

WEEKLY Hungary + SEE POWER REVIEW

For Wk44-2023 (30.10.-05.11.) - published on Monday 06.11.2023



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PRICES | CONSUMPTION | COAL | GAS | HYDRO | NUCLEAR | RES | MAINTENANCES | TRANSMISSION | FLOWS

1. SPOT Power prices and Short overview

Main price drivers:

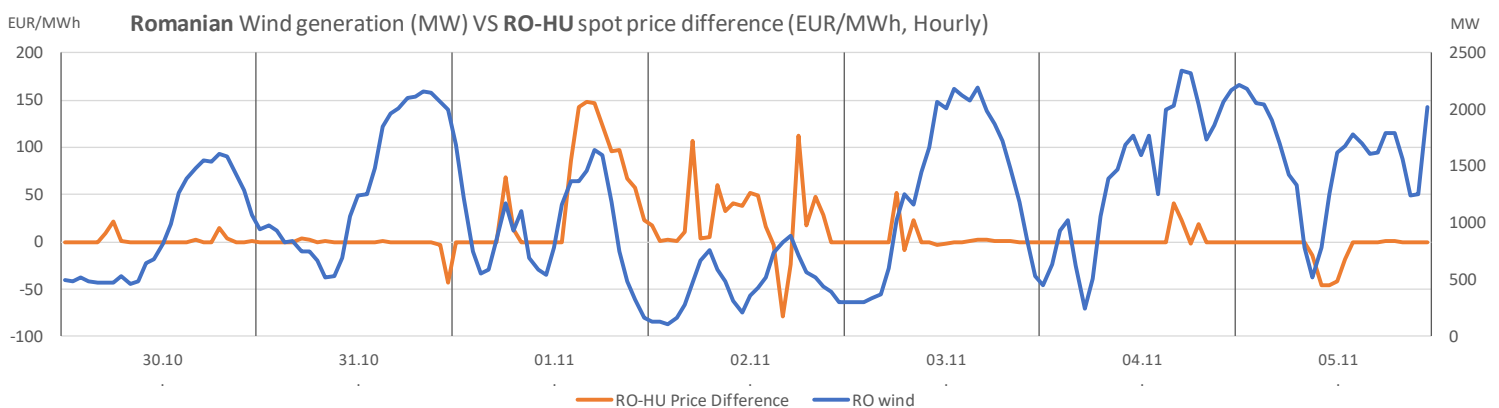
- SEE prices dropped strongly as CWE and Italian spot prices collapsed
- Although total SEE imports increased by 360 MW, imports from Core were just 120 MW higher, as delivery to Italy was reduced.
- Two most dominant local elements were extreme wind generation in SEE and low gas generation in Greece
- HUPX, CROPEX and BSP settled quite close to CWE markets, but OPCOM and IBEX settled significantly above HUPX, due to strong increase of SEE > GR flows (HENEX settled 20.5 EUR/MWh above HUPX)

	Absolute level				Wk-44 change vs previous weeks			
	Week 44	Week 43	Week 42	WK-44-2022	Week 43	Week 42	WK-44-2022	
Average price	<i>Prices</i>							
HUPX price	69.73	109.66	105.86	155.40	-39.9	-36.1	-85.7	
HU-DE difference	8.04	7.61	11.40	48.70	+ .4	-3.4	-40.7	
HU-AT difference	5.77	5.92	3.45	13.91	- .2	+2.3	-8.1	
AT GAS (CEGH)	41.25	46.96	46.79	78.20	-5.7	-5.5	-37.0	
* EUA – CO2 (Dec23)	78.26	79.81	81.96	75.27	-1.6	-3.7	+3.0	
SEE Power	<i>MW AVG</i>							
Consumption	28,984	28,991	29,766	29,788	-6	-782	-804	
Temperature	13.6	16.3	14.1	12.7	-2.6	- .5	+ .9	
Hydro generation	5,550	5,039	5,165	3,995	+511	+385	+1555	
Coal generation	8,632	8,729	9,070	10,053	-96	-438	-1420	
Gas generation	3,553	4,568	4,624	4,405	-1016	-1071	-852	
Nuclear generation	4,369	4,376	4,363	4,648	-6	+6	-279	
Wind	3,285	2,319	2,711	1,991	+966	+575	+1295	
Solar (peak)	2,787	3,202	3,508	2,011	-415	-721	+777	
SEE Export	<i>MW AVG</i>							
Base-load	-1,741	-1,383	-1,529	-3,164	-358	-212	+1423	
Base load (EUR/MWh)	05.11. SUN	04.11. SAT	03.11. FRI	02.11. THU	01.11. WED	31.10. TUE	30.10. MON	AVG EUR/MWh
HU-DE spread	1.99	6.67	10.63	29.63	0.88	1.83	4.68	8.04
Hungary	31.90	31.49	67.20	89.40	63.77	106.78	97.57	69.73
Germany	29.91	24.82	56.57	59.77	62.89	104.95	92.89	61.69
AT-DE spread	0.78	0.76	2.26	8.12	-1.54	1.84	3.71	2.28
Austria	30.69	25.58	58.83	67.89	61.35	106.79	96.60	63.96
Slovenia	30.00	27.98	66.73	72.05	63.86	107.24	97.83	66.53
Romania	24.82	34.88	69.92	111.61	108.15	105.03	99.73	79.16
Bulgaria	27.92	49.28	80.02	111.66	108.15	105.03	111.77	84.83
Croatia	29.95	29.57	67.22	79.65	68.91	107.36	97.92	68.65
Serbia	20.29	42.52	76.47	95.36	74.51	102.63	109.38	74.45
Greece	29.68	49.28	80.02	126.54	128.58	105.63	112.15	90.27
Turkey	34.29	48.28	72.78	84.74	81.18	86.78	82.88	70.13
IT NORD	66.94	74.84	77.78	111.12	70.83	122.31	117.52	91.62
SI-IT NORD. spread	-36.94	-46.86	-11.05	-39.07	-6.97	-15.07	-19.69	-25.09
RO-HU spread	-7.08	3.39	2.72	22.21	44.38	-1.75	2.16	9.43
BG-RO spread	3.10	14.40	10.10	0.05	0.00	0.00	12.04	5.67
GR-BG spread	1.76	0.00	0.00	14.88	20.43	0.60	0.38	5.44

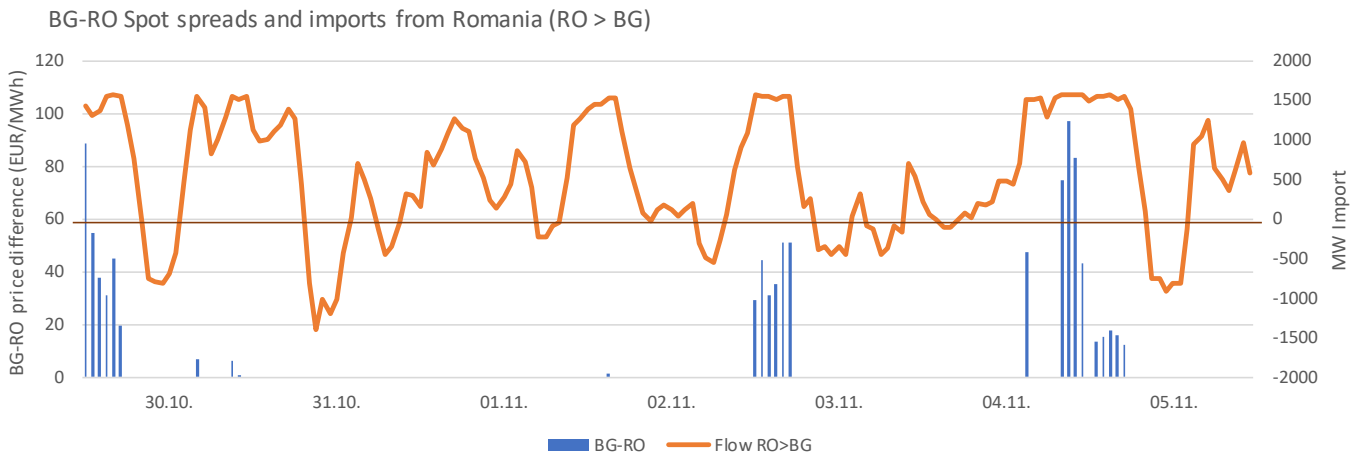
- Spot prices dropped strongly in CWE markets, and pulled SEE prices down. In SEE outside Greece, gas and coal units are not so much responsive on prices, but on consumption - which stayed the same as in previous week. Although price level in WK44 was strongly unfavorable for coal and gas units across SEE, thermal generation stayed on average the same in all SEE countries - except in Greece.
 - Market conditions in Greece changed strongly, resulting with 800 MW more flows toward Greece from Bulgaria, North Macedonia and Albania. Also, Greece was delivering 286 MW less to Italy than in previous week. In Greece, gas-fired generation was 1,100 MW lower - which is 3rd lowest gas generation in Greece this year. Greek gas prices were adjusted in November to October CWE prices, which were on the rise. Due to that, Greek gas units prices lost competitiveness against CWE. During October, Greek spot gas price was 6.9 EUR/MWh lower than CEGH, but in first 5 days of November, Greek spot gas price was 0.75 EUR/MWh higher than CEGH. Also, there is a tax issue in Greece.
 - Although generation structure in SEE changed strongly due to 1,100 MW lower gas-fired generation, HU-DE price difference was at similar level as in past two weeks.
- ⇒ Consumption stayed the same
- ⇒ Hydro generation was 510 MW higher
- ⇒ Wind generation was exceptional and 970 MW higher
- ⇒ Solar generation was lower, but such drop was negligible compared to wind and hydro rise

As a result, imports from Core were just 120 MW higher than in previous week, which is not sufficient to cause strong change of HU-DE price difference. Although in total imports of the region were 358 MW higher than in previous week, most of this decline comes as delivery to Italy was reduced—as Italian prices also collapsed. Most of the ‘reduced delivery’ to Italy comes as a result of Greek—Italian exchange, which was not affecting HUPX and other SEE markets.

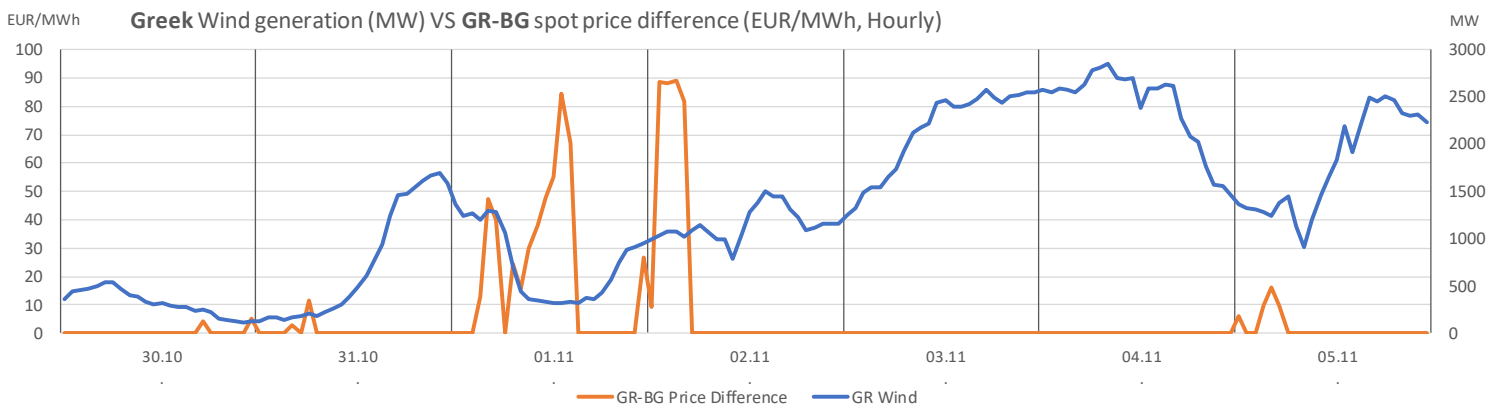
Aside Greek HENEX which settled 20.5 EUR/MWh above HUPX, OPCOM and IBEX also settled strongly above HUPX. In Romania, there was a strong correlation of local wind generation with decoupling with Hungarian market, which was visible in on Thursday, when OPCOM spiked above HUPX in periods with very low wind generation. As wind generation increased on Friday, OPCOM started settling very close to HUPX.



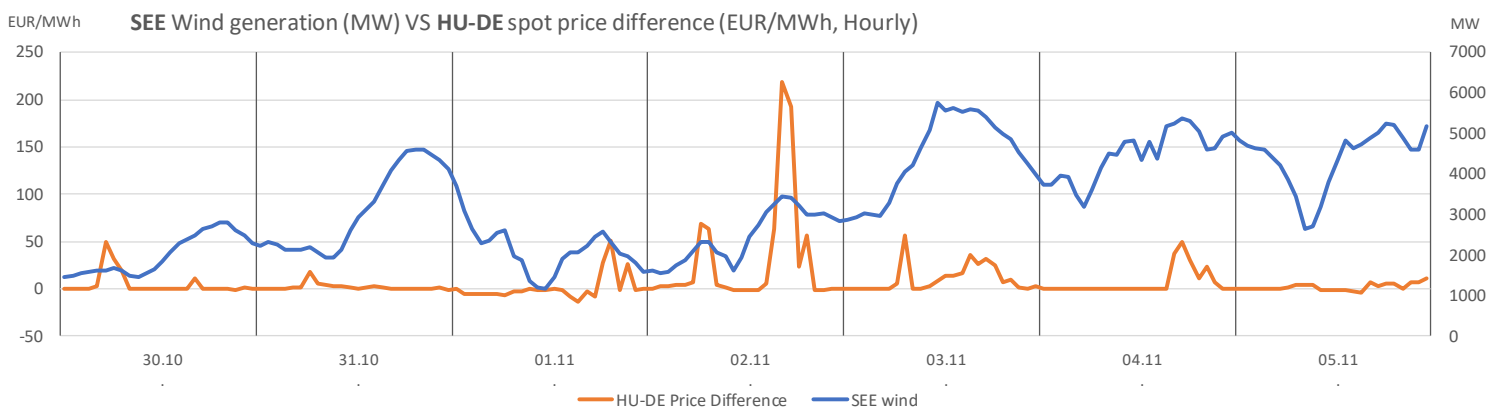
Due to huge wind generation, Romania was actually not an importer in WK44, but still settled at 9.43 EUR/MWh above HUPX, as delivery to Bulgaria was strong. Bulgaria was on average importer, due to NPP Kozloduy 1,000 MW unit being out of operation. Still, although Bulgaria was on average importing just 195 MW, but outflow to Greece was huge, as well as increased outflow to Turkey.



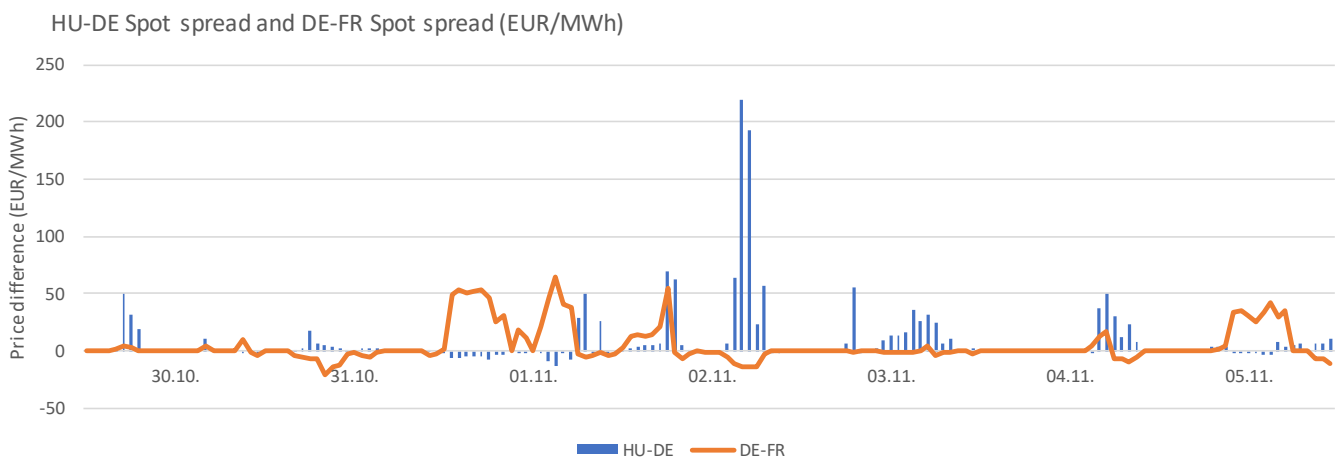
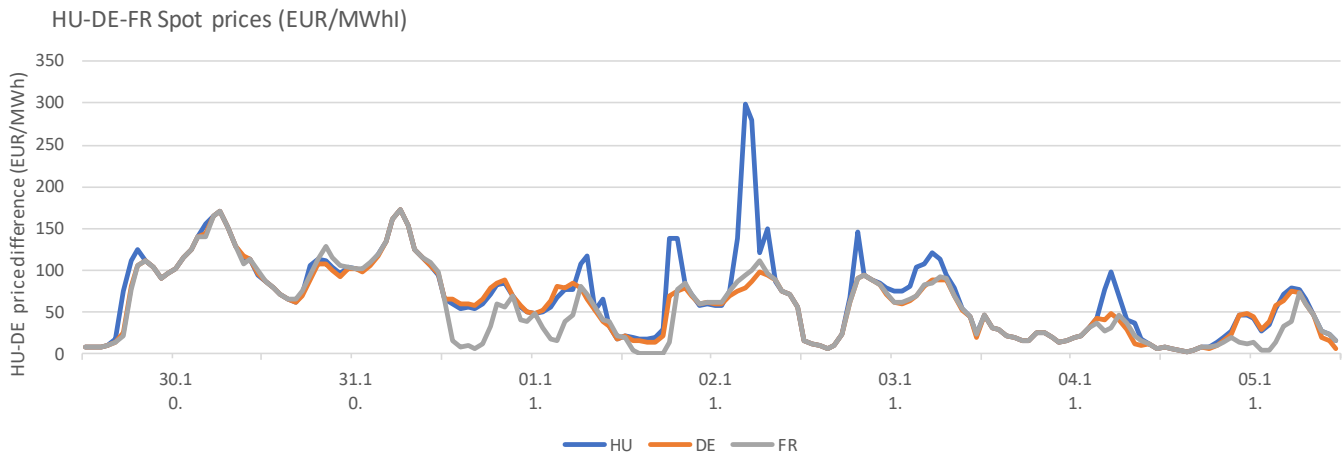
HENEX was settling at or above IBEX level due to very low gas-fired generation, which made HENEX very dependable on wind generation. This was especially visible on Wednesday and Thursday. The reason why HENEX did not settle strongly above IBEX on Monday and Tuesday is due to still very high gas generation in Greece, which was impacted by previous pricing. But as Greek gas got close and above CWE gas price level, gas generation dropped and HENEX became strong importer and dependent on wind generation.



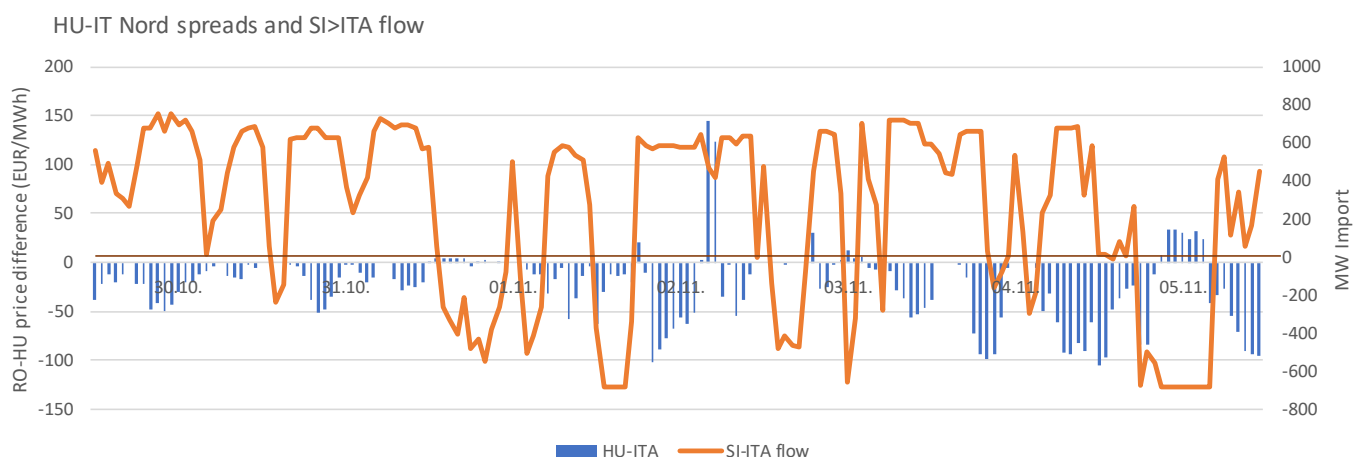
Observing entire SEE, wind generation was generally high throughout the week, but during Wednesday and Thursday, with low wind generation HUPX was settling above EPEX-DE in risky hours (H6-H8 and H18-H20, with no solar). As it can be seen from the chart below, HUPX was able to have very close spread with EPEX-DE even on weekends, due to high wind, despite low EPEX-DE settlement.



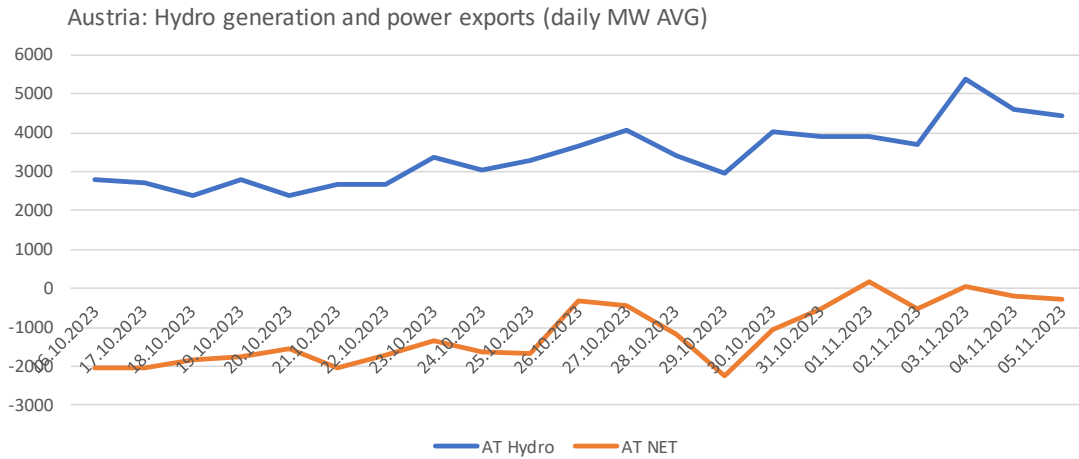
One of the most important elements is that French market again settled strongly below EPEX-DE, similar as in previous week. French spot was 4.8 EUR/MWh lower than German spot, while in WK40 and WK41, French market settled above EPEX-DE (around 5 EUR/MWh on average). Scenario when French settlement is below German settlement puts less pressure on Core > SEE exports. SEE region can import 10% more from Core if the French market is priced below the German market.



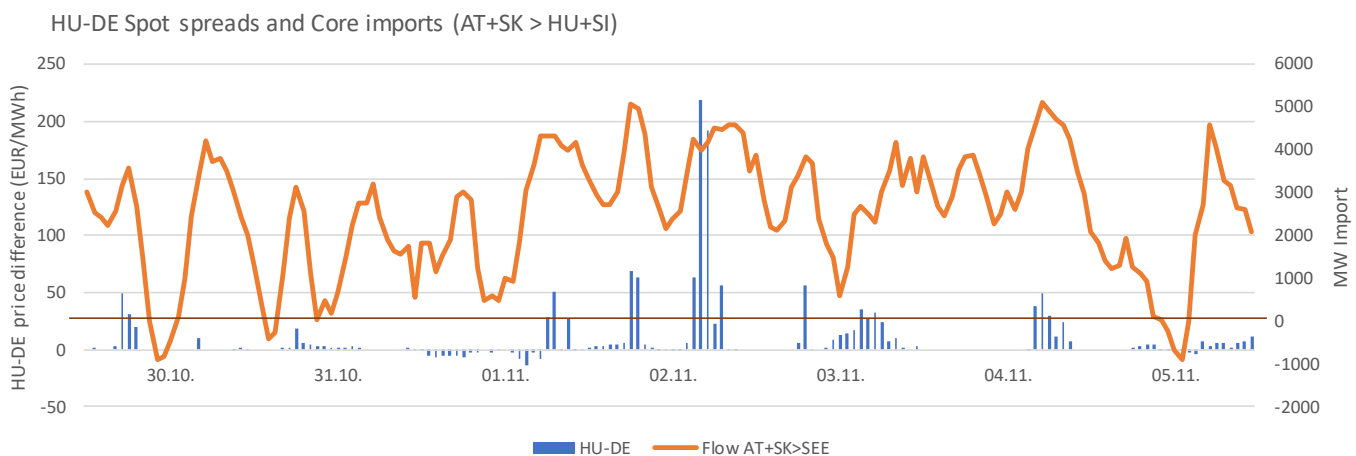
Another convenience for HUPX was that German market had less occurrences of spiking above Italian market in H6-H9 and H18-H22, and DE-ITA spread was 5 EUR/MWh lower in Wk44 than in Wk43. When German market settles above Italian market, there is a much higher chance for HUPX also to settle above Italian Nord market (as HUPX can hardly settle below EPEX-DE without extremely high hydro generation).



Another convenience is that Austrian exports improved strongly in previous week, due to rise of hydro generation - as a result of high precipitation. This helped HUPX and EPEX-AT not to spike strongly above EPEX-DE as physical energy injection in Austria reduced congestion on critical AT-DE grid elements. Also, RAM on the most congested DE>AT line Pleinting-St.Peter was in past weeks 7% higher than at the same time last year.



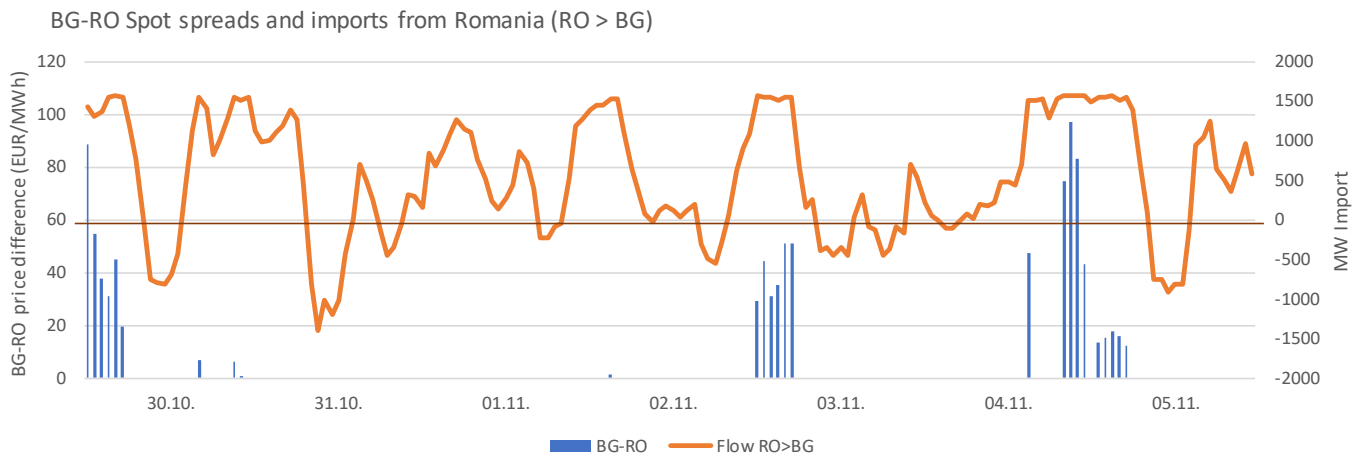
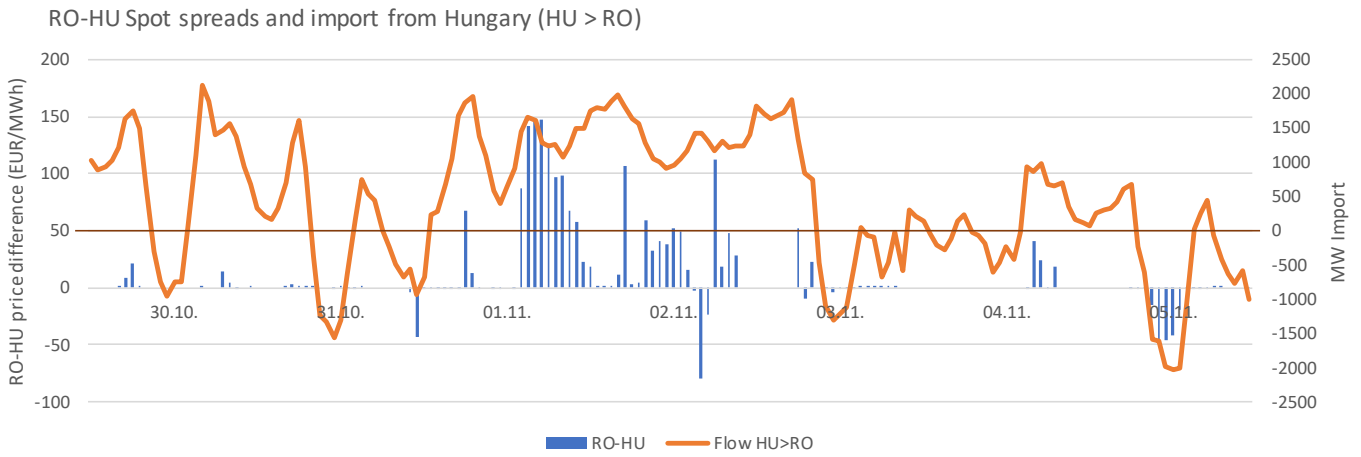
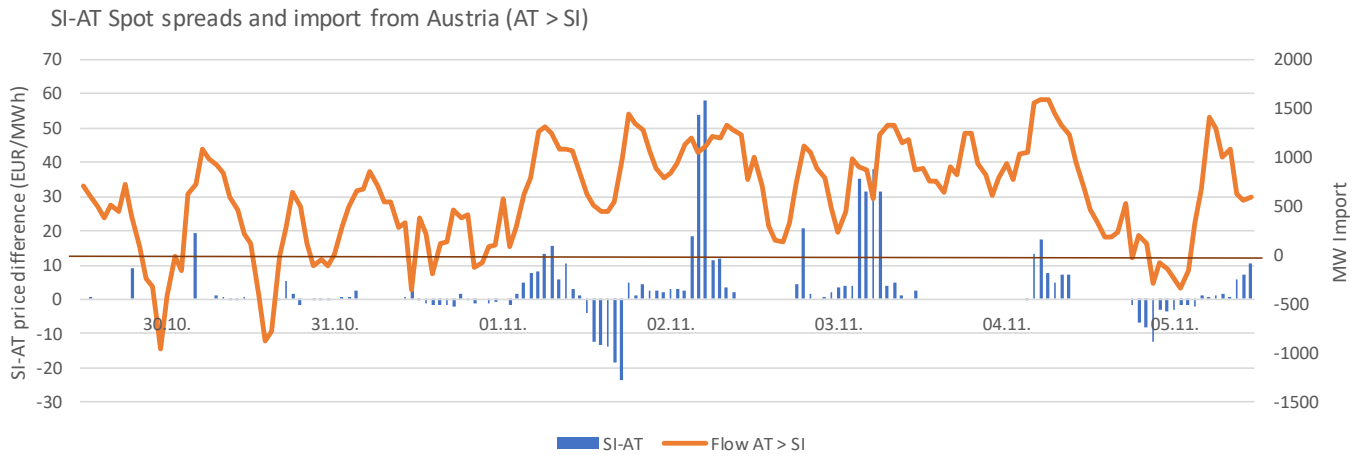
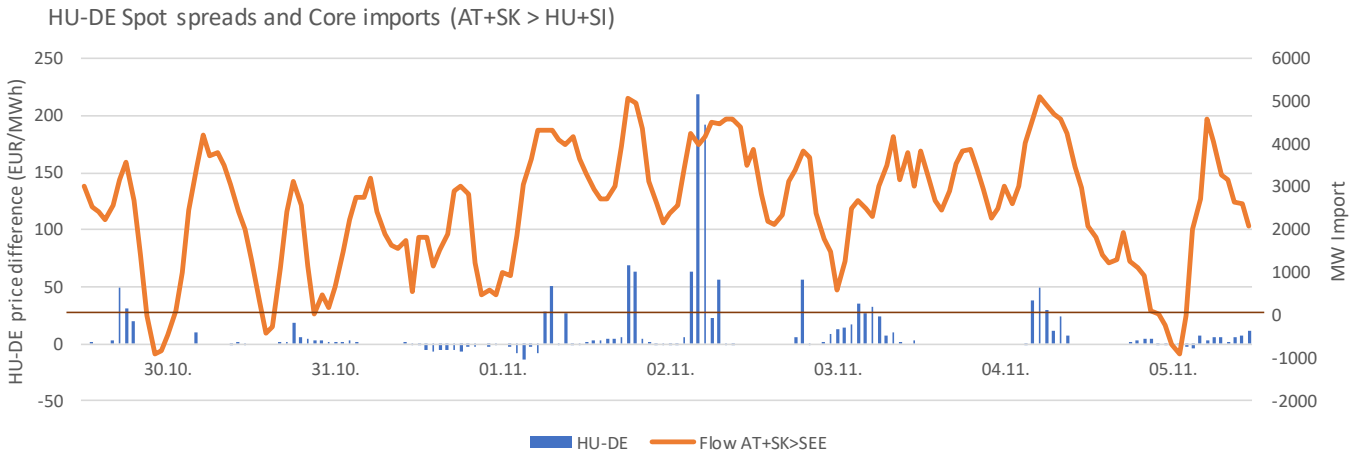
Although SEE imports were high, FBMC market coupling parameters have changed compared to the same time last year. In recent weeks, HU+SEE region is getting 300MW more imports from FBMC than last year in congested hours when HU-DE and AT-DE are both above 5 EUR/MWh, which is not a game changer but contributes to lower HU-DE settlement. There are many possible reasons for that, including low FR-DE spread and French market being below EPEX-DE, higher RAM on DE>AT line Pleinting-St.Peter line. Also, shut down power plants in Germany have affected base power flows on some lines resulting in a way that Pleinting-St. Peter line is less loaded.



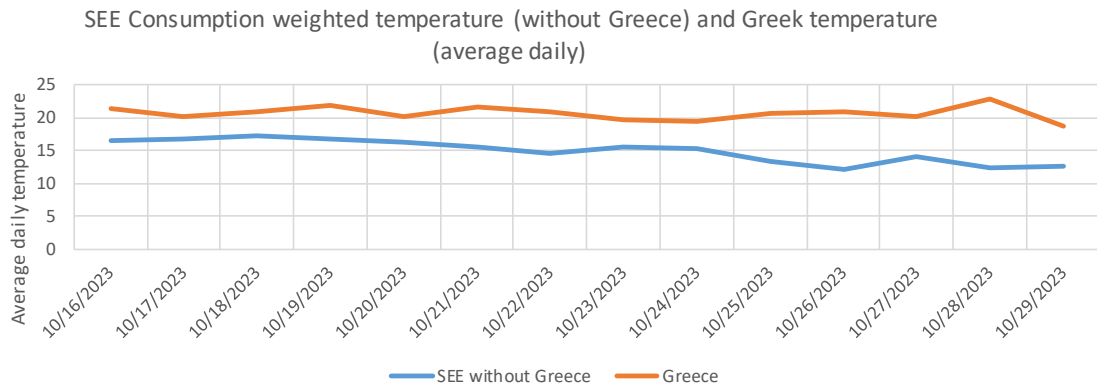
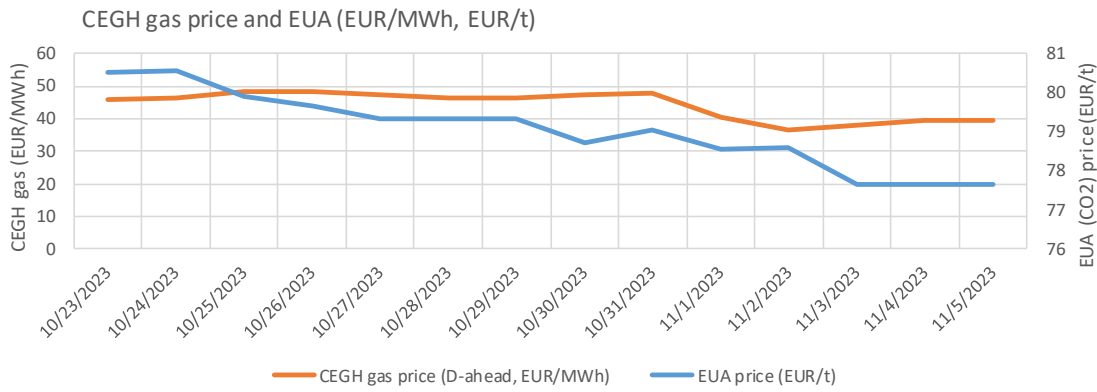
Nuclear power plant Krsko remains offline due to leakage. Works are ongoing, and according to latest update, operator of NPP estimates that NPP will be reconnected to the grid in mid November 2023. In addition to NPP Krsko being out, NPP Kozloduy is also in maintenance. As a result, region is missing huge amount of base load energy. 1,600 MW in nuclear capacity in the region is out and the region was highly sensitive on missing base-load energy, especially in hours H7-H9 and H18-H22, which have very high consumption but no benefit of solar generation.

- Imports of the region were lower than in WK43, by 360 MW. However, this did not result with significant increase of HU-DE price difference as imports from Core increased by less than 120 MW. The biggest change in flows is on Italian borders, as region was exporting 457 MW less to Italy. Reson—Italian price level was not as high as in previous weeks. Most important is Greek—ITA exchange, which was just 57 MW, as Greek gas-fired generation price increased strongly.
- In SEE, there was just one maintenance of interconnections during WK44: BG-RO line Stupina—Varna. This maintenance has resulted by lower BG>RO NTC, but this reduction is not significant, as Bulgaria is not an exporter due to 1,000 MW in NPP Kozloduy being out. Although RO>BG NTC was unchanged, Bulgarian IBEX settled 5.7 EUR/MWh above Romanian OPCOM, although both countries were short. The reason was very high import of Greece and high Greek price level (Greek settlement was over 11 EUR/MWh higher than Romanian and 20.5 EUR/MWh higher than Hungarian spot).
- Temperatures in Wk44 were strongly above average resulting with very low consumption which was at similar level as in Wk43 - just 6 MW lower. Only in Bulgaria consumption has increased significantly, as cloud coverage was high leading to drop of prosumer generation. Outside Greece, temperatures were 2.6 degrees lower than in Wk43 and at similar level as in Wk42. At this time of year consumption sensitivity on temperatures is around 400 MW per degree Celsius, in case of average temperatures. But at high temperature level, sensitivity is not visible to strong extent as average temperatures in SEE (without Greece) were 13.6 degrees.
- Coal fired generation was lower than in WK43, although availability even improved by 335 MW. There were many unplanned outages of coal units during WK44, but also, high temperatures and generally low consumption did not put a pressure on power utilities to increase coal-fired generation, Also, price level was too low to support profitable operation of coal units. This was the 2nd worst week for coal units in 2023 observing revenues. In total, coal-fired generation was 96 MW lower than in Wk43, and even 438 MW lower than in Wk42.
- Gas-fired generation in the region dropped sharply compared to previous two weeks, and it was the lowest since mid-June 2023. Outside Greece, gas-fired generation was actually 80 MW higher than in previous week, despite much lower revenues. But, temperatures were lower which probably resulted with slight increase of generation due to heating purposes. But in Greece, gas-fired generation was 1,100 MW lower - which is 3rd lowest gas generation in Greece this year.
- Hydro generation in WK44 was on the rise compared to previous 8 weeks as a result of heavy rain in Adriatic region and Danube flow increase. Hydro generation still remains below average for this time of year, but just for 200 MW. As a result of precipitation in Adriatic region, hydro generation increased strongly in Croatia and Bosnia and Herzegovina. Also, as Wk43 was also rainy not only in Adriatic but in Austria also, Danube flow increased, resulting with increase of hydro generation in Serbia. Two weeks of precipitation did affect Danube flow which increased sharply, but still remains below average. Danube flow was 7.7% below average in Wk44, which is significant improvement compared to 44% below average in Wk43. Danube flow was just 300 cbm/s lower than long term average for this time of year.

- Wind generation in Wk43 exceptional, and it was some 30% higher than average for this time of year. Wind generation was 970 MW higher than in Wk43, and 576 MW higher than in Wk42, The biggest contributors to high wind generation in this week were Greece with 453 MW rise and Romania with 311 MW rise. All SEE countries had higher wind generation than in previous week. Observing entire region, wind generation was 42% higher than in Wk43 and 29% higher than in Wk42. Wind generation was also much stronger than at the same time last year, 65% higher or 1300 MW.
- Solar generation in the region was significantly lower than in previous weeks, due to shorter days and higher cloud coverage, and it was the lowest since early-March 2023. In total, compared to previous week peak solar generation was 474 MW lower. In SEE without Greece peak solar generation was 301 MW lower, while in Greece it was 174 MW higher. Highest drop was in Bulgaria—179 MW or 28%. But, comparing to Wk42, peak solar generation was even 780 MW lower. Highest drop was in Bulgaria (-290 MW), but significant drop was also in Hungary (-264 MW).
- Nuclear generation was at the similar level as in Wk43, as NPP Krsko and NPP Kozloduy remain offline (outage in NPP Krsko (Slovenia) and maintenance of 1,000 MW unit in NPP Kozloduy (Bulgaria)). Nuclear generation was the same as at exact time last year, but observing +/- one week, it was higher last year, as NPP Krsko came back from maintenance on 8th of November, and NPP Kozloduy on 5th of November 2022. In Hungary and Romania, nuclear generation was as expected as there were no outages.
- Maintenance plan of thermal units was strong for this time of year, as NPP Kozloduy had delayed maintenance start (in previous years, NPP Kozloduy 1000 MW unit was in full operation or coming into operation in Wk44). Observing RS+HU+BG+RO+GR+SI, maintenance plan was 300 MW less intensive comparing to Wk43, and 620 MW less intensive than in Wk42. Most of the availability improvement compared to WK43 was due to 200 MW improvement in Romania (TPP Isalnica, 300 MW), but unit was not in operation so this improvement was not visible on the market). Comparing to Wk43, in addition to Romanian improvement, there was 200 MW improvement in Greece, due to Heron CC gas unit.



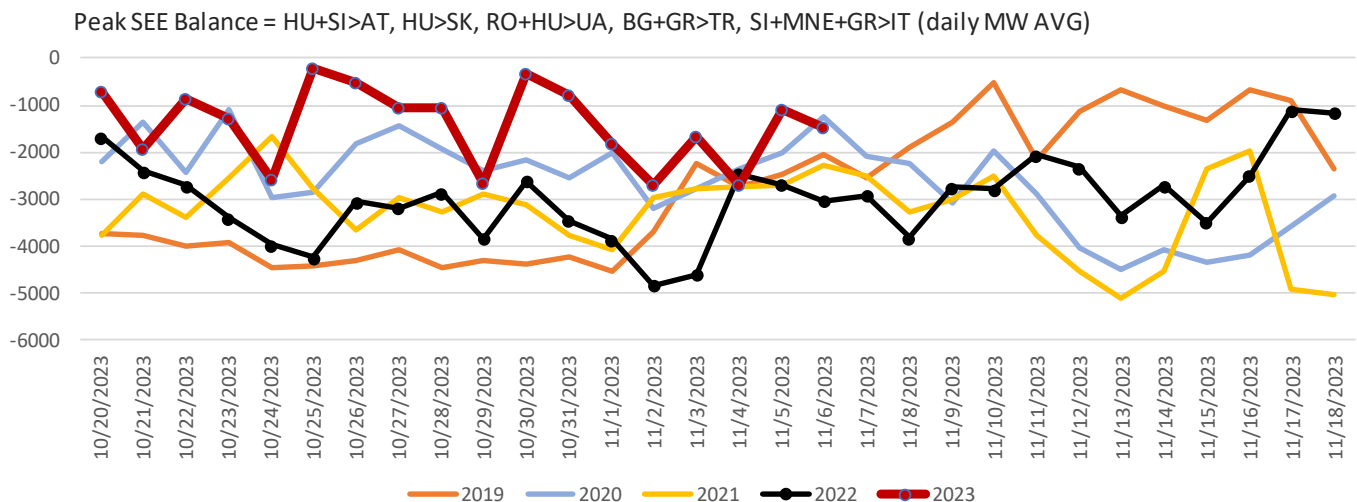
Average CEGH gas price was some 5.7 EUR/MWh lower than in past week, while EUA was traded at some 1.5 EUR/t lower than in Wk43. Greek gas price was 2.3 EUR lower than CEGH.



Base-load prices	HU	DE	AT	RO	RS	BG	GR	IT PUN	IT South	IT North	FR	SK
Week-44 prices	69.73	61.69	63.96	79.16	74.45	84.83	90.27	95.72	100.05	91.62	56.90	65.22
VS Week-43	-39.93	-40.37	-39.78	-31.24	-39.40	-26.10	-29.11	-35.43	-31.36	-38.15	-32.57	-43.96
VS Week-42	-36.13	-32.77	-38.45	-32.51	-34.63	-28.28	-23.07	-53.51	-47.60	-57.66	-26.07	-38.81
VS same week last year	-85.67	-45.01	-77.53	-86.88	-83.50	-80.97	-81.20	-41.28	-37.76	-47.46	56.90	-76.05

HU Price spreads	HU-DE	HU-AT	HU-RO	HU-RS	HU-BG	HU-GR	HU-IT PUN	HU-FR	HU-SK
Week-44	8.04	5.77	-9.43	-4.72	-15.10	-20.54	-25.99	12.83	4.51
Week-43	7.61	5.92	-0.74	-4.19	-1.27	-9.72	-21.49	20.19	0.48
Week-42	11.40	3.45	-5.81	-3.22	-7.25	-7.47	-43.37	22.89	1.83

MW AVG	SLO	BA	MK	ME	RS	RO	BG	HU	HR	GR	XK	AL	SUM
Week-44 export	-29	+277	-55	-4	+179	+152	-195	-1283	+134	-805	+96	-209	-1741
VS Week-43	+119	-34	-101	+37	+34	+386	-97	-57	+311	-1047	+1	+90	-358
VS Week-42	+397	-92	-36	+58	+70	+167	-103	-180	+414	-1001	+273	-180	-212
VS last year	+701	+195	+1	+6	+315	+204	-1033	+147	+731	-121	+125	+134	+1403

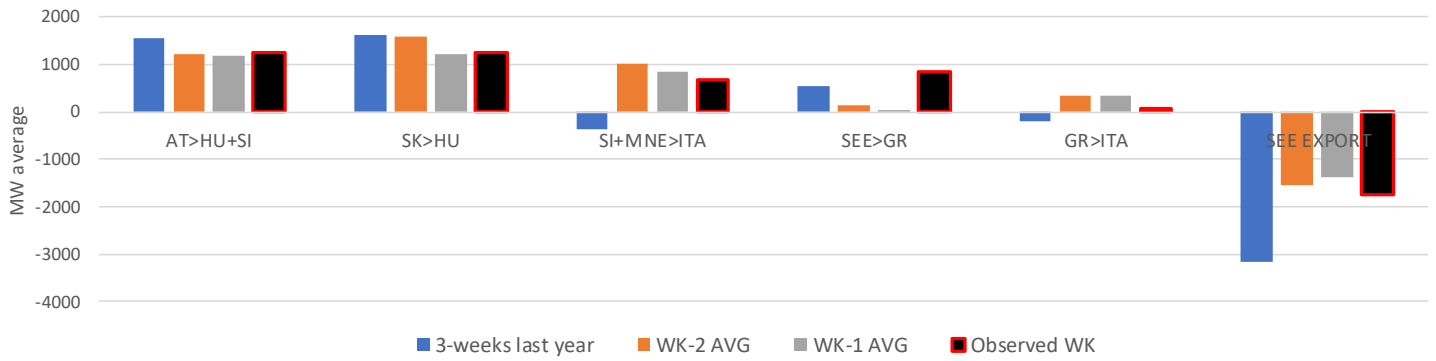


Changes of flows on most important borders:

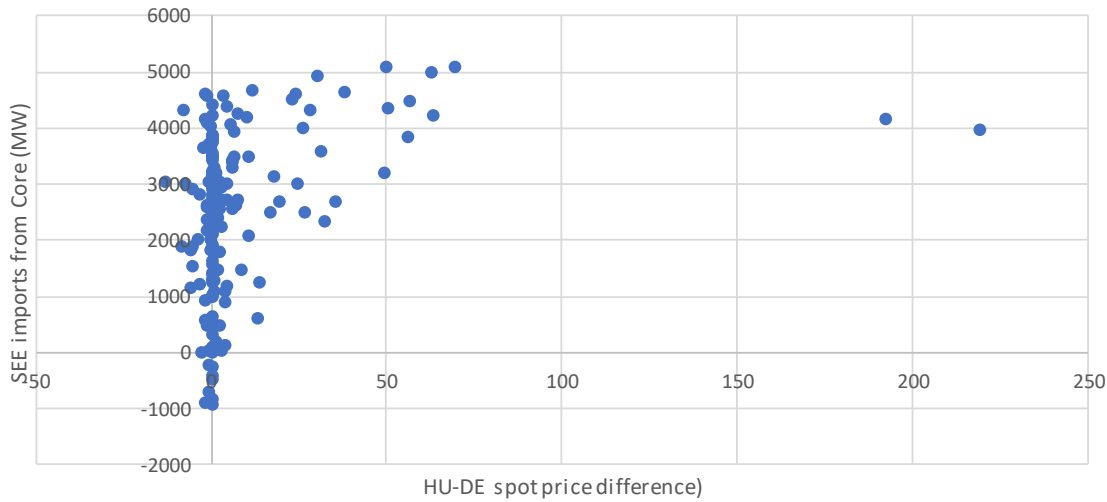
MW AVG flow	AT>HU+SI	SK>HU	SI+MNE>ITA	SEE>GR	GR>ITA	SEE EXPORT
Week-44 AVG flow	1264	1248	687	861	57	-1741
VS Week-43	94	23	-171	808	-286	-358
VS Week-42	36	-335	-335	730	-293	-212
VS last year	-297	-364	1054	305	270	1423

*MW average change of flow observing entire week and 3-week range at the same time last year (-1/+1)

Average commercial exchanges and total SEE import (MW average, MON-SUN)



HU-DE price difference vs CORE > SEE imports (AT+SK > SI+HU) - hourly

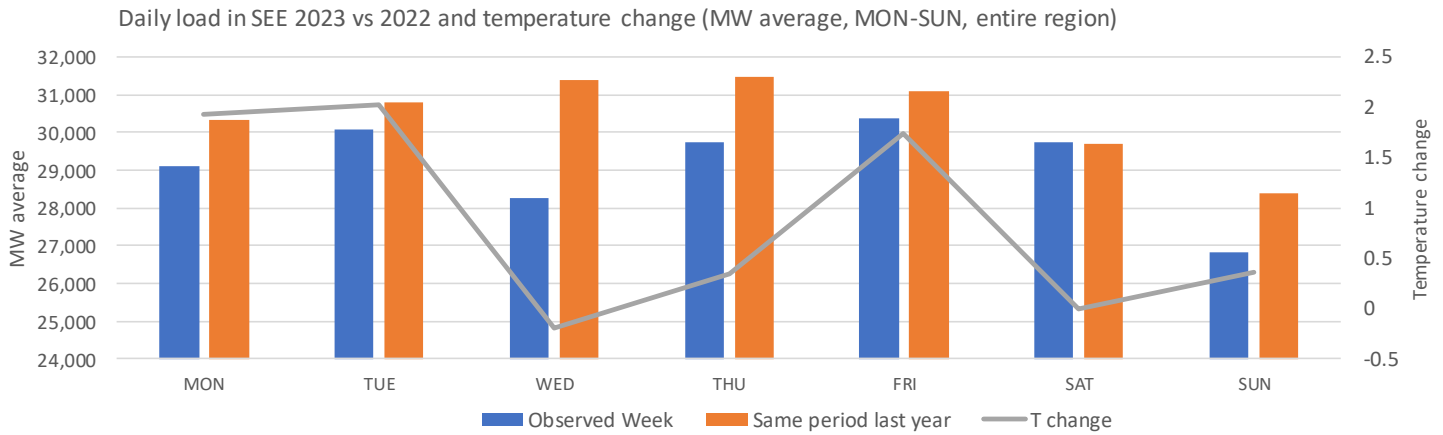


Following table shows MW average values of exports, consumption and generation per type for SEE countries. Also, table compares observed week to previous two weeks and the same period in 2022.

Total HU+SEE+GR	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-1741	28984	5550	8632	3553	3285	1488	4369	Imports of the region were slightly lower despite extremely strong wind generation. Main impact was drop of Greek gas-fired generation due to lower profitability
VS Week-43	-358	-6	511	-96	-1016	966	-156	-6	
VS Week-42	-212	-782	385	-438	-1071	575	-298	6	
VS last year	1403	-804	1555	-1420	-852	1295	441	-279	Much higher exports than at the same time last year, due to spike of hydro and wind
Albania	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-209	724	515						Higher exports due to higher hydro generation
VS Week-43	90	0	90						
VS Week-42	-180	-5	-185						
VS last year	134	2	138						Higher exports due to higher hydro generation
BA	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	277	1091	435	925		20			Slightly lower exports due to lower coal-fired generation
VS Week-43	-34	-102	165	-192		9			
VS Week-42	-92	-108	86	-239		-2			
VS last year	195	-141	157	-150		6			Higher exports due to lower consumption and higher coal-fired generation
Bulgaria	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-195	3581	176	1492	192	145	283	1080	No strong change
VS Week-43	-97	147	-7	12	4	24	-47	0	
VS Week-42	-103	-158	-2	-103	26	-41	-102	1	
VS last year	-1033	-345	-51	-1118	-33	72	125	-406	Lower exports due to much lower coal-fired generation - despite lower consumption
Croatia	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	134	1816	889	176	322	437	11		Higher exports due to rise of hydro generation
VS Week-43	311	-32	177	-14	-39	122	-1		
VS Week-42	414	-75	323	-19	-33	25	-2		
VS last year	731	-1	551	13	-100	219	5		Higher exports due to high rise of wind and hydro generation
Greece	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-805	4667	324	478	1026	1322	739		Much higher imports due to drop of gas-fired generation as Greek gas prices came closer to CWE gas prices
VS Week-43	-1047	-79	-227	-188	-1098	451	-58		
VS Week-42	-1001	-99	-334	-105	-990	354	-5		
VS last year	-121	70	60	71	-550	307	145		Lower exports due to lower gas-fired generation, despite high wind
Hungary	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-1283	4732	27	260	652	128	311	1922	Slightly lower export than in past two weeks, due to lower solar generation
VS Week-43	-57	69	-3	65	-18	54	-30	4	
VS Week-42	-180	-69	8	-33	-101	30	-124	17	
VS last year	147	-15	9	-160	-178	90	155	289	Higher export as solar generation was much higher
North Macedonia	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-55	603	103	488		8			No strong change / incomplete data
VS Week-43	-101	-27	6	-39		-4			
VS Week-42	-36	-30	-43	59		-17			
VS last year	1	-12	-13	44		-3			No strong change / incomplete data
Kosovo*	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	96	649		660					No strong change, but higher exports than in Wk42 due to higher coal-fired generation
VS Week-43	1	3		-20					
VS Week-42	273	-32		241					
VS last year	125	-26		89					Higher exports due to higher coal-fired generation
Montenegro	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-4	273	139	202		52			Higher exports due to rise of hydro generation
VS Week-43	37	-1	45	0		0			
VS Week-42	58	-29	50	3		-2			
VS last year	6	-25	124	-21		23			Higher exports due to rise of hydro generation
Romania	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	152	5951	1322	804	1322	1142	118	1367	Higher exports due to high wind generation
VS Week-43	386	41	93	-73	133	309	-14	-9	
VS Week-42	167	17	50	-34	22	226	-48	-11	
VS last year	204	-80	-43	-444	16	588	2	-15	Higher exports due to high wind generation
Serbia	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	179	3671	854	2761		30			Slightly higher exports due to rise of hydro and coal generation
VS Week-43	34	150	205	376		1			
VS Week-42	70	-7	193	-167		0			
VS last year	315	-73	292	-99		-8			Higher exports due to rise of hydro generation
Slovenia	Export	Load	Hydro	Coal	Gas	Wind	Solar	Nuclear	Comment
Observed week	-29	1225	768	387	38	1	26	0	Higher exports due to drop of consumption
VS Week-43	119	-175	-32	-24	2	0	-4	0	
VS Week-42	397	-185	239	-40	5	0	-16	0	
VS last year	701	-158	330	354	-7	1	9	-147	Higher exports due to higher hydro and coal generation. NPP Krsko was in maintenance last

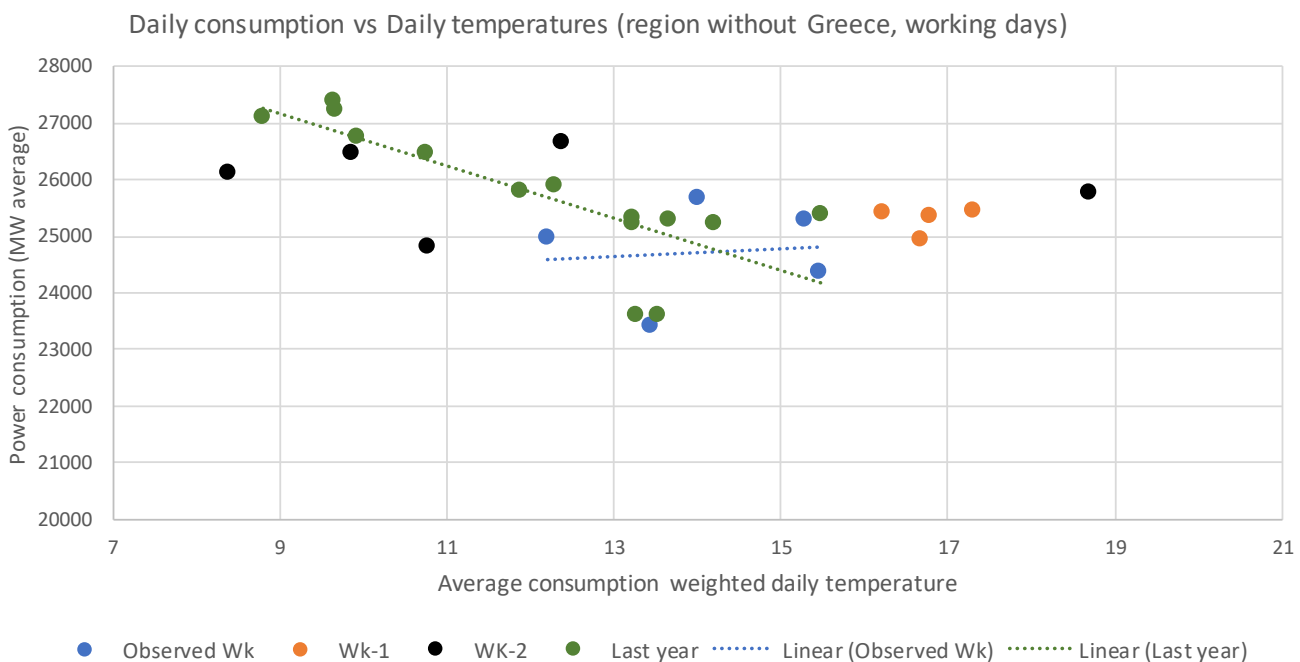
2. Power consumption

Temperatures in Wk44 were strongly above average resulting with very low consumption which was at similar level as in Wk43 - just 6 MW lower. Only in Bulgaria consumption has increased significantly, as cloud coverage was high leading to drop of prosumer generation. Outside Greece, temperatures were 2.6 degrees lower than in Wk43 and at similar level as in Wk42.

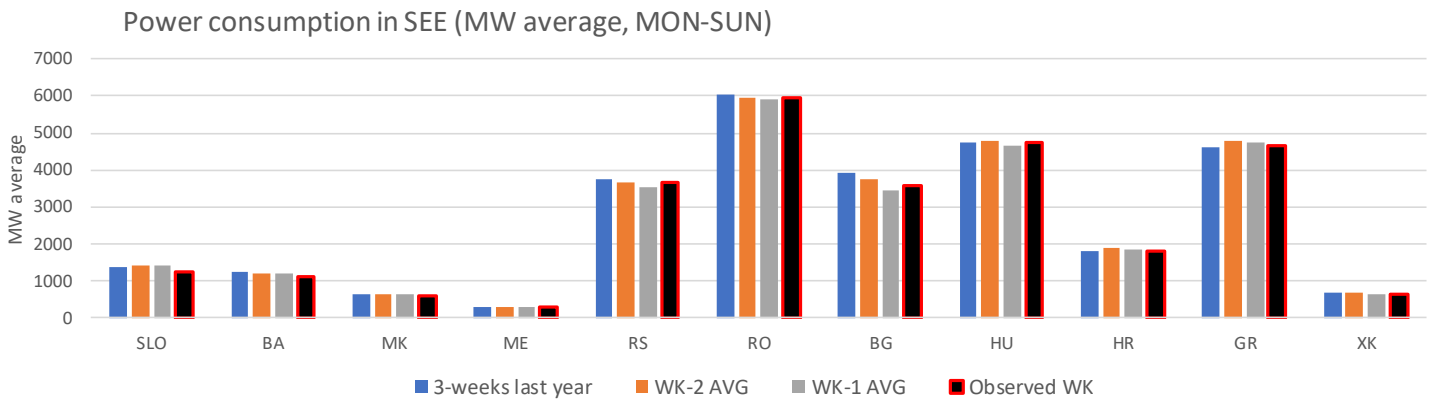
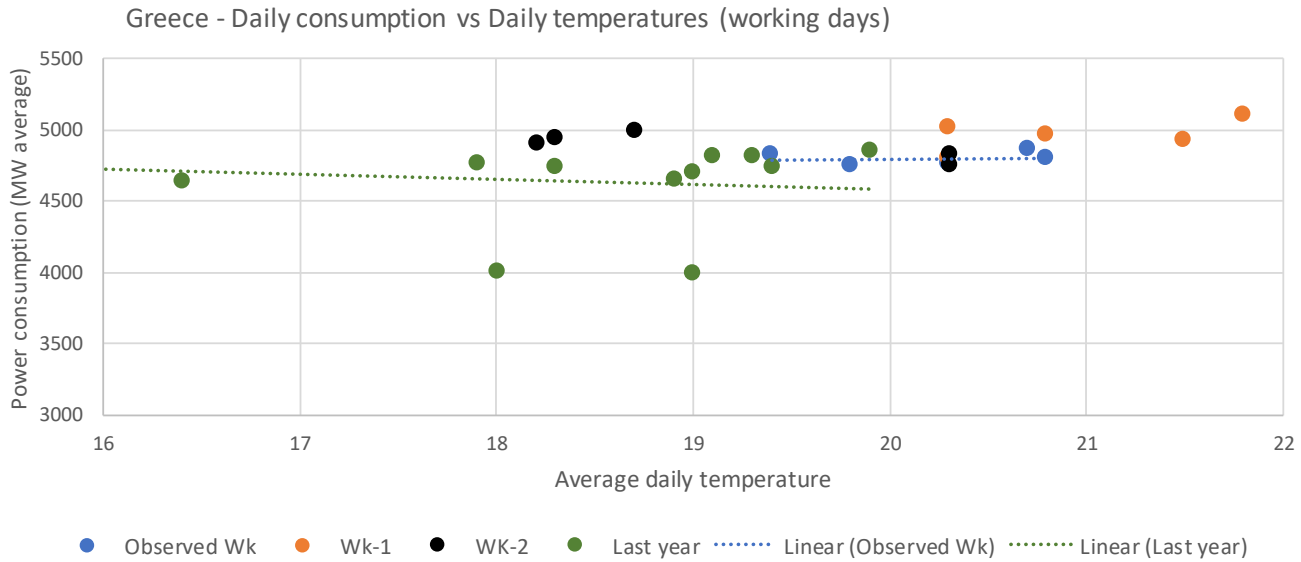


At this time of year consumption sensitivity on temperatures is around 400 MW per degree Celsius, in case of average temperatures. But at high temperature level, sensitivity is not visible to strong extent as average temperatures in SEE (without Greece) were 13.6 degrees.

Consumption in the region without Greece was 874 MW lower than last year, for just 0.9 degrees higher temperature. Last year, consumption was low due to decline of industrial consumption and power saving due to high prices. Recent data show that consumption has recovered with price drop. But, peak consumption is much lower due to higher prosumer generation (solar generation connected on distribution level, accounted as negative consumption). Data shows that on the level of SEE, for each MW of reported solar generation by TSO-s, there is additional 0.6 MW which is reported as negative consumption. As Peak solar generation was close to 800 MW higher, this resulted with some 500 MW of negative consumption.



In Greece, consumption was at similar level as in Wk43 (-80 MW), for 0.6 degrees lower temperatures. Solar generation in Greece did not experience a sharp drop, so prosumer effect was not present. Also, at this temperature level there is no reaction of consumption on temperatures. In Greece, sensitivity of consumption on temperatures is not visible at a temperature level between 15-22 degrees, and average temperature in Wk42 was 20.4 degrees. Chart below shows temperature effect on consumption in Greece.



MW AVG	SLO	BA	NMK	ME	RS	RO	BG	HU	HR	GR	XK	AL	SUM
Week-44 consumption	1225	1091	603	273	3671	5951	3581	4732	1816	4667	649	724	28984
VS Week-43	-175	-102	-27	-1	150	41	147	69	-32	-79	3	0	-6
VS Week-42	-185	-108	-30	-29	-7	17	-158	-69	-75	-99	-32	-5	-782
VS last year	-158	-141	-12	-25	-73	-80	-345	-15	-1	70	-26	2	-804

3. Coal-fired generation

Coal fired generation was lower than in WK43, although availability even improved by 335 MW. There were many unplanned outages of coal units during WK44, but also, high temperatures and generally low consumption did not put a pressure on power utilities to increase coal-fired generation, Also, price level was too low to support profitable operation of coal units. This was the 2nd worst week for coal units in 2023 observing revenues. In total, coal-fired generation was 96 MW lower than in Wk43, and even 438 MW lower than in Wk42.

Two dominant countries resulting with lower coal-fired generation were Bosnia and Herzegovina, with 192 MW drop (several outages) and Greece, with 188 MW drop. On the contrary, generation in Serbia improved sharply, by 376 MW. In other countries, gas-fired generation was generally stable and subjected to daily optimization against consumption and outages. Slovenian coal-fired generation remains high although TES-6 is unprofitable at current price level and did not work last year at this time (probably as a result of outage of NPP Krsko).

Comparing to Wk43-Wk45 period of 2022, coal-fired generation was 1,420 MW lower—mostly as a result of 1,100 MW lower coal-fired generation in Bulgaria and 444 MW lower in Romania.

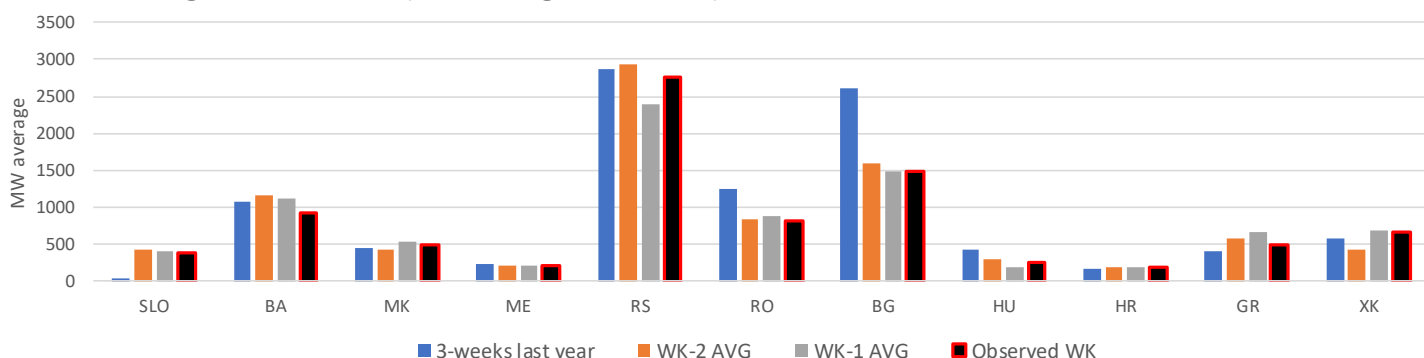
Observing entire region (without Bosnia and Herzegovina), availability of coal units compared to last week was 335 MW higher, and actual coal-fired generation was just 96 MW higher.

EUA did drop by 1.5 EUR/t, but HUPX price collapsed by 39.9 EUR/MWh compared to previous week, resulting with significantly lower revenues of coal-fired units. Revenues were 38.3 EUR/MWh lower than in Wk43, and 32 EUR/MWh lower than in Wk42. In Wk44, revenues of coal units stood at -8.7 EUR/MWh (after just EUA costs). But, comparing to previous year coal-fired generation it continues to be low, as a result of low revenues (especially in Bulgaria) and shutting down of two coal-fired units in Romania. In EU countries, revenues of coal units (HUPX against EUA-CO2 costs) were 132 EUR lower than at the same time last year.

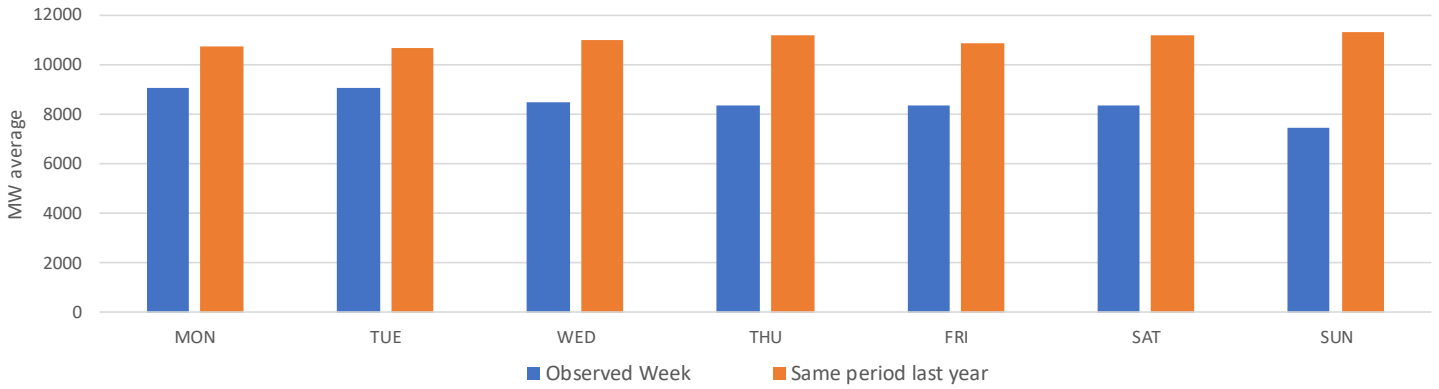
Following table shows drop of coal-fired generation per country, comparing to previous weeks and last year.

MW AVG	SLO	BA	MK	ME	RS	RO	BG	HU	HR	GR	XK	SUM
Week-44 generation	387	925	488	202	2761	804	1492	260	176	478	660	8632
VS Week-43	-24	-192	-39	0	376	-73	12	65	-14	-188	-20	-96
VS Week-42	-40	-239	59	3	-167	-34	-103	-33	-19	-105	241	-438
VS last year	354	-150	44	-21	-99	-444	-1118	-160	13	71	89	-1420

Coal generation in SEE (MW average, MON-SUN)

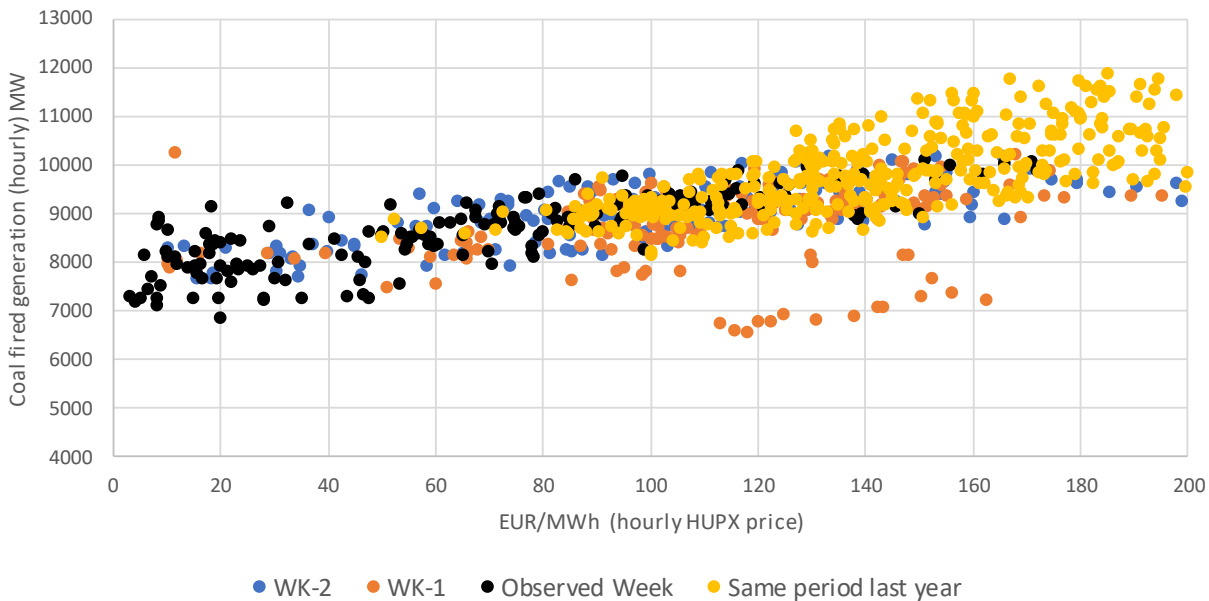


Daily coal-fired generation (MW average, MON-SUN, entire region)

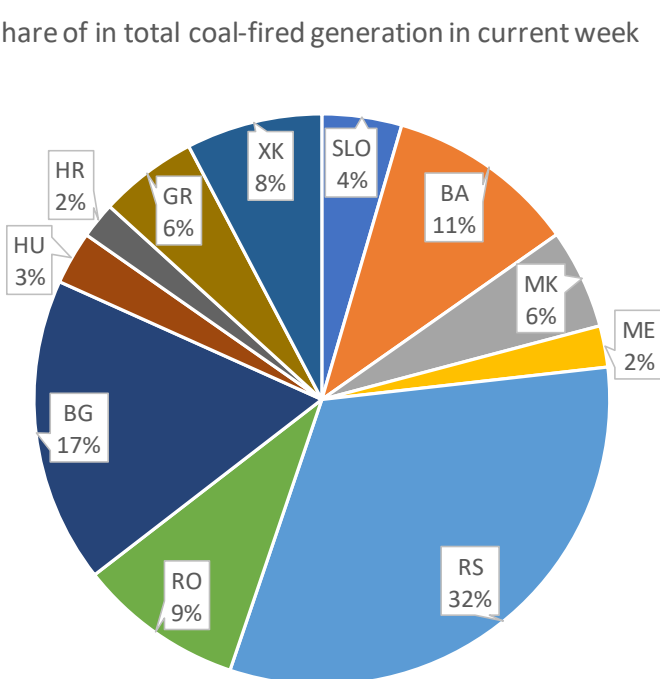


Coal fired generation was in decline throughout the week, but with 1600 MW difference comparing Monday (highest generation) and Sunday (lowest generation).

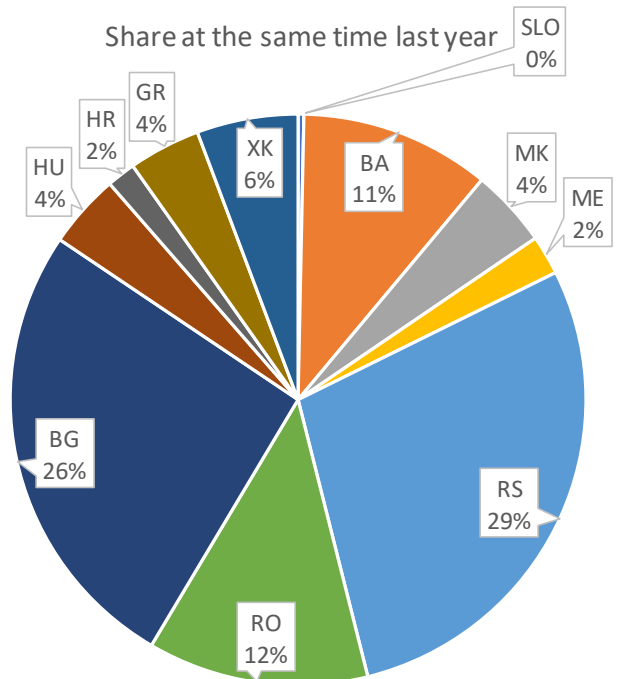
Coal fired generation - Price curves (All SEE countries vs HUPX), hourly



Share of in total coal-fired generation in current week



Share at the same time last year



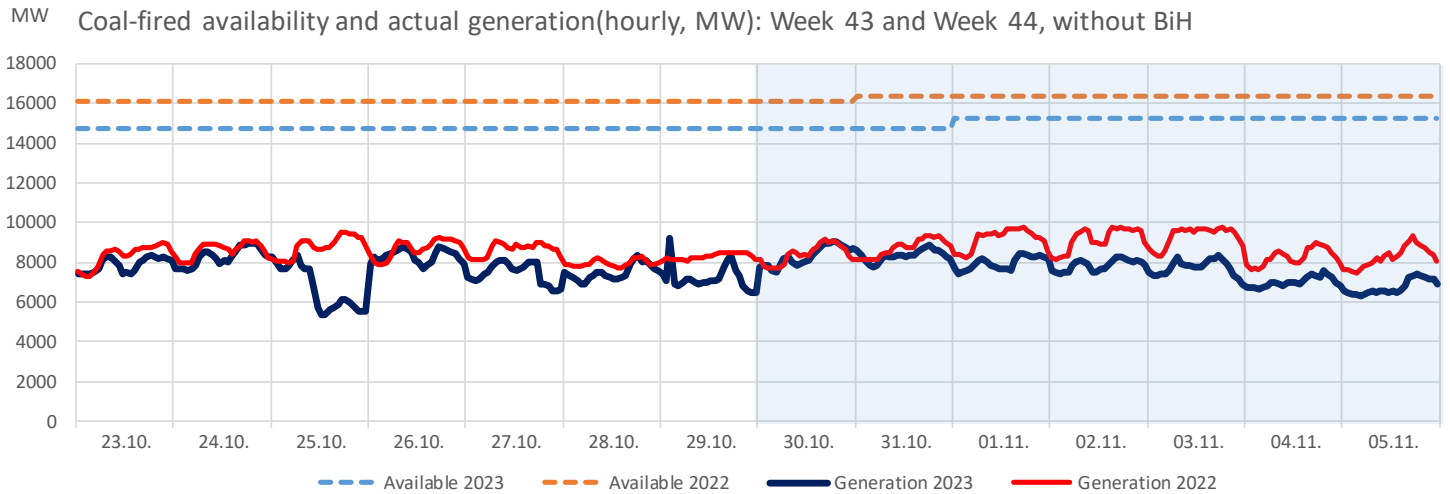


Chart shows daily coal generation in observed and previous week, and at the same period last year. Availability in 2023 was 1278 MW lower, but actual coal-fired generation was 1055 MW lower - due to 600 MW stronger maintenance of Greek coal units (irrelevant to market), 224 MW stronger maintenance of Hungarian Matrai coal units and 340 MW stronger maintenance of Serbian units.

- * Bosnia and Herzegovina is not included into the chart due to non-transparent maintenance plan
- * Installed output of coal units is included into availability. Some units in SEE have even 30% lower output than installed - which results with charts showing much lower generation than actual availability
- * Some units are in reserve and work just occasionally (Romania, Greece, North Macedonia, Slovenia)

4. Gas-fired generation

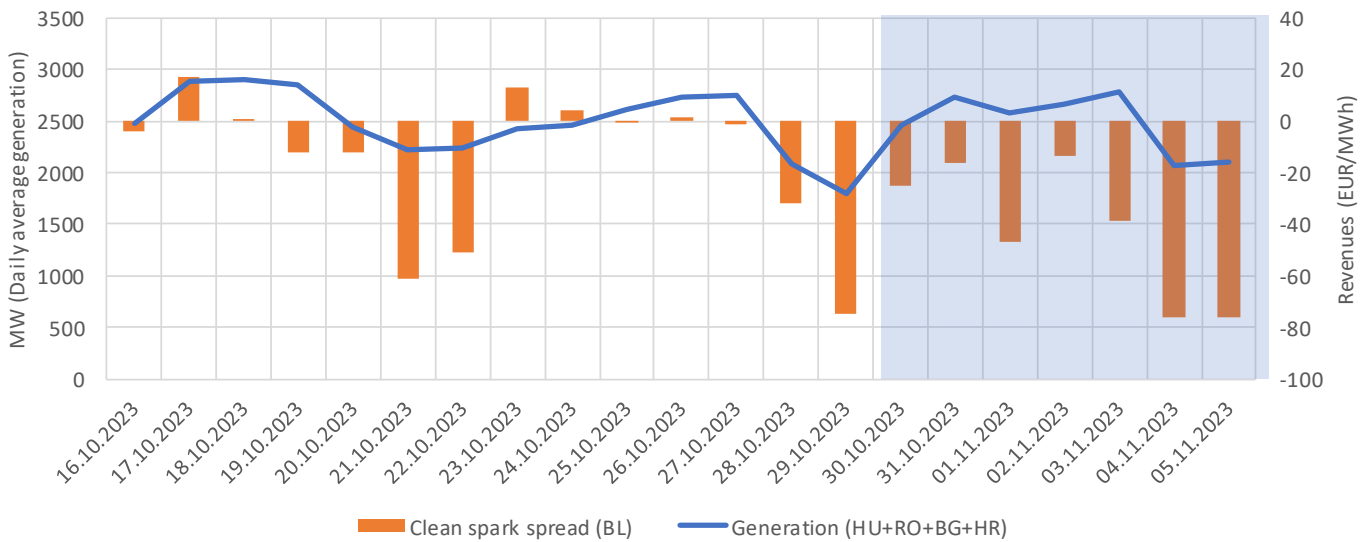
Gas-fired generation in the region dropped sharply compared to previous two weeks, and it was the lowest since mid-June 2023. Outside Greece, gas-fired generation was actually 80 MW higher than in previous week, despite much lower revenues. But, temperatures were lower which probably resulted with slight increase of generation due to heating purposes. But in Greece, gas-fired generation was 1,100 MW lower - which is 3rd lowest gas generation in Greece this year.

Contrary to previous weeks when gas units were profitable on working days, they were strongly unprofitable for both working days and weekends. Although gas prices have dropped compared to Wk43, CWE power prices dropped much more and pulled down SEE market prices.

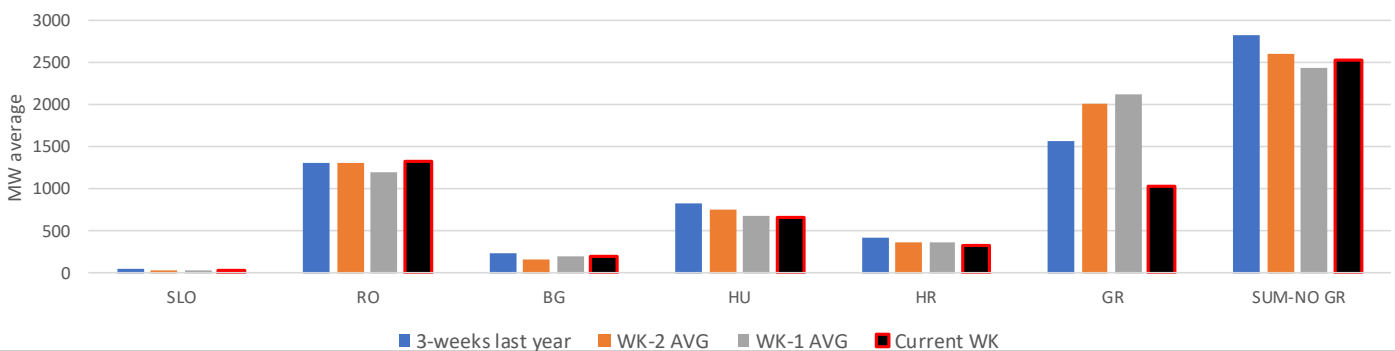
But, more important is that Greek gas prices were adjusted in November to October CWE prices, which were on the rise. Due to that, Greek gas units prices lost competitiveness against CWE. During October, Greek spot gas price was 6.9 EUR/MWh lower than CEGH, but in first 5 days of November, Greek spot gas price was 0.75 EUR/MWh higher than CEGH. Also, there is a tax issue in Greece.

For base-load product, gas units outside Greece were not profitable on any day. Observing entire week, revenues of gas-fired units (outside Greece) were 29.1 EUR/MWh lower than in Wk43. In Greece, revenues of gas units were 18.3 EUR/MWh lower. Greek spot gas prices were on average 2.3 EUR/MWh lower CWE (last week 9.3 EUR/MWh lower), but Greek market also has a tax of 5% on TTF-index if gas is used for power generation. Working day revenues in Hungary were at -28 EUR/MWh, while in Greece, at 2.5 EUR/MWh (without Tax). Greek spot power prices during working days were 25.6 EUR/MWh higher than HUPX).

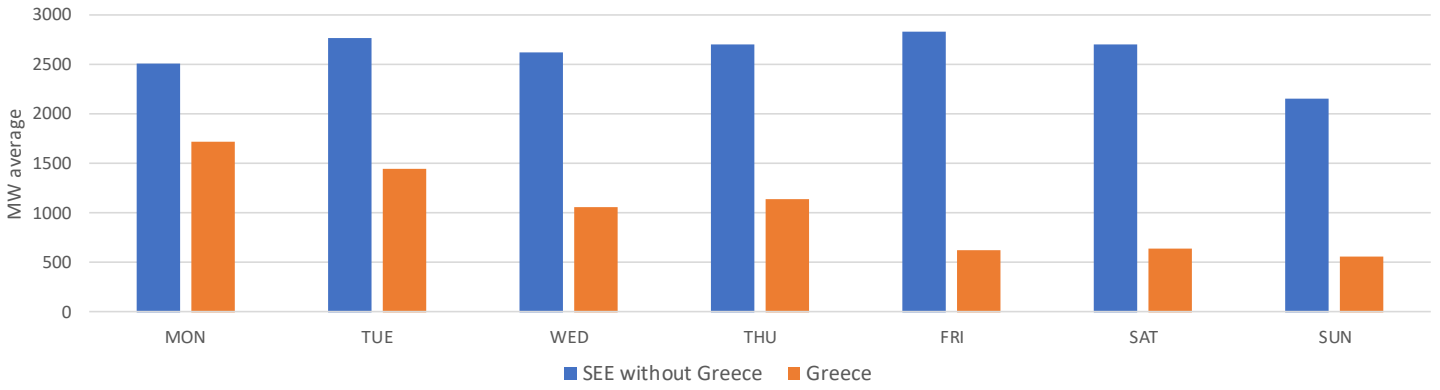
Revenues of gas-fired units (57% efficiency, HUPX base load, daily CEGH Daily CO2 costs)



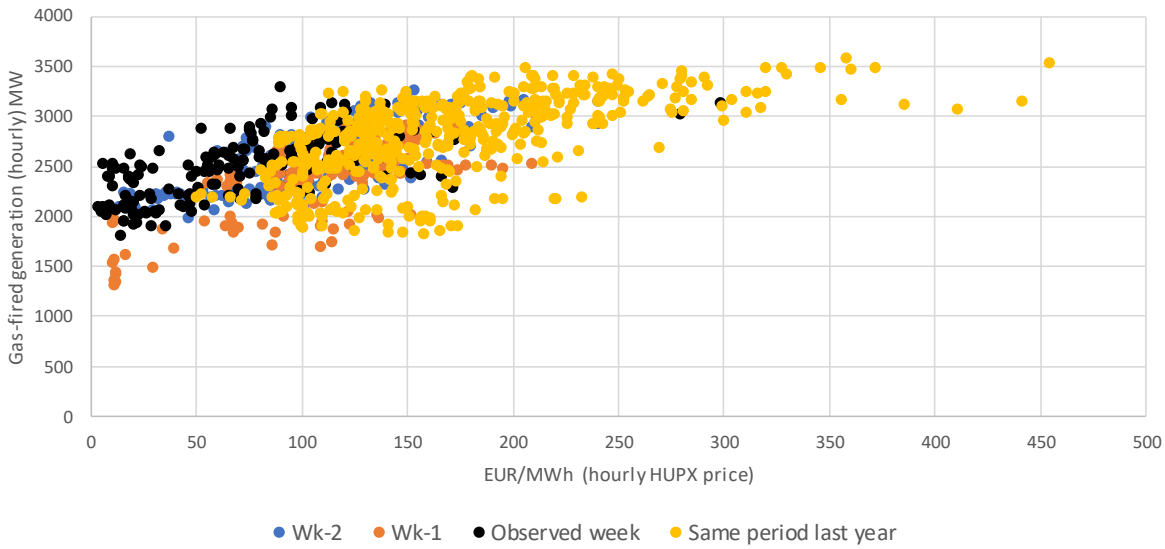
Gas-fired generation in SEE (MW average, MON-SUN)



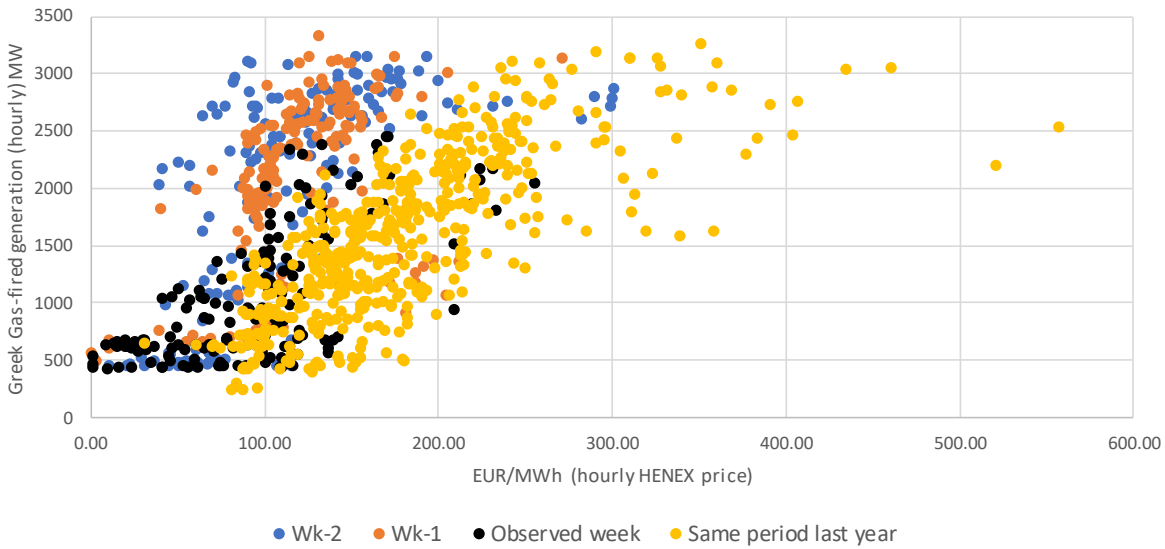
Daily gas-fired generation (MW average, MON-FRI)



Price generation curves (HU+BG+RO+HR gas vs HUPX)



Price generation curves (Greek gas vs HENEX)

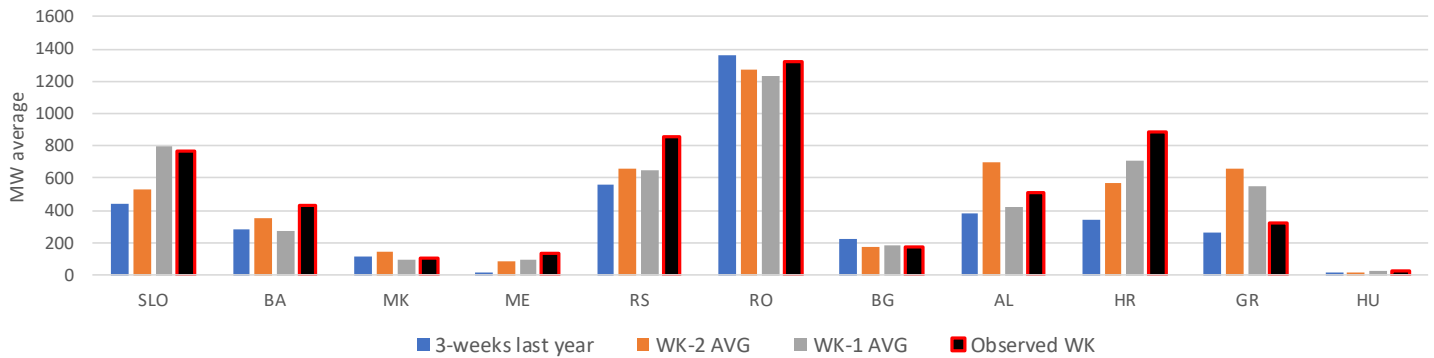


5. Hydro generation

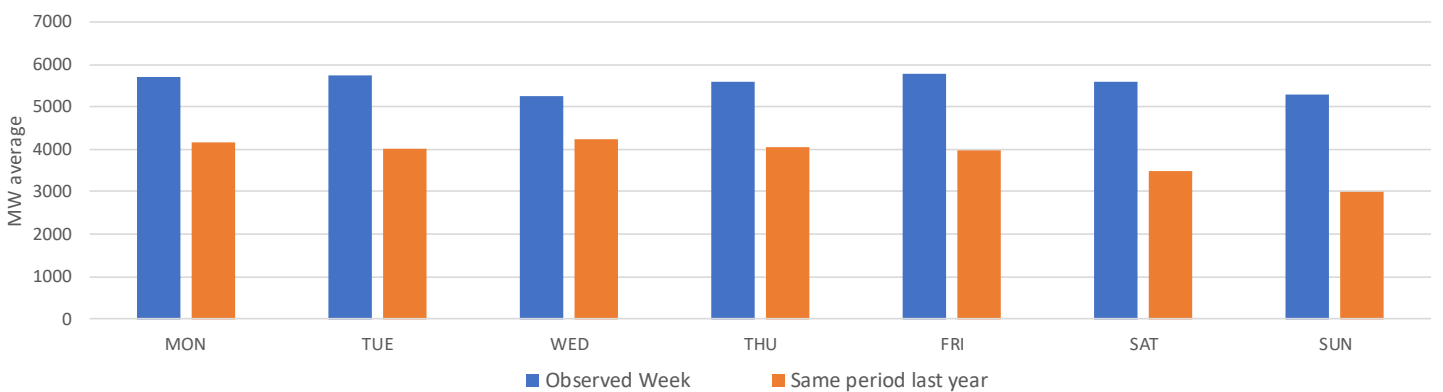
Hydro generation in WK44 was on the rise compared to previous 8 weeks as a result of heavy rain in Adriatic region and Danube flow increase. Hydro generation still remains below average for this time of year, but just for 200 MW. As a result of precipitation in Adriatic region, hydro generation increased strongly in Croatia and Bosnia and Herzegovina. Also, as Wk43 was also rainy not only in Adriatic but in Austria also, Danube flow increased, resulting with increase of hydro generation in Serbia. Two weeks of precipitation did affect Danube flow which increased sharply, but still remains below average. Danube flow was 7.7% below average in Wk44, which is significant improvement compared to 44% below average in Wk43. Danube flow was just 300 cbm/s lower than long term average for this time of year.

Hydro generation was 520 MW higher than in Wk43, and 395 MW higher than in Wk42. Also, hydro generation was 1565 MW higher than at the same time last year.

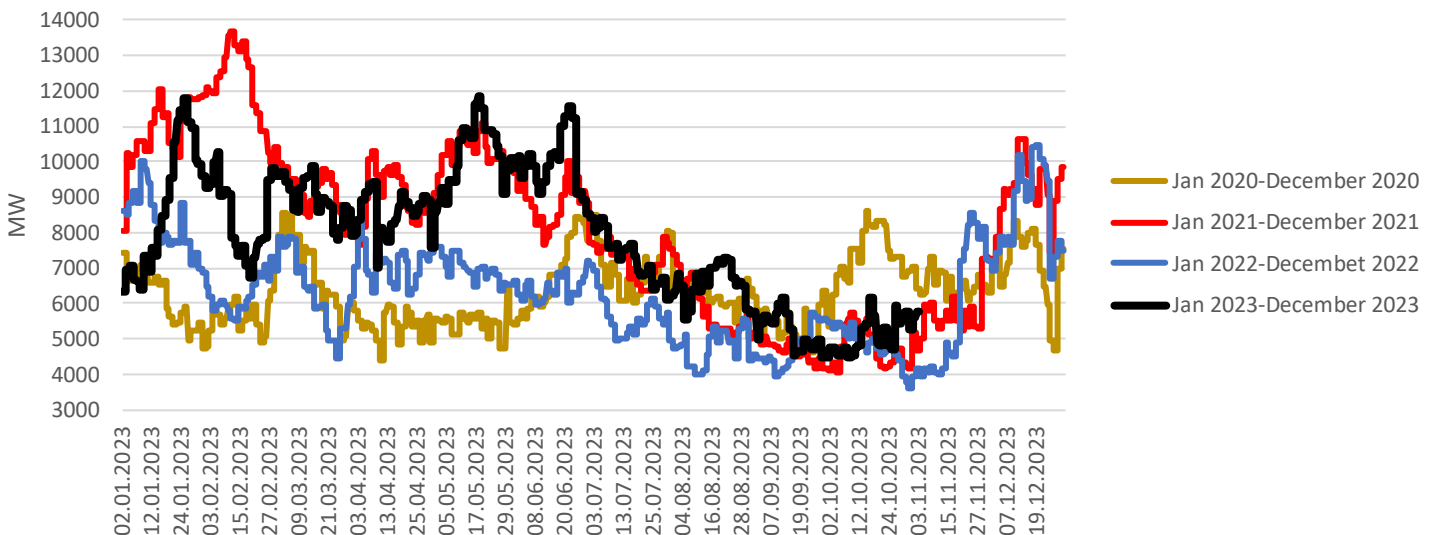
Hydro generation in SEE (MW average, MON-SUN)



Hydro generation (MW average, MON-SUN, entire region)

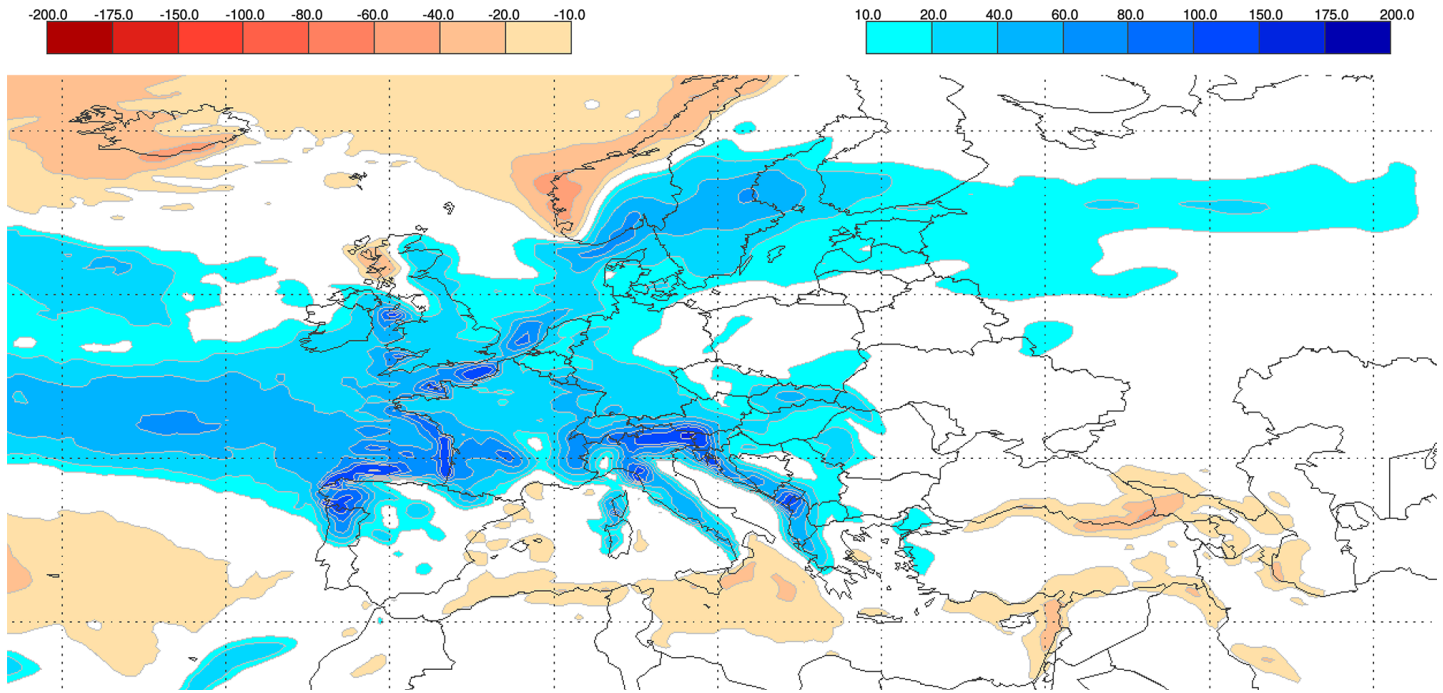


SEE daily average hydro generation: January-December (Monday-Friday)

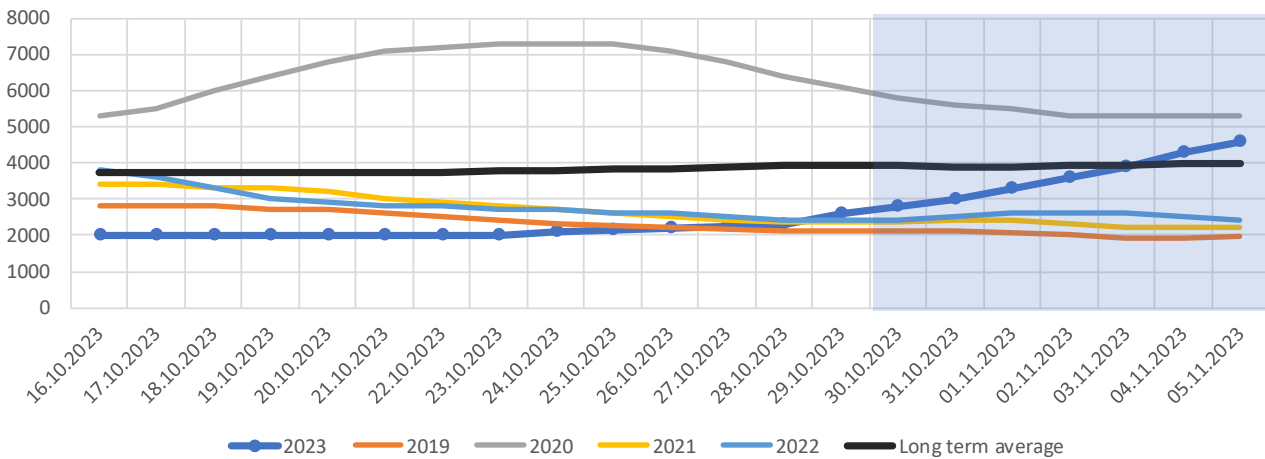


Monthly Rain Anomalies valid for week: from 30 October to 05 November 2023

Map processed by EFFIS System based on ECMWF Monthly Forecast System initiated on 30 October 2023
Estimated deviation (anomaly) of the mean from model climate in millimeters (mm)

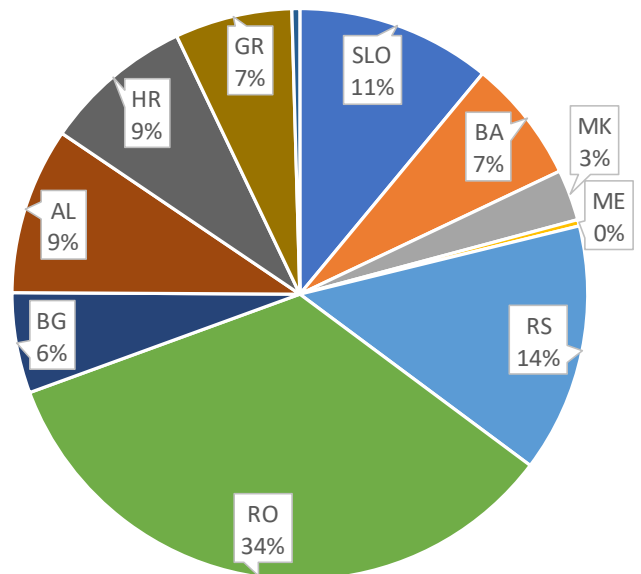
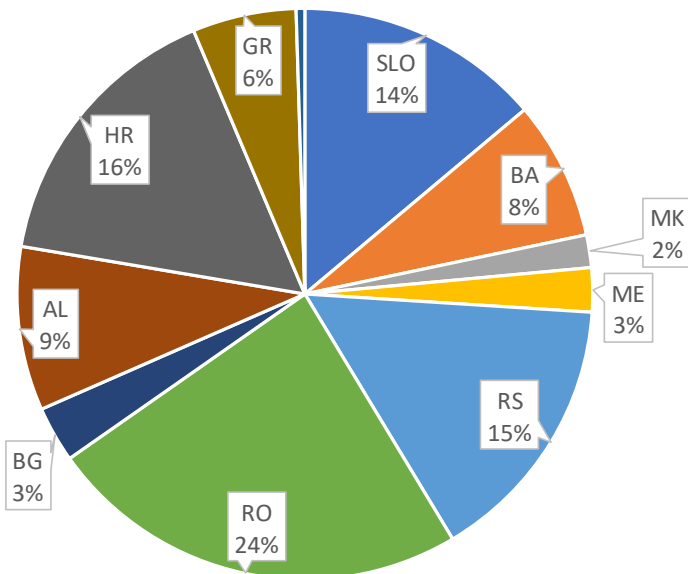


Danube flow (daily average m3/s)



Share of in total hydro generation in current week

Share at the same time last year



6. Wind generation

Wind generation in Wk43 exceptional, and it was some 30% higher than average for this time of year. Wind generation was 970 MW higher than in Wk43, and 576 MW higher than in Wk42, The biggest contributors to high wind generation in this week were Greece with 453 MW rise and Romania with 311 MW rise. All SEE countries had higher wind generation than in previous week.

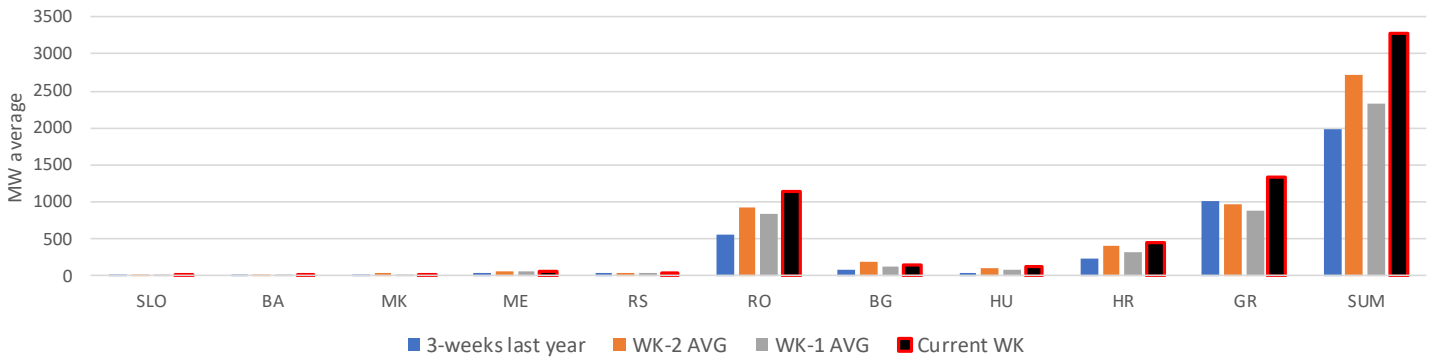
Observing entire region, wind generation was 42% higher than in Wk43 and 29% higher than in Wk42. Wind generation was also much stronger than at the same time last year, 65% higher or 1300 MW.

Wind generation was one of the dominant price driver in Wk43, but mostly on Tuesday and Thursday, when wind generation was extremely high.

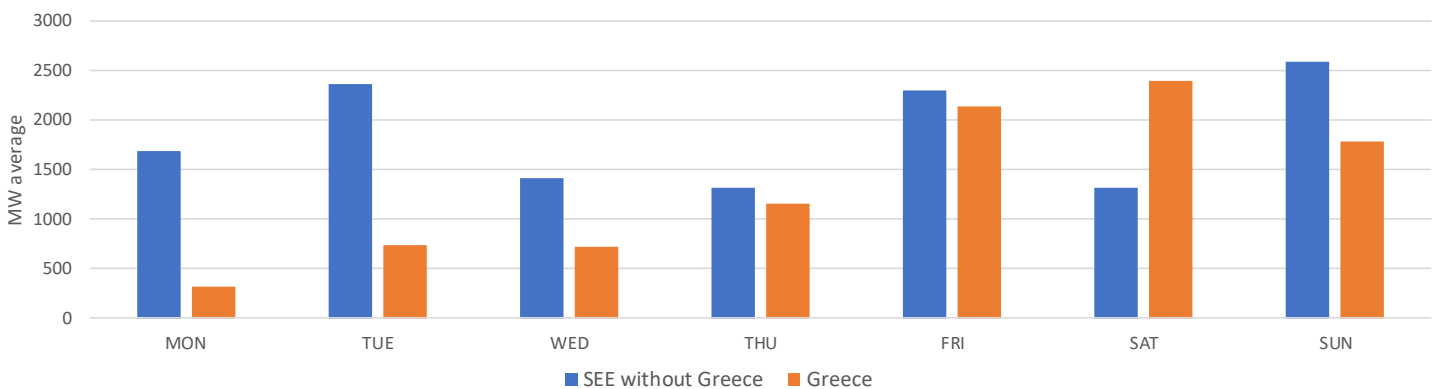
Wind generation (MW average)	WK44	WK43	WK42	*Last year	WK44 VS WK43		WK44 VS WK42		WK44 VS Last year	
					MW	%	MW	%	MW	%
Hungary	128	74	98	38	54	74%	30	80%	90	239%
Romania	1,142	833	916	554	309	37%	226	41%	588	106%
Bulgaria	145	121	186	73	24	20%	-41	-56%	72	100%
Croatia	437	315	412	218	122	39%	25	12%	219	100%
Other	111	105	131	93	6	6%	-20	-22%	18	19%
SUM (without GR)	1,963	1,448	1,743	976	515	36%	220	23%	987	101%
Greece	1,322	871	968	1,015	451	52%	354	35%	307	30%
SUM (Entire SEE)	3,285	2,319	2,711	1,991	966	42%	575	29%	1,295	65%

*Last year: 3 week range at the same time in 2022

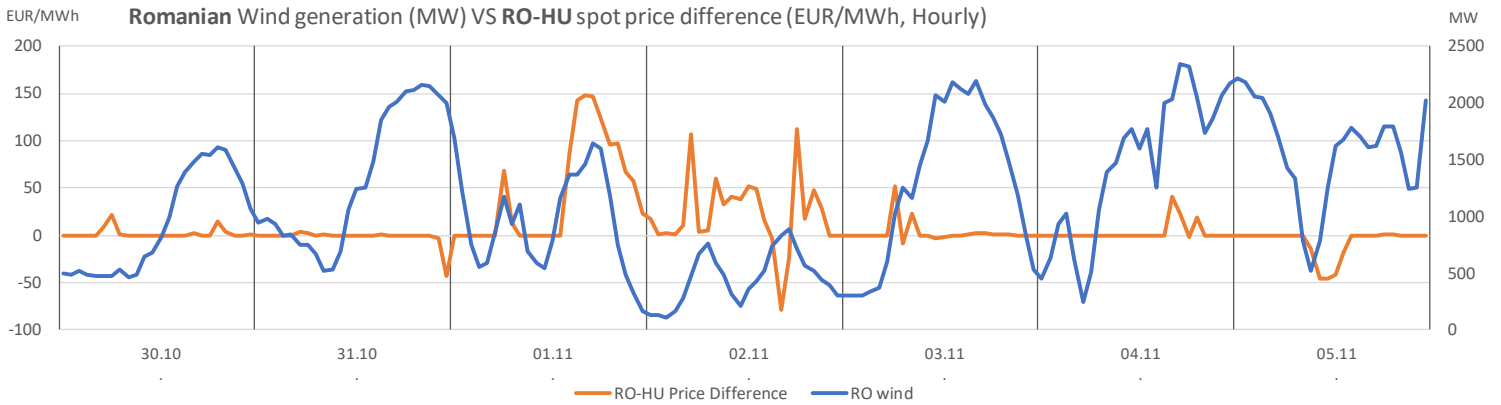
Wind generation in SEE (MW average, MON-SUN)



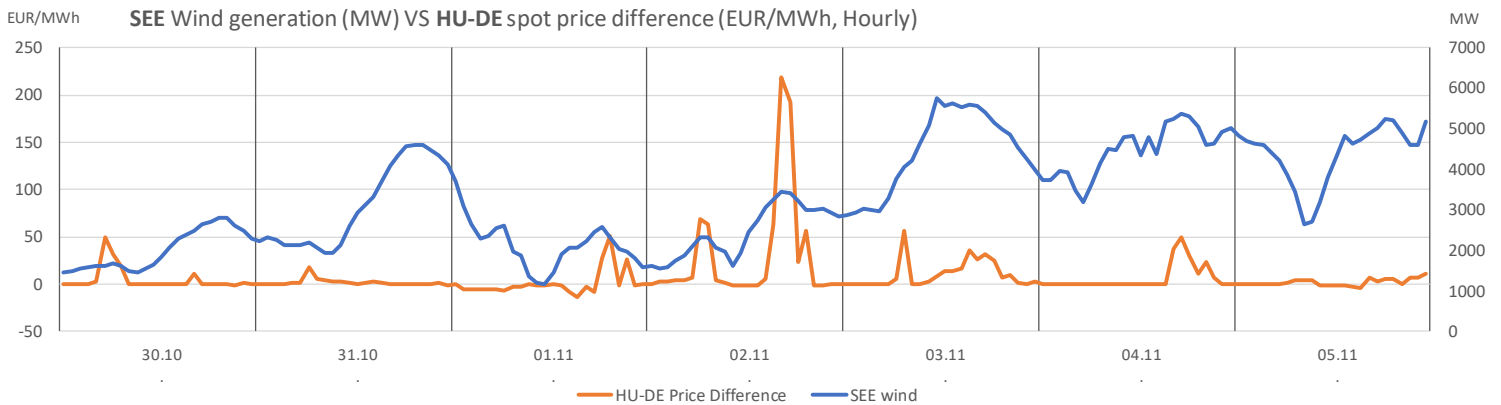
Daily wind generation (MW average, MON-FRI)



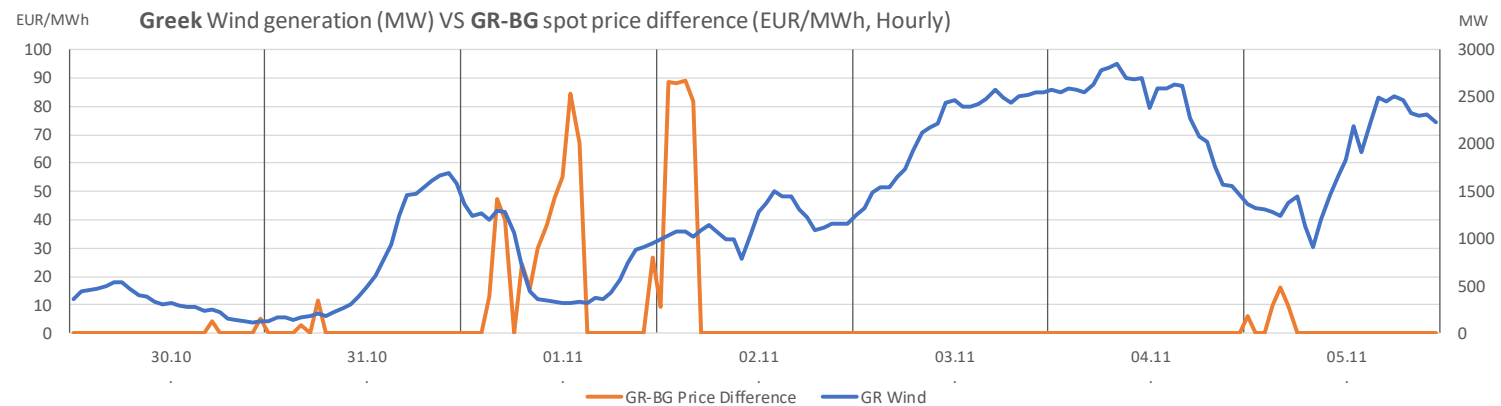
In Romania, there was a strong correlation of local wind generation with decoupling with Hungarian market, which was visible in on Thursday, when OPCOM spiked above HUPX in periods with very low wind generation. As wind generation increased on Friday, OPCOM started settling very close to HUPX.



Observing entire SEE, wind generation was generally high throughout the week, but during Wednesday and Thursday, with low wind generation HUPX was settling above EPEX-DE in risky hours (H6-H8 and H18-H20, with no solar). As it can be seen from the chart below, HUPX was able to have very close spread with EPEX-DE even on weekends, due to high wind, despite low EPEX-DE settlement.



HENEX was settling at or above IBEX level due to very low gas-fired generation, which made HENEX very dependable on wind generation. This was especially visible on Wednesday and Thursday. The reason why HENEX did not settle strongly above IBEX on Monday and Tuesday is due to still very high gas generation in Greece, which was impacted by previous pricing. But as Greek gas got close to CWE price level, gas generation dropped and HENEX became strong importer and dependent on wind generation



7. Solar generation

Solar generation in the region was significantly lower than in previous weeks, due to shorter days and higher cloud coverage, and it was the lowest since early-March 2023. In total, compared to previous week peak solar generation was 474 MW lower. In SEE without Greece peak solar generation was 301 MW lower, while in Greece it was 174 MW higher. Highest drop was in Bulgaria—179 MW or 28%.

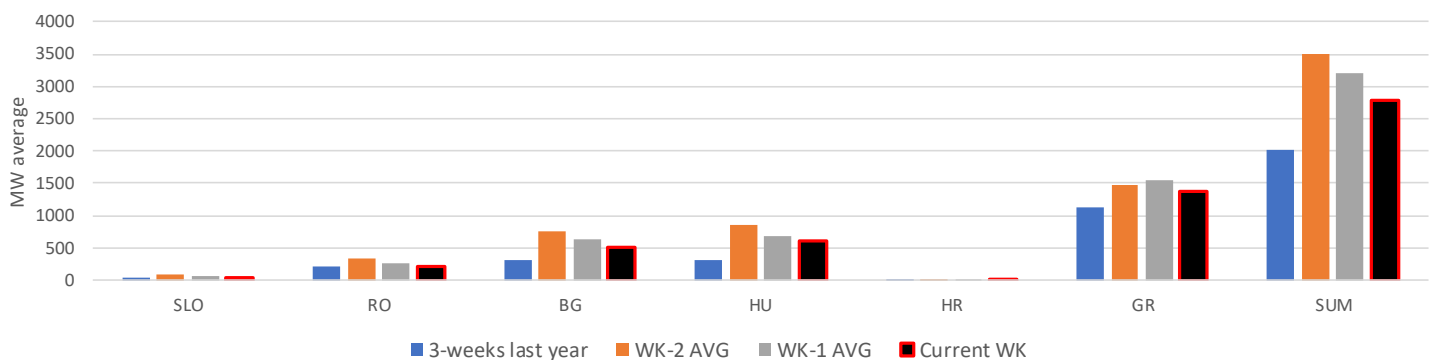
But, comparing to Wk42, peak solar generation was even 780 MW lower. Highest drop was in Bulgaria (-290 MW), but significant drop was also in Hungary (-264 MW).

Comparing Friday vs Wednesday (two extreme days), Peak solar generation in the region dropped by 1617 MW (without Greece). In Greece, extreme days were Saturday and Monday, with 954 MW difference in peak solar generation.

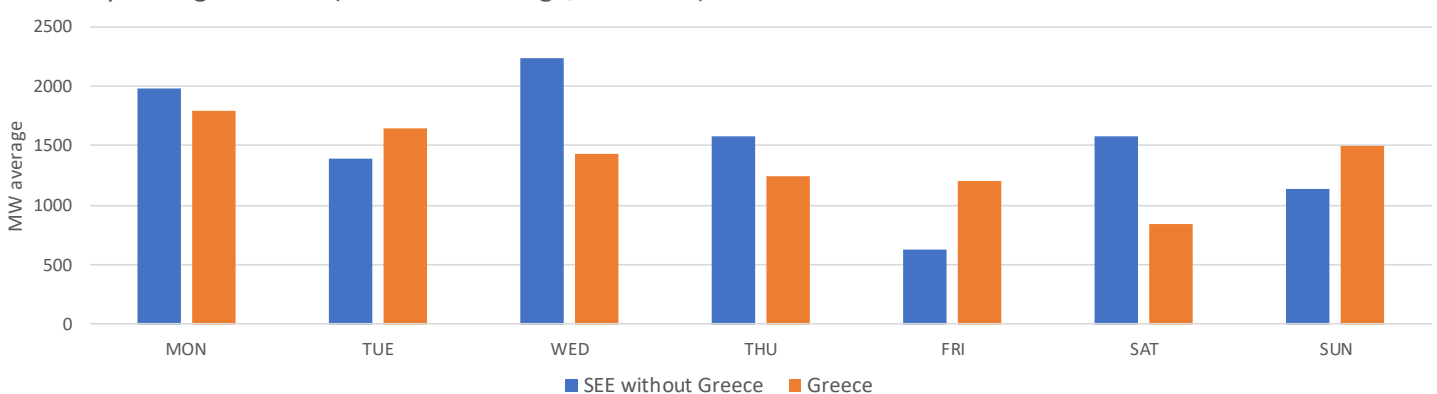
Solar Peak generation (MW average)	WK44	WK43	WK42	*Last year	WK44 VS WK43		WK44 VS WK42		WK44 VS Last year	
					MW	%	MW	%	MW	%
Hungary	599	671	862	306	-72	-11%	-264	-86%	293	96%
Romania	220	259	327	223	-39	-15%	-107	-48%	-4	-2%
Bulgaria	517	636	748	300	-120	-19%	-231	-77%	216	72%
Other	71	82	109	46	-11	-13%	-38	-82%	25	55%
SUM (without GR)	1,407	1,648	2,046	876	-241	-15%	-639	-73%	531	61%
Greece	1,381	1,554	1,462	1,135	-174	-11%	-81	-7%	246	22%
SUM (Entire SEE)	2,787	3,202	3,508	2,011	-415	-13%	-721	-36%	777	39%

*Last year: 3 week range at the same time in 2022

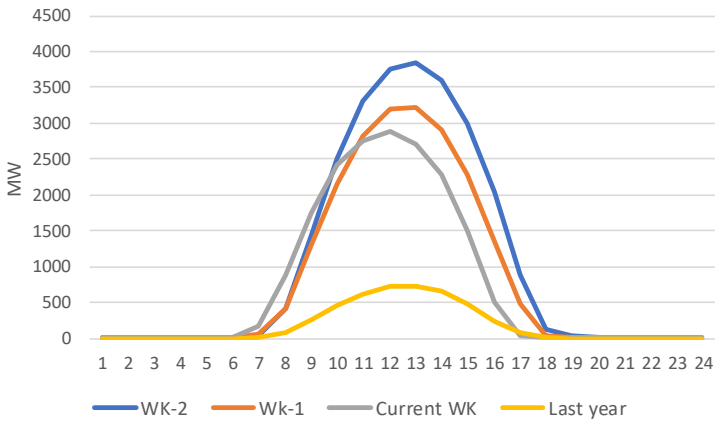
Solar generation in SEE (PEAK MW average, MON-FRI)



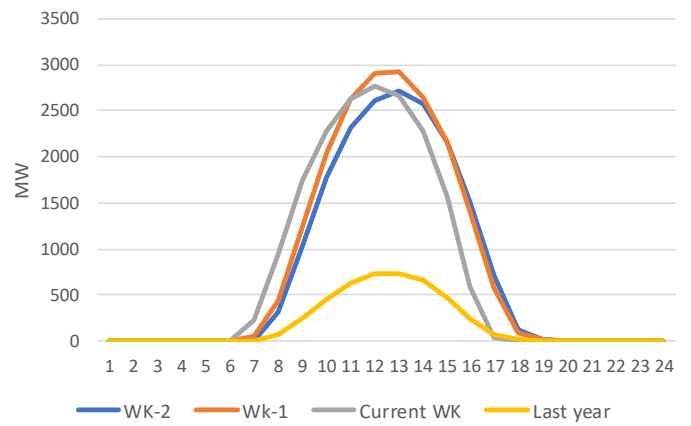
Daily Solar generation (PEAK MW average, MON-FRI)



Solar generation in SEE (without Greece), 24h AVG



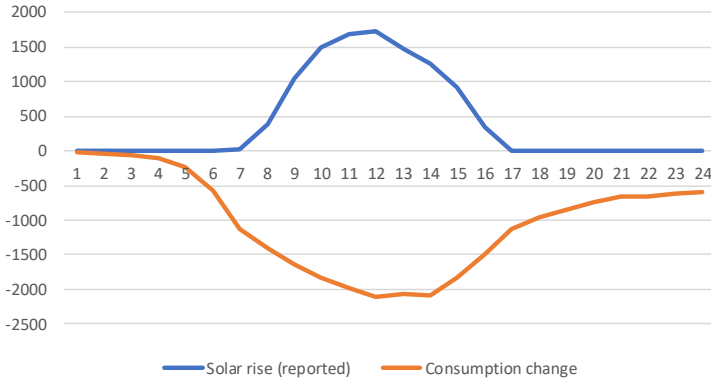
Solar generation in Greece, 24h AVG



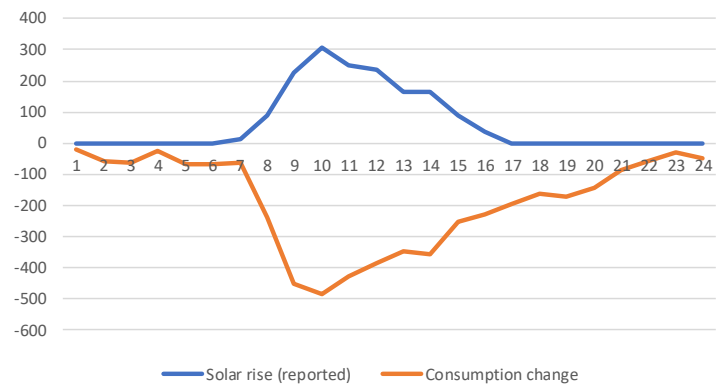
Following charts show specific days with significant change of solar generation (blue line) and consumption change on the same days. Goal is to see the effect of higher solar irradiation on consumption drop - as part of solar generation is not visible on generation data, but on reduced consumption data (photovoltaic prosumers).

Photovoltaic installations (mostly rooftop) connected on distribution network do not report their generation data to the Transmission System Operators - instead, their generation results with lower energy offtake from the distribution grid (or negative consumption). Still, such installation affect SEE power exports at the same manner as solar generation reported to the TSO.

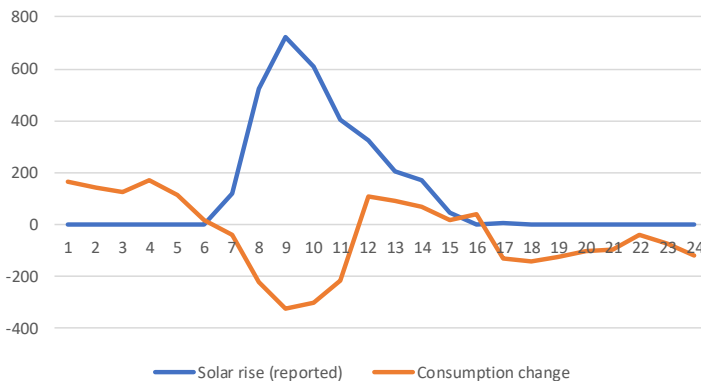
MW Hungary: 01.11.2023 vs 31.10.2023



MW Romania: 01.11.2023 vs 02.11.2023



MW Greece: 31.10.2023 vs 01.11.2023

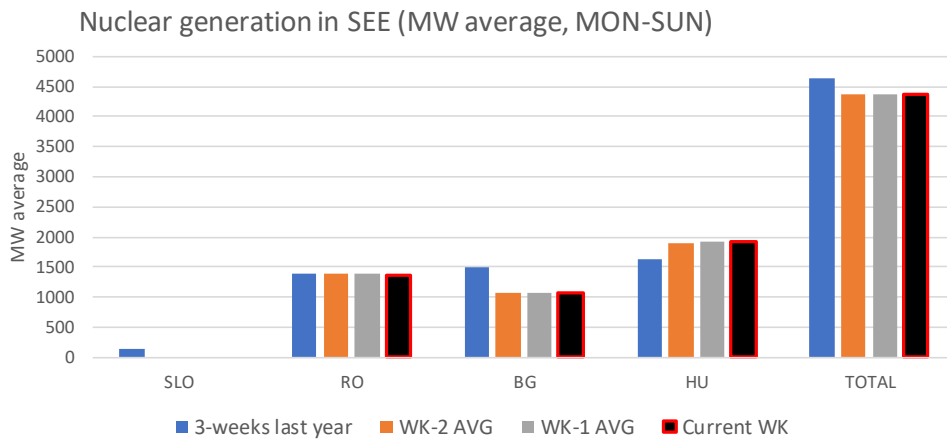


8. Nuclear generation

Nuclear generation was at the similar level as in Wk43, as NPP Krsko and NPP Kozloduy remain offline (outage in NPP Krsko (Slovenia) and maintenance of 1,000 MW unit in NPP Kozloduy (Bulgaria)). Nuclear generation was the same as at exact time last year, but observing +/- one week, it was higher last year, as NPP Krsko came back from maintenance on 8th of November, and NPP Kozloduy on 5th of November 2022. In Hungary and Romania, nuclear generation was as expected as there were no outages.

Nuclear power plant Krsko is offline due to leakage. According to the operator of the power plant, repair works are on-going and plant is expected to be reconnect the unit to the grid in mid-November 2023.

Nuclear generation was at similar level as in Wk43 and Wk42: Just 6 MW lower than in Wk43. Nuclear generation was 280 MW lower than +/-1 week at the same time last year, as two nuclear units came in Wk45 last year.



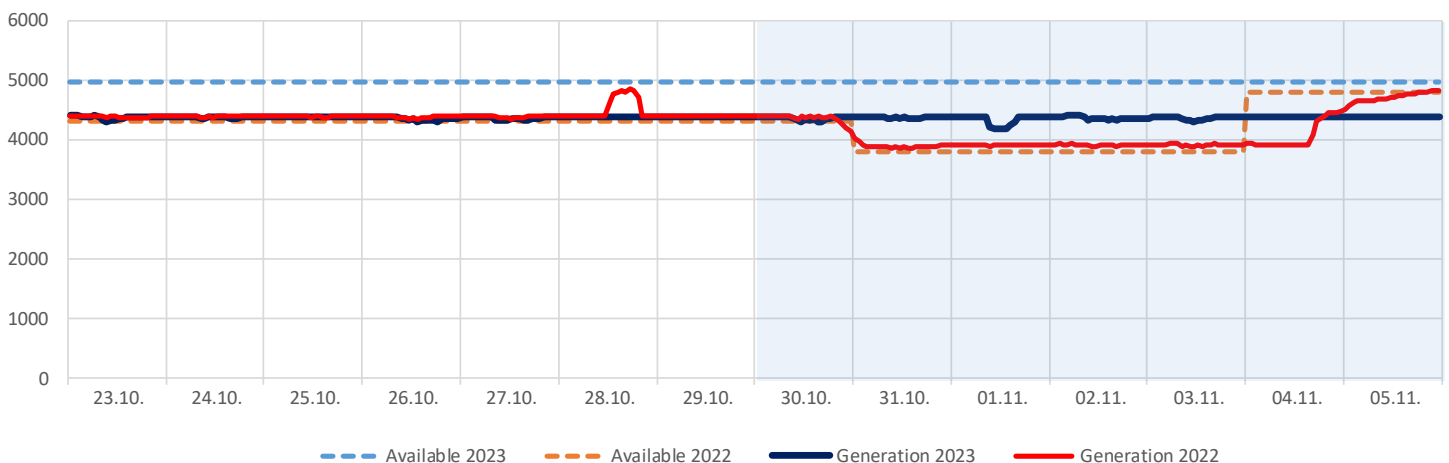
Maintenances of nuclear units:

- NPP Kozloduy G10 (1000 MW) went into maintenance and started with shutdown on H6 on 08.10.2023

Unplanned outages of nuclear units:

- NPP Krsko was shut down due to leaks. NPP Krsko started with Shutdown in H24 on Thursday (05.10.2023) and reached 0 MW output at H5 on Friday (06.10.2023).

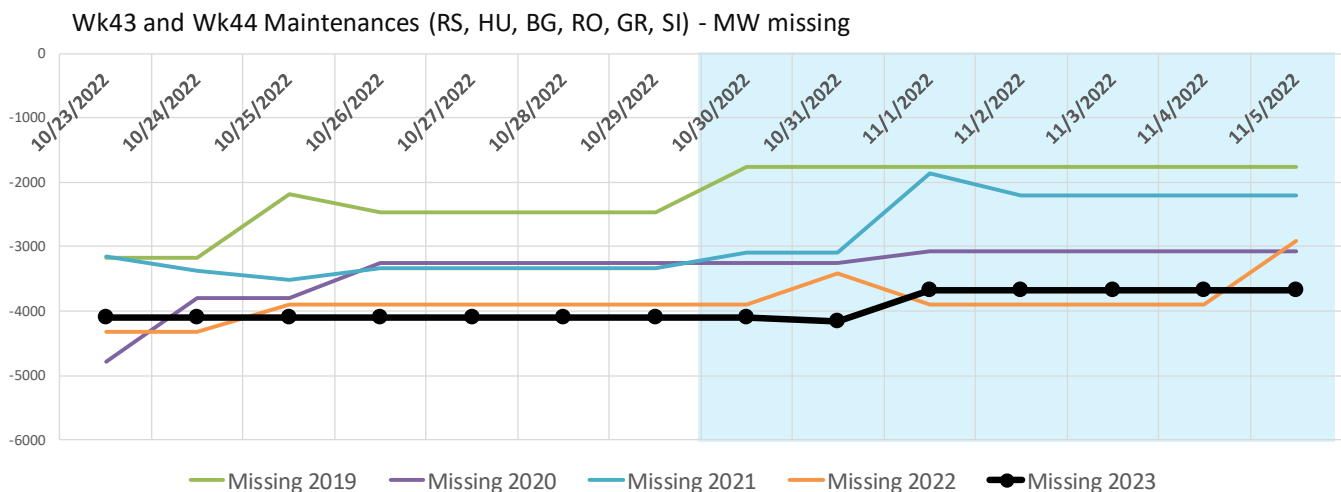
MW Nuclear planned availability and actual generation(hourly, MW): Week 43 and Week 44



9. Maintenances of generation units (thermal)

Maintenance plan of thermal units was strong for this time of year, as NPP Kozloduy had delayed maintenance start (in previous years, NPP Kozloduy 1000 MW unit was in full operation or coming into operation in Wk44). Observing RS+HU+BG+RO+GR+SI, maintenance plan was 300 MW less intensive comparing to Wk43, and 620 MW less intensive than in Wk42. Most of the availability improvement compared to WK43 was due to 200 MW improvement in Romania (TPP Isalnica, 300 MW), but unit was not in operation so this improvement was not visible on the market). Comparing to Wk43, in addition to Romanian improvement, there was 200 MW improvement in Greece, due to Heron CC gas unit.

Observing coal units in the entire region (with also units in North Macedonia, Montenegro, Croatia, Kosovo), availability of coal units compared to last week was 335 MW higher, but coal generation was just 96 MW higher, as availability improvement was in units which are unprofitable. Compared to last year, entire region had 1280 MW lower availability - due to 600 MW stronger maintenance of Greek coal units (irrelevant to market), 224 MW stronger maintenance of Hungarian Matrai coal units and 340 MW stronger maintenance of Serbian units. But, coal-fired generation was also 1055 MW lower, as a result of lower revenues of Bulgarian coal units and shutting down of Romanian coal units.



In and Out of units during WK44

- Maritsa 2 G4 (BG), 177 MW, 03.09.2023-31.10.2023 Going IN
- Aloumnio ST (GR), 334 MW, 01.09.2023-31.10.2023 Going IN
- Heron GT 01 (GR), 49 MW, 30.10.2023-10.11.2023 Going OUT

Offline units during WK44

- Matrai G4 (HU), 224 MW, 22.07.2023-15.11.2023
- TENT A G5 (RS), 340 MW, 11.06.2023-15.11.2023
- Bucuresti S G3 (RO), 84 MW, 03.07.2023-12.11.2023
- Turceni G7 (RO), 267 MW, 31.05.2023-31.12.2023
- Kozloduy G10 (BG), 1040 MW, 09.10.2023-20.11.2023
- Korinthos Power (GR), 433 MW, 17.08.2023-10.12.2023
- Aliveri G5 (GR), 417 MW, 19.08.2023-18.11.2023

- Megalopoli G4 (GR), 256 MW, 01.10.2023-30.11.2023
- AG Dimitrios G5 (GR), 342 MW, 16.09.2023-12.11.2023

Unplanned outages of thermal units (sorted by the date of entry back into operation):

TPPs		Type	MW	Event	From	To
Dunamenti G7	HU	Gas	269	Outage	30.10.2023, 12:15	30.10.2023, 17:30
TENT A G4	RS	Coal	329	Outage	28.10.2023, 23:00	30.11.2023, 18:00
Maritsa2 G2	BG	Coal	165	Outage	28.10.2023, 05:30	31.10.2023, 22:59
Cernavoda G1	HU	Nuclear	-254	Outage	01.11.2023, 10:00	01.11.2023, 15:00
Craiova 2 G2	RO	Coal	120	Outage	27.10.2023, 20:00	02.11.2023, 23:59
Kakanj G7	BA	Coal	200	Outage	28.10.2023, 09:00	03.11.2023, 04:00
Kostolac B G1	RS	Coal	349	Outage	03.11.2023, 19:00	04.11.2023, 18:00
TENT A G1	RS	Coal	210	Outage	04.11.2023, 00:30	05.11.2023, 09:30
Paroseni CA	RO	Coal	130	Outage	25.10.2023, 00:00	05.11.2023, 23:59
CCCC P.Brazi	RO	Gas	-416	Outage	06.11.2023, 10:00	06.11.2023, 12:00
Matrai G5	HU	Coal	224	Outage	05.11.2023, 14:00	06.11.2023, 23:00
NEK Krsko	SLO	Nuclear	696	Outage	06.10.2023, 05:00	16.11.2023, 00:00
Galabovo G2	BG	Coal	343	Outage	17.10.2023, 23:00	16.11.2023, 23:00
Tuzla G6	BA	Coal	200	Outage	16.06.2023, 23:00	
Kakanj G5	BA	Coal	100	Outage	25.08.2023, 23:00	
Tuzla G5	BA	Coal	200	Outage	01.11.2023, 00:00	
Tuzla G4	BA	Coal	200	Outage	02.11.2023, 21:00	
Gacko G1	BA	Coal	300	Outage	05.11.2023, 05:00	

10. Transmission grid

Important transmission lines maintenances

- SK-UA (V. Kapusany - Mukachevo) 30.10.2023 - 03.11.2023 - NTC 0 MW
- RO-BG (Stupina - Varna) 01.11.2023 - 25.11.2023

In SEE, there was just one maintenance of interconnections during WK44: BG-RO line Stupina—Varna. This maintenance has resulted by lower BG>RO NTC, but this reduction is not significant, as Bulgaria is not an exporter due to 1,000 MW in NPP Kozloduy being out. Although RO>BG NTC was unchanged, Bulgarian IBEX settled 5.7 EUR/MWh above Romanian OPCOM, although both countries were short. The reason was very high import of Greece and high Greek price level (Greek settlement was over 11 EUR/MWh higher than Romanian and 20.5 EUR/MWh higher than Hungarian spot).

Imports of the region were lower than in WK43, by 360 MW. However, this did not result with significant increase of HU-DE price difference as imports from Core increased by less than 120 MW. The biggest change in flows is on Italian borders, as region was exporting 457 MW less to Italy. Reason—Italian price level was not as high as in previous weeks. Most important is Greek—ITA exchange, which was just 57 MW, as Greek gas-fired generation price increased strongly.

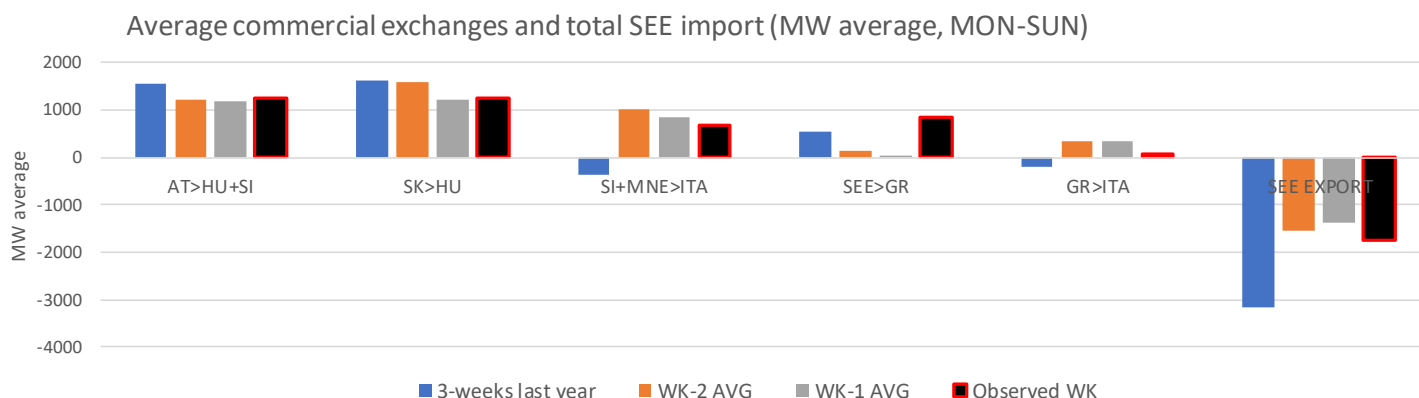
Although consumption and coal-fired generation did not change compared to WK43, gas fired generation dropped by over 1,100 MW, due to collapse of Greek gas-fired generation. As a result, SEE > GR flows were 860 MW higher. Also, as expected, solar generation declined further.

However, hydro generation improved by 500 MW, and most importantly, wind generation was extremely high, over 960 MW higher than in previous week and 1,300 MW higher than average.

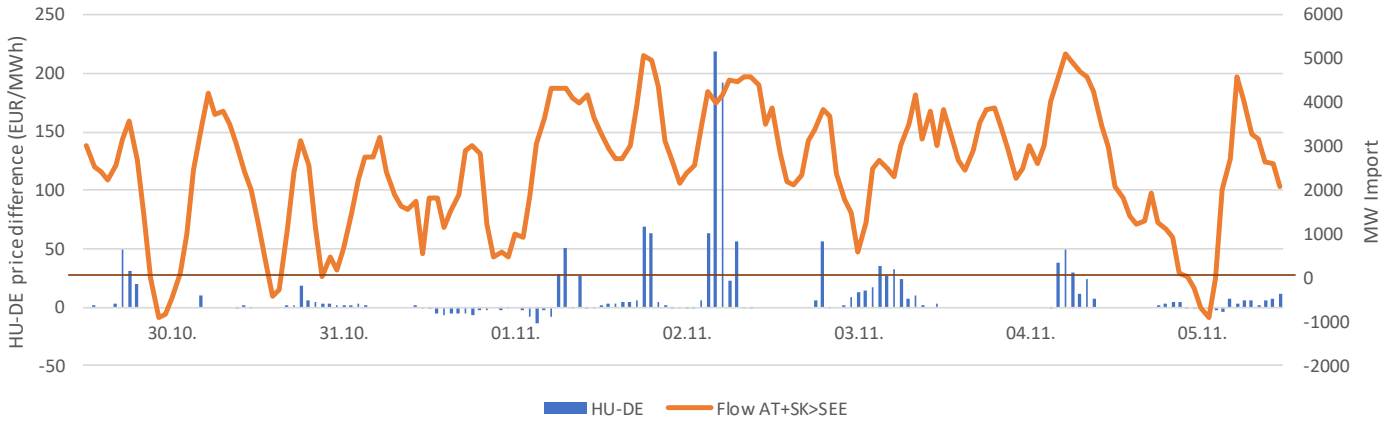
Changes of flows on most important borders:

*MW average change of flow observing entire week and 3-week range at the same time last year (-1/+1)

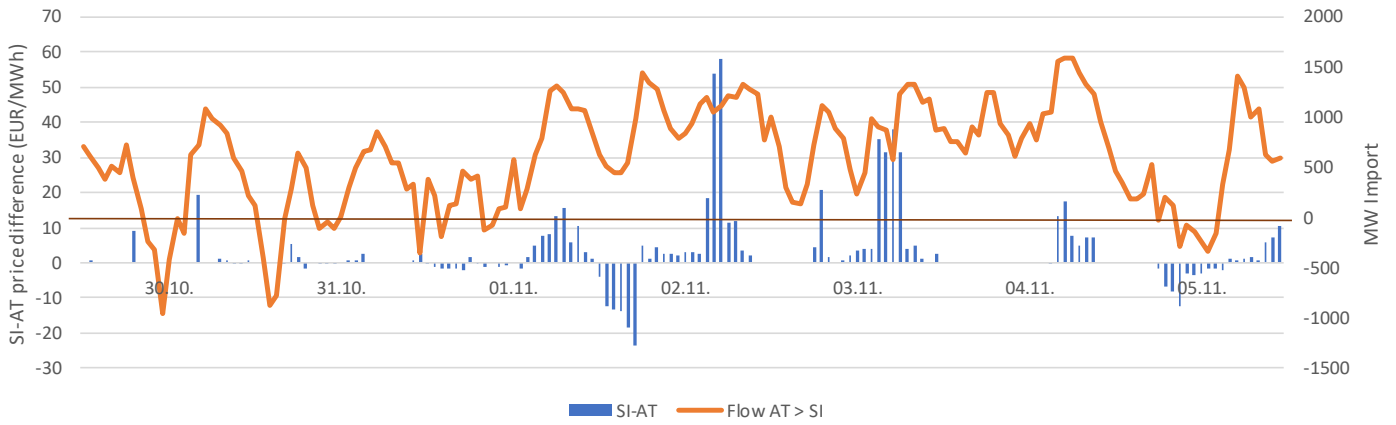
MW AVG flow	AT>HU+SI	SK>HU	SI+MNE>ITA	SEE>GR	GR>ITA	SEE EXPORT
Week-44 AVG flow	1264	1248	687	861	57	-1741
VS Week-43	94	23	-171	808	-286	-358
VS Week-42	36	-335	-335	730	-293	-212
VS last year	-297	-364	1054	305	270	1423



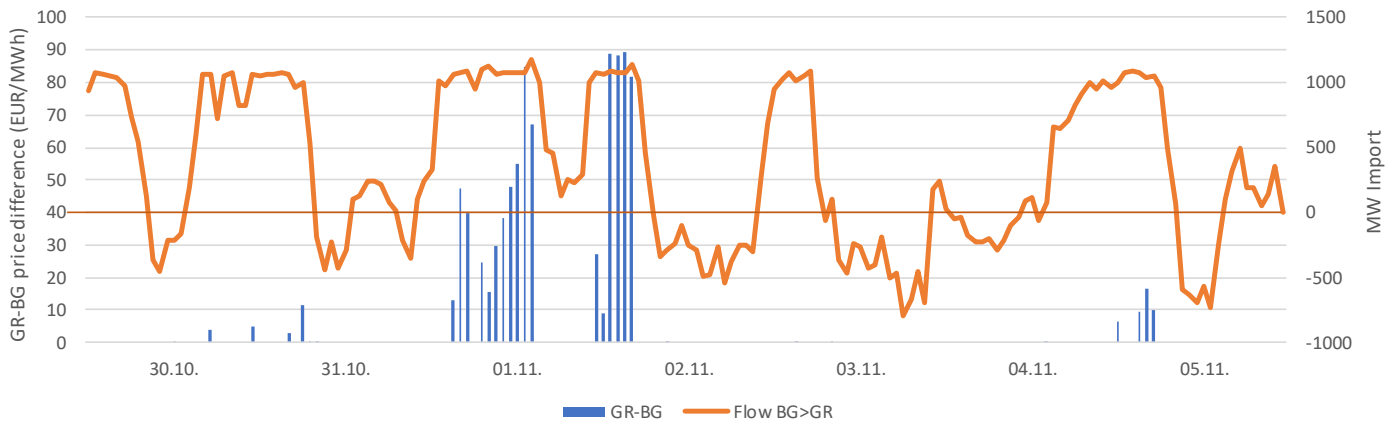
HU-DE Spot spreads and Core imports (AT+SK > HU+SI)



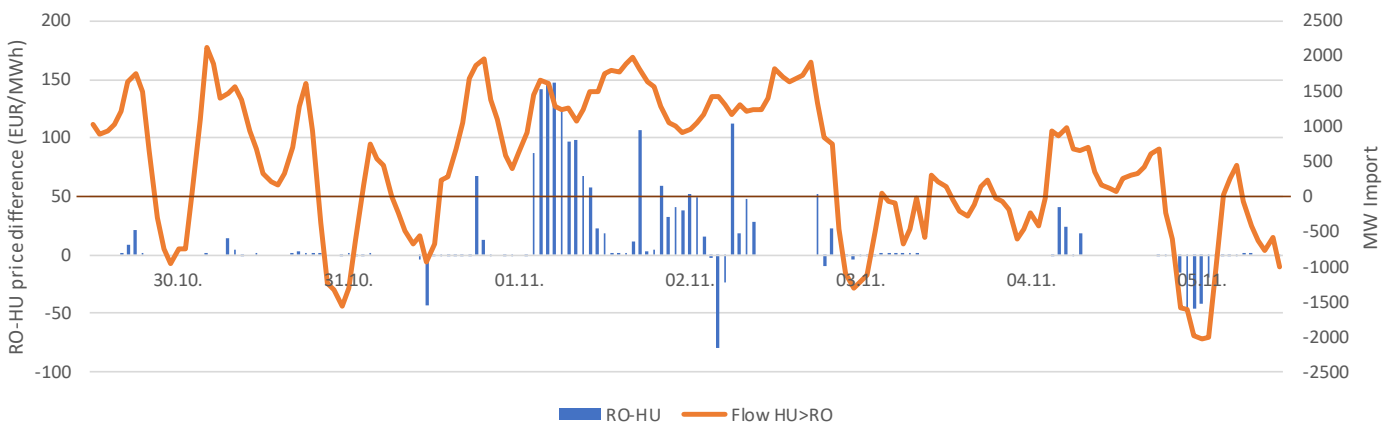
SI-AT Spot spreads and import from Austria (AT > SI)



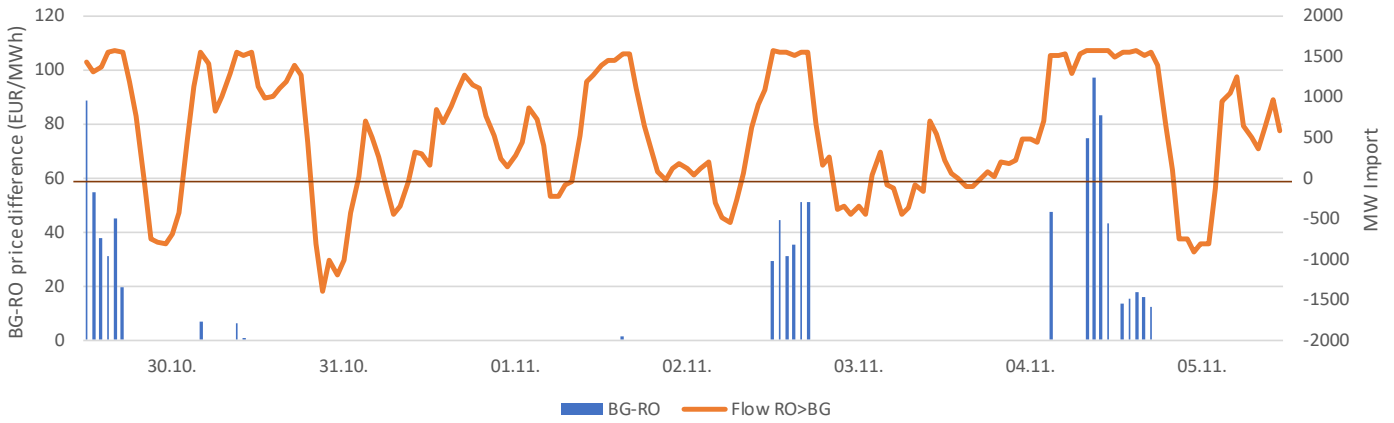
GR-BG Spot spreads and import from Bulgaria (BG > GR)



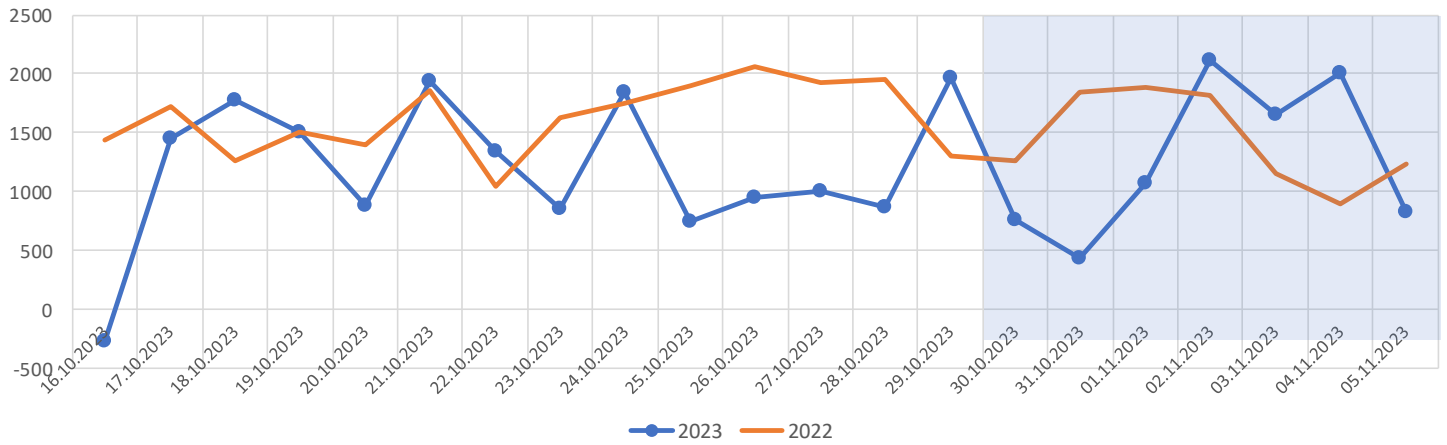
RO-HU Spot spreads and import from Hungary (HU > RO)



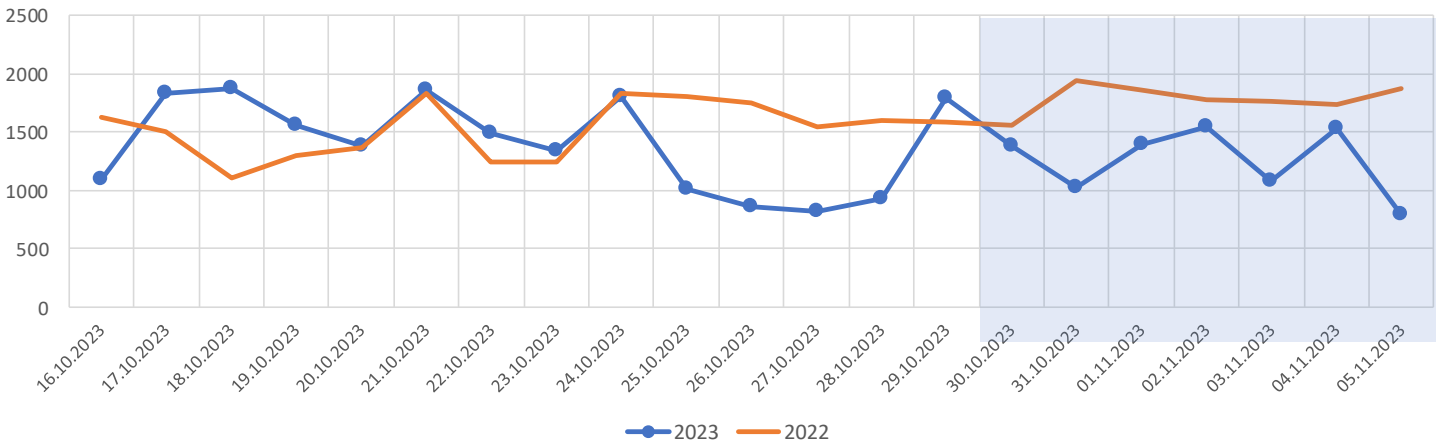
BG-RO Spot spreads and imports from Romania (RO > BG)



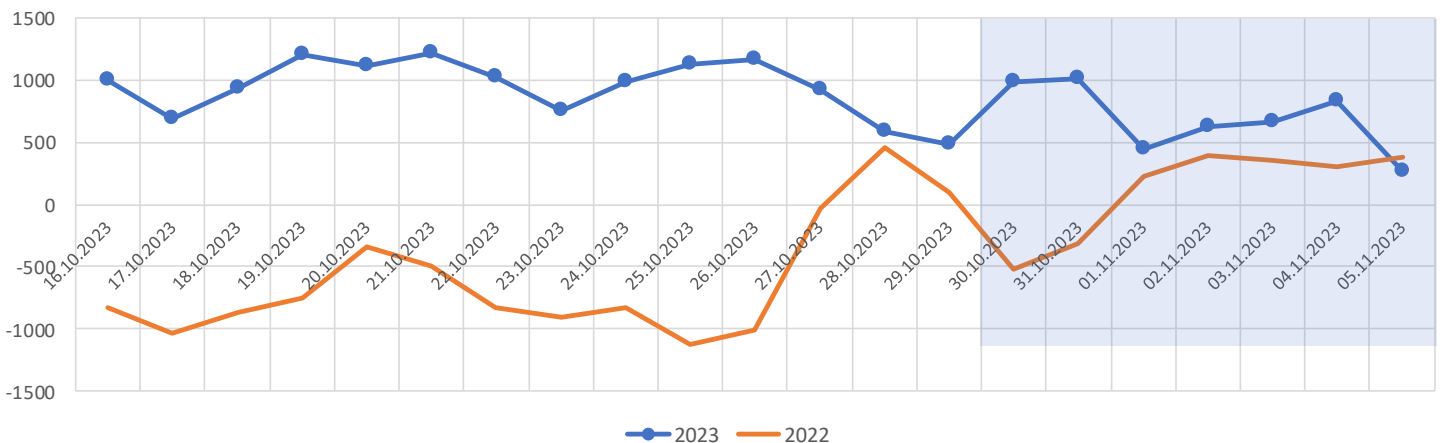
Commercial flows, Austria > Hungary + Slovenia (daily MW average)



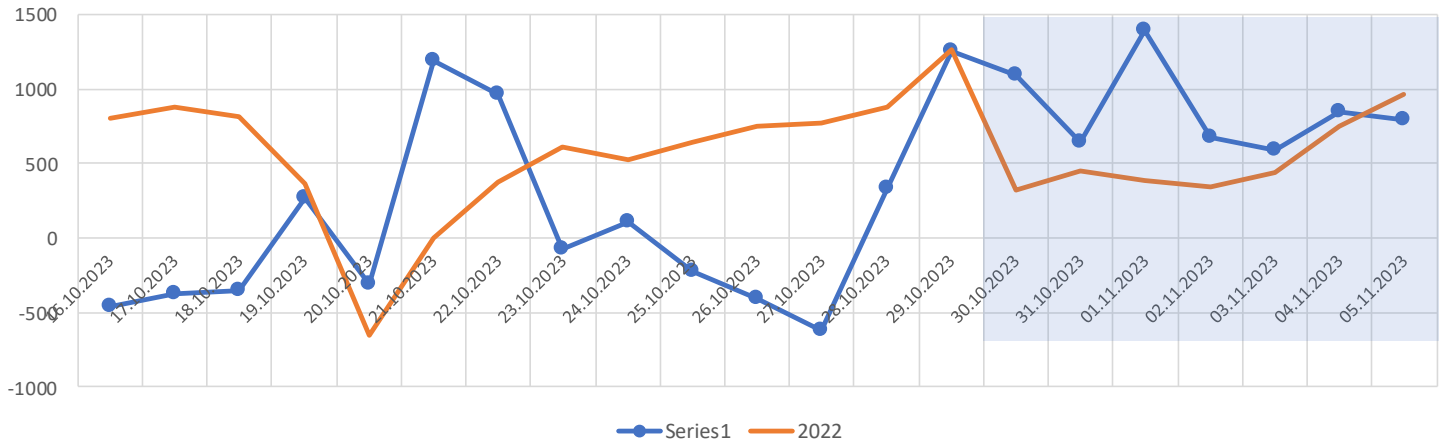
Commercial flows, Slovakia > Hungary (daily MW average)



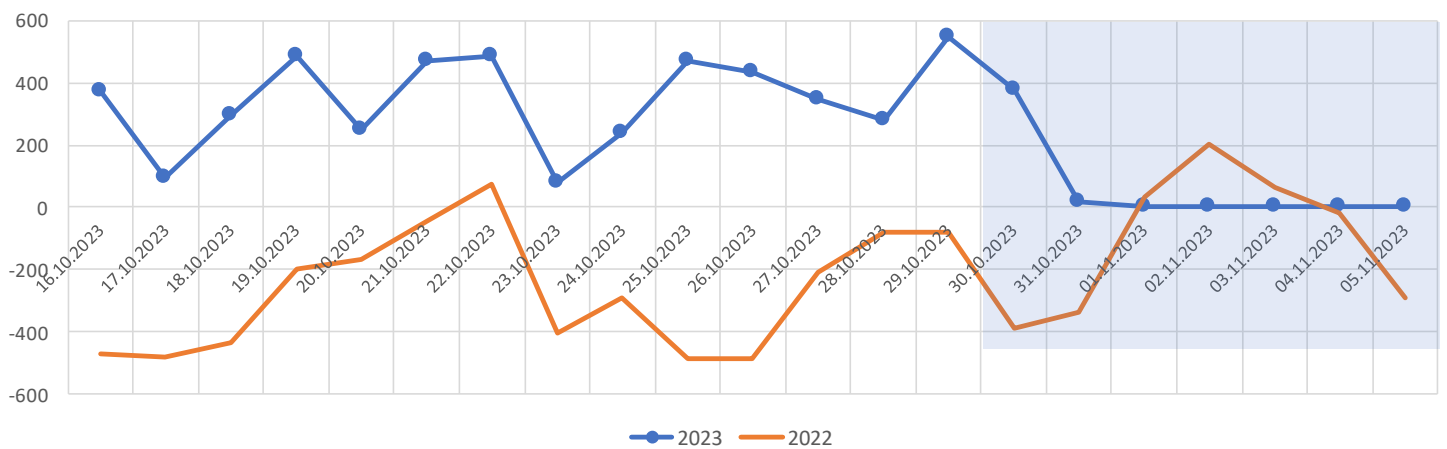
Commercial flows, Slovenia + Montenegro > Italy (daily MW average)



Commercial flows, Bulgaria + North Macedonia + Albania > Greece (daily MW average)



Commercial flows, Greece + Italy > Italy (daily MW average)



11. Power futures

	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
DE December 2023	-14.63%	95.90	97.81	97.68	98.85	109.10	110.55	112.34
DE January 2023	-8.12%	118.19	118.27	115.69	117.99	127.21	128.36	128.64
DE Q1+Y 2023 Base	-6.95%	117.66	117.84	115.84	117.72	126.52	126.36	126.45
DE Q2+Y 2023 Base	-5.31%	106.93	106.61	106.17	106.43	113.53	113.48	112.93
DE Q2+Y 2023 Base	-2.79%	119.04	117.08	115.83	115.91	122.26	122.91	122.46
DE Cal 24 Base	-4.77%	119.26	118.47	117.12	117.85	125.06	125.41	125.24
DE Cal 25 Base	-3.26%	113.42	112.07	110.70	111.05	116.41	117.33	117.24
DE Cal 24 Peak	-4.69%	135.75	135.08	133.80	134.85	142.08	143.00	142.43
DE Cal 25 Peak	-3.41%	132.70	132.87	131.10	131.00	137.20	137.56	137.38

	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
HU December 2023	-13.34%	109.75	108.39	116.48	116.48	125.97	126.57	126.64
HU January 2023	-8.23%	131.92	132.53	133.90	133.90	141.08	144.60	143.75
HU Q1+Y 2023 Base	-6.91%	131.80	131.73	134.70	134.70	141.85	142.53	141.59
HU Q2+Y 2023 Base	-5.40%	115.35	115.57	118.11	118.11	122.92	122.64	121.93
HU Q2+Y 2023 Base	-4.95%	129.71	129.83	132.83	132.83	136.94	137.03	136.47
HU Cal 24 Base	-5.60%	131.39	131.28	134.25	134.25	139.44	139.32	139.19
HU Cal 25 Base	-3.09%	119.88	118.54	119.19	119.19	124.31	124.71	123.70
HU Cal 24 Peak	-4.67%	149.74	150.58	152.15	152.15	158.50	158.61	157.08
HU Cal 25 Peak	-3.35%	140.97	139.65	140.21	140.21	145.67	146.95	145.86

	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
IT December 2023	-11.96%	131.30	133.09	133.11	136.68	146.88	148.15	149.13
IT January 2023	-9.01%	145.43	148.04	147.08	149.36	158.41	159.70	159.83
IT Q1+Y 2023 Base	-8.23%	143.38	144.98	143.86	145.44	154.81	155.60	156.24
IT Q2+Y 2023 Base	-4.62%	131.54	132.87	130.91	131.61	138.88	139.34	137.91
IT Q2+Y 2023 Base	-5.65%	137.67	138.46	135.92	136.71	145.10	145.19	145.91
IT Cal 24 Base	-5.62%	140.99	141.57	139.76	140.80	148.85	149.25	149.39
IT Cal 25 Base	-2.57%	126.98	126.38	124.80	125.59	130.34	130.38	130.33
IT Cal 24 Peak	-4.80%	152.64	152.96	150.66	152.38	160.74	160.75	160.33
IT Cal 25 Peak	#DIV/0!	0.00	0.00	0.00	0.00	0.00	0.00	0.00

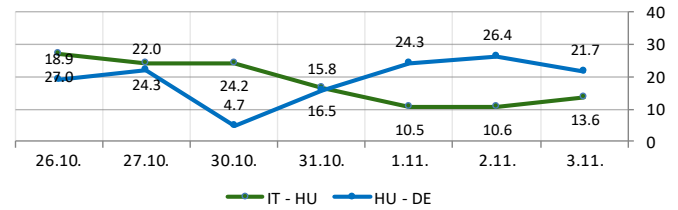
	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
DE Week 45	-18.16%	76.46	71.75	78.74	87.20	104.99	90.03	93.43
DE Week 46	-18.28%	87.05	89.25	94.50	97.00	114.28	104.50	106.52
HU Week 45	-12.64%	98.16	98.16	103.01	103.01	109.65	112.02	112.36
HU Week 46	-15.06%	103.22	118.00	111.04	111.04	117.99	126.03	121.52
IT Week 45	-19.79%	111.75	108.75	113.50	119.51	133.83	136.33	139.32
IT Week 46	-12.21%	124.00	121.63	124.00	131.06	140.25	138.00	141.25

	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
CEGH Gas								
December 2023	-10.28%	47.49	48.19	46.33	47.12	52.63	52.63	52.93
Q1+Y 2023 Base	-8.51%	49.95	50.22	49.41	49.41	54.35	54.25	54.60

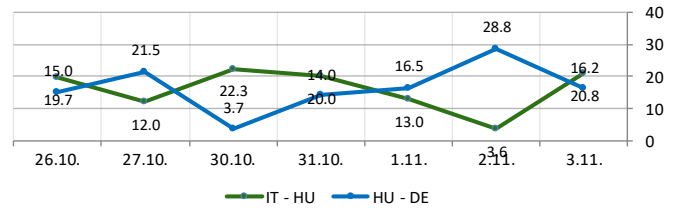
	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
API-2 Coal								
December 2023	-6.15%	120.7	120.0	119.5	119.8	125.1	128.2	128.6
Q1+Y 2023	-7.20%	117.7	117.9	117.8	118.0	123.0	126.2	126.8

	7-day	3.11.	2.11.	1.11.	31.10.	30.10.	27.10.	26.10.
CO2 (EUA)								
Apr-22	-10.28%	77.7	78.6	78.5	79.1	78.7	79.4	79.7
2021-2030	-8.51%	77.2	78.2	78.1	78.6	78.8	78.8	79.1

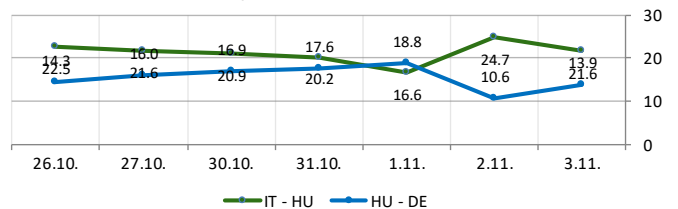
Week 45 DE-HU-IT Spreads



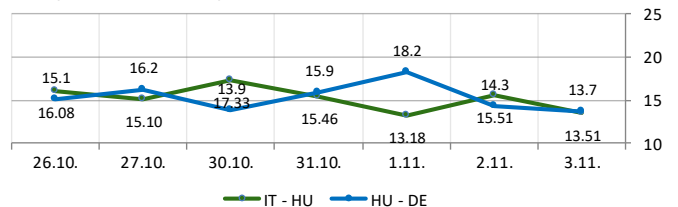
Week 46 DE-HU-IT Spreads



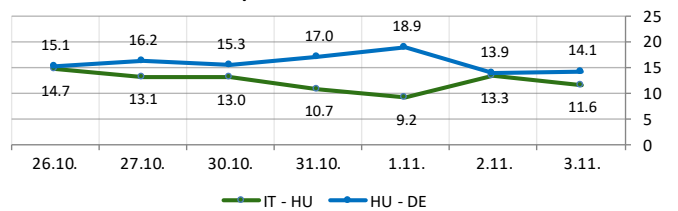
December 2023 DE-HU-IT Spreads



January 2023 DE-HU-IT Spreads



Q1+Y 2023 Base DE-HU-IT Spreads



Q2+Y 2023 Base DE-HU-IT Spreads

