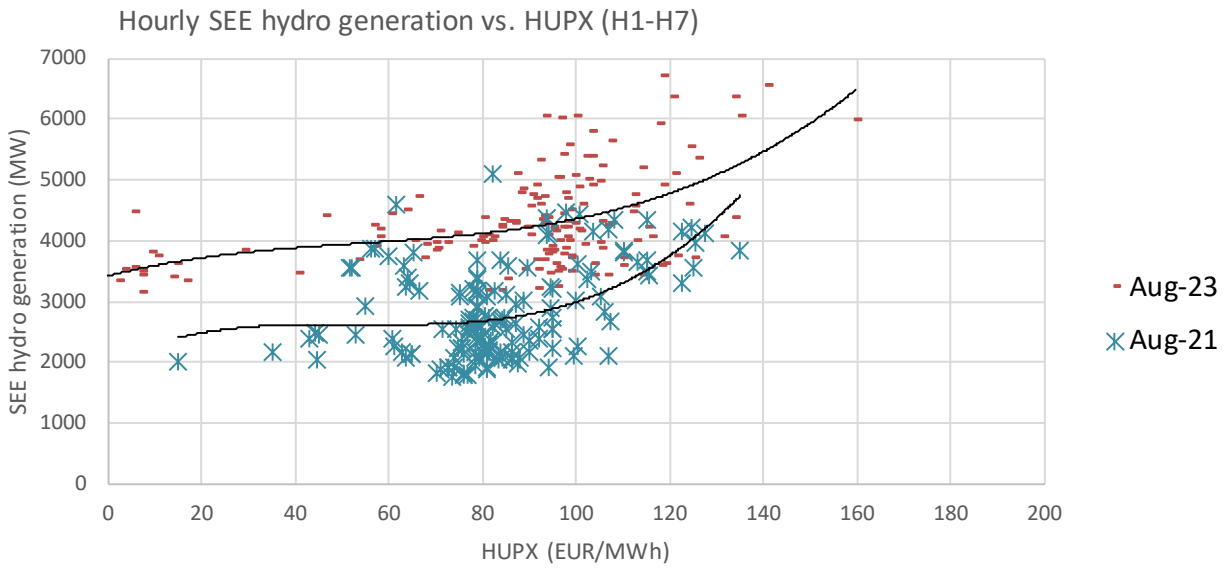
If SEE would have 1200 MW lower hydro generation in August 2024 than in August 2023, this should not be equally distributed in all hours.

- In August 2021, average hydro generation was lower than in August 2023 while average market price was similar as in both August 2021 and August 2023. However, hydro generation in sunny hours of August 2023 was lower than it was in sunny hours of August 2021 which is a consequence of much higher solar power generation and lower prices during sunny hours.
- Similar effect can be expected in August 2024. Average hydro generation in August 2024 should be similar to hydro generation in August 2021. However, hydro generation in sunny hours of August 2024 will be lowered and increased in hours H19-H24 compared to August 2021 although average hydro generation should be similar.

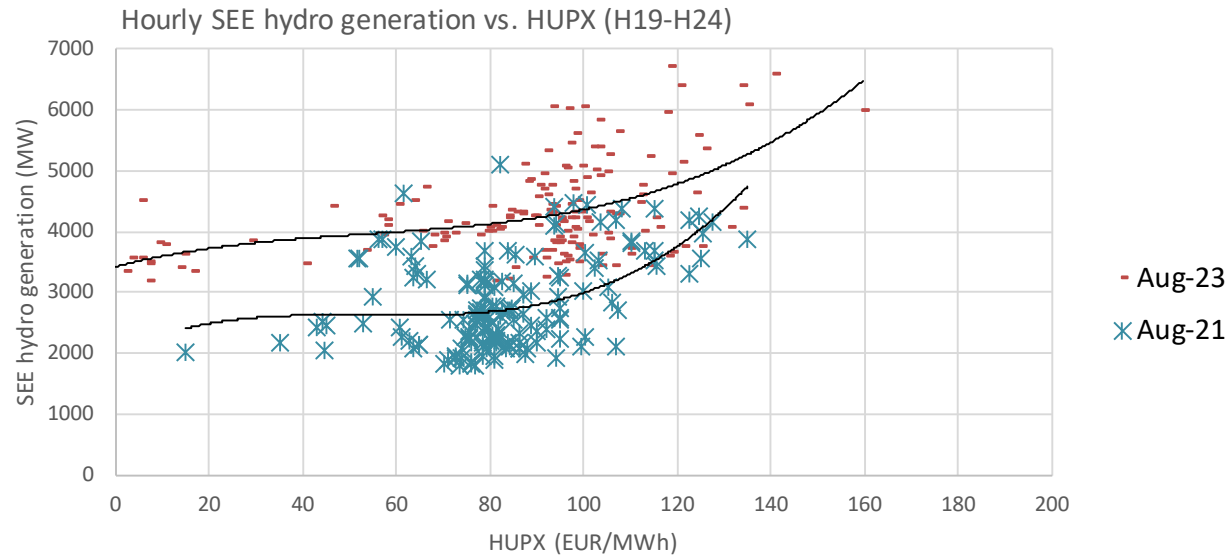




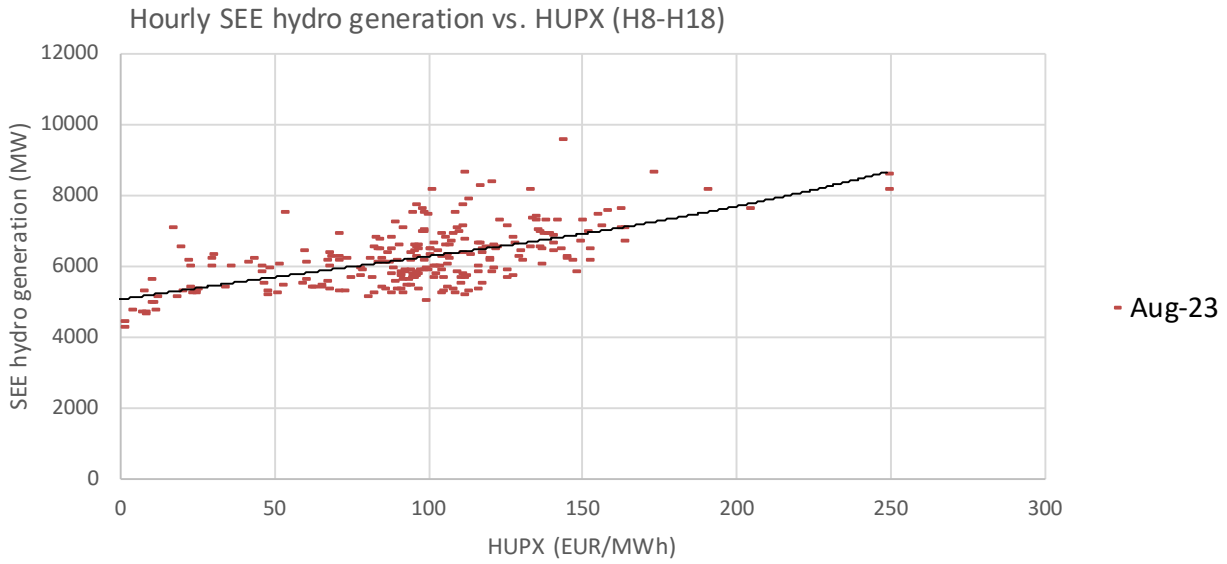
We can assume that hydro generation will be roughly 1200 MW lower than in August 2023 in hours H1-H7 because, hydro generation in those hours does not react significantly on market prices and equal hydro generation can be expected for market price of 60 EUR/MWh and for market price of 90 EUR/MWh



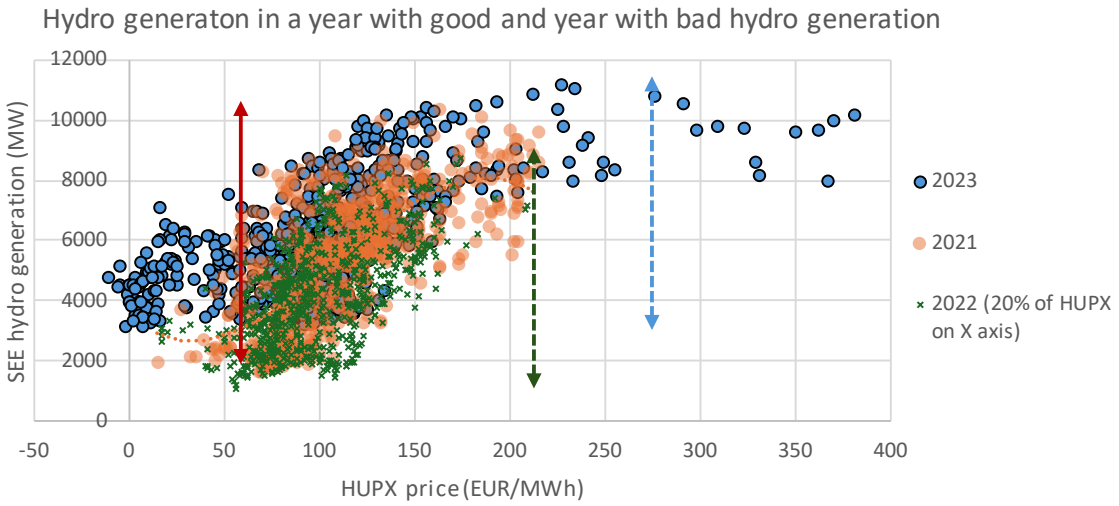
For hours H1-H7, it can be optimistically assumed that hydro generation will be on average only 500-700 MW lower than in August 2023 because reservoirs will shift energy from sunny hours into hours H1-H7 and H19-H24 more than it was the case in previous years. However, the same level of generation as last year can not be expected due to lower run-of-river generation and 500-700 MW lower average hydro generation needs to be assumed for hours H11-H7.



For Hours H8-H18, there can be expected that hydro generation will be up to 2000 MW higher in expensive hours than in less expensive hours.

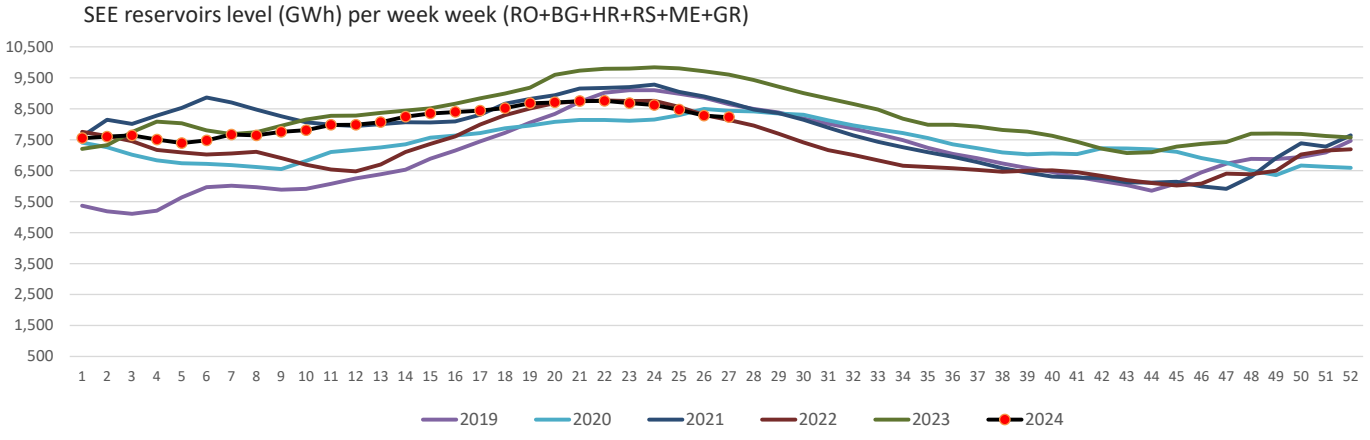


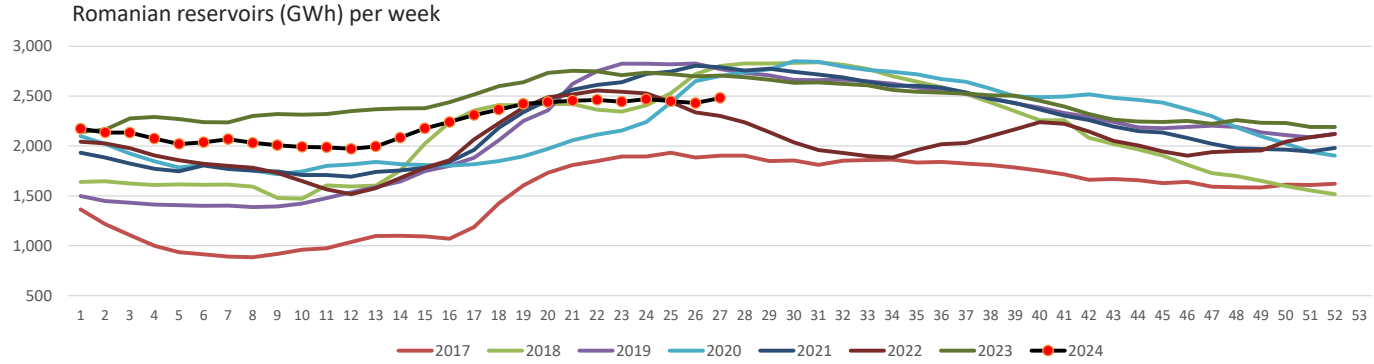
Hydro generation in hours H19-H21 will need to be lower than in August 2023 because higher reservoir usage in expensive hours can-not compensate for the lower run-of river generation in August 2024. Chart below shows that reservoirs operation range is roughly the same in each year in August irrespectively to the fact that average hydro generation in August 2023 was 1700 MW higher than in August 2022. **Due to lower hydro run-of-river part of hydro generation, hydro generation August 2024 in hours H19-H24 will have to be around 1000 MW lower than last year.**



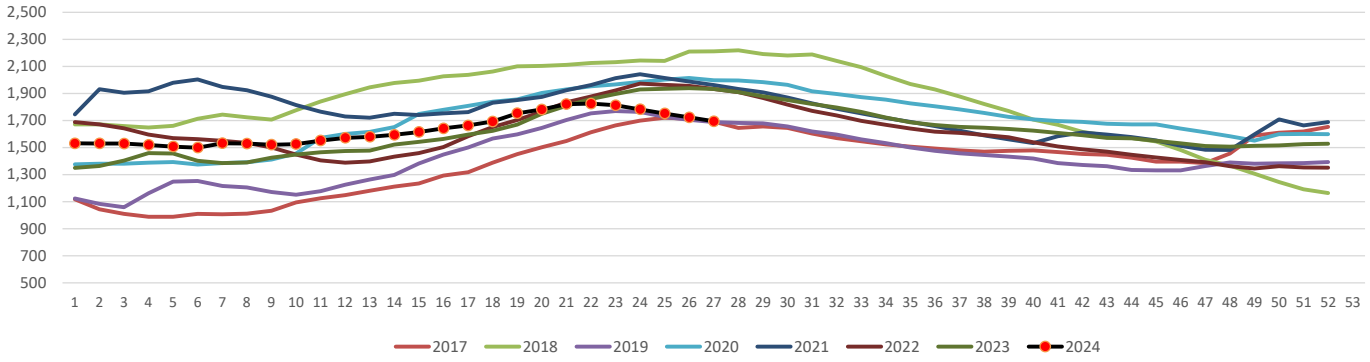
Additional risk for August 2024 is that Pump storage hydro power plant Bajina Basta (2x307MW) will have only one unit available while in August 2023 both units were available.

Reservoirs level is quite low for this time of the year which could be another bullish factor for August 2024.

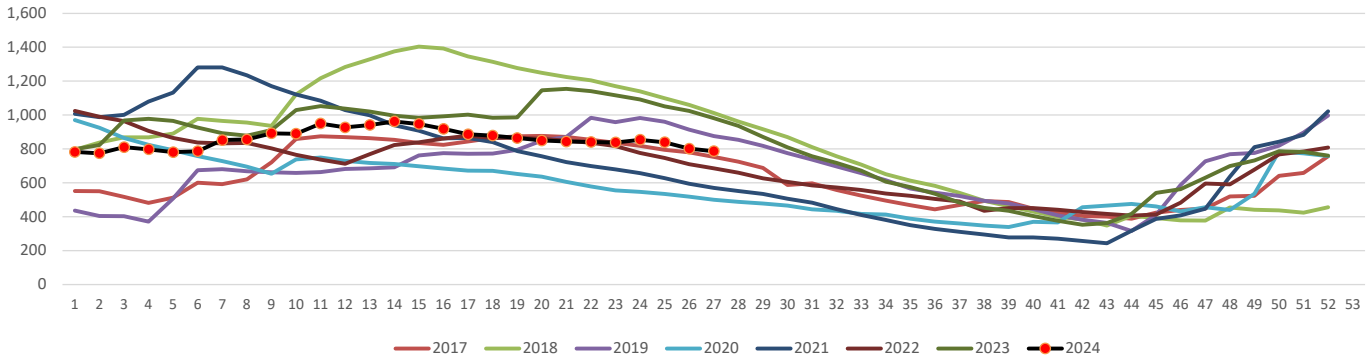




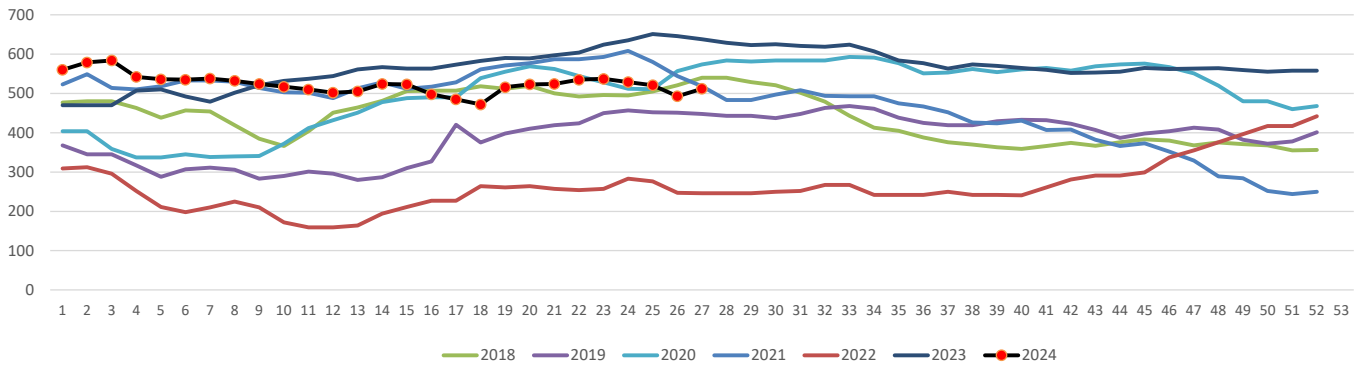
Bulgarian reservoirs (GWh) per week



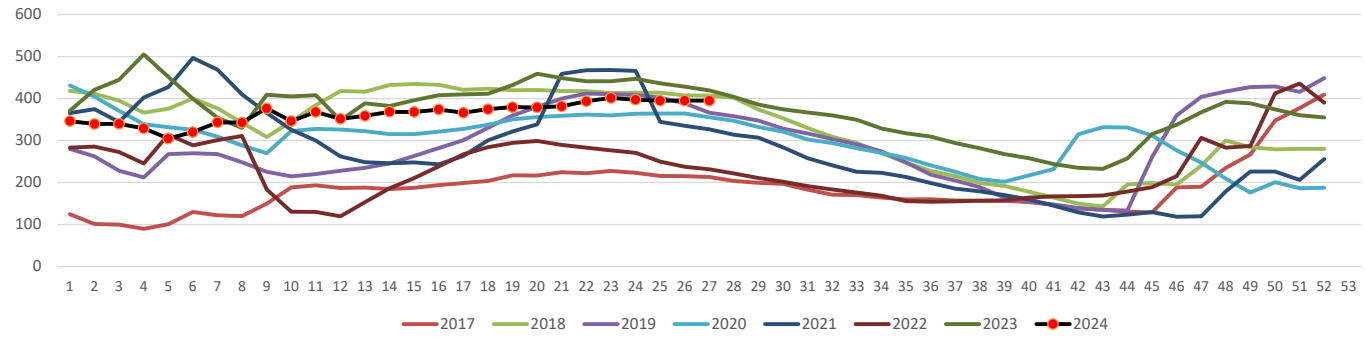
Croatian reservoirs (GWh) per week



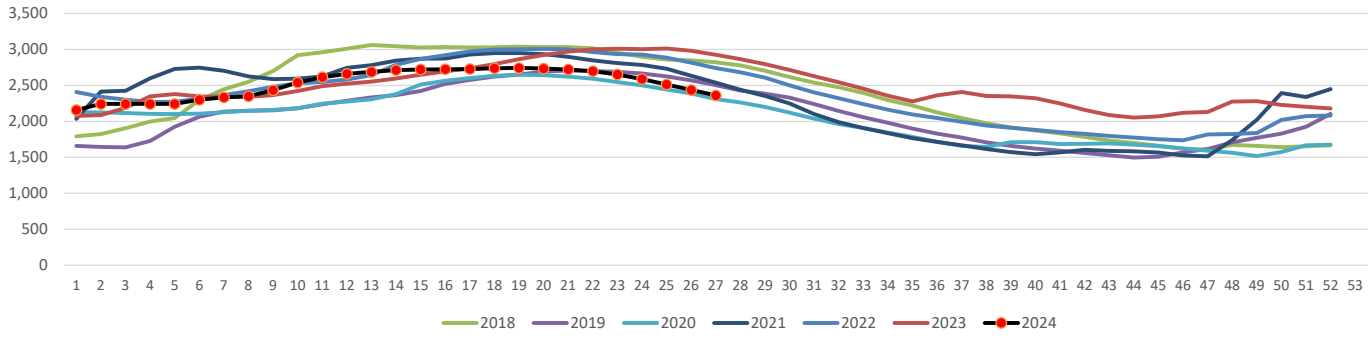
Serbian reservoirs (GWh) per week



Montenegrin reservoirs (GWh) per week



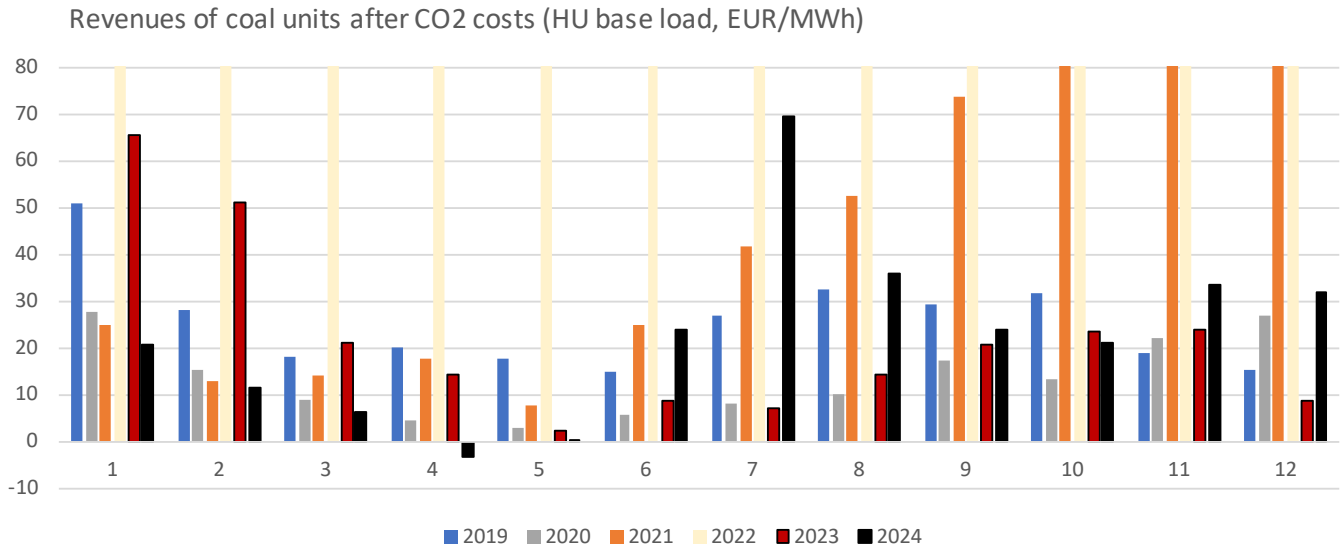
Greek reservoirs (GWh) per week



AVAILABILITY OF NUCLEAR, COAL AND GAS UNITS IN AUGUST 2023

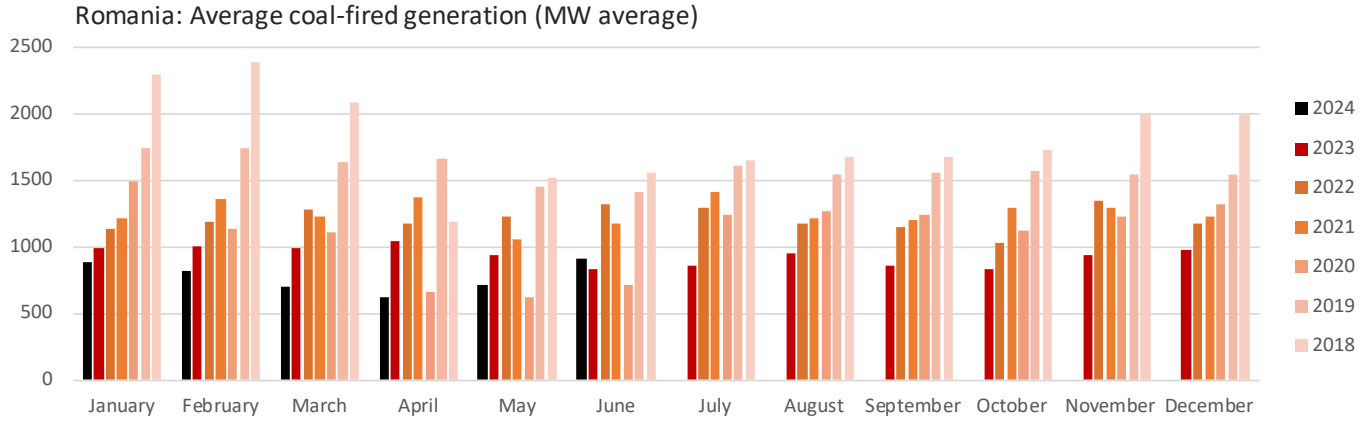
Change of availability of units which will make a difference to generation-consumption balance of the region compared to August 2023:

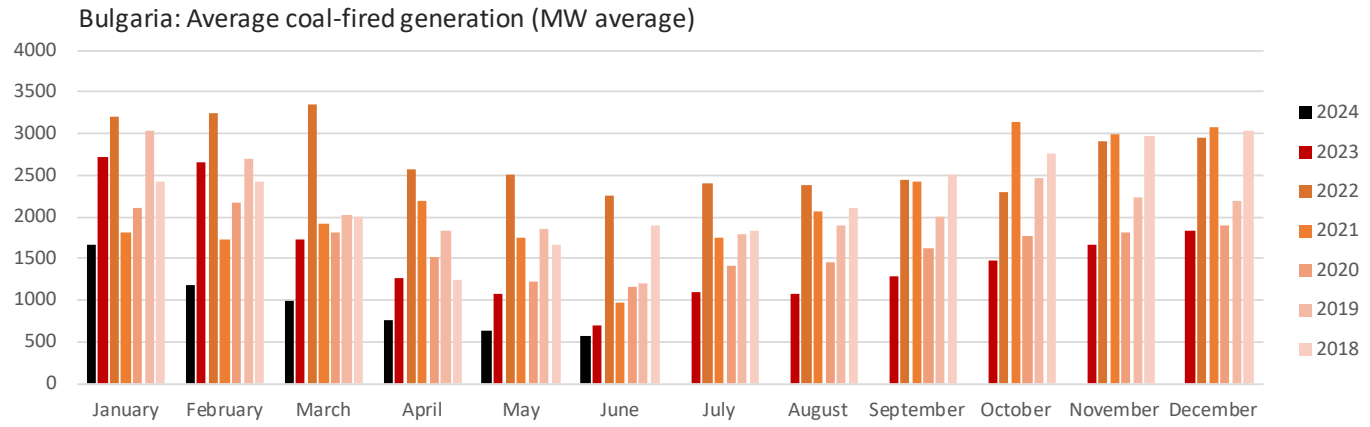
- 220 MW lower lignite fired generation in Serbia for the whole August
- 500MW NPP Paks will be out of operation as of 23.08.2024 while it was fully in operation last year in August.
- 400-500 MW higher availability of gas fired power plants in Greece in the 2nd half of August.

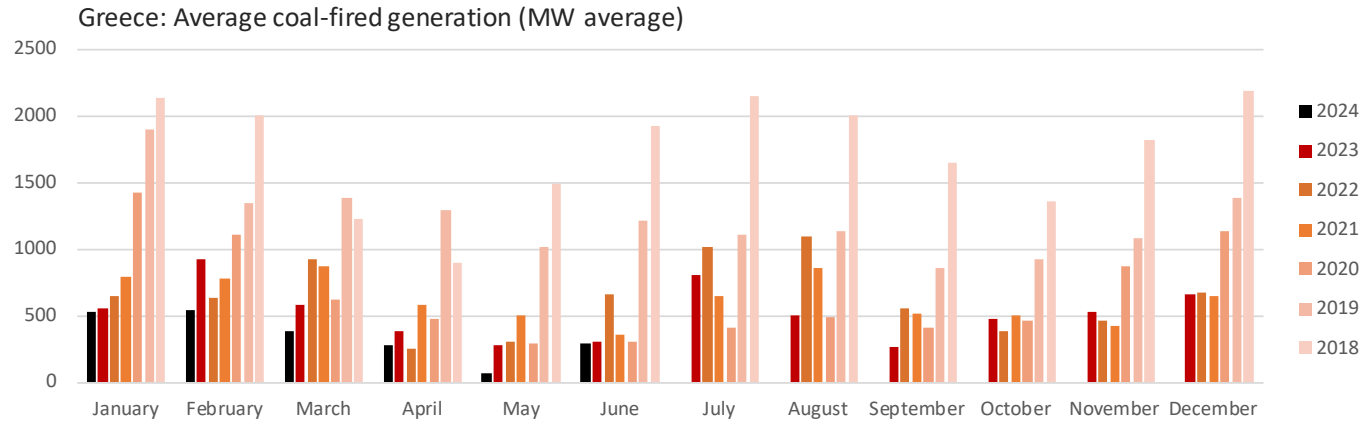


Revenues of lignite units are roughly the same as last year, but it has to be assumed that lignite fired power generation will be around 400 MW lower than last year:

- Availability of lignite units in Serbia is 220 MW lower
- Romanian lignite generation in 2024 is on average 200 MW lower than in the each corresponding month of last year. It has to be assumed that Romanian lignite fired generation should be 200 MW lower in August 2024 than in August 2023.
- Bulgarian lignite generation in 2024 is much lower than in each corresponding month of last year. However, we can assume that lignite generation in Bulgaria can reach 1000 MW since it reached 1000 MW in February and March this year as well.







Compared to June 2024, availability in August will be 3000 MW better:

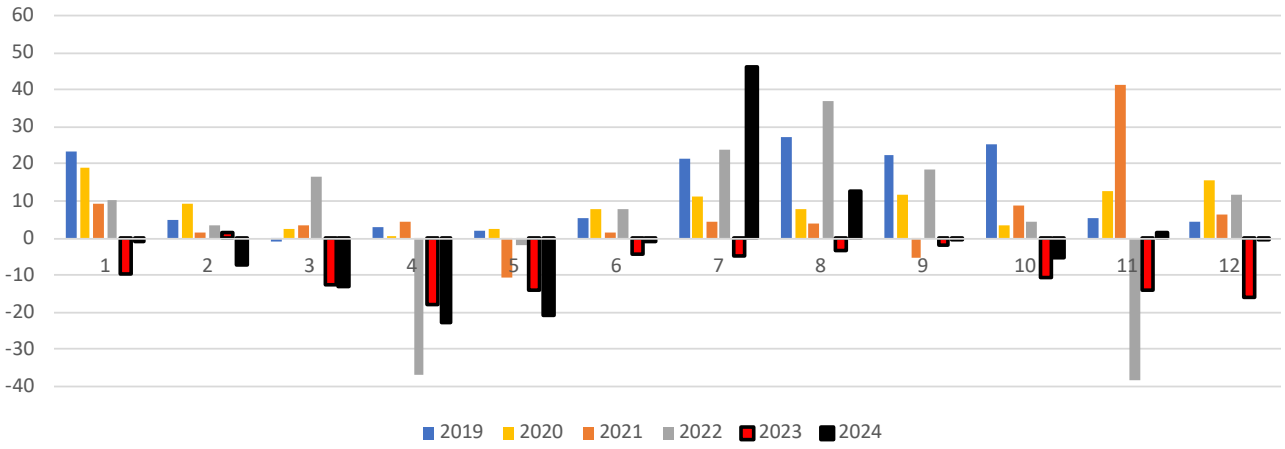
- 1000 MW of lignite fired generation increase in Serbia
- 1600 MW of nuclear power generation increase in Romania and Bulgaria
- 400 MW increase availability of gas units in Hungary

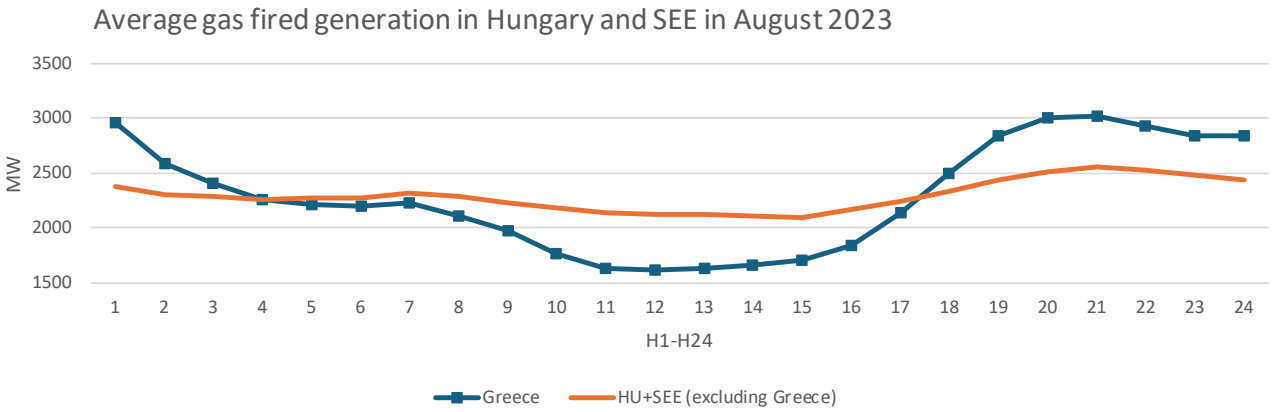
With other units taken into account and expected increase of Bulgarian lignite generation, **base load generation increase in August 2024 will be around 3000-3500 MW compared to June 2024, while consumption in the whole region of Hungary and SEE should not be higher than it was in June.**

Generation costs of gas units for August 2024 are around 10 EUR/MWh lower than in August 2023 since Emissions costs are more than 15 EUR/t lower than last year and gas prices are also lower than last year. Since the need for gas units in August 2024 will be higher than in August 2023 (due to lower hydro and lignite fired generation), it cannot be expected that market prices are lower in August 2024 than they were in August 2023 in hours when high output of gas units is needed.

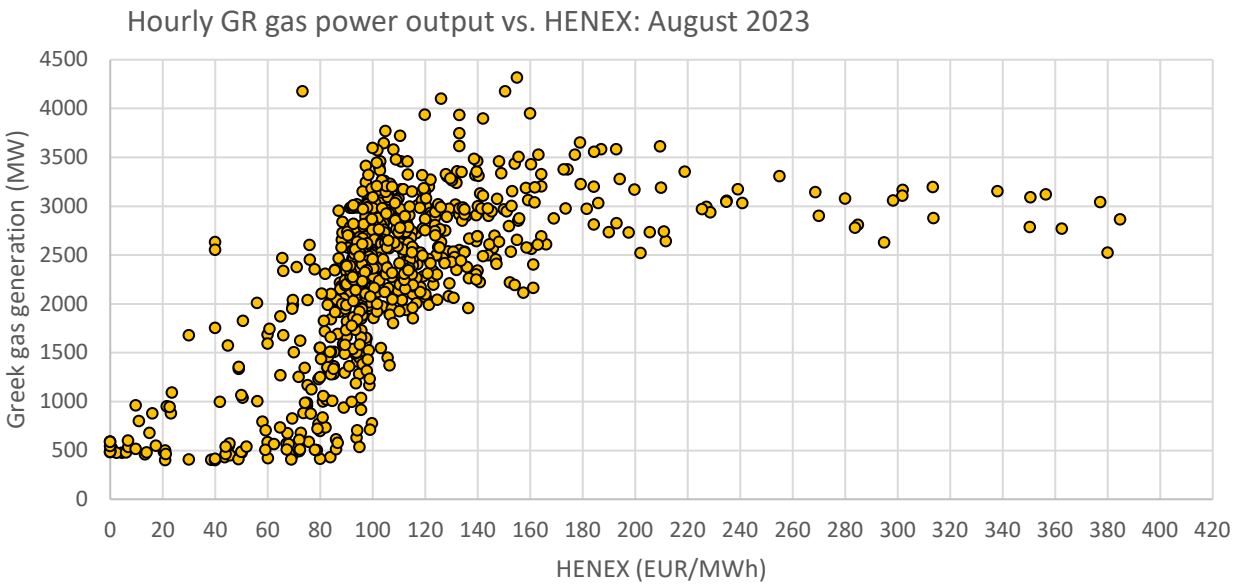
Additionally, weighted average gas import costs in Greece in August 2024 were just 26.5 EUR/MWh against around 34 EUR/MWh of gas prices in the rest of Europe. This year, Greek gas prices are very similar to gas prices in the rest of Europe.

Hungary: Profitability of gas units with 57% efficiency,
Hungarian Spot base-load (CEGH day-ahead gas, Daily CO2 futures price)

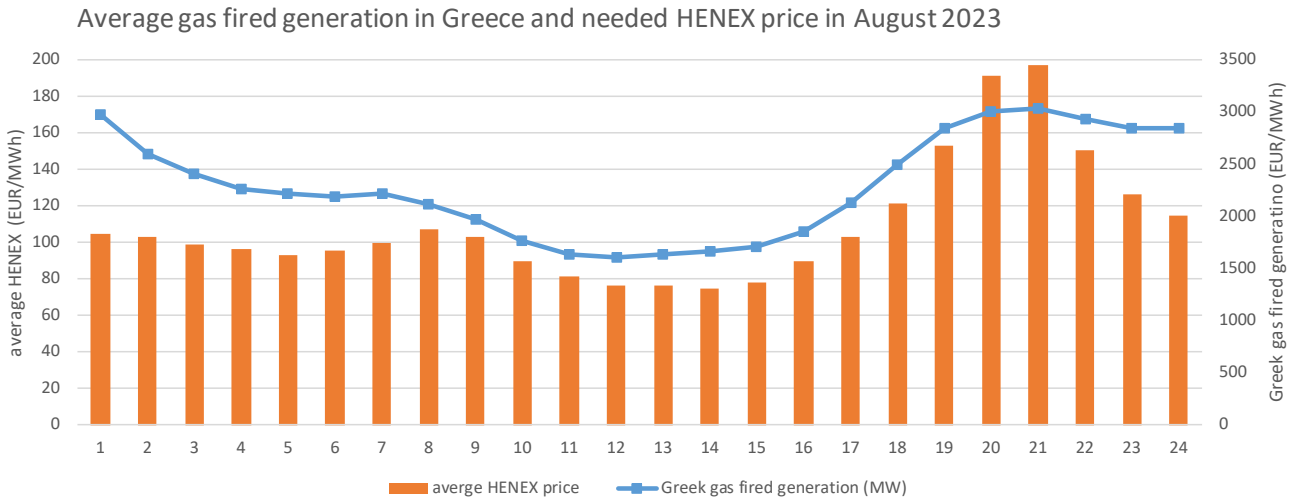


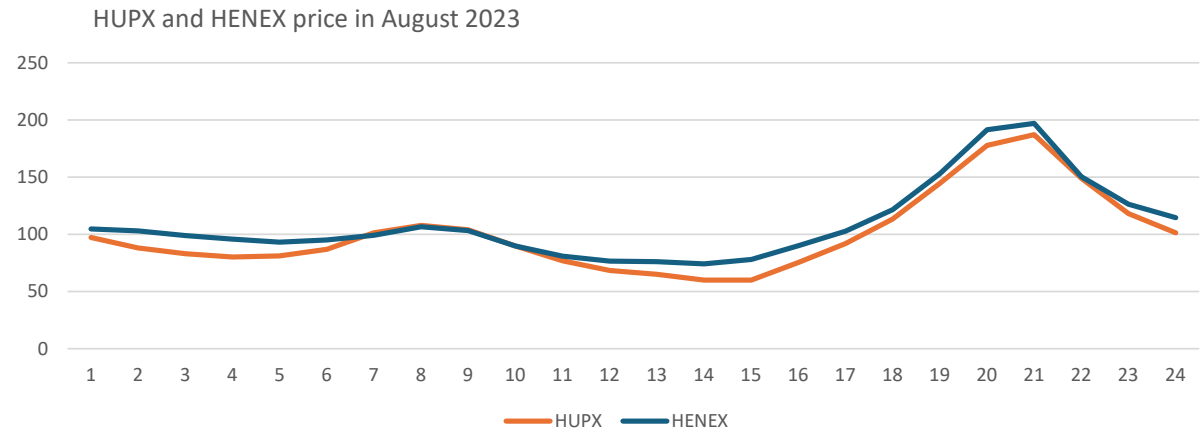


Particularly Greek gas units were highly sensitive on market prices and were increasing generation only in case of gas prices above 80 EUR/MWh.



- If high Greek gas fired generation was necessary in August 2023 in hour H1-H7 and hours H18-H24, it will be necessary also in August 2024.
- Greek units needed around 100 EUR/MWh price in hours H1-H8 in order to ensure sufficient gas fired generation in August 2023. There are no reasons to assume that HENEX will need less than 95-100 EUR/MWh in hours H1-H8 to ensure sufficient gas fired generation.
- In Sunny hours, HUPX and HENEX can go down and gas fired generation can be close to the technical minimum, but in hours H1-H8 a price level of around 95-100 EUR/MWh gas-fired generation will be needed.
- Additionally, HUPX and HENEX should have very similar price in August 2024 due to increased BG>GR NTC.





Gas fired power generation is anyhow expected to be very low (close to the technical minimum) in sunny hours, resulting in 1000-2000 MW lower gas fired generation in sunny hours.

BULLISH IMPACT OF INCREASED BG>GR NTC

In August 2023, Greek price was very close to HUPX and still Greek gas fired generation was high.

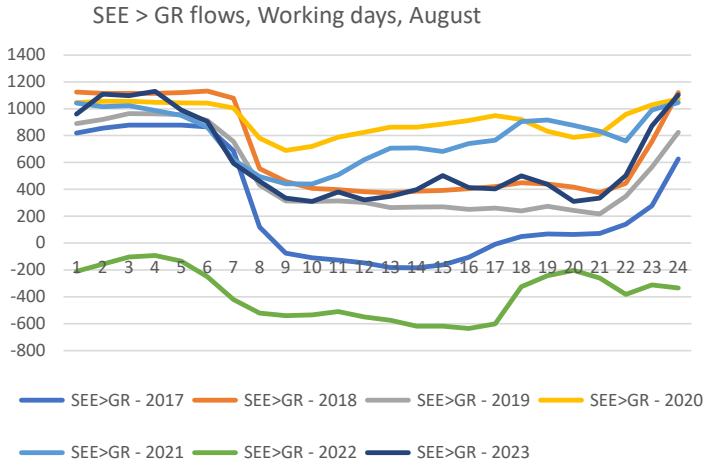
The increase of BG>GR NTC which happened at the end of 2023 can have a strong impact on rising HUPX prices in August 2024.

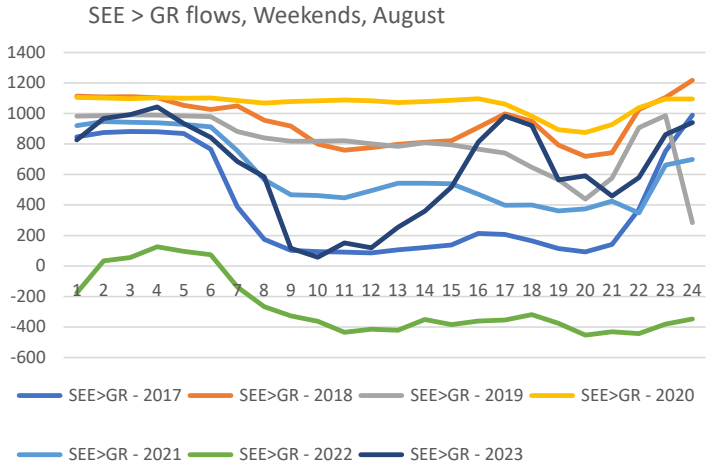
At the end of 2023, a new interconnection line between Bulgaria and Greece entered in operation, so capacity on the Bulgarian-Greek border is significantly increased. In the first months of 2024, average SEE>GR capacity was 350 MW higher than in the first months of 2023. Greek market will use those 350 MW of additional cross border capacity to import energy from Bulgaria and HUPX price zone.

In August 2023, HENEX settled at 109 EUR/MWh while generation costs were probably nearly equal to costs that can be expected for August 2024. Under the similar weather and market conditions as last year, HENEX price would need to settle at the similar price level as last year.

In case of the same weather conditions as last year, at current price of Hungarian Futures for August, Greek market will use additional BG>GR capacity for import. However, markets on the northern Greek borders will not be able to provide such additional imports due to very high energy deficits on those markets which will result in rising prices on all markets until Greek gas units generation is high.

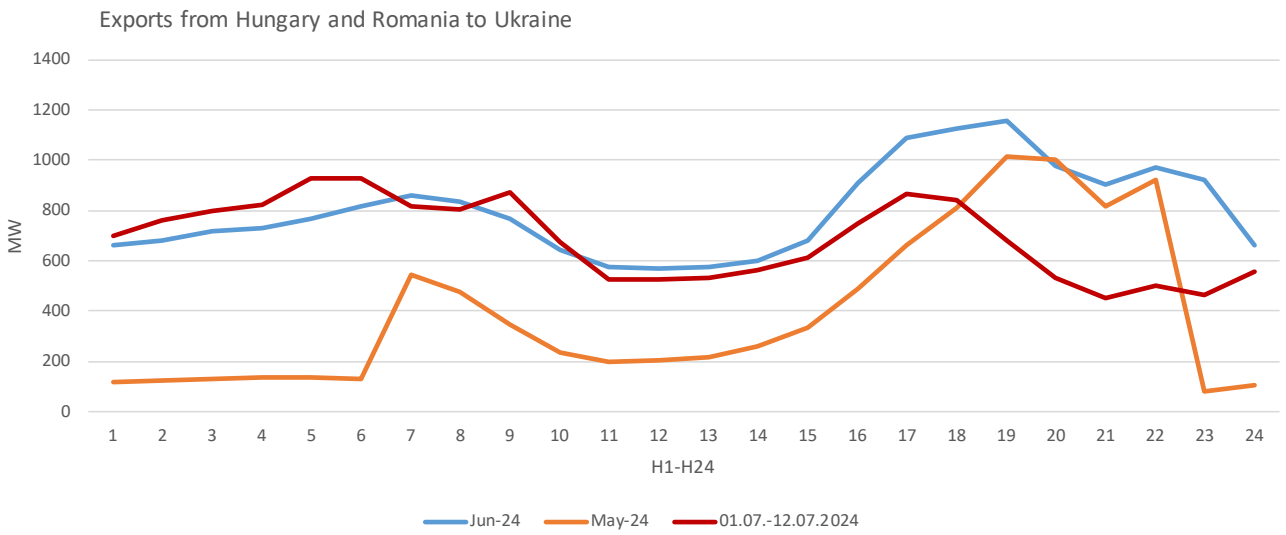
Export to Greece are high in August because Greek market rather imports energy than Greek producers would push high gas fired power generation. Only in August 2022, when Greek gas fired power plants had much lower gas prices than other European market, Greek gas units worked at high output at low price level and there were no Greek market imports.





EXPORTS TO UKRAINE AND MOLDOVA

- This is a very recent risk factor for HUPX. In August 2023 there were no exports to Ukraine and Moldova.
- Exports to Ukraine and Moldova need to be considered as part of the net position of HU+SEE since those exports “consume” offers from OPCOM and HUPX.
- If exports would increase further in August compared to June, this would be an additional unexpected pressure for HUPX in August.



SOLAR GENERATION IN AUGUST 2024

Precipitation during June did affect solar generation, but outside Greece. Solar generation was mostly affected by higher cloud coverage in Slovenia and Hungary, which resulted with some 150 MW lower peak solar generation than expected – which is not significant impact. In Greece, solar generation was in line with expectation.

- May-2024 data should be excluded from the analysis, as cloud coverage was high across the region
- June-2024 is favorable for analysis as similar weather conditions should be expected in July and August
- Q2 and Q3 2023 had mixed weather conditions – very rainy June, and dry July and August and should be taken with precaution when conducting analysis.

For the entire SEE region, peak hours solar generation H9-H20 in August 2024 should be:

- 1,300 MW higher than in August 2023
- 150 MW higher than in June 2024
- 500 MW lower than in July 2024

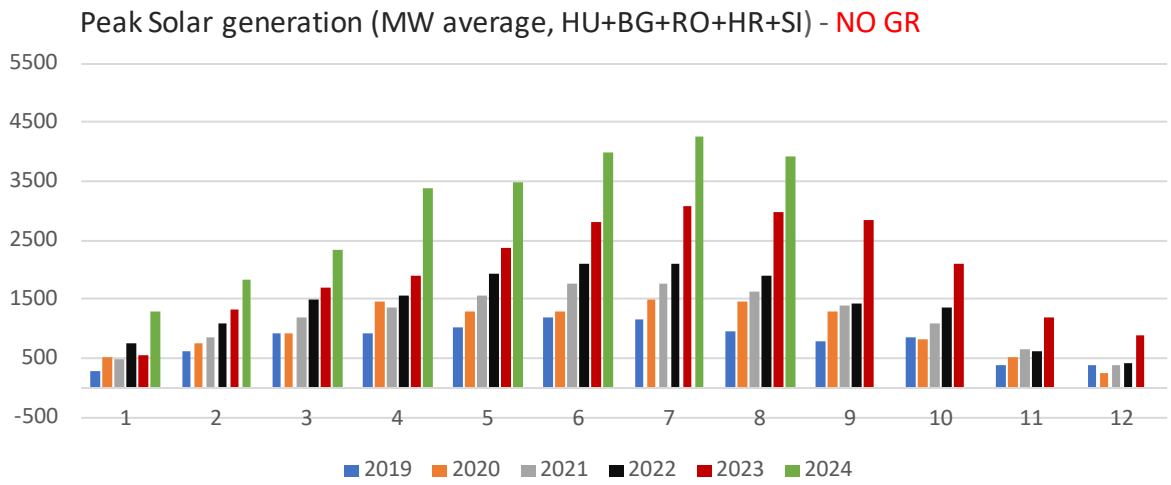
SOLAR GENERATION OUTSIDE GREECE

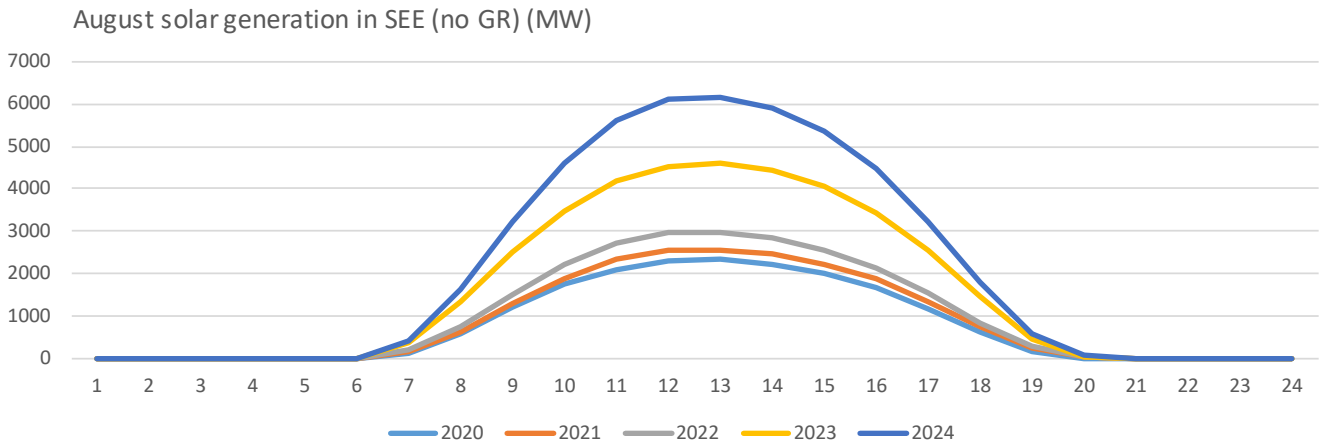
Less cloud coverage should be expected during July and August than in June, but this will not impact solar generation significantly, as mostly western Balkans and Hungary were affected by cloud coverage and precipitation.

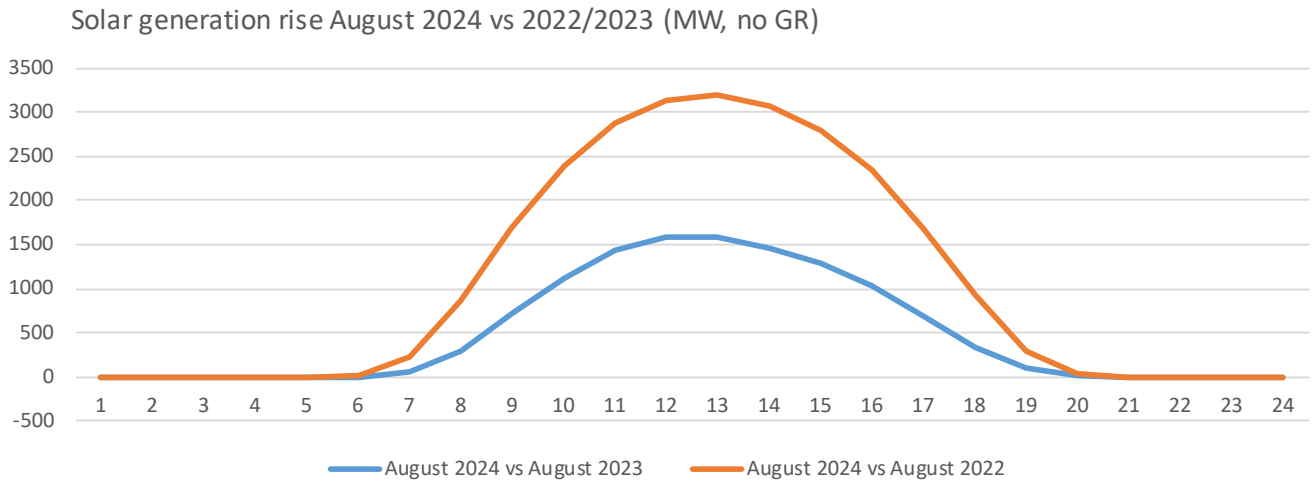
Similar weather conditions can be expected for August vs June as it was in 2021 and 2022, which would result with the same peak solar generation as in June, or 3920 MW on average.

This would lead to peak solar generation outside Greece being:

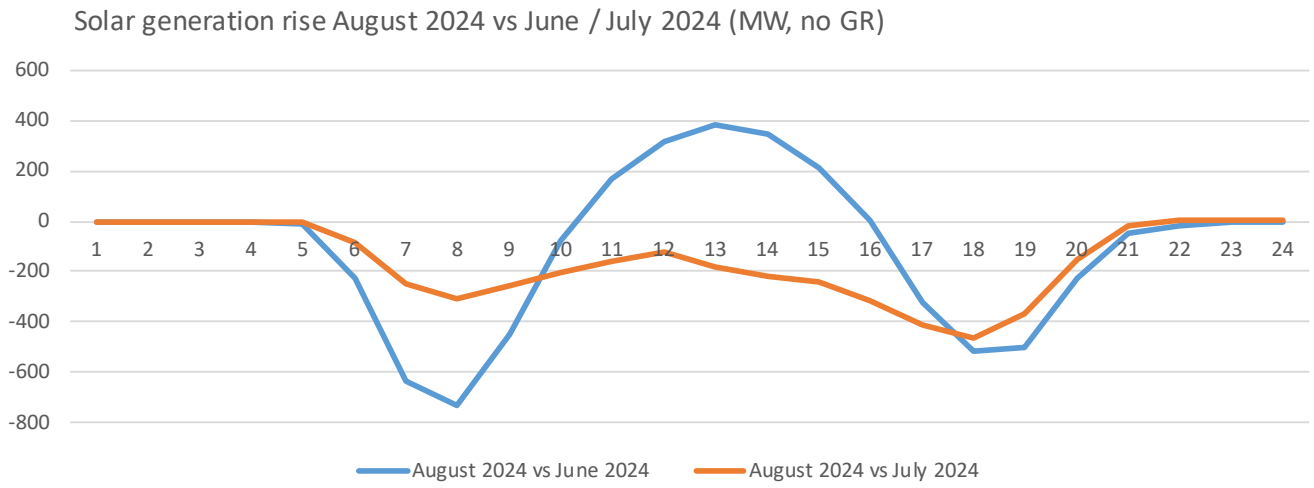
- 950 MW higher than in August 2023
- The same as in June 2024
- 300 MW lower than in July 2024
- 450 MW higher than in May 2024


Peak Solar generation (MW average, HU+BG+RO+HR+SI) - NO GR
5500
4500
3500
2500
1500
500
-500
1 2 3 4 5 6 7 8 9 10 11 12
2019 2020 2021 2022 2023 2024

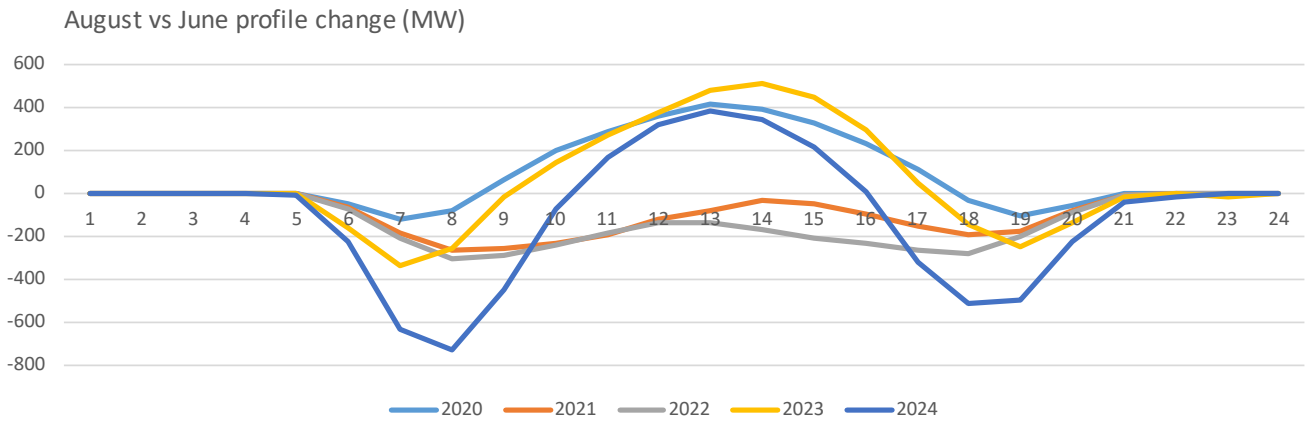

August solar generation in SEE (no GR) (MW)
7000
6000
5000
4000
3000
2000
1000
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
2020 2021 2022 2023 2024


Solar generation rise August 2024 vs 2022/2023 (MW, no GR)
3500
3000
2500
2000
1500
1000
500
0
-500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
August 2024 vs August 2023
August 2024 vs August 2022

Compared to June and July 2024, solar generation will actually be lower in critical hours.



The data might look surprising, but 2020-2023 data show the same trend

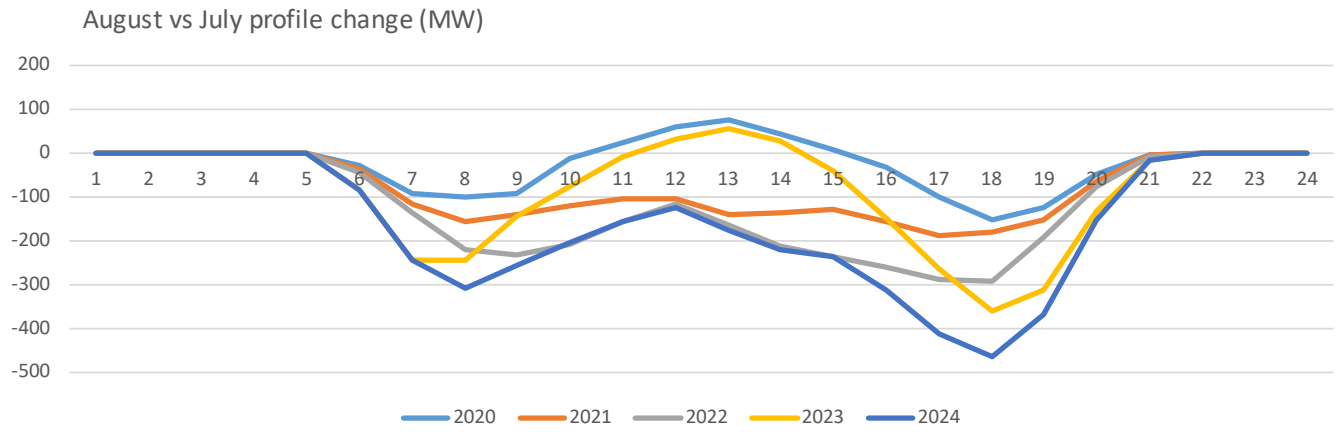


- 2020: Rainy June, dry August
- 2021: Dry June, dry August
- 2022: moderate June, rainy August
- 2023: Extremely rainy June, rainy August
- 2024: moderate June, expected dry August

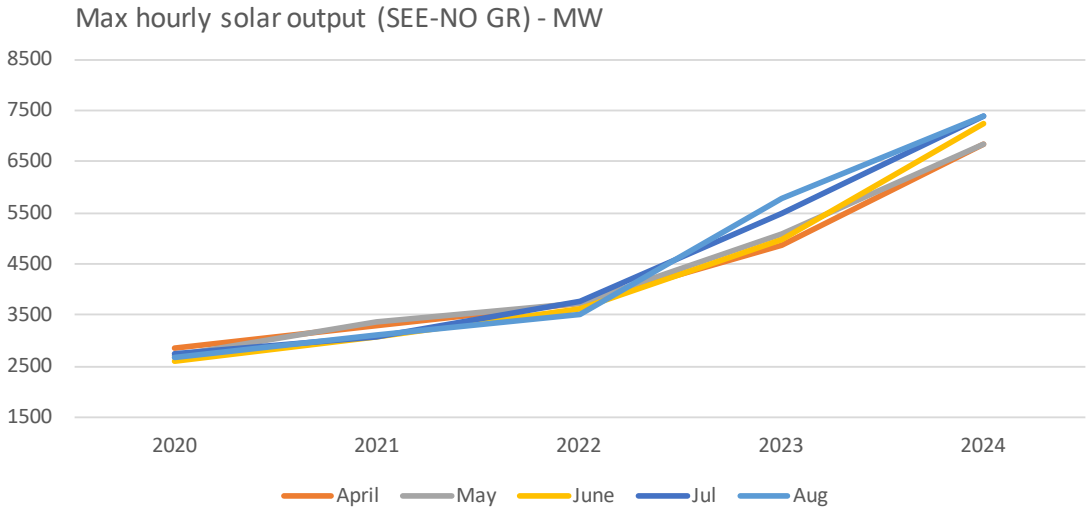
In case of moderate or dry June and similar condition in August, solar generation is lower in early and late sunny hours. Only in case of extremely high June precipitation and cloud coverage is August solar generation higher than in June.

More emphasized drop in H7-H8 and H17-H19 is a result of actually close to 2000 MW more installed capacities on compared to August 2023

Similar is comparing to July. Solar generation in H10-H15 was higher only when July had higher precipitation than August, which was the case in 2020 and 2023



In SEE (excluding Greece), Max hourly output in a period June-August is in quite tight range, assuming no growth of solar installations during this period. Max hourly generation is some 2-3% higher in August and July than in June – Except in a year of 2023, when rise was significant as June-2023 had extreme precipitation and high cloud coverage. But, in past two years, due to strong growth of RES installations (on average over 160 MW on monthly level) max solar generation in July was higher than in April. We should assume around 300 MW higher max hourly generation in SEE without Greece than in June 2024.



SOLAR GENERATION IN GREECE

Solar generation in August in Greece is lower than in July, but slightly higher than in June (August vs June 2023 was exceptional case as June solar generation was low due to high precipitation and cloud coverage in Greece).

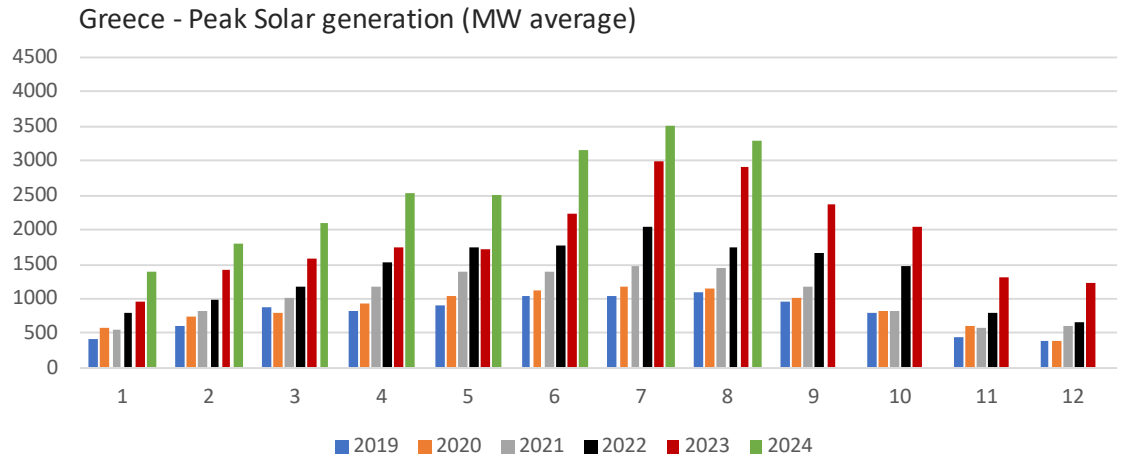
Peak solar generation in August-2024 in Greece should be around 3300 MW at average weather conditions.

In Greece, peak solar generation in August 2024 should be (average conditions):

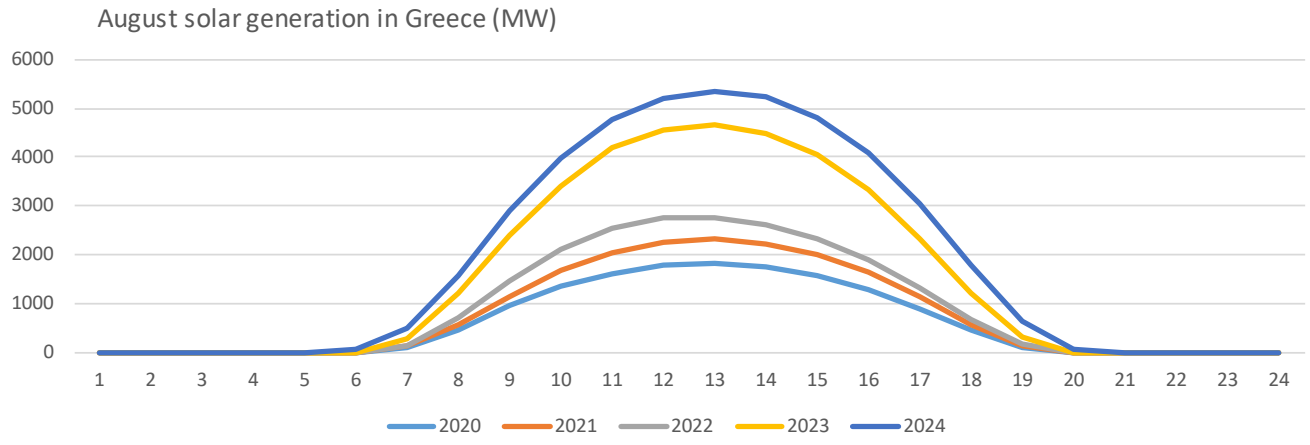
400 MW higher than in August 2023

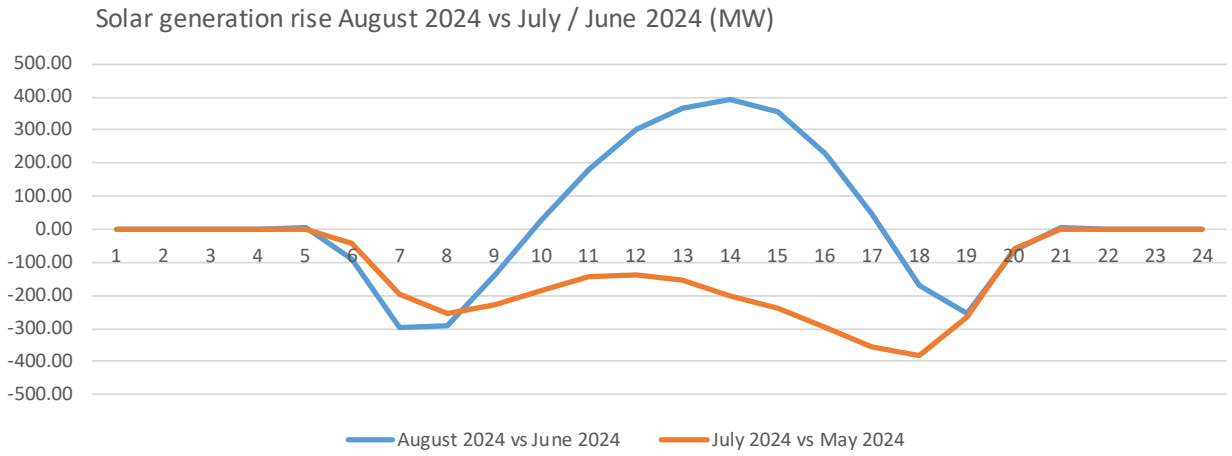
200 MW lower than in July 2024

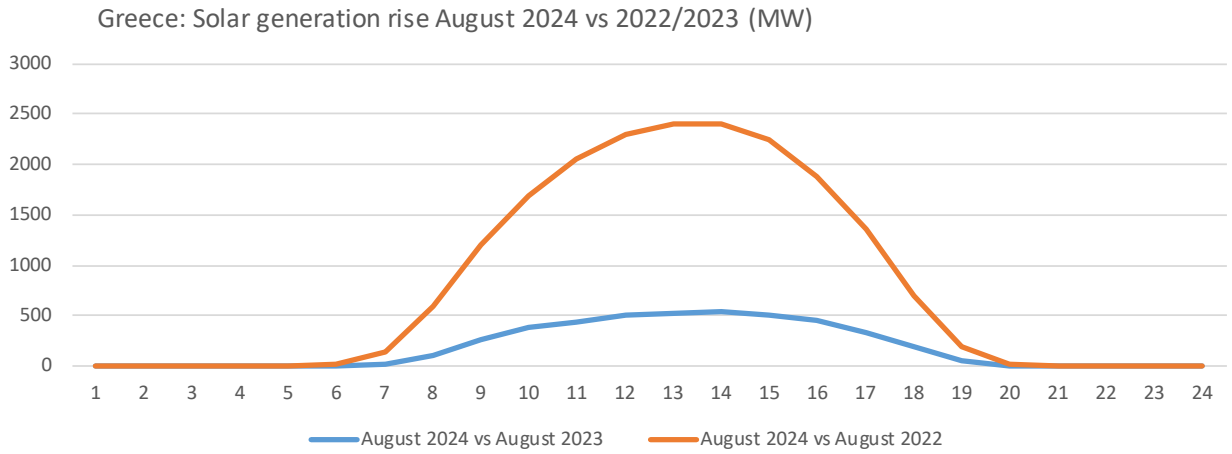
150 MW higher than in June 2024



Assuming the same distribution of hourly generation VS max output in August 2024 as it was the case in previous years in August, and average profile change August vs June, we should expect following profile of solar generation in Greece in July 2024

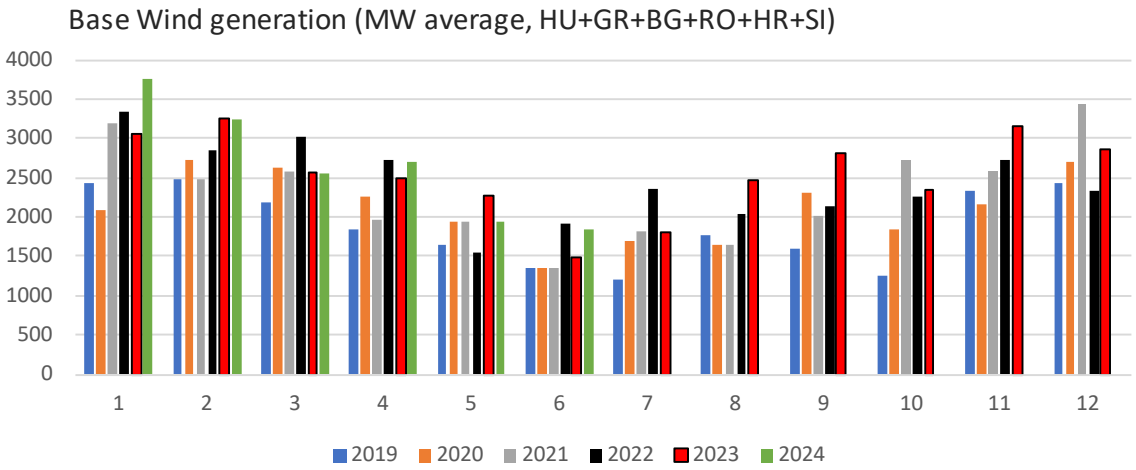



Solar generation rise August 2024 vs July / June 2024 (MW)
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
-300.00
-400.00
-500.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
August 2024 vs June 2024
July 2024 vs May 2024


Greece: Solar generation rise August 2024 vs 2022/2023 (MW)
3000
2500
2000
1500
1000
500
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
August 2024 vs August 2023
August 2024 vs August 2022

Wind power generation in August 2024

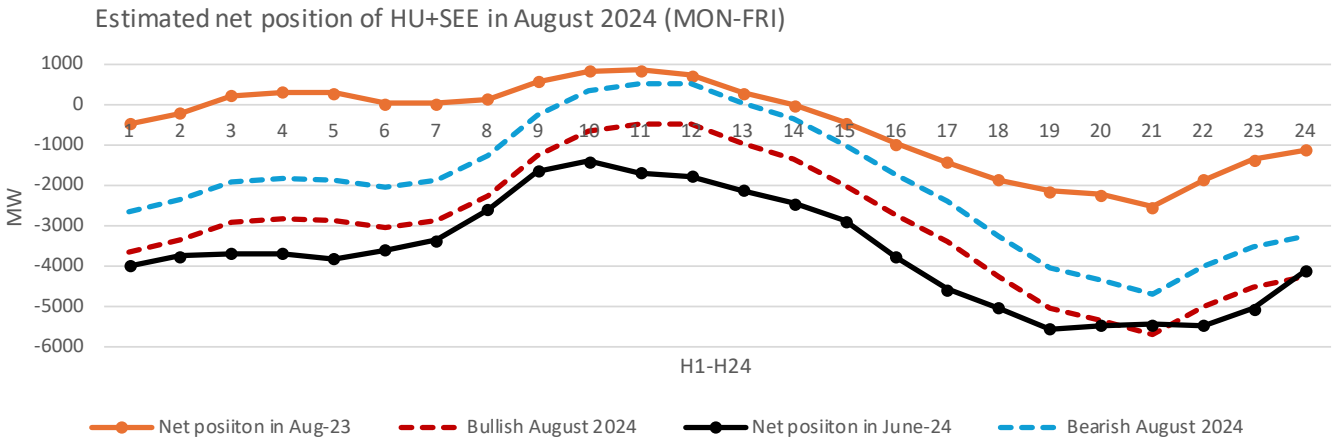
- Wind power generation in August is on average higher than in June and July. Last year August had record-high wind generation for August, and this year we should expect at best the same wind generation – which is some 800 MW higher than in June. In worst case, we should expect the same wind generation as in June 2024



GENERATION-CONSUMPTION BALANCE OF THE REGION IN AUGUST 2024 VS. AUGUST 2023

- Hydro generation will be 1200 MW lower
- 400-500 MW lower lignite fired generation in Serbia and Romania
- At the end of August, availability of NPP Paks will be 500 MW lower.
- Greek gas fired generation will be 350MW lower due to higher imports NTC of Greece.
- Consumption should be 0-1100 MW higher than in August 2023
- High increase in solar power generation, but also decrease of gas fired power generation in sunny hours due to lower prices. The effect of solar power generation increase will be dumped a bit by the decline of gas fired generation mostly in Greece.

Exports to Ukraine and Moldova need to be taken into account as net position of HU+SEE region and we assumed them to be at the level of June 2024.



Conclusions:

- In any scenario, net position of HU+SEE region will be much worse than in August 2023
- In any scenario, net position of HU+SEE region will not be as bad as it was in June 2024. **For the same transmission grid conditions as in June 2024, HUPX would settle lower in August 2024 than in June 2024.**
- In any scenario, sunny hours will have much better net position than in June 2024.
- In any scenario, much higher gas fired generation will be needed in hours H1-H8 so those hours will need to settle at price of around 95 EUR/MWh.
- In any scenario, full gas fired power generation and import from Italy will be needed to cover net position in hours H19-H24. However, Italian>Slovenian cross-border lines will be in the maintenance.

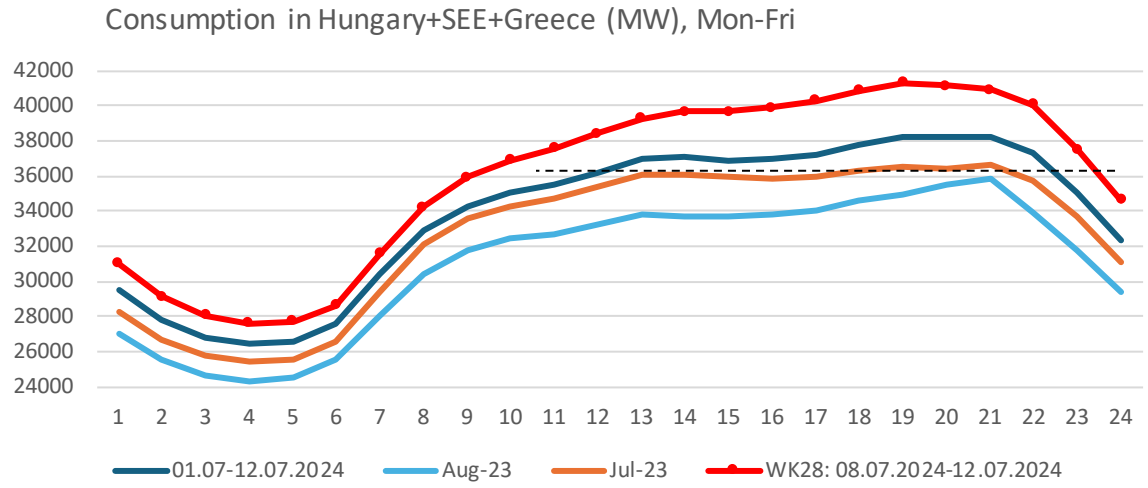
If Generation-consumption balance of August 2024 is compared to the WK28 (08.07.2024-12.07.2024), there will be a huge improvement due to much lower expected consumption:

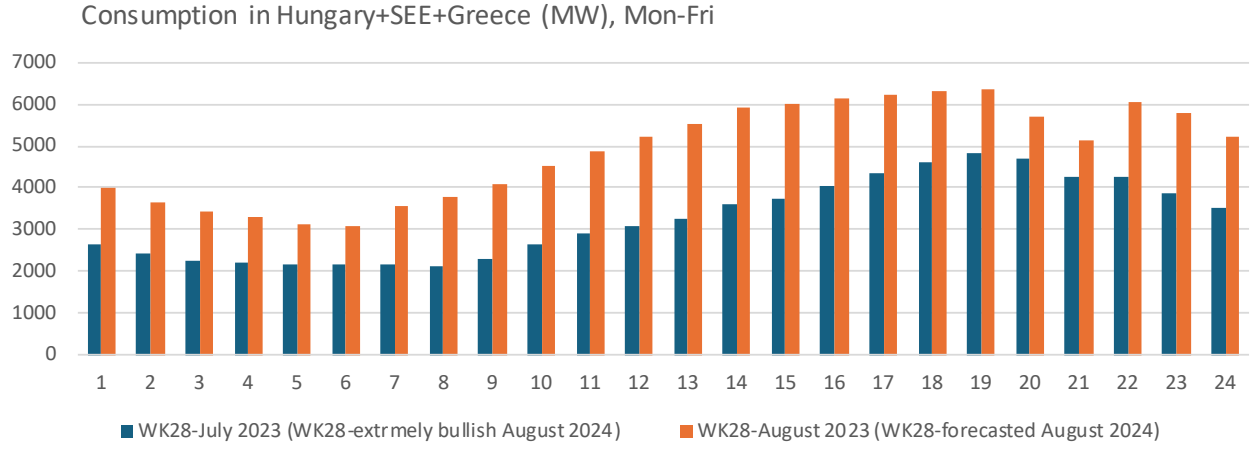
- Even in the case of very warm August scenario, consumption in the region of HU+SEE+Greece in August 2024 should be in average 3200 MW lower than in the WK28. In hours H19-H24, consumption would be even 4000MW lower than in the WK24.
- Consumption in hours H20/H21 in August will be lower than consumption in H23 of the WK28.
- Availability of lignite fired generation will be 350MW better
- Availability of gas fired generation in Hungary will be 400MW better.
- Nuclear generation should also be higher than in WK28, at least until NPP Paks goes into maintenance on 23.08.2024. A 1000MW unit in NPP Kozloduy had a three weeks delayed entry in operation, started grid synchronization on 08.07.2024 and reached stable full generation only in the afternoon on 10.07.2024
- Hydro generation will be up to 1000MW lower.

Market conditions in August will be incomparably better than in the WK28 (08.07.2024-12.07.2024)

A decline of hydro generation in August against WK28 will be nearly fully compensated with better availability of gas, lignite and nuclear availability.

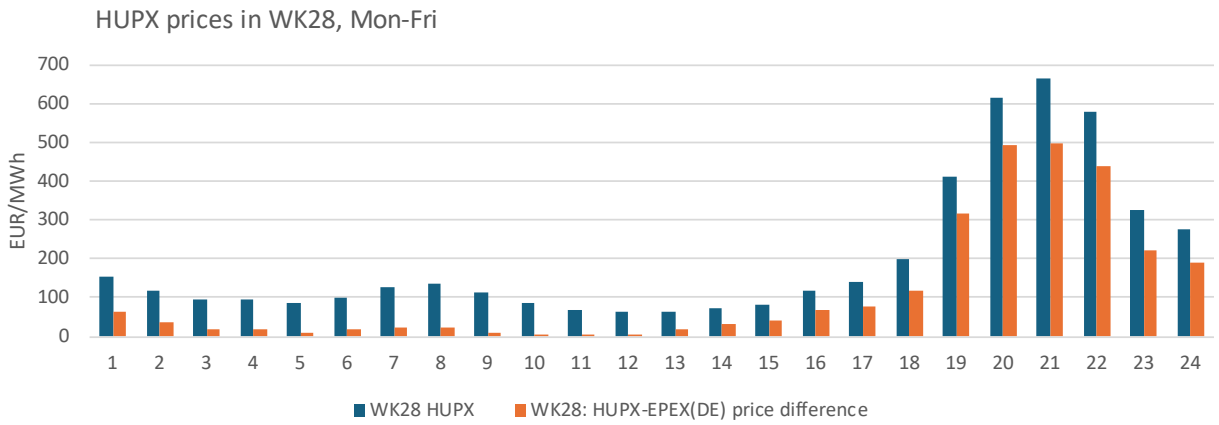
The need for energy will be in average at least 2500-3000 MW lower than in the WK28.

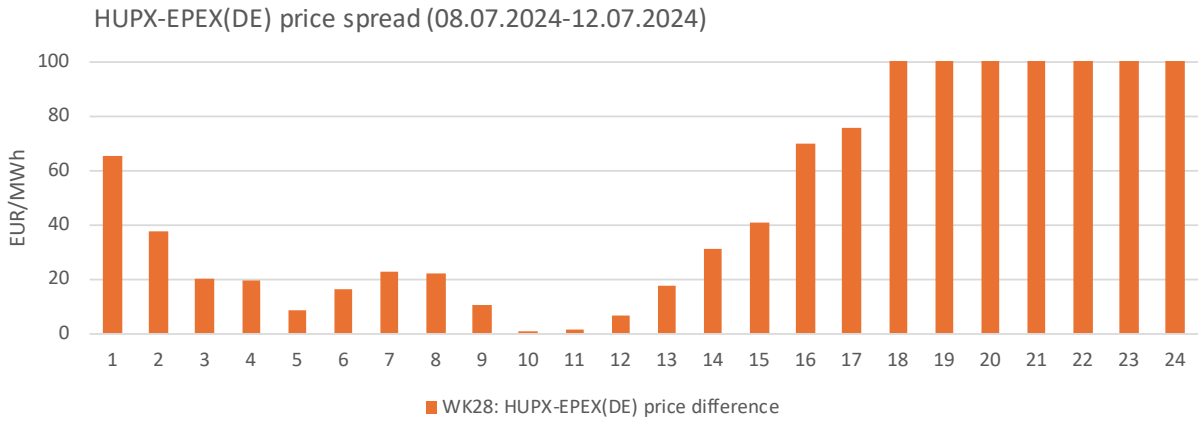




CONSIDERATION OF MARKET BEHAVIOR IN THE WK28

- WK28 had too high consumption which is not comparable to consumption which can be expected in August 2024.
- WK28 had an enormous rise of prices of selling offers on all markets, which was triggered by market panic. The most visible increase of prices of selling offers was in Greece. Prices of selling offers were increased only for hours H19-H24
- Despite high consumption and difficult transmission grid conditions, HUPX market prices in hours H1-H7 were still below 100 EUR/MWh on working days and on weekends even lower.
- Despite high consumption, HUPX prices in sunny hours were not too far from German market prices



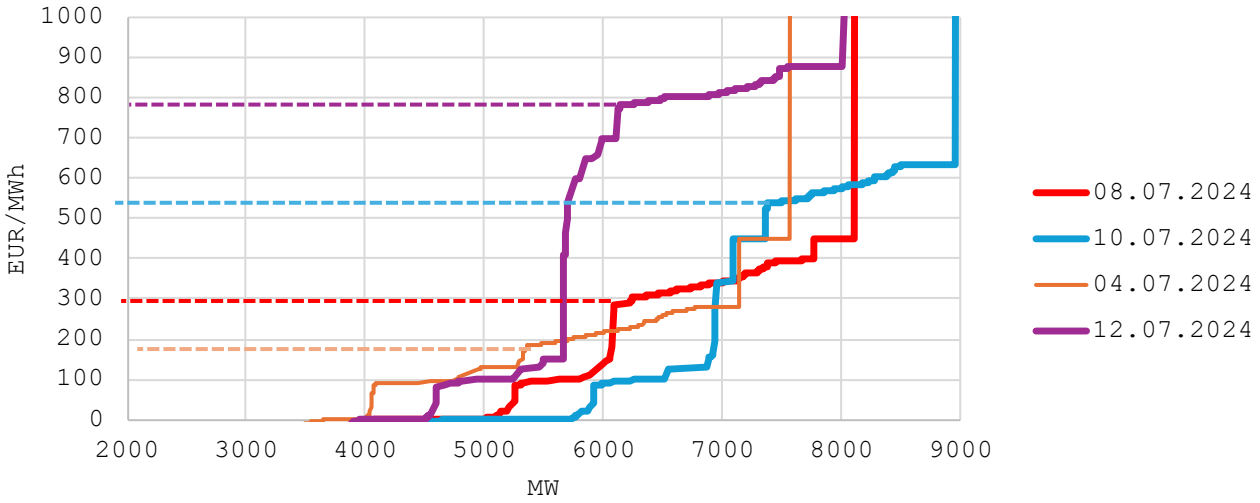


What makes it impossible to forecast HUPX prices for August is that it is not possible to evaluate price of selling offers on the market which will be in place in August. All the time until the WK28, selling offers on power exchanges were reflecting realistic generation costs, but in the WK28 price of selling offers in hours H19-H24 got increased so that offers are not correlated to generation costs anymore.

The last 2000 MW of selling offers on the Greek market was offered at the price level of 180-280 EUR/MWh in the WK27, but on each day of WK28 the price of selling offers was increased with the panic. The price of the last 2000MW of selling offers on the Greek market on Friday 12.07.2024 reached even price level of 800-900 EUR/MWh.

Since on Friday 12.07.2024 prices of 800 EUR/MWh were not reached neither on Greek nor on Hungarian markets, that means that those offers were not activated. Despite the extreme heat wave and extreme consumption there is still enough energy on the market even in hour H20, but it is offered on too high price and it is not purchased.

H20: Greek market selling price-curves



There will be no lack of energy on the market in August, however it is impossible to estimate at which price it will be offered. During heat waves energy will probably be offered at high price.

The need for energy in August will be in average be 2500-3000 MW lower than in the WK28 which will eliminate the need of the market to activate expensive selling offers, so the market price will go significantly down in August.

CONCLUSION ABOUT HUPX PRICE IN AUGUST 2024:

- **The need for energy in the region of Hungary+SEE+Greece in August will be much lower than in the WK28.** Lower need for energy will eliminate the need for activation of high priced selling offers (last 2000MW of offers in Greece) in hours H19-H24
- **However,** the reduced need for energy might not affect HUPX prices that much in the first half of August because of simultaneous maintenance of two Hungarian cross-border lines (AT-HU line and SK-HU line) which will greatly reduce the possibility of Hungarian market to import energy in Flow Based Market Coupling.
- HU+SEE region will have much lower prices and risks in August than in WK28, but this will not necessarily be the case for HUPX. The reasons why HUPX should be higher than other markets also in August (particularly in the 1st half of August) are similar as for the WK28 (07.07.2024-14.07.2024):

a. HUPX in WK28 does not have high price because Greek market selling offers are at high price. Impact of all other markets on HUPX is very small in WK28.

b. HUPX in WK28 anyhow settles above Greek market and no much energy from Greece can come to HUPX at all because of reduced SR>HU and BG>RO capacities.

c. HUPX price in WK28 in H19-H24 is anyhow completely independent from Croatian, Slovenian and prices on other markets. Which means that HUPX is high for completely different reasons than other markets.

d. All other markets in SEE in WK28 have high settlement because the price of selling offers increased significantly, but HUPX is anyhow above that prices.

e. HUPX in WK28 was extremely high because there are no sufficient Hungarian market selling offers and because Flow Based Market Coupling can not assign more imports to Hungarian bidding zone because of transmission grid conditions! The same will be the case in the first half of August.

Announced available transfer capacity (ATC) for August on Serbian>Hungarian border is 0MW, the same as for July, which will eliminate the possibility for Hungarian market to receive energy outside of Flow Based Market Coupling Mechanism.

Market conditions in August for all other regional markets except for HUPX are bearish. However, HUPX itself will face huge risks originating from inability of Flow Based Market Coupling to allow high imports of Hungarian market due to strong maintenances of cross-border lines, particularly until 16.08.2024.

Other markets (except Hungary and Romania) do not have reason for settlement above 100 EUR/MWh in August:

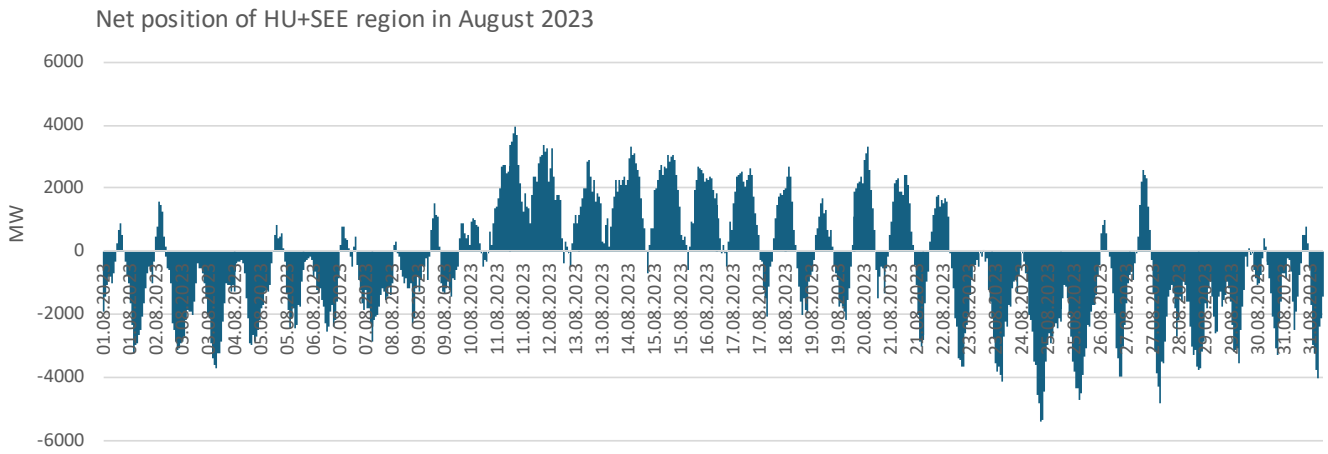
- Due to much lower consumption than in WK28, all hours H1-H17 during August will have lower settlement than in the WK28. In WK28, hours H1-H18 on working days settled at 106.7 EUR/MWh on HUPX and only at 94.5 in Greece.
- Hours H19-H24 will have around 4000MW lower consumption than WK28 so there will be no necessity to activate expensive selling offers as it was the case in the WK28.
- There are no reasons for hours H1-H18 to settle above 90 EUR/MWh on all markets except HUPX.
- There are no reasons for hours H19-H24 to settle above 160 EUR/MWh on all markets except HUPX.
- **Current HUPX futures price for August of 106.8 EUR/MWh is sufficiently high for all markets except for HUPX.**

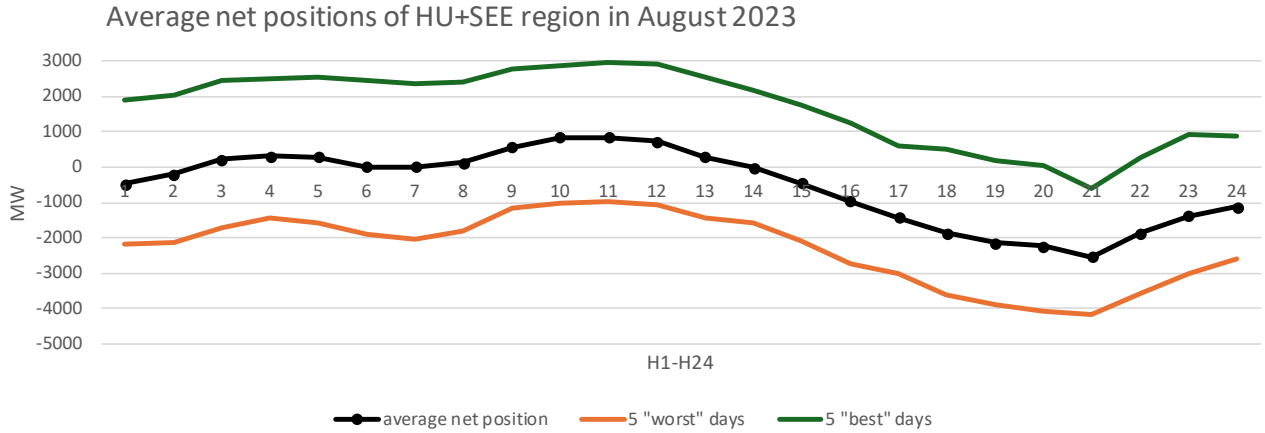
There is a trading opportunity for August in trading long position on Hungarian market against short position on other SEE markets which are all currently priced at the similar price level. This also includes long HU vs. short GR trade position.

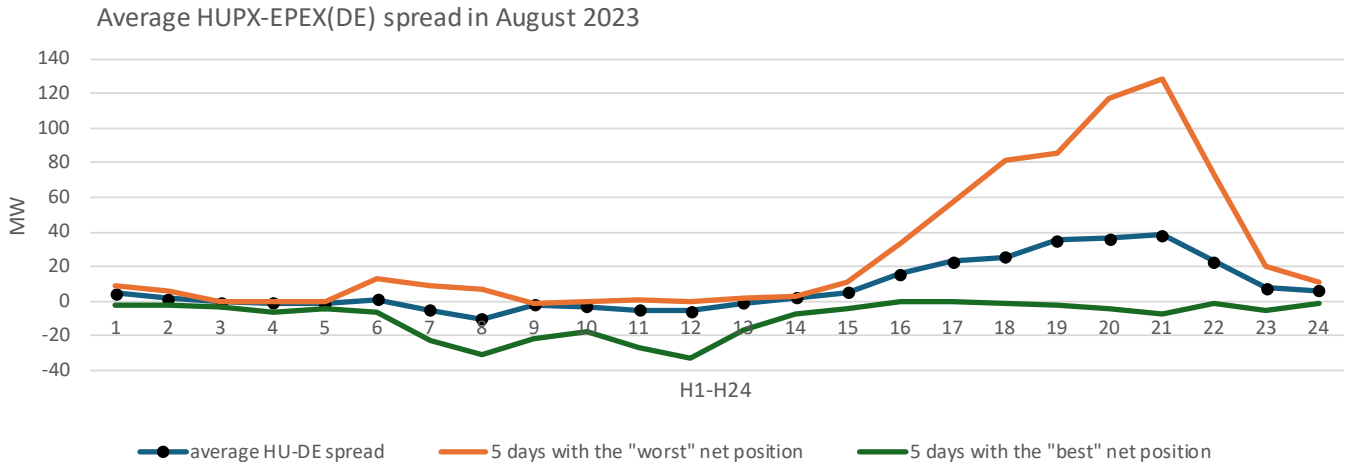
Reasons why it is very difficult to leave trade positions on settlement for the whole month of August:

1. There is a huge difference in market conditions on hot weeks and cold weeks during August.

In case of difficult periods during August 2024, net position of HU+SEE region will be extremely short and risks much higher than last year. HUPX price upsides in case of difficult market conditions are higher than downsides in case of relaxed market conditions.



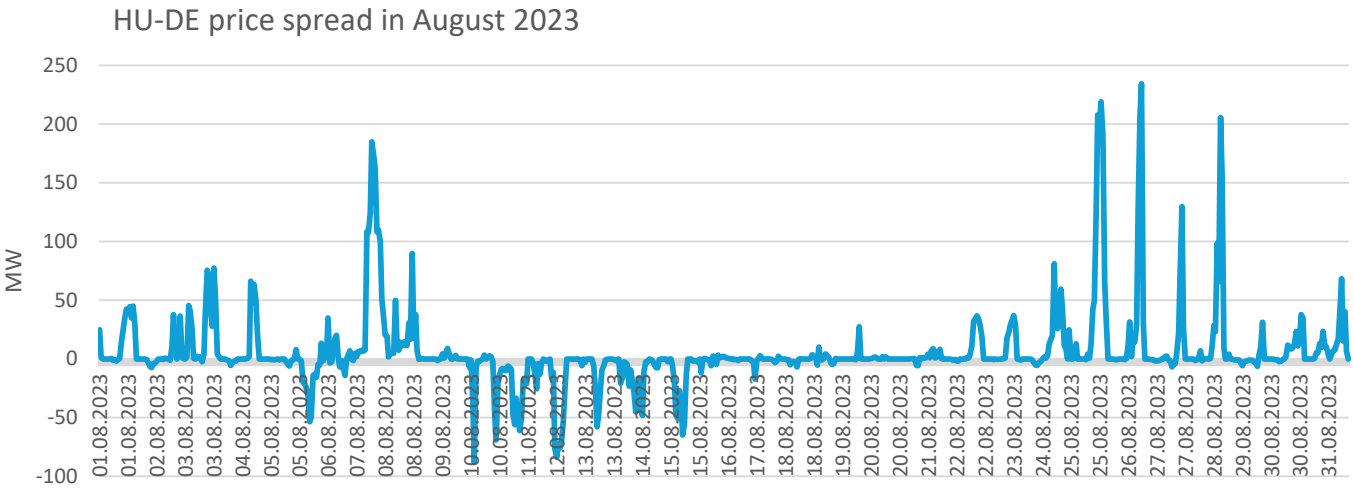


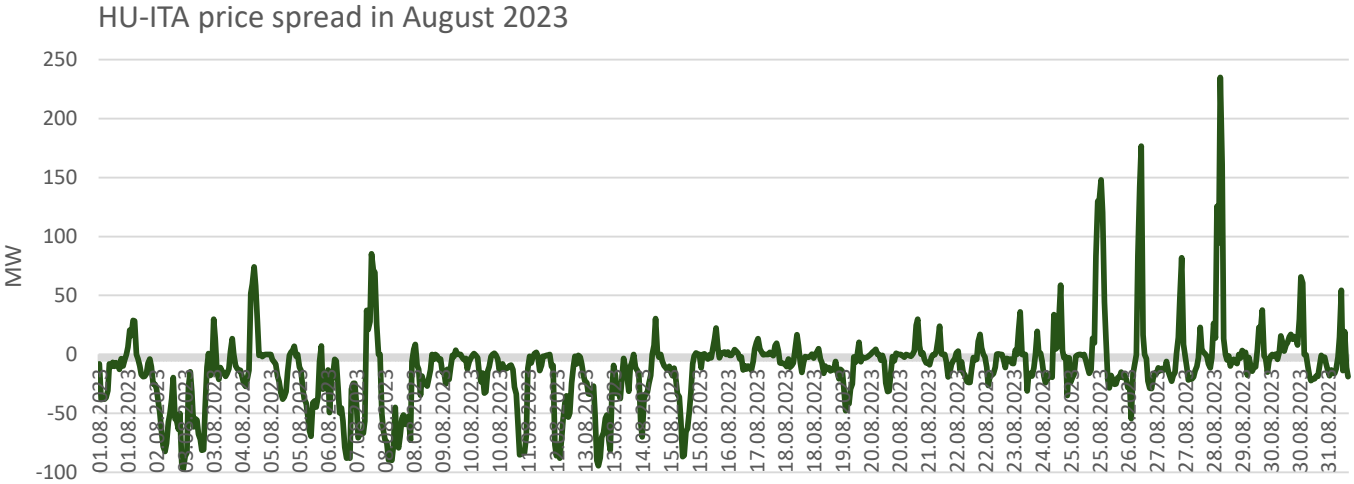


2. One should not forget that HUPX was settling occasionally 100-200 EUR/MWh above Italian market during the heat wave in late August 2023. This year, situation can be worse because:
   - NPP Paks will be in maintenance as of 23.08.2024 and it was not in maintenance last year
   - Hydro and lignite generation will be lower than last year
   - Exports to Ukraine and Moldova higher.
   - Reduced ITA>SLO capacity due to new capacity calculation method

Once HUPX and SEE markets are without selling offers on power exchanges, HUPX price escalates easily.

Risks for extreme prices occurrence is much higher this year than it was last year





3. There will be maintenance of 4 cross-border lines which link HU+SEE region with Central and Western Europe. This will seriously limit the possibility of HU+SEE region to import sufficient amount of energy in hours H19-H24 and prices can escalate.
4. There are very strong maintenances of cross-border lines on Slovakian-Hungarian and Austrian-Hungarian border in the first half of August. This will make a very strong pressure on the remaining Austrian-Hungarian lines and limit possibility of Hungarian market to import.

   Physical power flows over SK>HU and AT>HU border are exceeding 3000MW at the moment in H19-H24, with two 380kV in maintenance the remaining grid will not be able to transfer the same amount of energy so transmission grid conditions will be more difficult for Hungarian market than they are at the moment. Hungary itself will not be able to import the same amount of energy in the Flow Base Marke Coupling mechanism as it was the case in July.

   In the period 12.08-16.08. There will be simultaneously all 4 cross-border lines in the maintenance

   A. SK-HU line, God-Levice 22.07-16.08.2024

The average impact of this line maintenance on FBMC maximal exchanges was 400 MW last time when this line was in maintenance in March 2023 (13.03-17.03.2023).

Maintenance of this line can create overloads in FBMC on another grid elements on SK>HU border or in Slovakia which are highly impacted by Hungarian and Romanian net position.

Maintenance of this line will induce a huge pressure on the 2nd AT>HU line Neusiedl-Szombathely which is highly loaded already in the WK28 when all AT-HU and SK-HU lines are in operation.

   B. AT-HU line, Zurndorf - Szombathely, 22.07.2024 - 11.08.2024
   C. AT-HU line, Wien-Gyor 2 12.08.2024-08.09.2024 AT>HU NTC=250MW

Maintenance of the line B will induce a huge pressure of physical flows on the line C (and vice versa). Those lines are highly loaded already in the WK28 when all AT-HU and SK-HU lines are in operation.

   D. SLO-ITA border, 03.08.2024-18.08.2024 (or 14.08.2024) SLO<>ITA NTC=0MW

The impact of this maintenance can be very bullish or very bearish, depending whether HU+SEE region needs energy from Italy or has surplus of energy. Last year HU+SEE region was importing from Italy in hours H18-H21, this year will be importing even more due to probably lower lignite fired generation and probably higher export to Ukraine exactly in the most risky period H18-H24. This year the impact of this maintenance will probably be very bullish due to stronger needs for energy from Italy in H18-H24!

Simultaneous maintenance of SLO-ITA border and SK>HU line will reduce import possibilities of HU+SEE region by at least 1000 MW in hours H19-H24.

E. DE-CZ line, Etzenricht-Hradec05.08.2024-21.08.2024

F. DE-AT border, ISAR-OTTENHOFEN 443, 444, 446 (3 lines) 01.08, 20.08, 22.08, 26.08

List of other important transmission grid maintenances:

- SI - ITA (Divaca - Redipuglia) 03.08.-18.08.2024 SLO<>ITA NTC=0 MW
- (actual maintenance plan can be lower and can be reduced to 05.08-14.08 according to TERNA website)
- SI- ITA (Melina - Divaca) 06.08. - 16.08.2024
- SI - ITA (Melina - Divaca) 26.08 - 30.08.2024 (affected H7- H15)
- SI - ITA (Bericevo - Diavaca) 19.08. - 23.08.2024 (affected H7- H15)
- RS-BG (Nis 2 – Sofia West) 22.07.2024 – 02.08.2024 – NTC 0 MW
- RS-RO (Djerdap – Portile de Fier) 19.08.2024 – 23.08.2024
- RO-BG (Stupina – Varna) 05.08.2024 – 16.08.2024
- RO-BG (Stupina – Issacea) 19.08.2024 – 06.09.2024
- RO-HU (Arad – Sandorfalva) 26.08.2024 – 06.09.2024
- BG-NMK (Chervena Mogila – Shtip) 24.08.2024 – 28.08.2024 - NTC 0 MW
- SK-CZ (Stupava – Sokolnice) 29.07.2024 – 02.08.2024

PUBLIC HOLIDAYS

- 02.08.: Republic Day – North Macedonia (Friday)
- 05.08.: Victory and Homeland Thanksgiving Day – Croatia (Monday)
- 15.08.: Assumption of Mary – Croatia, Greece, Romania, Slovenia (Thursday)
- 19.08.: Saint Stephen’s Day (bridge day) – Hungary (Monday)
- 20.08.: Saint Stephen’s Day – Hungary (Tuesday)

PRICES AND SPREADS

	Base				Peak			
	HU	DE	IT PUN	GR	HU	DE	IT PUN	GR
2012	60.78	44.90	85.64	64.06	72.87	53.02	86.36	67.96
2013	47.42	38.23	65.01	38.69	57.64	47.59	65.29	42.22
2014	35.99	27.93	47.17	57.57	44.14	35.03	47.14	62.10
2015	42.49	31.61	52.72	50.16	52.13	37.77	53.58	52.42
2016	33.00	27.18	37.08	39.07	38.40	31.30	38.58	41.13
2017	58.31	30.85	55.77	50.57	76.83	36.17	62.53	51.54
2018	60.45	56.19	67.71	63.83	68.24	62.21	70.24	66.05
2019	58.69	36.85	49.54	64.02	72.87	41.87	51.73	66.75
2020	37.60	34.86	40.32	46.14	43.99	40.54	44.68	47.83
2021	109.02	82.70	112.40	121.72	124.67	92.32	118.44	136.07
2022	495.29	465.18	543.15	436.56	540.32	495.79	558.62	464.89
2023	100.41	94.32	111.89	109.33	103.36	92.74	113.49	114.56
2024	**106.78**	**70.78**	**99.87**	**107.14**	**105.72**	**67.72**	**97.65**	

	Base			Peak		
	HU-DE	HU-IT PUN	HU-GR	HU-DE	HU-IT PUN	HU-GR
2012	15.9	-24.9	-3.3	19.9	-13.5	4.9
2013	9.2	-17.6	8.7	10.1	-7.6	15.4
2014	8.1	-11.2	-21.6	9.1	-3.0	-18.0
2015	10.9	-10.2	-7.7	14.4	-1.5	-0.3
2016	5.8	-4.1	-6.1	7.1	-0.2	-2.7
2017	27.5	2.5	7.7	40.7	14.3	25.3
2018	4.3	-7.3	-3.4	6.0	-2.0	2.2
2019	21.8	9.1	-5.3	31.0	21.1	6.1
2020	2.7	-2.7	-8.5	3.5	-0.7	-3.8
2021	26.3	-3.4	-12.7	32.4	6.2	-11.4
2022	30.1	-47.9	58.7	44.5	-18.3	75.4
2023	6.1	-11.5	-8.9	10.6	-10.1	-11.2
2024	**36.0**	**6.9**	**-0.4**	**38.0**	**8.1**	

POWER PLANT MAINTENANCES IN AUGUST 2024

Country	P. Plant	Unit	MW	Start - end date
Hungary	Dunamenti	G7G8	401	26.03.2024-10.08.2024
Hungary	Matrai	G5	224	27.07.2024-05.10.2024
Bulgaria	Bobov Dol	G2	190	08.07.2024-08.09.2024
Romania	Galabovo	G1	343	04.08.2024-03.09.2024
Greece	Lavrio	G5	377	26.08.2024-10.09.2024
Greece	Korinthhos P.	G1	433	23.08.2024-07.09.2024

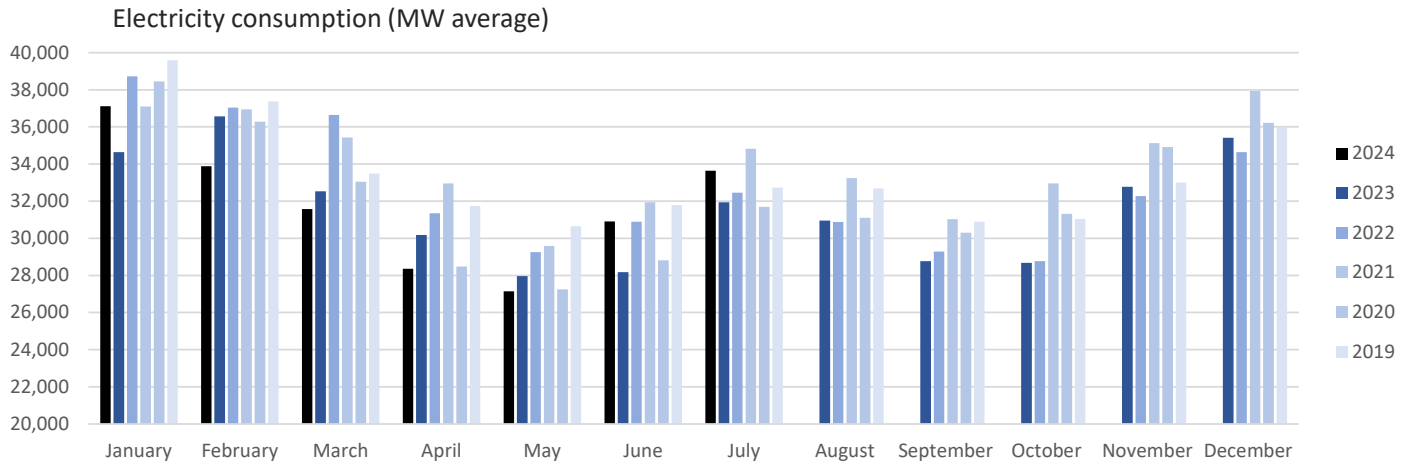
Country	P. Plant	Unit	MW	Start - end date
Serbia	Kostolac B	G1	349	07.05.2024-25.09.2024
Serbia	TENT A	G2	210	28.05.2024-24.09.2024
Serbia	TENT A	G3	329	25.08.2024-23.10.2024
Romania	Brazi	G5G6	170	01.04.2024-30.09.2024
Romania	Paroseni	CA	130	31.08.2024-29.09.2024

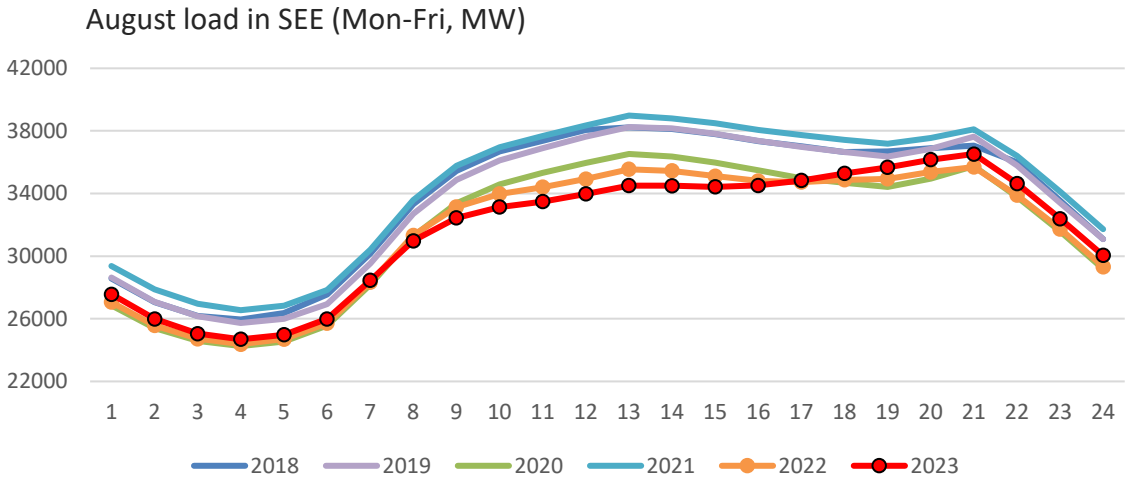
SCHEDULES - IN AND OUT OF GENERATION UNITS IN AUGUST 2024

Date	Unit	MW	Country	Going
04.08.2024	Galabovo G1	343	Bulgaria	OUT
10.08.2024	Dunamenti G7G8	432	Hungary	IN
23.08.2024	Korinthos Power	433	Greece	OUT
25.08.2024	TENT A G3	329	Serbia	OUT
26.08.2024	Lavrio G5	377	Greece	OUT
31.08.2024	Paroseni CA	130	Romania	OUT

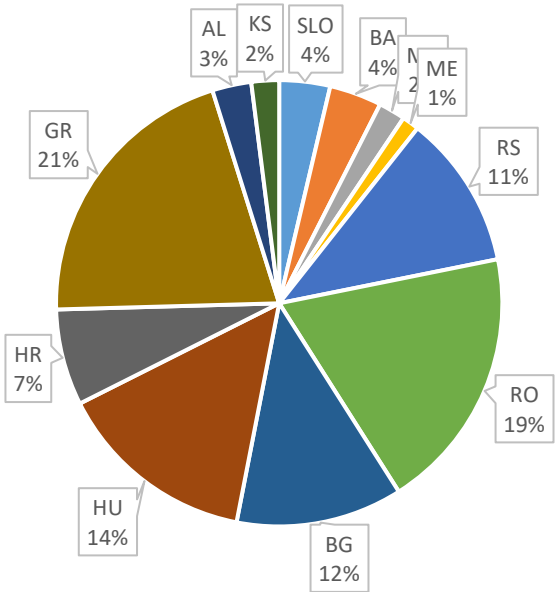
STATISTICAL DATA FOR AUGUST

ELECTRICITY CONSUMPTION

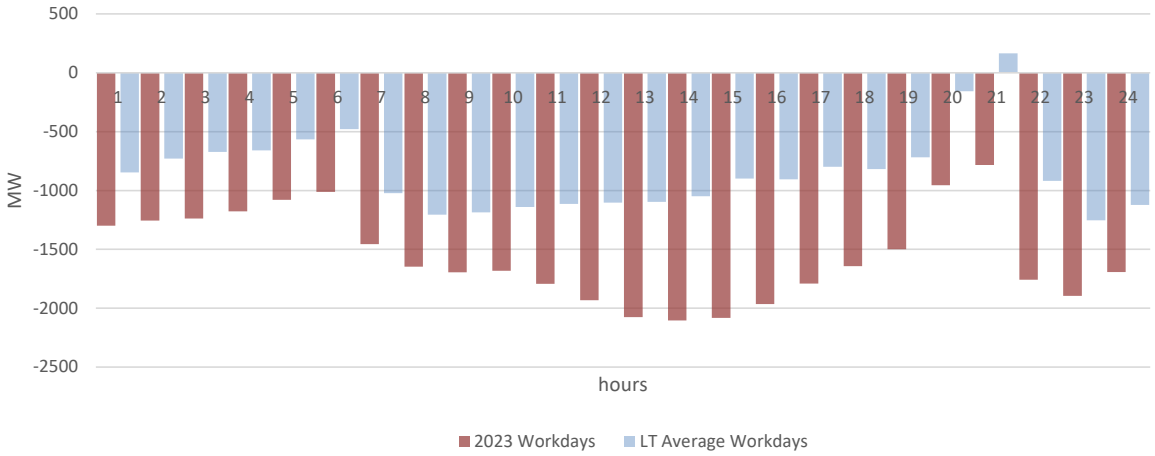




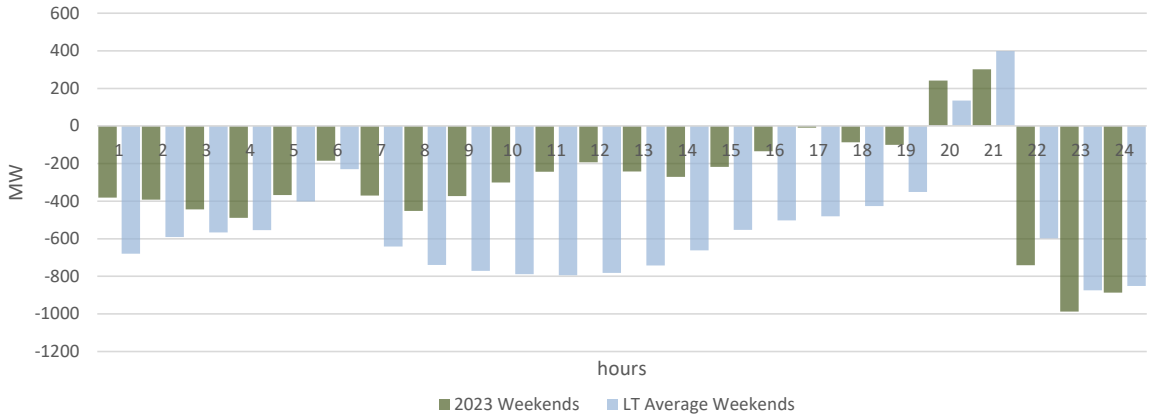
Consumption per country in August 2023



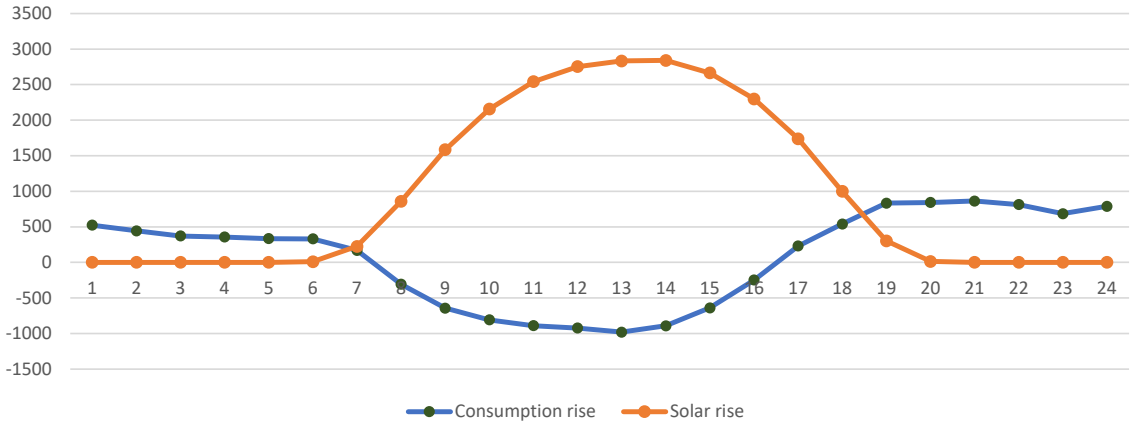
Consumption change August 2023 - July 2023: MON-FRI



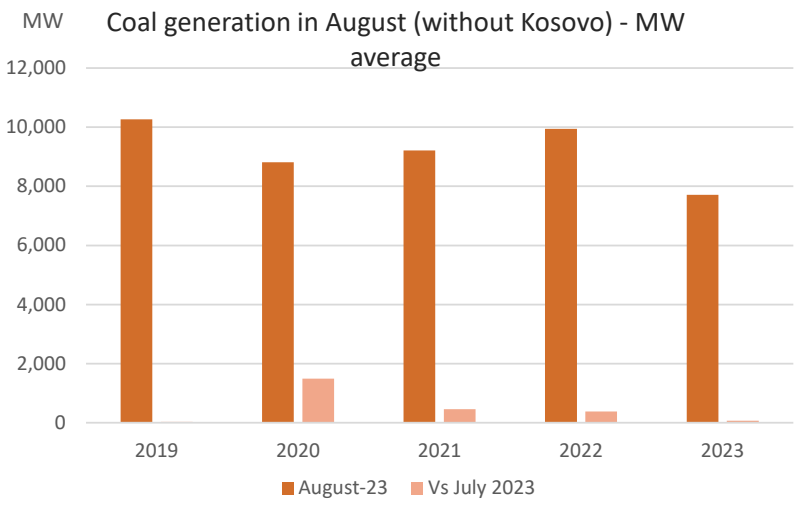
Consumption change August 2023 -July 2023: Weekends

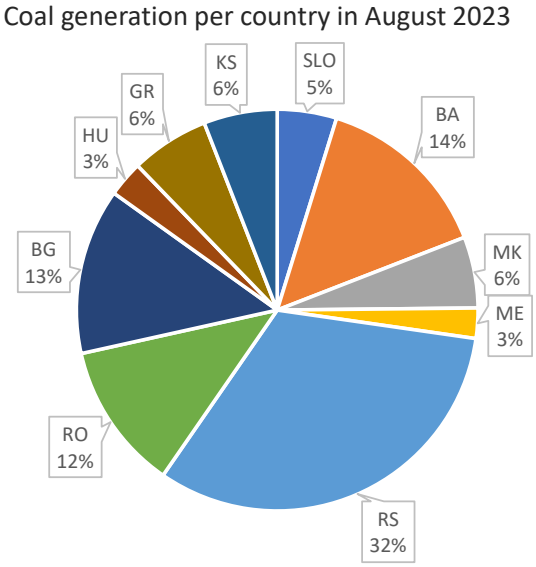


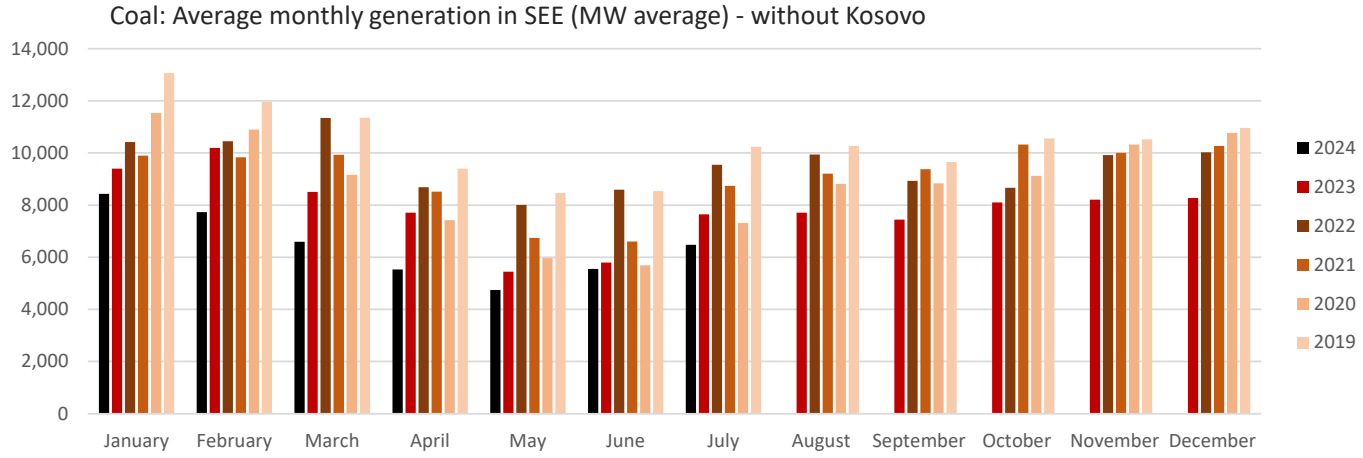
Consumption profile August 2023 vs August 2022 and solar rise

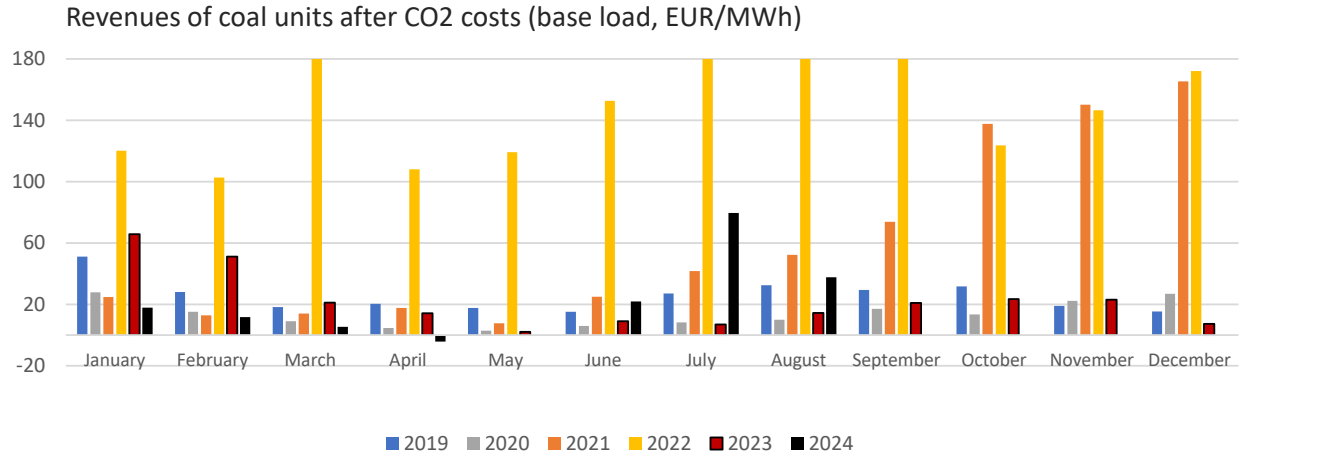


COAL-FIRED GENERATION

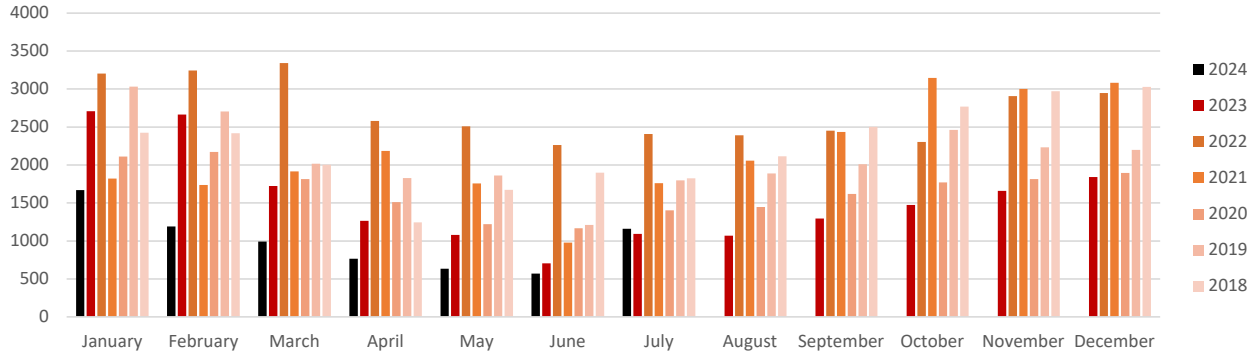




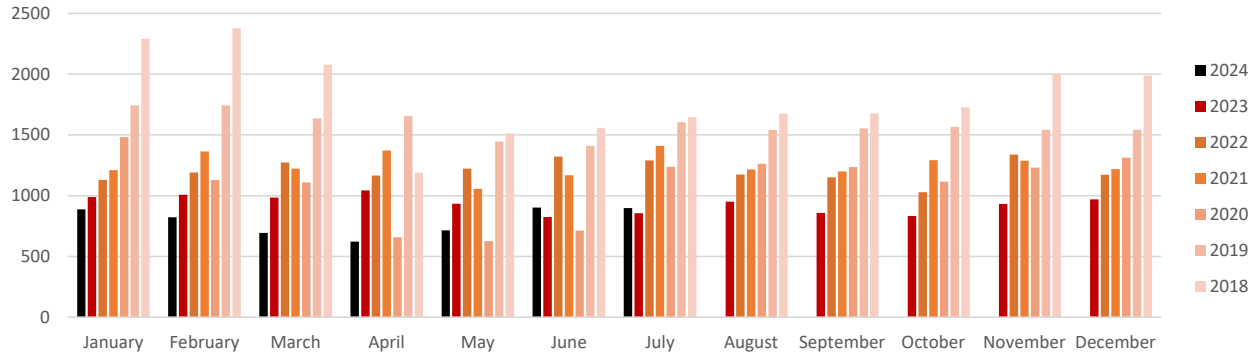




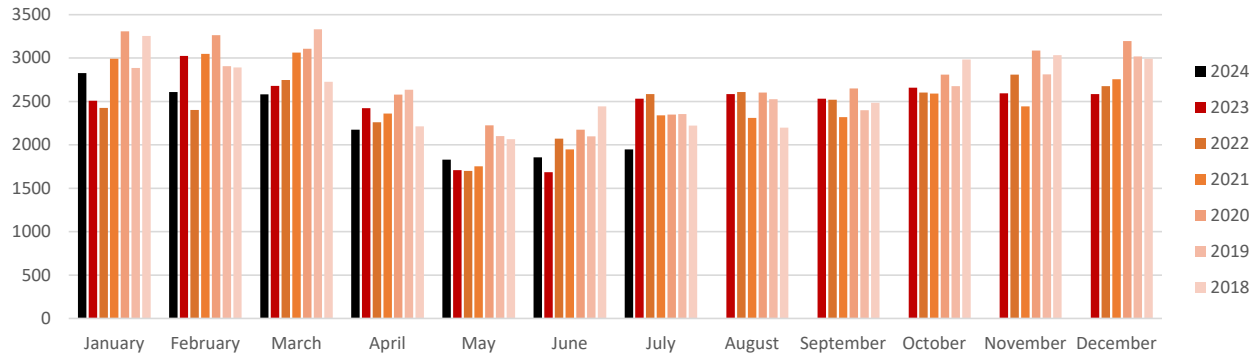
Bulgaria: Average coal-fired generation (MW average)



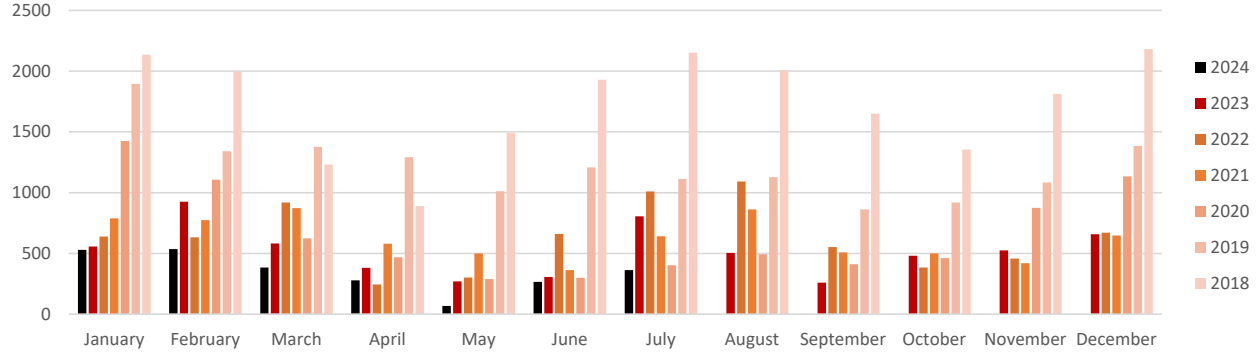
Romania: Average coal-fired generation (MW average)

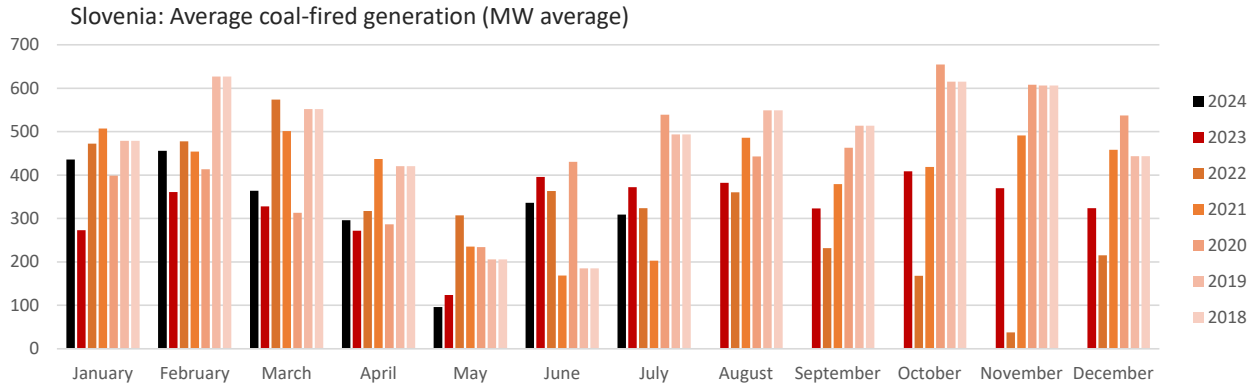


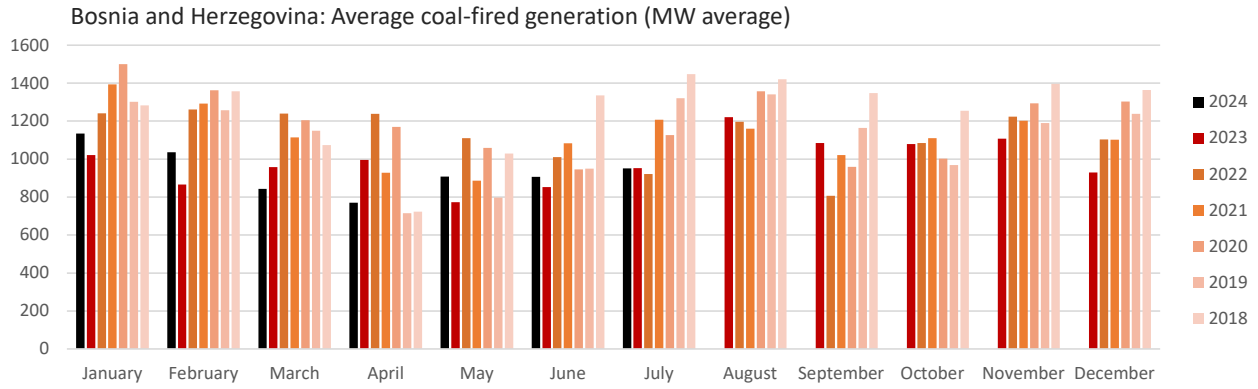
Serbia: Average coal-fired generation (MW average)

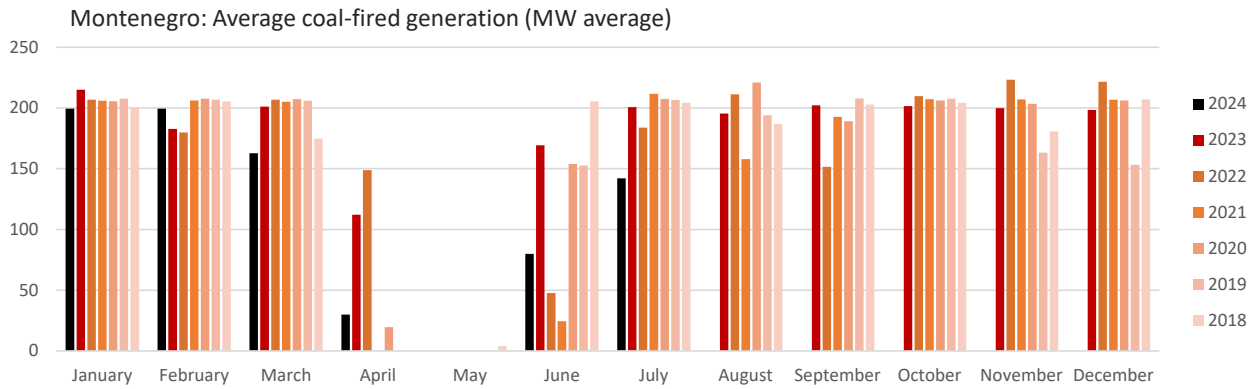


Greece: Average coal-fired generation (MW average)

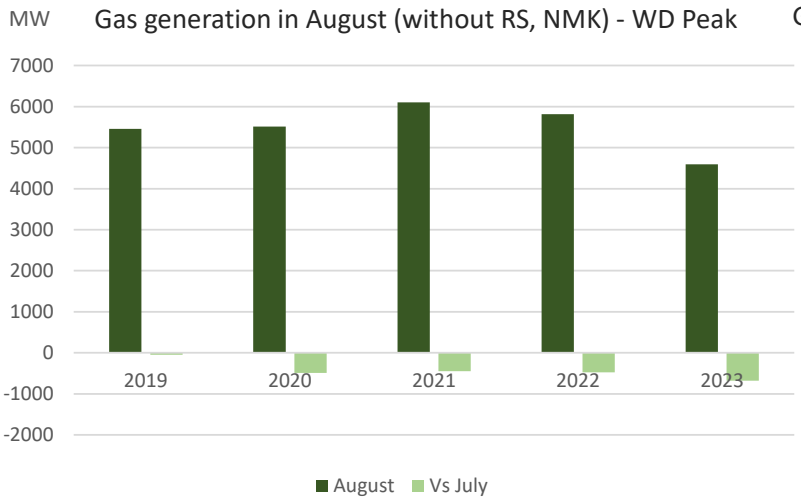


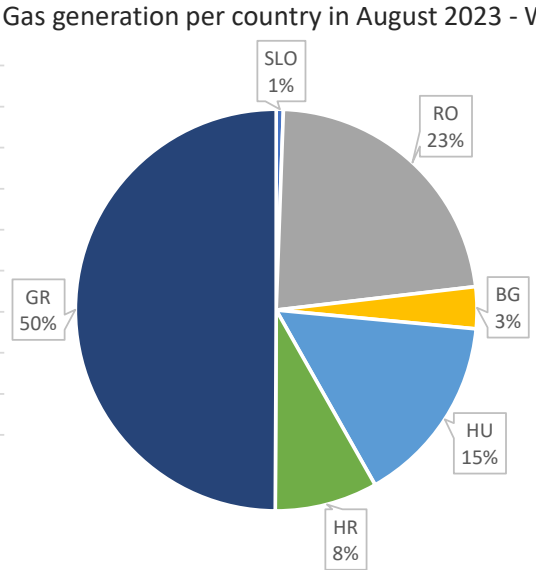

Slovenia: Average coal-fired generation (MW average)
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
2024
2023
2022
2021
2020
2019
2018

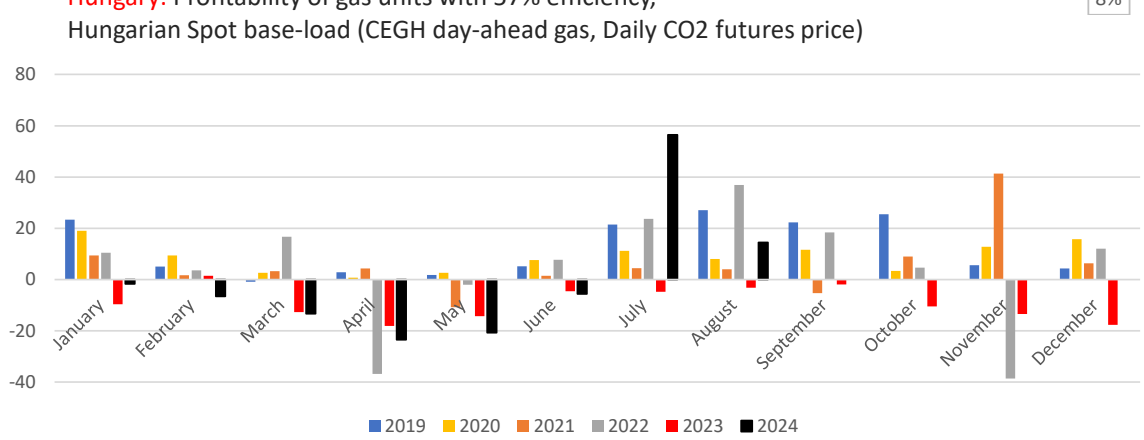

Bosnia and Herzegovina: Average coal-fired generation (MW average)
1600
1400
1200
1000
800
600
400
200
0
January
February
March
April
May
June
July
August
September
October
November
December
2024
2023
2022
2021
2020
2019
2018

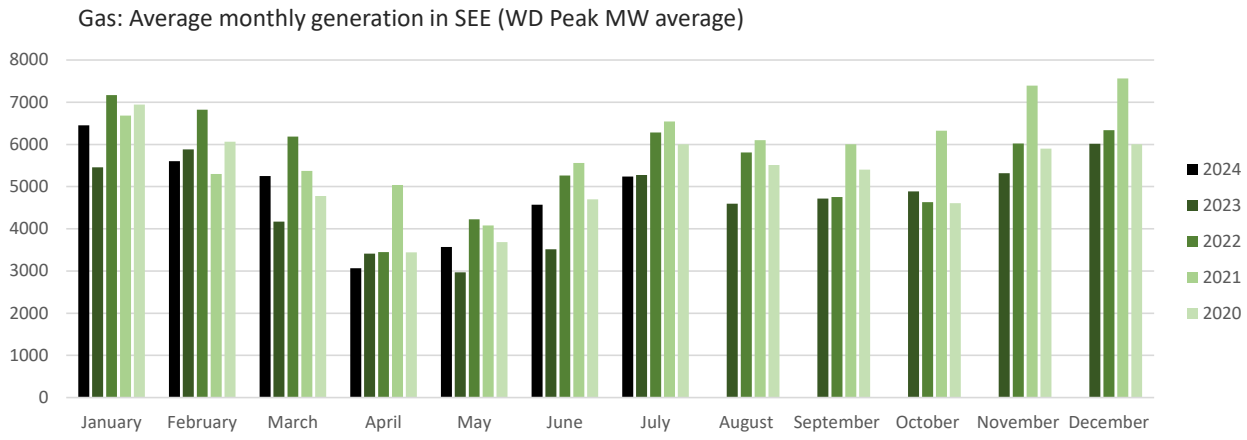

Montenegro: Average coal-fired generation (MW average)
250
200
150
100
50
0
January
February
March
April
May
June
July
August
September
October
November
December
2024
2023
2022
2021
2020
2019
2018

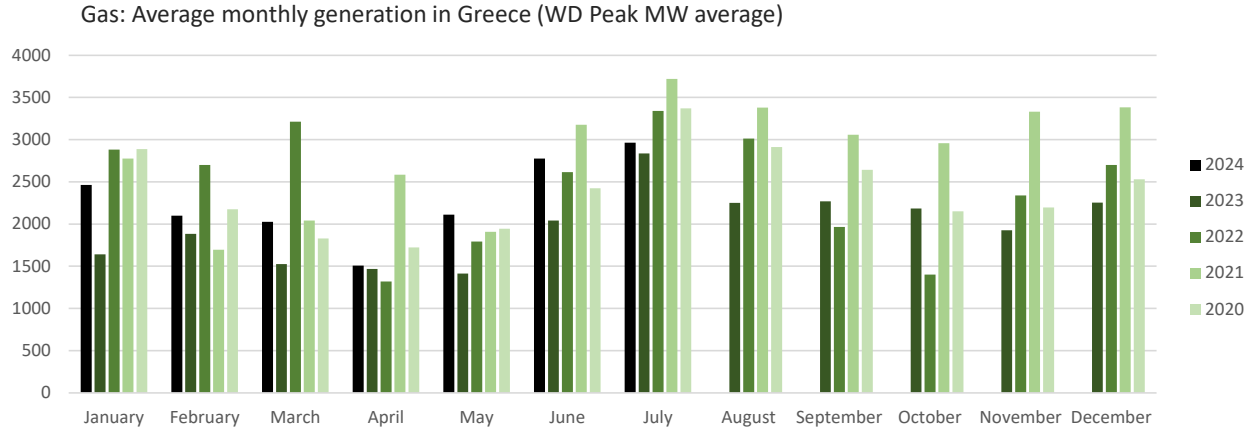
GAS-FIRED GENERATION



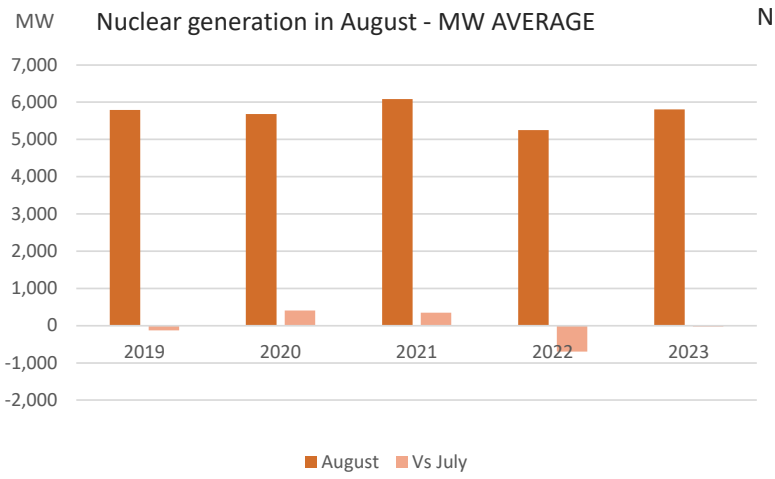


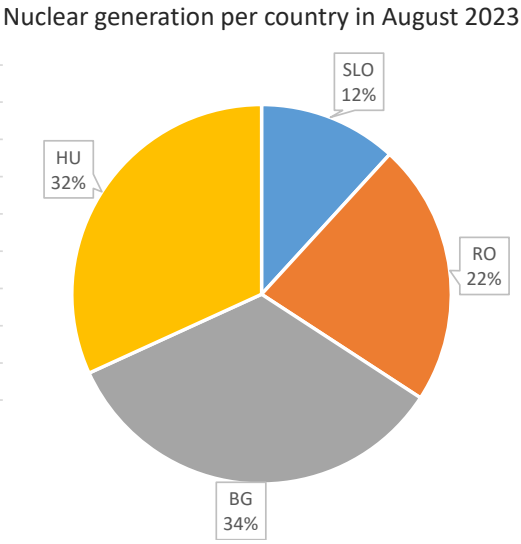


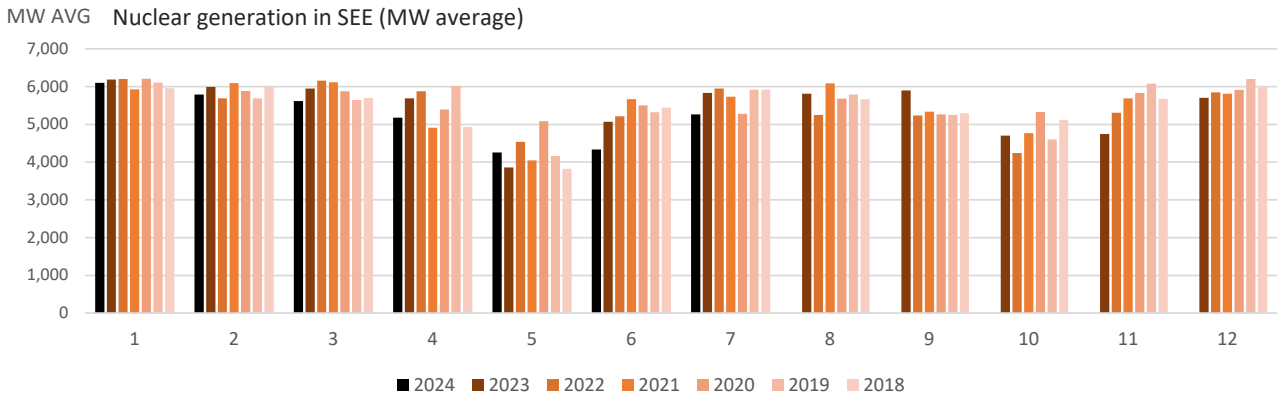


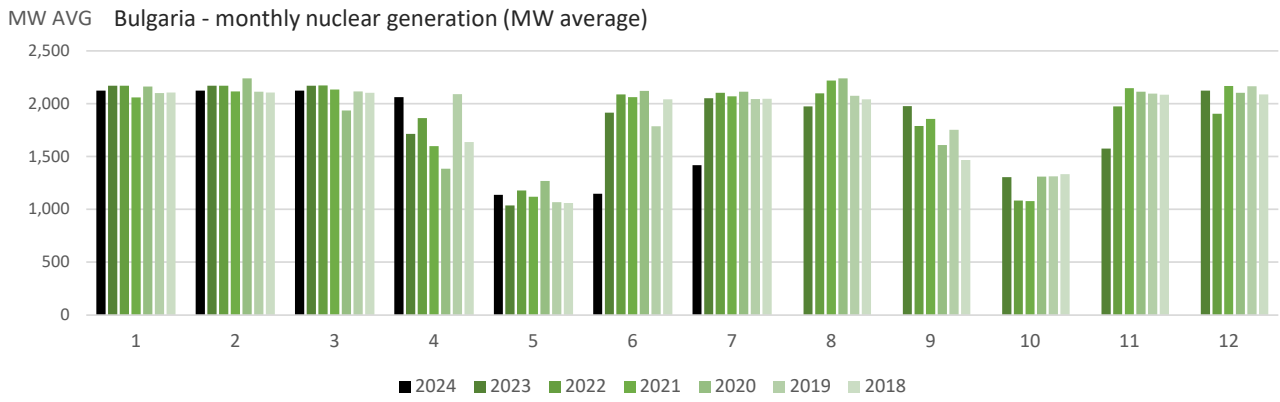


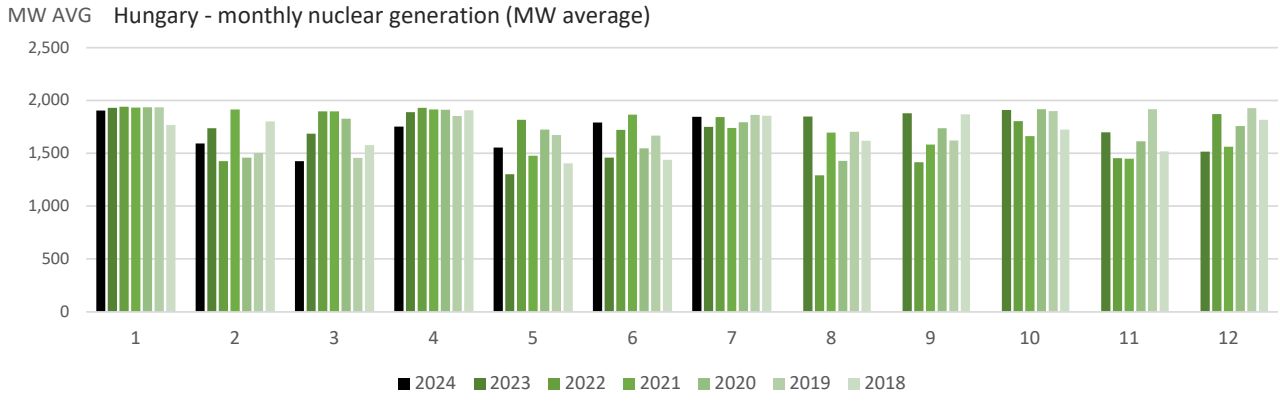
NUCLEAR GENERATION

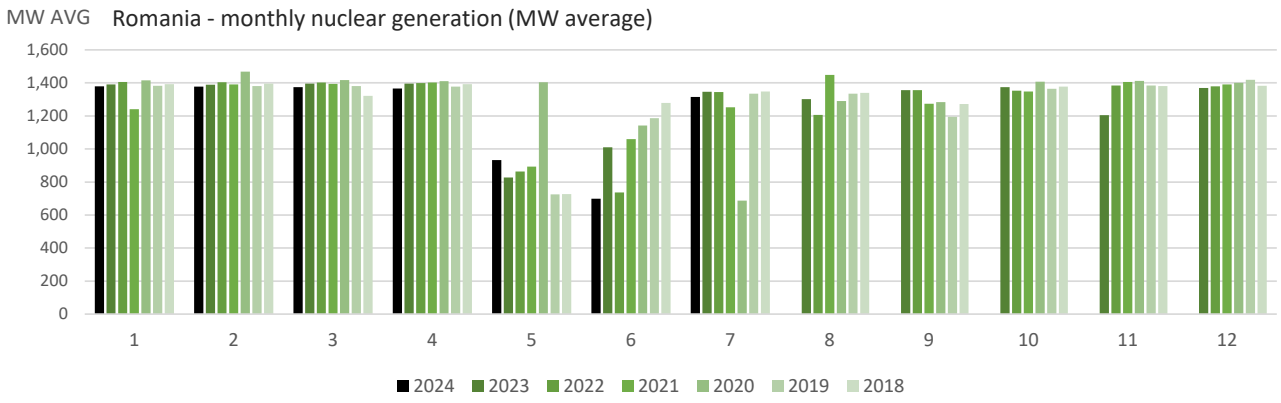


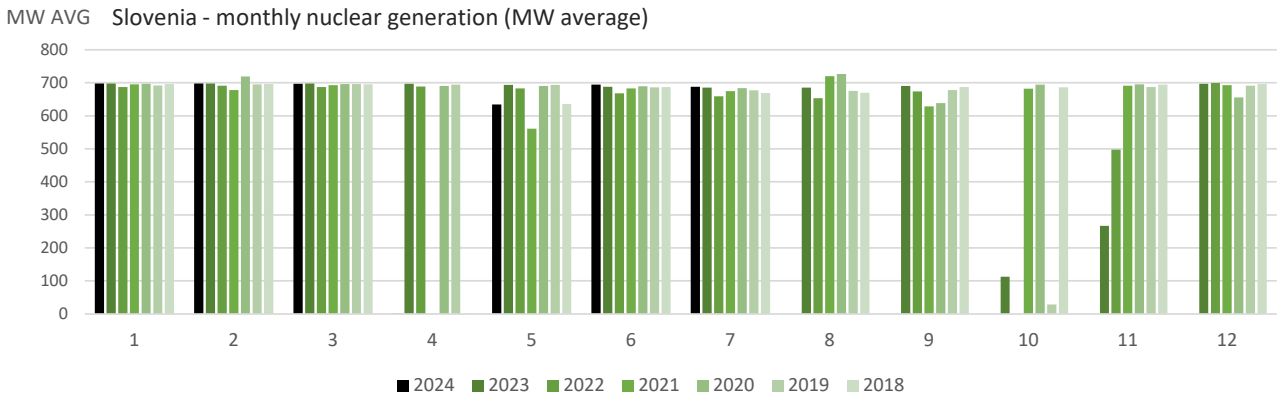




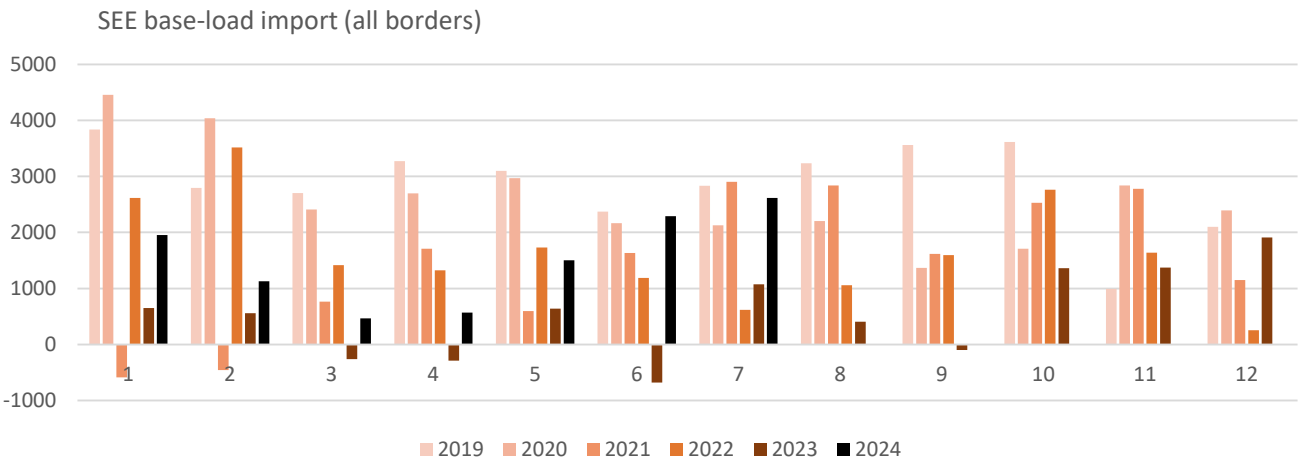


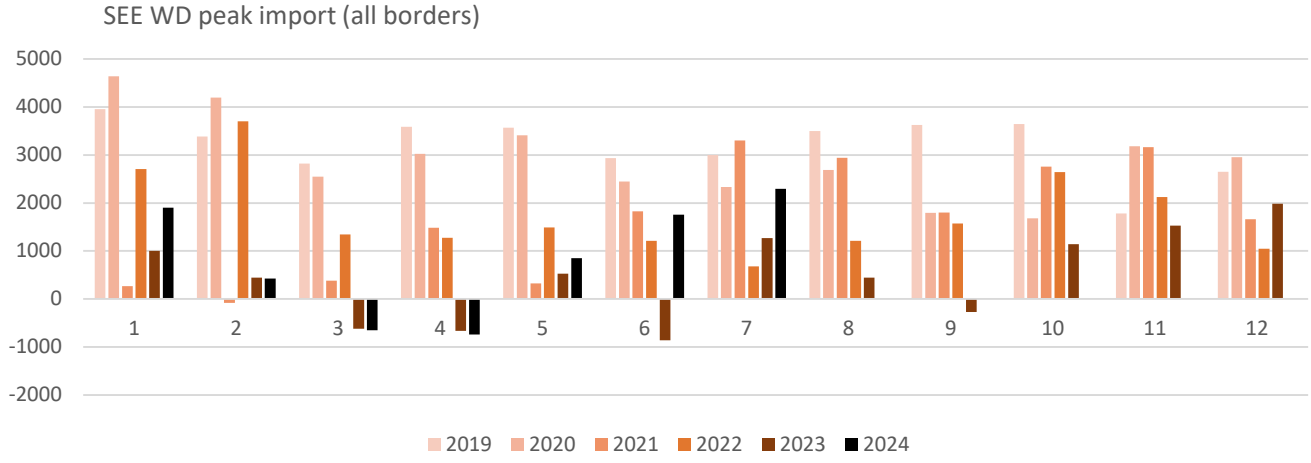






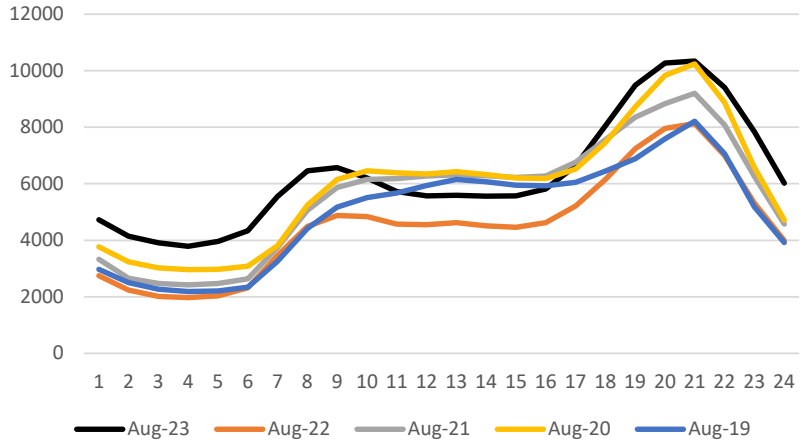
SEE IMPORT (MW AVG)



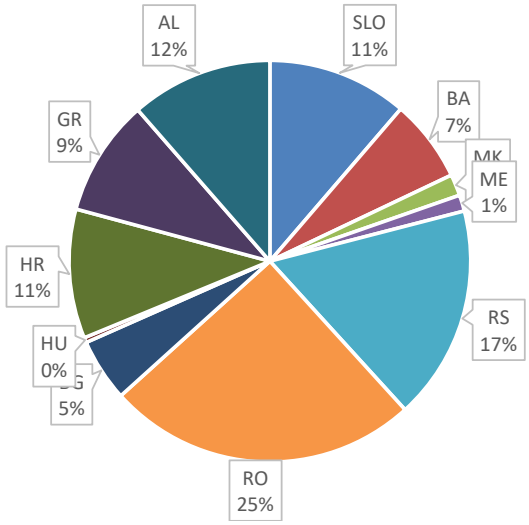


HYDRO GENERATION

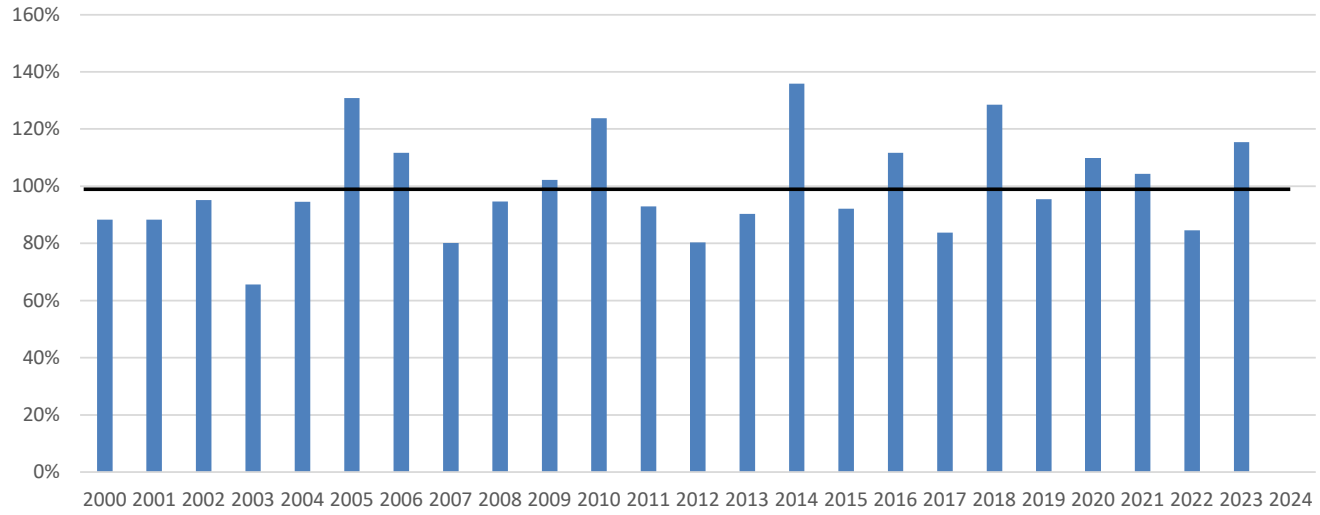
Hydro generation in August, 24h profile (MW)



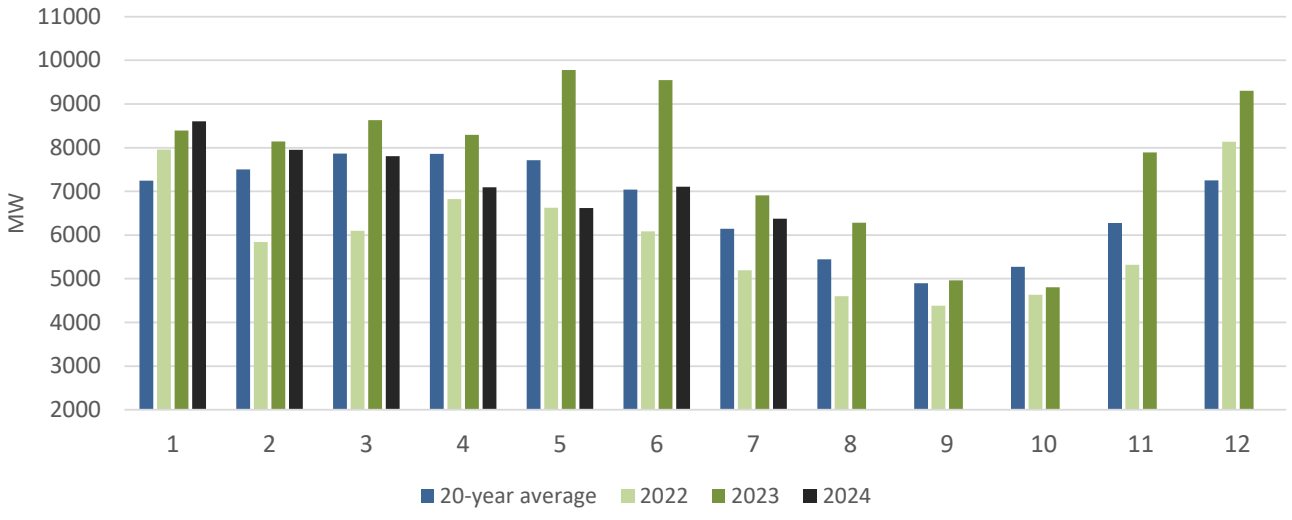
Hydro generation per country in August 2023

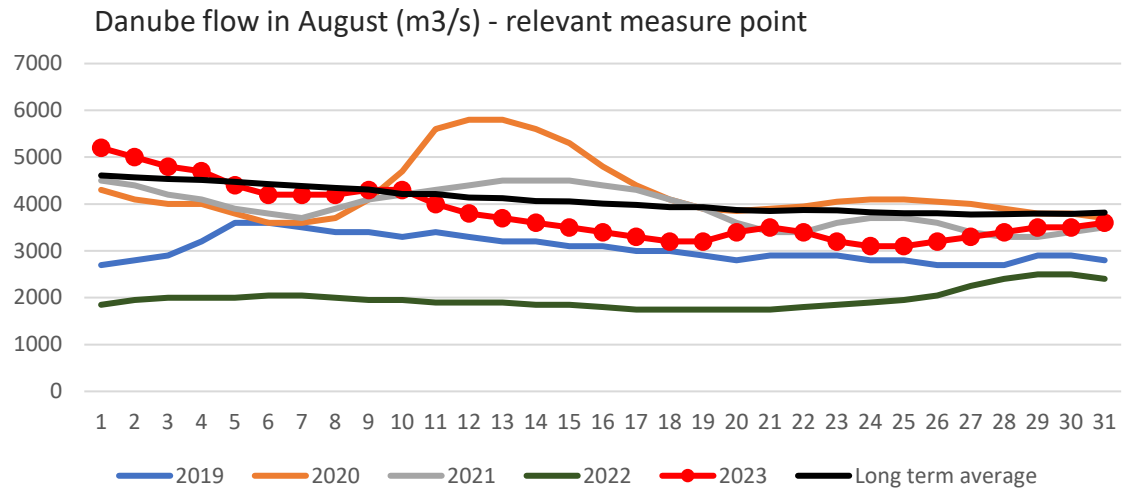


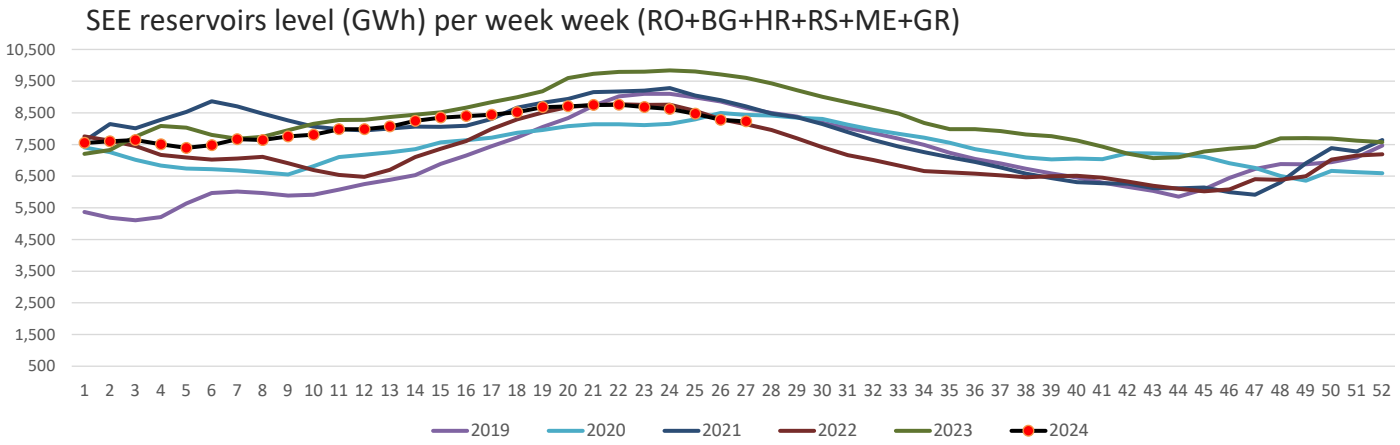
Hydro generation in August
compared to average (entire SEE)



Average monthly hydro generation (entire SEE)

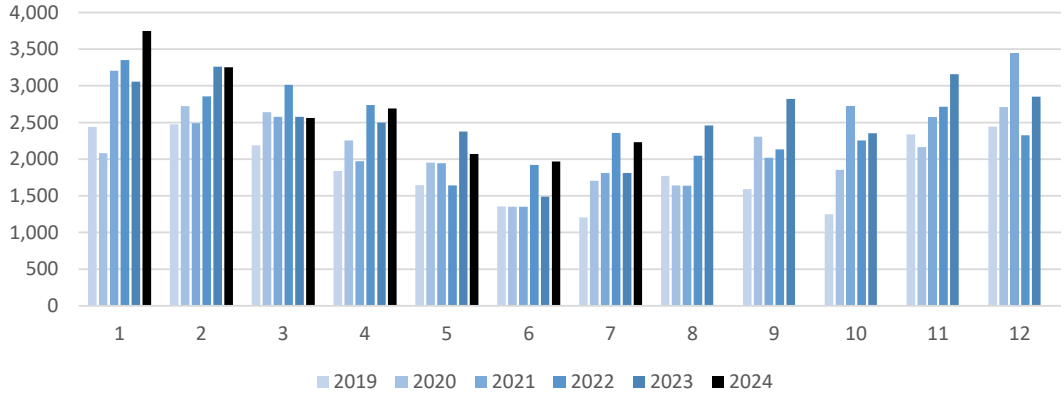



Danube flow in August (m3/s) - relevant measure point
7000
6000
5000
4000
3000
2000
1000
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
2019
2020
2021
2022
2023
Long term average

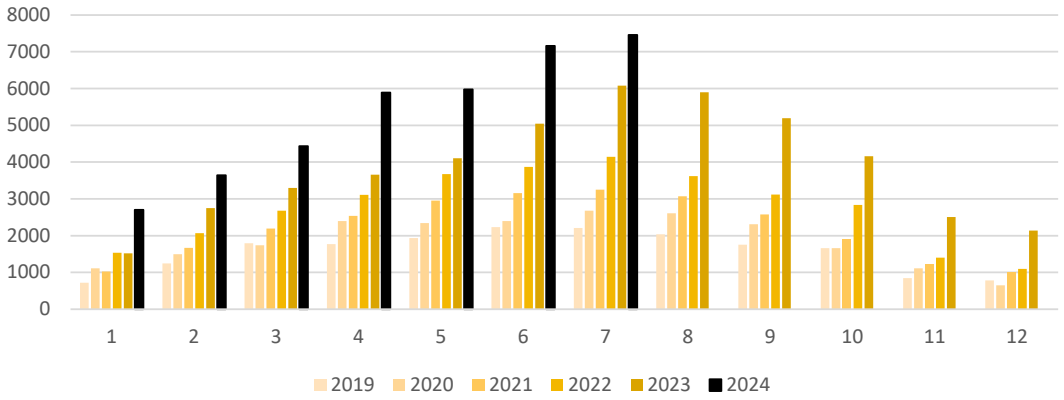

SEE reservoirs level (GWh) per week week (RO+BG+HR+RS+ME+GR)
10,500
9,500
8,500
7,500
6,500
5,500
4,500
3,500
2,500
1,500
500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
2019
2020
2021
2022
2023
2024

WIND AND SOLAR GENERATION

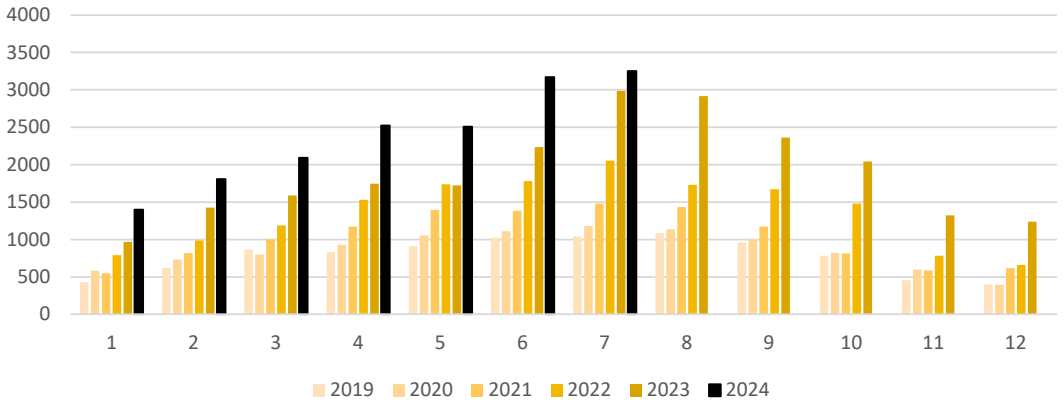
Base Wind generation (MW average, HU+GR+BG+RO+HR+SI)



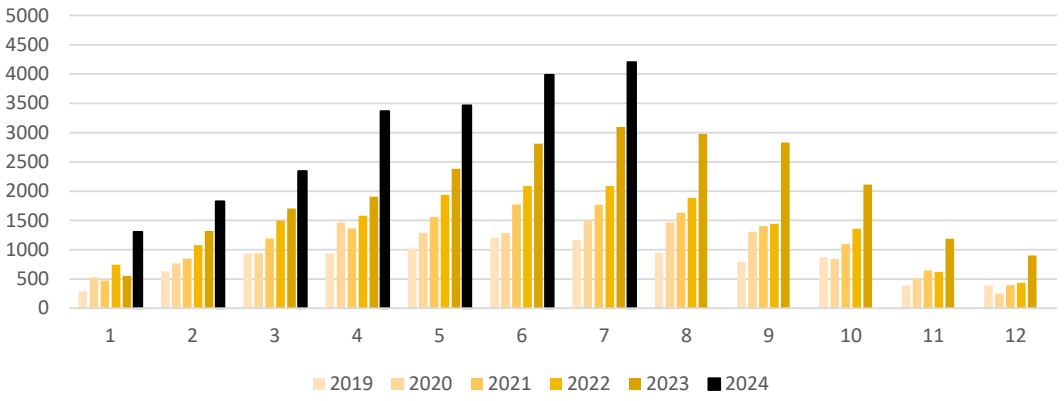
Peak Solar generation (MW average, HU+BG+RO+HR+SI+GR)



Greece - Peak Solar generation (MW average)



Peak Solar generation (MW average, HU+BG+RO+HR+SI) - NO GR



ATC AUCTIONS (monthly auctiuons - Hungarian and SEE borders for August 2024)

	AT>HU	AT>SI	SEPS>HU	SI > IT	RO > HU	UA > HU	RO>RS
1-Aug-24		300		0	120	0	
2-Aug-24		300		0	120	0	
3-Aug-24		300		0	120	0	
4-Aug-24		300		0	120	0	
5-Aug-24		300		0	120	0	
6-Aug-24		300		0	120	0	
7-Aug-24		300		0	120	0	
8-Aug-24		300		0	120	0	
9-Aug-24		300		0	120	0	
10-Aug-24		300		0	120	0	
11-Aug-24		300		0	120	0	
12-Aug-24		300		0	120	0	
13-Aug-24		300		0	120	0	
14-Aug-24		300		0	120	0	
15-Aug-24		300		0	120	0	
16-Aug-24		300		0	120	0	
17-Aug-24		300		0	120	0	
18-Aug-24		300		0	120	0	
19-Aug-24		300		0	120	0	
20-Aug-24		300		0	120	0	
21-Aug-24		300		0	120	0	
22-Aug-24		300		0	120	0	
23-Aug-24		300		0	120	0	
24-Aug-24		300		0	120	0	
25-Aug-24		300		0	120	0	
26-Aug-24		300		0	0	0	
27-Aug-24		300		0	0	0	
28-Aug-24		300		0	0	0	
29-Aug-24		300		0	0	0	
30-Aug-24		300		0	0	0	
31-Aug-24		300		0	0	0	
AVG	N/A	300	N/A	0	97	0	N/A

	BG>RS	BG > GR	MK > GR	BG > TR	BG > MK
1-Aug-24	0		300		300
2-Aug-24	0		300		300
3-Aug-24	250		300		250
4-Aug-24	250		300		250
5-Aug-24	250		300		250
6-Aug-24	250		300		250
7-Aug-24	250		300		250
8-Aug-24	250		300		250
9-Aug-24	250		300		250
10-Aug-24	250		300		250
11-Aug-24	250		300		250
12-Aug-24	250		300		250
13-Aug-24	250		300		250
14-Aug-24	250		300		250
15-Aug-24	250		300		250
16-Aug-24	250		300		250
17-Aug-24	250		300		250
18-Aug-24	250		300		250
19-Aug-24	250		300		250
20-Aug-24	250		300		250
21-Aug-24	250		300		250
22-Aug-24	250		300		250
23-Aug-24	250		300		250
24-Aug-24	250		300		250
25-Aug-24	250		300		250
26-Aug-24	250		300		250
27-Aug-24	250		300		250
28-Aug-24	250		300		250
29-Aug-24	250		300		250
30-Aug-24	250		300		250
31-Aug-24	250		300		250
AVG	234	N/A	300	N/A	253

ATC AVERAGES FOR AUGUST

	AT>HU	AT>SI	SEPS>HU	SI > IT	RO > HU	UA > HU	RO>RS	BG>RS	BG > GR	NMK > GR	BG > TR	BG > NMK
2024	N/A	300	N/A	0	97	0	N/A	234	N/A	300	N/A	253
2023	150	300	151	15	280	0	160	194	400	250	234	306
2022	100	250	200	35	280	0	232	200	331	331	116	250
2021	100	60	600	42	200	455	131	251	0	356	269	300
2020	0	0	390	60	80	455	197	271	302	319	32	271
2019	100	217	400	92	114	443	172	147	316	200	172	200
2018	80	65	450		80	455	147	97	302	164	235	250
2017	100	150	450	141	200	45	162	200	150	150	234	100

AUGUST NET POSITIONS (MW average)

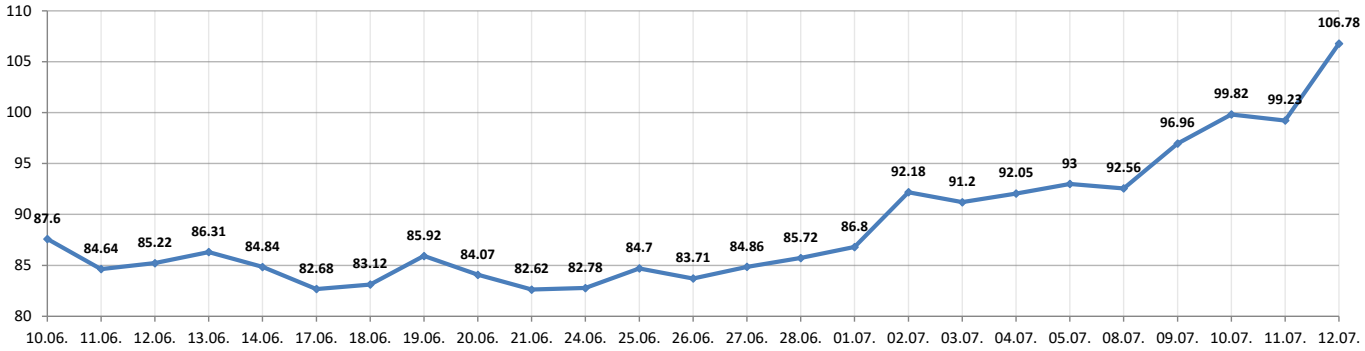
MW AVG	2018	2019	2020	2021	2022	2023
BA NET EXPORT	513	579	488	266	247	441
BG NET EXPORT	1,382	899	641	1,077	1,619	525
HR NET EXPORT	-1,067	-1,105	-923	-871	-845	-546
HU NET EXPORT	-1,651	1,351	-1,414	-1,316	-1,407	-809
GR NET EXPORT	-555	-1,024	-1,320	-792	522	-435

MW AVG	2018	2019	2020	2021	2022	2023
NMK NET EXPORT	-118	-11	-38	-90	-22	18
ME NET EXPORT	-105	-116	-69	-181	-192	-141
RO NET EXPORT	484	-692	-192	-660	-524	-189
RS NET EXPORT	-266	-145	483	-147	-279	322
SI NET EXPORT	87	-16	374	306	-14	678

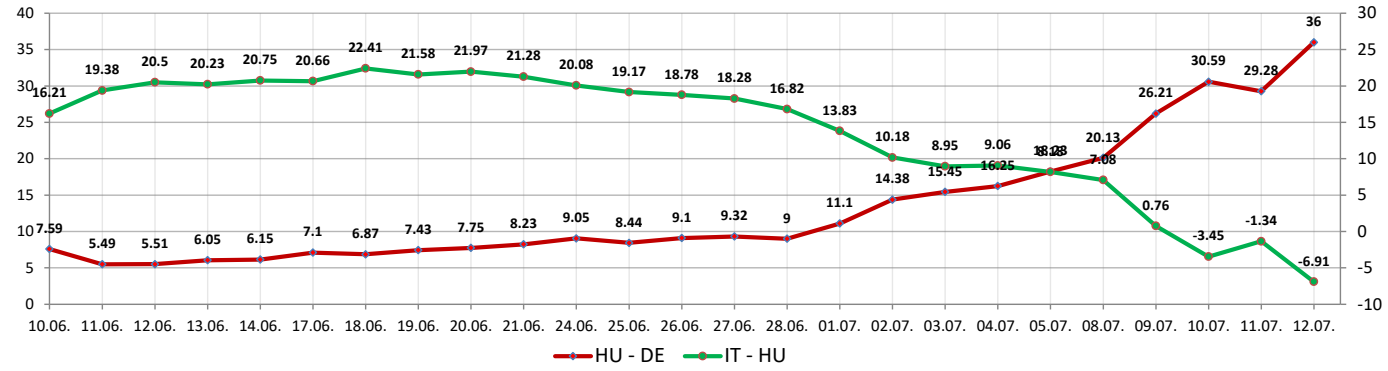
MARKET PRICES FOR AUGUST 2024

BASE

HU-EEX- August 2024 price (EUR/MWh), BASE

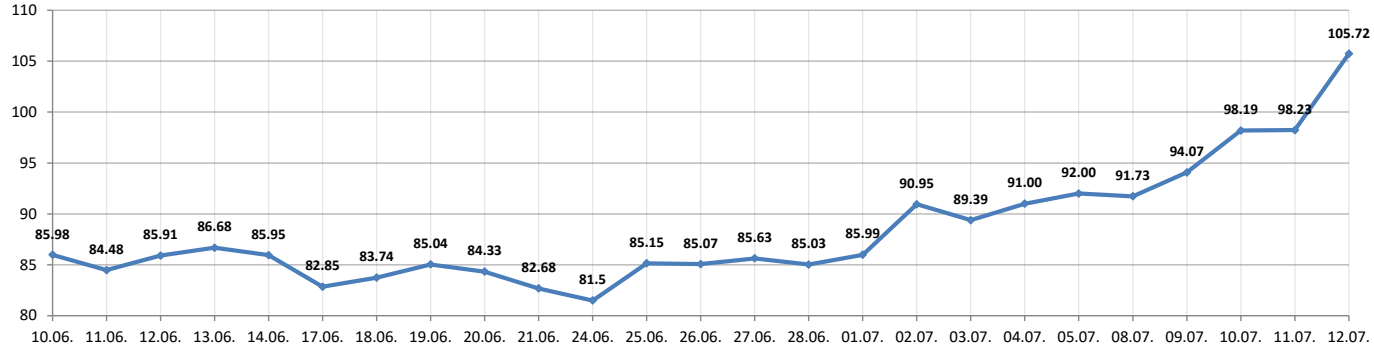


DE BASE Spread: EEX- August 2024 price (EUR/MWh) PUN



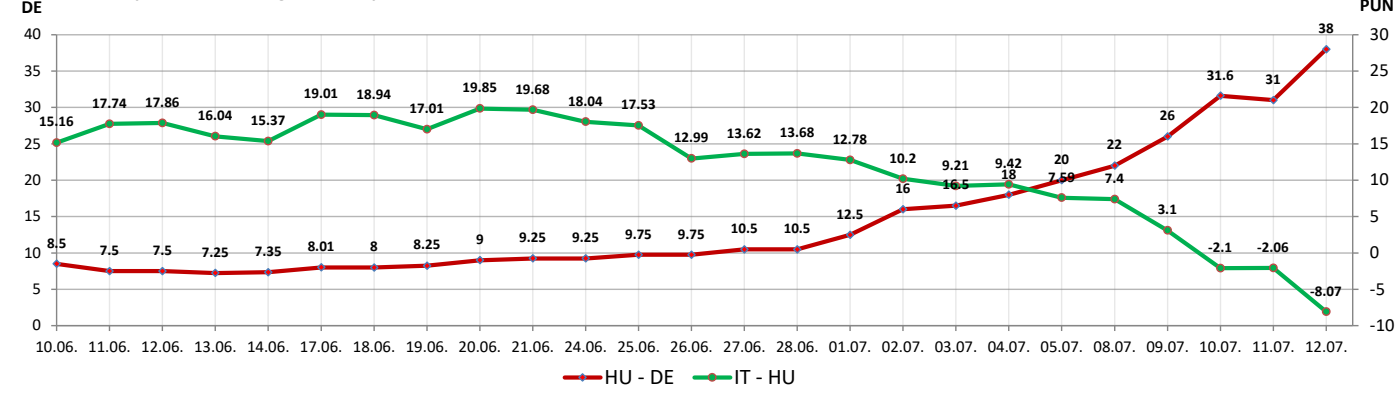
PEAK

HU-EEX - August 2024 price (EUR/MWh), PEAK



PEAK Spread: EEX - August 2024 price (EUR/MWh)

DE PUN



AUGUST HISTORICAL DATA - MW AVERAGE

Germany	2017	2018	2019	2020	2021	2022	2023
EEX (EUR/MWh)	30.85	56.19	36.85	34.86	82.70	465.18	94.32

IT Nord	2017	2018	2019	2020	2021	2022	2023
(EUR/MWh)	55.38	65.43	45.23	37.99	105.66	547.60	111.17

Hungary (MW AVG)	2017	2018	2019	2020	2021	2022	2023
HUPX (EUR/MWh)	58.31	60.45	58.69	37.60	109.02	495.29	100.41
Consumption	4,706	4,844	4,763	4,609	4,675	4,584	4,495
Hydro Generation	19	20	19	27	22	10	25
Coal fired Generation	685	563	410	478	378	356	230
Gas fired Generation	704	522	761	887	786	789	702
Oil fired Generation	5	7	5	0	3	3	1
Nuclear Generation	1,372	1,618	1,704	1,328	1,606	1,293	1,848
RES Generation	265	242	354	449	543	690	840
Total Generation	3,108	3,102	3,340	3,212	3,337	3,140	3,645
Export-Import balance	-1,598	-1,651	1,351	-1,414	-1,316	-1,407	-809

Slovenia (MW AVG)	2017	2018	2019	2020	2021	2022	2023
BSP (EUR/MWh)	57.45	60.83	54.59	37.59	105.46	494.01	94.69
Consumption	1,508	1,438	1,392	1,289	1,409	1,142	1,140
Hydro Generation	454	375	390	593	536	263	712
Coal fired Generation	551	565	378	450	485	356	382
Gas fired Generation	1	0	31	35	30	30	26
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	665	669	675	680	675	653	685
RES Generation	66	58	59	58	56	56	61
Total Generation	1,726	1,655	1,533	1,816	1,782	1,358	1,867
Export-Import balance	177	87	-16	374	306	-14	678

Romania (MW AVG)	2017	2018	2019	2020	2021	2022	2023
OPCOM (EUR/MWh)	56.93	52.27	60.19	37.88	112.70	490.43	101.22
Consumption	6,210	6,581	6,594	6,347	6,609	6,134	5,932
Hydro Generation	1,237	2,202	1,345	1,825	1,519	1,245	1,581
Coal fired Generation	1,733	1,497	1,372	1,262	1,212	1,164	951
Gas / Mixed / Oil	997	1,091	828	1,091	1,120	1,154	1,034
	0	0	0	0	0	0	0
Nuclear Generation	1,200	1,227	1,335	1,198	1,358	1,205	1,300
RES Generation	905	734	843	837	723	860	867
Total Generation	6,161	6,824	5,675	6,214	5,931	5,629	5,733
Export-Import balance	-65	484	-692	-192	-660	-524	-189

Bulgaria (MW AVG)	2017	2018	2019	2020	2021	2022	2023
IBEX (EUR/MWh)	38.42	40.00	52.13	37.42	111.55	432.85	101.35
Consumption	3,503	3,964	3,935	3,707	4,036	3,828	3,737
Hydro Generation	335	640	334	324	329	394	319
Coal fired Generation	1,862	1,972	1,626	1,476	2,118	2,392	1,068
Gas fired Generation	108	117	125	173	203	191	154
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	1,887	1,934	2,074	2,098	2,078	2,098	1,974
RES Generation	412	350	340	341	348	389	731
Total Generation	4,616	4,905	4,376	4,413	5,077	5,463	4,247
Export-Import balance	1,048	1,382	899	641	1,077	1,619	525

Serbia (MW AVG)	2017	2018	2019	2020	2021	2022	2023
SEEPEX (EUR/MWh)	59.31	61.01	58.97	37.24	109.65	491.96	96.78
Consumption	3,934	3,933	3,967	3,794	3,413	3,393	3,462
Hydro Generation	794	1,051	859	1,132	927	635	1,089
Coal fired Generation	2,200	2,530	2,527	2,612	2,324	2,608	2,586
Gas / Other Generation	0	0	0	1	1	1	1
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	0	0	0	20	27	30	30
Total Generation	4,140	3,753	3,386	3,780	3,280	3,274	3,706
Export-Import balance	67	-266	-145	483	-147	-279	322

*RES data doesn`t include wind generation

*Load data includes KS for 2016-2020

Croatia (MW AVG)	2017	2018	2019	2020	2021	2022	2023
CROPEX (EUR/MWh)	59.37	60.83	55.87	38.13	105.51	493.67	96.11
Consumption	2,191	2,254	2,185	2,058	2,163	2,142	2,159
Hydro Generation	503	552	410	366	483	279	656
Coal fired Generation	0	184	188	188	190	193	194
Gas fired Generation	380	266	285	321	312	441	379
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	183	194	202	289	313	402	375
Total Generation	1,065	1,196	1,094	1,164	1,297	1,316	1,605
Export-Import balance	-1,180	-1,067	-1,105	-923	-871	-845	-546

BiH (MW AVG)	2017	2018	2019	2020	2021	2022	2023
Consumption	1,378	1,236	1,296	1,141	1,233	1,218	1,173
Hydro Generation	398	492	460	323	310	284	419
Coal fired Generation	1,242	1,421	1,341	1,284	1,086	1,118	1,145
Gas fired Generation	0	0	0	0	0	0	0
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	0	9	15	15	22	17	12
Total Generation	1,641	1,905	1,796	1,298	1,418	1,419	1,576
Export-Import balance	216	513	579	488	266	247	441

Montenegro (MW AVG)	2017	2018	2019	2020	2021	2022	2023
Consumption	442	445	437	368	731	394	383
Hydro Generation	52	148	116	82	102	57	82
Coal fired Generation	179	187	194	207	144	205	195
Gas fired Generation	0	0	0	0	0	0	0
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	0	8	16	27	24	25	26
Total Generation	243	343	326	316	270	287	303
Export-Import balance	-199	-105	-116	-69	-181	-192	-141

Macedonia (MW AVG)	2017	2018	2019	2020	2021	2022	2023
Consumption	711	681	688	628	449	563	599
Hydro Generation	101	125	107	212	151	97	109
Gas + Coal Generation	457	445	573	366	413	451	458
	0	0	0	0	0	0	0
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	22	16	16	12	9	12	13
Total Generation	569	586	699	578	573	560	580
Export-Import balance	-142	-118	-11	-38	-90	-22	18

Greece (MW AVG)	2017	2018	2019	2020	2021	2022	2023
Price (EUR/MWh)	50.57	63.83	64.02	46.14	121.72	436.53	109.33
Consumption	6,539	6,276	6,630	6,206	7,051	6,070	6,378
Hydro Generation	522	634	550	438	618	583	592
Coal fired Generation	1,808	1,977	1,137	465	863	1,092	504
Gas fired Generation	1,239	1,232	2,388	2,617	3,161	3,013	2,288
Oil fired Generation	0	0	0	0	0	0	0
Nuclear Generation	0	0	0	0	0	0	0
RES Generation	1,540	1,492	1,366	1,289	1,567	1,743	2,537
Total Generation	6,026	5,765	5,562	4,809	6,210	6,431	5,922
Export-Import balance	-515	-555	-1,024	-1,320	-792	522	-435

AUGUST 2024 MONTHLY ATC AUCTIONS (with currently available results)

Border+Direction	NTC	AAC	ATC	AATC	Price	Validity period:
Auctions for 100% of ATC						
Austria > Hungary		250				01-31.08.2024
Austria > Slovenia	**600**	300	**300**			01-31.08.2024
Albania > XK	**200**	200	**0**			01-31.08.2024
Albania > Montenegro	**200**	200	**0**			01-31.08.2024
Albania > Greece	**250**	200	**50**			01-31.08.2024
BIH > Croatia	**500**	400	**100**			01-31.08.2024
BIH > Montenegro	**350**	200	**150**			01-31.08.2024
BIH > Serbia	**500**	150	**350**	**350**	**3.55**	01-31.08.2024
Bulgaria > Serbia	**0**	0	**0**	**0**	**0.00**	01-02.08.2024
	250	150	**400**	**0**	**0.00**	03-31.08.2024
Bulgaria > Romania	**1700**	500	**1200**			01-31.08.2024
Bulgaria > NMK	**450**	150	**300**	**300**	**1.10**	01-02.08.2024
	400	150	**250**	**250**	**1.60**	03-31.08.2024
Bulgaria > Greece		300				01-31.08.2024
Croatia > Slovenia		500				01-31.08.2024
Croatia > Hungary	**450**	400	**50**			01-31.08.2024
Croatia > Serbia	**300**	150	**150**			01-31.08.2024
Croatia > BIH	**500**	398	**102**			01-31.08.2024
Hungary > Romania	**470**	350	**120**			01-25.08.2024
	350	350	**0**			26-31.08.2024
Hungary > Serbia	**200**	200	**0**			01-31.08.2024
Hungary > Croatia	**500**	500	**0**			01-31.08.2024
Hungary > Ukraine		0				01-31.08.2024
Hungary > Austria		249				01-31.08.2024
Hungary > Slovakia		800				01-31.08.2024
Hungary > Slovenia	**200**	150	**50**			01-31.08.2024
Greece > Albania	**250**	200	**50**			01-31.08.2024
Greece > NMK	**450**	150	**300**			01-31.08.2024
Greece > Bulgaria	**800**	300	**500**			01-31.08.2024
Greece > Italy		50				01-31.08.2024
Greece > Turkey	**166**	50	**116**			01-31.08.2024
NMK > Serbia	**500**	150	**350**	**350**	**0.90**	01-31.08.2024
NMK > Bulgaria	**450**	150	**300**	**300**	**0.30**	01-02.08.2024
	400	150	**250**	**250**	**0.50**	03-31.08.2024
NMK > Greece	**450**	150	**300**			01-31.08.2024
NMK > XK	**350**	100	**250**			01-31.08.2024
Montenegro > Albania	**200**	200	**0**			01-31.08.2024
Montenegro > BIH	**350**	199	**151**			01-31.08.2024
Montenegro > Serbia	**200**	100	**100**	**100**	**4.50**	01-31.08.2024
Montenegro > Italy	**400**	140	**260**			01-31.08.2024
Montenegro > XK	**200**	100	**100**			01-31.08.2024
Romania > Bulgaria	**1800**	500	**1300**			01-31.08.2024
Romania > Serbia		250				01-31.08.2024
Romania > Hungary	**470**	350	**120**			01-25.08.2024
Romania > Ukraine	**350**	350	**0**			26-31.08.2024
Serbia > XK						01-31.08.2024
Serbia > BiH	**500**	150	**350**	**350**	**0.15**	01-31.08.2024
Serbia > Bulgaria	**0**	0	**0**	**0**	**0.00**	01-02.08.2024
	400	150	**250**			03-31.08.2024
Serbia > Croatia	**300**	150	**150**			01-31.08.2024
Serbia > Hungary	**200**	200	**0**			01-31.08.2024
Serbia > Montenegro	**300**	100	**200**	**200**	**4.32**	01-31.08.2024
Serbia > N.Macedonia	**600**	150	**450**	**450**	**0.40**	01-31.08.2024
Serbia > Romania		250				01-31.08.2024
Slovenia > Croatia		500				01-31.08.2024
Slovenia > Austria	**300**	300	**0**			01-31.08.2024
Slovenia > Italy	**220**	220	**0**			01-31.08.2024
Slovenia > Hungary	**200**	150	**50**			01-31.08.2024
Italy > Greece		50				01-31.08.2024
Turkey > Greece	**50**	50	**0**	**0**	**0.00**	01-31.08.2024
Italy > Slovenia	**124**	124	**0**			01-31.08.2024
Italy > Montenegro	**399**	139	**260**			01-31.08.2024
Ukraine > Hungary	**0**	0	**0**	**0**	**0.00**	01-31.08.2024
Ukraine > Romania	**0**	0	**0**	**0**	**0.00**	01-31.08.2024

Border+Direction	NTC	AAC	ATC	AATC	Price	Validity period:
Auctions for 100% of ATC						
Slovakia > Hungary		699				01-31.08.2024
XK > Albania	**200**	200	**0**			01-31.08.2024
XK > Montenegro	**300**	100	**200**			01-31.08.2024
XK > NMK	**350**	100	**250**			01-31.08.2024

Border+Direction						Validity period:
50% of ATC - ESO, Bulgaria						
Bulgaria > Turkey		50				01-31.08.2024
Turkey > Bulgaria		50				01-31.08.2024