



NEXT SOLUTIONS

The future of Energy

Energy Market Report | Q2 2022

Edited by:

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Intro:

The Russian invasion of Ukraine remains the main driver of the season. We will observe that despite several environmental changes, the market is moving toward an **opposite direction** respect to the classic behavior suggested by the period. We try to relate this year quarter with the past year one by using an elementary, still effective, quantitative analysis. In the end we discuss about the dangers and opportunities that this situation provides for the Q3 2022.

The Quarter:

Q2 is usually a period with less tension over the grid. This has been particularly true for this Q with respect to the past year; but this situation has no effect on the **prices** that remain **high** due to the Russian invasion of Ukraine. The natural gas flow reduction from Russian to EU, as response to the EU sanctions to Russia, has increased enormously the gas price. The **gas remains the first driver** in the power generation and its increment propagates immediately to the power prices, despite a higher renewable generation and a more stable demand.

	Mean	Std	MeanQ22\ meanQ21	StdQ22\ stdQ21
Demand Outturn (ITSDO) - GB (MW)	27791.53	3654.38	1.0087	0.8888
Transmission Wind Outturn (no curtailment) - GB (MW)	6033.063	4143.54	1.5065	1.2842
Solar Outturn - GB (MW)	1943.35	2302.78	0.9876	0.9721
Day Ahead Price (Local) - GB (LC/MWh)	155.315	50.452	2.1476	3.0212
System Price - GB (£/MWh)	152.378	76.363	2.0354	1.060
Remit Unavailable Total - GB (MW)	25666.231	1918.427	1.1164	0.6832
Temperature (C)	12.6063	3.1324	1.1650	0.77523
DA-SYS (£)	2.9373	63.4022	-1.1487	0.9031

We can infer multiple interesting information from the side table:

- 1) The demand remained **stable** across the 2 quarters, but this year his variability is reduced by 12%;
- 2) The **wind** production is **increased** by 50% but also his standard deviation is increased by almost 30%;
- 3) DA and **SyS** prices have doubled their values; while the SyS std. is unchanged, the DA std. has tripled;
- 4) The **Remit** unavailability remained almost constant, but its variation is reduced by 32%;
- 5) The temperature has been warmer and more stable;
- 6) The **DA-SyS** spread is stable in absolute value, but it changed its sign!

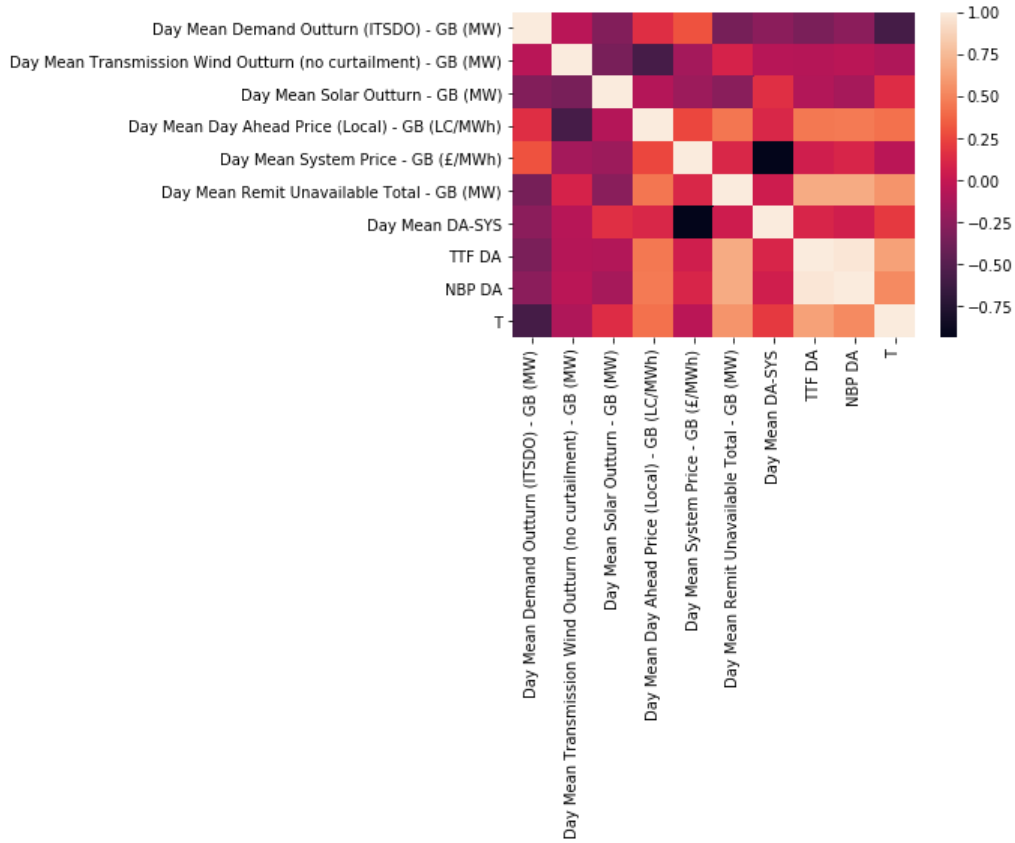
The above table tells us about a system with more renewable power, more stable demand, remit, and warmer temperature; yet the prices have doubled. To explain this apparent contradiction, we need to check the gas prices in the same periods:

	Mean	Std	MeanQ22\ meanQ21	StdQ22\ stdQ21
TTF (€/MWh)	99.1570	13.9910	3.9445	4.3208
NBP (p/therm)	135.7101	44.5775	2.1023	6.2889

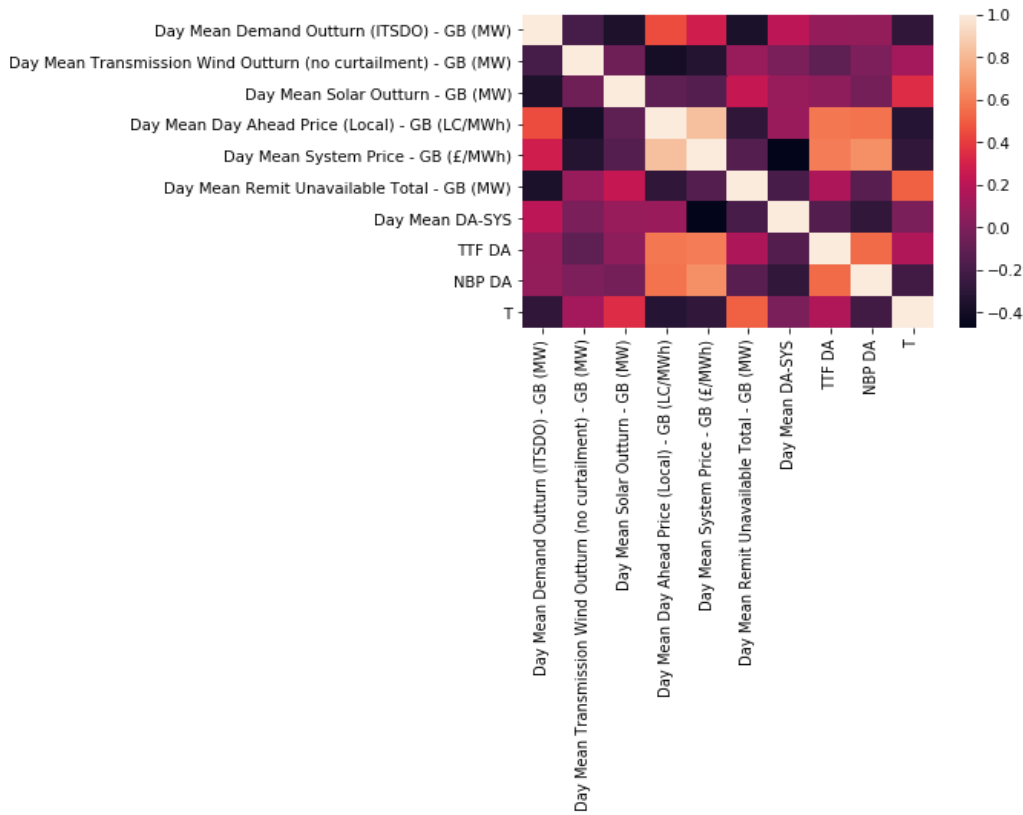
We observe a huge increment in both TTF and NBP prices not only related to the mean value during the quarter, but also in their standard variation. This phenomenon completely overwhelms all the attempts to stabilise the system from the environment, producing the DA and SyS increment prices observed in the first table.

We now plot the heat maps associated to the correlation matrix for the quantities studied before:

Q2 2021



Q2 2022



Regrettably the color gauge is to the same in both heat-maps, i.e., we cannot confront two colors from different heat-maps.

It is not difficult to see that the heat map associated to the current quarter describe a situation with stronger correlations - both negatives and positives. We provide below the correlation values associated to the most relevant quantities:

	Q2 2022	Q2 2021
Corr(DA,TTF)	0.5828	0.4537
Corr(DA,NBP)	0.5671	0.4615
Corr(DA,Demand)	0.4481	0.1490
Corr(DA,Wind)	-0.3881	-0.5769
Corr(DA,T)	-0.3275	0.4229

As we can see the correlations among DA and gas prices together with the correlation between DA and demand are increased greatly. This implies that with high gas prices a variation of the demand generates a stronger variation in the DA prices. This explains the huge increment of DA price's volatility in this quarter. The DA/wind correlation remains negative, but it is much weaker, showing once more that the gas price is the principal driver.

It is interesting to observe the huge shift in the DA/T correlation. Usually, DA and T are negatively correlated, but in this quarter the correlation is positive. Once again, the responsible is the gas price which shifts the DA price at higher value, despite the effect of a warmer environment.

Conclusions:

We are all aware that we are enduring uncommon times. Gas prices are incredibly high, and this affects the power prices. Anyhow there is one thing that is worth to mention and to be worried. The Q2 2022 is characterized by higher temperatures and wind production, the demand is basically equivalent to the past year value, but it is more stable, the same holds also for the remit unavailability. All these effects together are not enough to mitigate the effect generated by the gas price. Q3 and Q4 are approaching faster, and the situation about the gas prices remain unpredictable.

What could happen in the next quarters we observe an environment that instead of stabilising the market, pushes it toward an extreme context?

The previous question assumes even more importance considering the minimum level production for the French nuclear fleet, which is at his historical minimum. We do expect time with great volatility, the task seems to be complex, but it also opens the door to some opportunities.

Opportunities:

The previous analysis does not shine for optimism, yet there is one element which is in contrast with the above conclusion. The DA-SyS spread remains almost stable in its absolute value, but it becomes positive in the quarter in exam. A positive DA-SyS spread means that the market is oriented toward a long position, this could be explained by the increment in renewable generation, but there is also another aspect we'd like to analyse.

When the power prices are so high everyone with a controllable power plant is very happy to produce energy; high power price also means the possibility to run the implant at high load.

If too much energy is produced the grid can provide a BOA instruction to the plant that is now free to sell back the fuel it does not use anymore, producing again a profit.

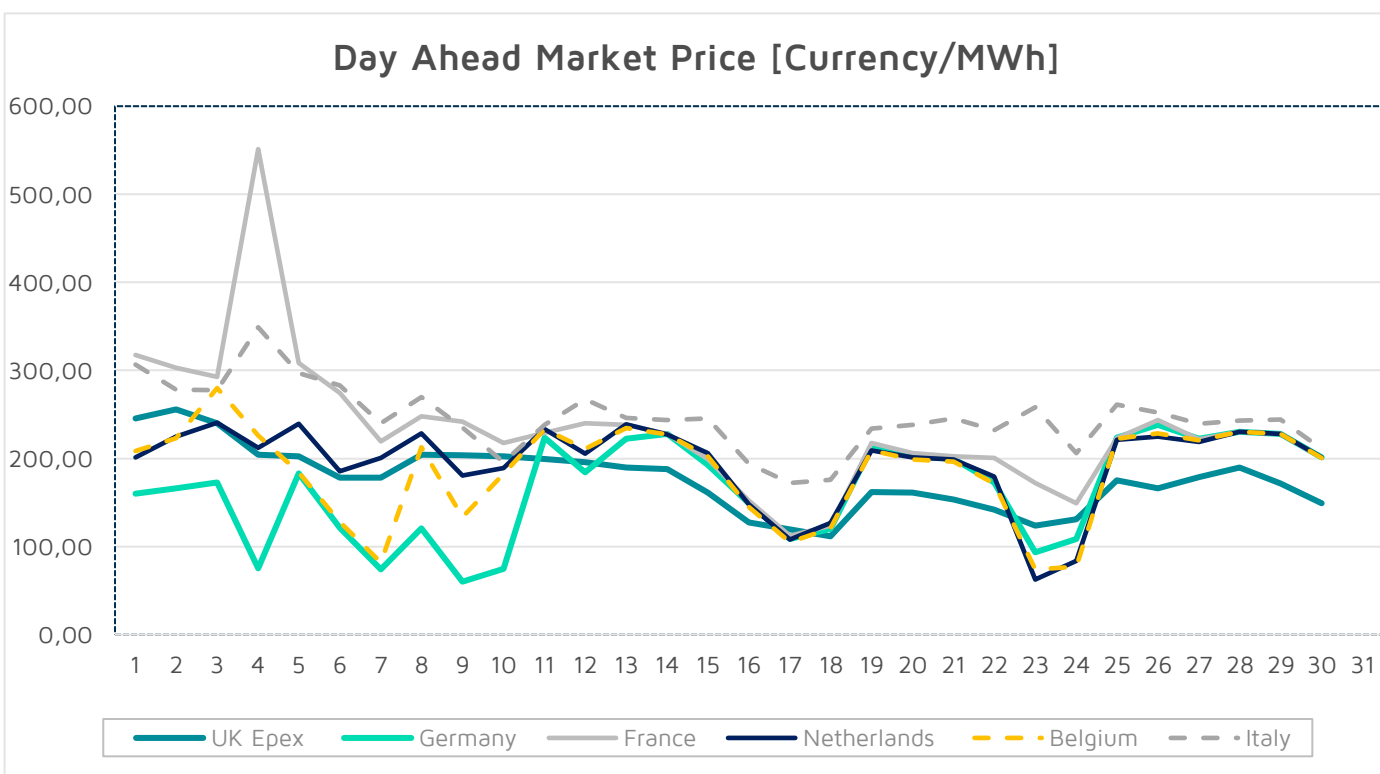
With power price so high there is also the possibility that too many entities will produce energy, generating at excess of production in the DA-SyS market. For this reason, a strategy that relies on this assumption may produce interesting revenues.

In the next analysis we will discuss if this strategy was correct, stay tuned!

UK Day Ahead Market Price [£/MWh] European Day Ahead Market Price [€/MWh], source: EPEX Spot, Nordpool

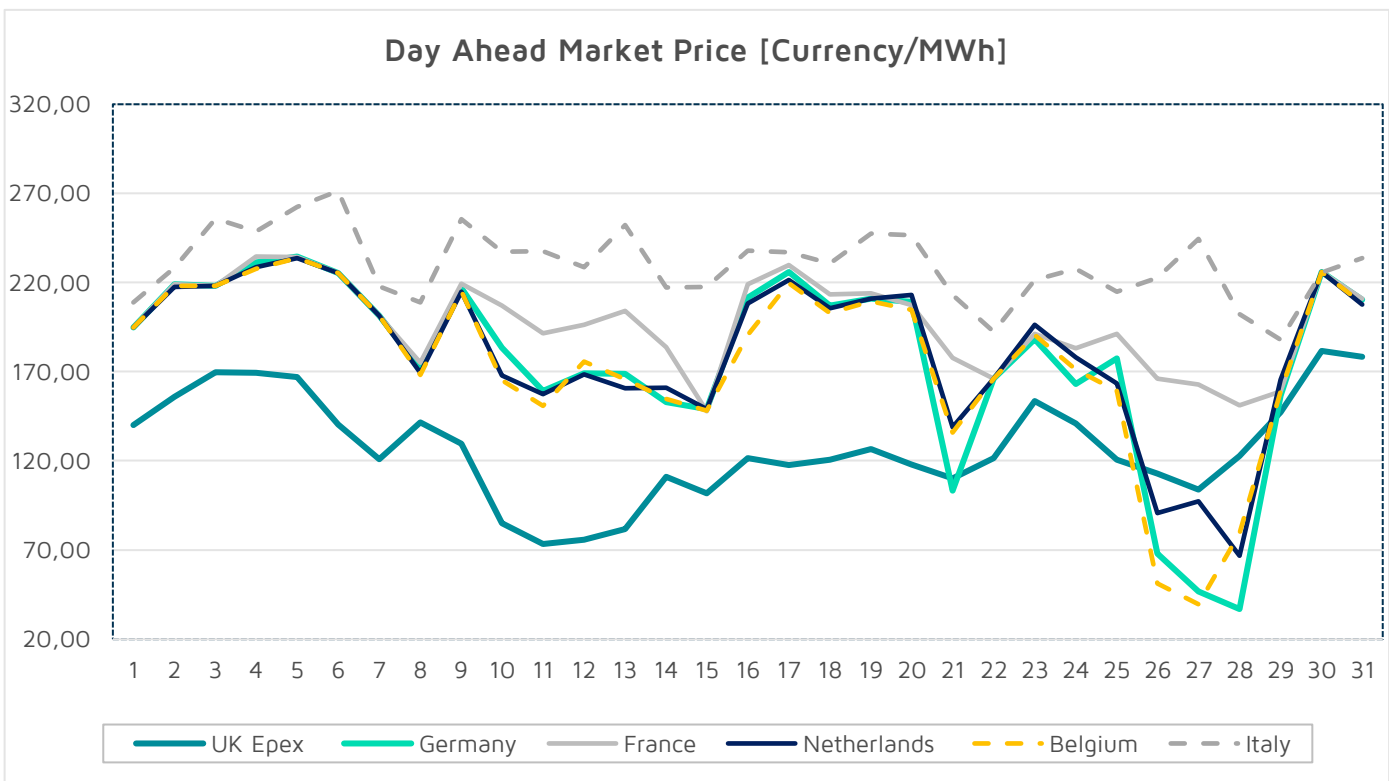
Day	UK Epex	Germany	France	Nordics	Belgium	Netherlands	Italy
01/04/2022	245,76	160,13	317,50	178,11	208,62	201,04	306,95
02/04/2022	255,80	166,40	302,92	137,80	222,81	224,64	278,49
03/04/2022	239,93	172,89	292,65	166,02	280,30	240,77	277,50
04/04/2022	204,52	75,33	551,43	133,88	225,80	212,34	348,91
05/04/2022	202,74	183,02	308,30	132,79	184,58	239,18	296,74
06/04/2022	178,32	121,33	274,35	123,59	127,69	185,73	283,31
07/04/2022	178,54	74,15	219,54	148,76	81,99	200,56	240,00
08/04/2022	204,47	120,87	248,11	79,87	212,93	228,69	269,52
09/04/2022	203,54	59,83	241,63	64,14	133,53	180,90	235,32
10/04/2022	202,19	74,65	217,91	44,50	182,70	189,23	195,85
11/04/2022	199,27	223,62	229,05	166,45	233,17	233,14	238,19
12/04/2022	195,75	184,59	239,96	177,40	210,80	205,27	267,28
13/04/2022	189,83	222,52	238,08	181,64	234,43	239,05	246,03
14/04/2022	187,70	227,71	227,92	189,42	227,49	227,54	243,49
15/04/2022	161,05	192,96	199,74	164,42	202,64	206,25	245,35
16/04/2022	127,52	149,22	152,01	110,93	144,92	147,79	194,14
17/04/2022	119,62	108,82	112,23	68,30	105,16	108,06	172,32
18/04/2022	111,34	120,23	123,55	100,48	120,75	126,63	175,93
19/04/2022	161,79	213,00	217,80	184,90	208,84	209,31	233,78
20/04/2022	161,15	203,25	206,02	157,73	199,07	201,27	238,50
21/04/2022	153,30	199,50	202,56	133,39	196,55	198,59	245,23
22/04/2022	142,10	172,49	200,52	92,29	171,36	179,60	231,91
23/04/2022	123,99	93,31	172,36	35,18	73,96	62,54	258,37
24/04/2022	131,03	108,54	149,01	77,82	77,35	83,82	206,20
25/04/2022	175,17	223,46	222,83	172,98	222,33	221,22	260,96
26/04/2022	165,98	238,47	243,57	149,05	228,71	224,63	251,92
27/04/2022	179,02	222,21	222,02	178,37	220,43	219,06	239,52
28/04/2022	189,60	230,15	230,20	160,57	230,10	230,12	242,77
29/04/2022	171,60	228,02	228,17	181,92	227,86	227,92	244,03
30/04/2022	149,20	201,28	200,93	121,20	200,93	201,16	210,71

Average day ahead market price	177,06	165,73	233,10	133,80	186,59	195,20	245,97
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UK Day Ahead Market Price [£/MWh] European Day Ahead Market Price [€/MWh], source: EPEX Spot, Nordpool

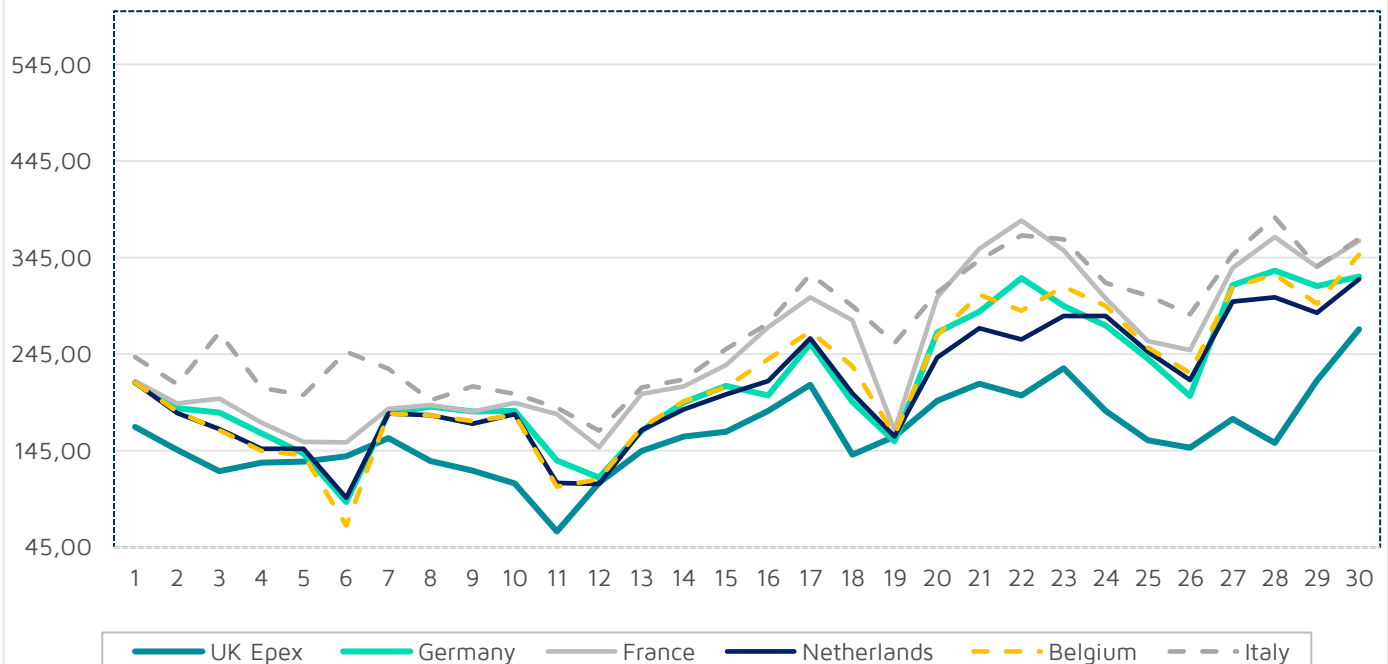
Day	UK Epex	Germany	France	Nordics	Belgium	Netherlands	Italy
01/05/2022	140,13	194,74	194,74	143,04	194,74	194,74	208,75
02/05/2022	155,78	219,02	218,95	104,46	218,17	217,44	228,24
03/05/2022	169,54	218,16	218,21	145,41	218,13	218,16	255,80
04/05/2022	169,45	231,29	234,59	206,28	227,64	228,42	248,66
05/05/2022	167,08	234,49	234,28	197,91	233,78	233,72	262,33
06/05/2022	140,46	225,36	225,36	147,47	225,36	225,36	271,17
07/05/2022	120,91	201,43	201,43	39,29	201,43	201,43	217,80
08/05/2022	141,56	171,82	175,00	71,79	168,15	169,19	208,85
09/05/2022	129,58	216,81	219,25	186,71	215,24	214,78	255,52
10/05/2022	84,99	183,32	207,13	96,44	165,25	167,94	237,16
11/05/2022	73,35	159,09	191,42	97,87	150,78	157,47	237,40
12/05/2022	75,64	169,12	196,25	85,98	175,68	168,40	228,40
13/05/2022	81,77	168,79	203,91	95,00	165,73	160,78	252,25
14/05/2022	111,08	152,97	183,59	44,60	154,59	160,89	217,09
15/05/2022	101,62	149,03	147,72	53,68	148,24	148,92	217,56
16/05/2022	121,52	211,58	218,90	131,54	190,45	208,10	237,89
17/05/2022	117,72	225,75	229,81	166,29	219,53	221,37	236,83
18/05/2022	120,70	206,97	213,33	152,13	202,77	205,50	230,57
19/05/2022	126,55	210,81	213,88	181,82	209,40	210,81	247,44
20/05/2022	117,97	209,23	207,39	178,26	204,61	213,02	246,46
21/05/2022	110,20	103,36	177,81	82,15	135,76	138,92	213,11
22/05/2022	121,55	166,03	166,19	127,81	165,92	165,90	192,47
23/05/2022	153,62	188,14	191,04	150,43	190,58	196,33	221,41
24/05/2022	140,78	162,95	183,18	49,86	171,13	177,89	227,69
25/05/2022	120,50	177,50	191,13	84,05	159,28	163,42	214,65
26/05/2022	112,85	67,93	166,02	24,98	51,09	90,60	222,66
27/05/2022	103,91	46,77	162,85	18,94	39,61	97,21	244,50
28/05/2022	122,60	36,85	151,16	13,17	79,35	66,80	202,21
29/05/2022	147,18	156,34	158,82	111,73	159,01	165,41	187,77
30/05/2022	181,50	225,99	225,99	170,61	225,99	225,99	225,53
31/05/2022	178,35	210,17	211,04	162,27	208,33	207,51	233,58
Average day ahead market price	127,76	177,48	197,43	113,61	176,64	181,37	230,06



UK Day Ahead Market Price [£/MWh] European Day Ahead Market Price [€/MWh], source: EPEX Spot, Nordpool

Day	UK Epex	Germany	France	Nordics	Belgium	Netherlands	Italy
01/06/2022	169,11	215,29	216,85	157,68	215,20	215,26	241,57
02/06/2022	145,72	188,87	193,49	151,40	185,18	183,81	213,50
03/06/2022	123,39	184,55	198,71	110,89	166,11	167,36	266,93
04/06/2022	132,17	162,49	174,01	83,21	144,30	146,94	209,74
05/06/2022	133,34	141,58	153,65	36,86	140,16	146,59	202,34
06/06/2022	139,15	91,33	153,33	49,66	67,35	95,81	247,53
07/06/2022	157,97	183,88	188,10	128,54	183,42	183,40	229,69
08/06/2022	134,08	190,35	191,83	143,32	181,44	181,26	196,82
09/06/2022	124,32	185,49	185,19	148,58	175,39	172,83	211,38
10/06/2022	110,83	185,75	194,05	140,75	181,33	182,89	203,56
11/06/2022	61,26	134,70	182,38	35,06	107,31	111,60	189,32
12/06/2022	111,46	116,96	148,63	35,59	115,15	109,96	165,60
13/06/2022	144,57	165,56	203,38	84,32	169,01	166,29	210,10
14/06/2022	159,34	194,98	211,44	110,89	195,97	187,37	218,38
15/06/2022	164,41	211,83	233,26	127,19	210,59	203,18	249,95
16/06/2022	186,12	201,97	272,85	125,04	239,32	216,94	276,74
17/06/2022	213,27	255,43	303,54	166,21	268,21	261,23	327,49
18/06/2022	140,38	195,40	280,15	42,08	232,44	204,31	294,76
19/06/2022	159,20	154,65	165,43	46,32	161,05	159,52	256,38
20/06/2022	196,47	267,37	303,95	170,65	264,51	241,32	308,89
21/06/2022	213,96	288,59	354,03	167,19	306,33	271,55	342,52
22/06/2022	202,04	323,34	383,14	166,75	289,86	260,22	368,07
23/06/2022	230,25	295,08	352,56	120,70	314,84	284,27	363,66
24/06/2022	185,91	274,30	302,60	128,06	294,80	284,50	318,34
25/06/2022	155,29	240,39	258,43	84,68	251,46	247,42	305,15
26/06/2022	147,70	201,67	249,07	74,03	225,30	218,09	286,15
27/06/2022	177,77	316,65	334,25	157,67	314,19	298,99	347,72
28/06/2022	153,04	331,52	366,40	126,28	327,36	303,71	386,46
29/06/2022	217,48	315,54	335,24	173,60	297,31	287,57	335,95
30/06/2022	270,73	325,48	362,06	190,26	348,11	322,40	364,65
Average day ahead market price	162,02	218,03	248,40	116,12	219,10	210,55	271,31

Day Ahead Market Price [Currency/MWh]



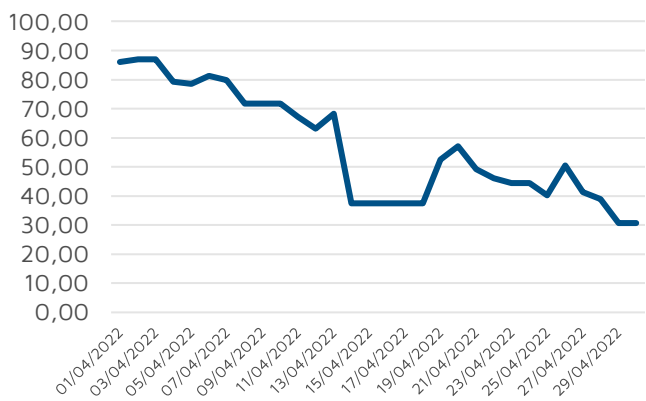
Source: Nordpool, ICE

Day	NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
01/04/2022	86,01	78,49	54,46	111,10	104,39	261,00
02/04/2022	87,03	78,49	62,53	111,10	104,39	261,00
03/04/2022	87,03	78,49	46,66	111,10	104,39	261,00
04/04/2022	79,18	78,50	26,34	109,63	107,53	261,00
05/04/2022	78,50	78,05	26,03	108,72	106,64	292,00
06/04/2022	81,23	77,18	-3,36	107,90	101,07	292,00
07/04/2022	79,78	79,94	-1,26	103,00	100,58	281,50
08/04/2022	71,67	80,09	40,21	104,75	102,78	288,00
09/04/2022	71,67	80,09	39,28	104,75	106,64	292,00
10/04/2022	71,67	80,09	37,93	104,75	101,07	292,00
11/04/2022	67,24	77,95	44,25	101,30	98,48	292,00
12/04/2022	63,14	79,01	48,25	104,65	104,64	320,25
13/04/2022	68,26	77,44	33,01	105,50	108,78	320,25
14/04/2022	37,54	79,97	89,11	97,53	111,70	320,25
15/04/2022	37,54	79,97	62,46	101,55	111,70	320,25
16/04/2022	37,54	79,97	28,93	101,55	104,64	320,25
17/04/2022	37,54	79,97	21,03	101,55	108,78	320,25
18/04/2022	37,54	79,97	12,75	0,00	113,16	320,25
19/04/2022	52,56	80,20	34,25	91,45	107,25	320,25
20/04/2022	57,00	87,82	22,56	96,53	106,80	324,35
21/04/2022	49,15	86,44	30,26	95,97	108,33	328,00
22/04/2022	46,09	88,99	24,11	91,55	106,65	313,00
23/04/2022	44,35	88,99	9,33	91,55	107,25	320,25
24/04/2022	44,35	88,99	16,37	91,55	106,80	324,35
25/04/2022	40,27	83,46	70,18	96,65	102,32	324,35
26/04/2022	50,51	82,71	41,55	93,23	104,99	292,00
27/04/2022	41,30	81,01	72,87	108,35	105,32	284,00
28/04/2022	38,91	82,68	87,49	99,00	107,59	284,00
29/04/2022	30,72	84,45	84,66	96,50	109,34	284,00
30/04/2022	30,72	84,45	62,26	96,50	104,99	292,00

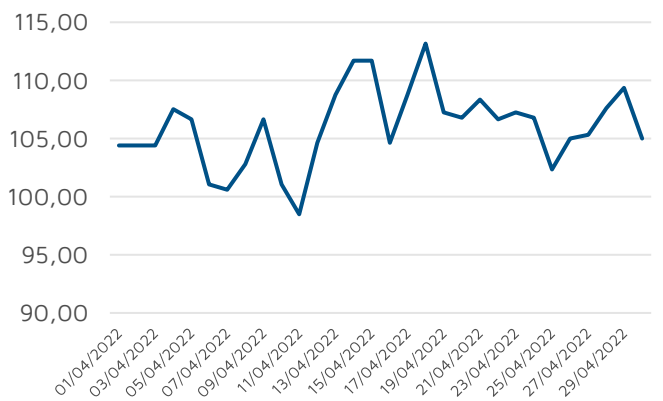
Average Market price

NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
56,87	81,46	40,82	97,98	105,97	300,19

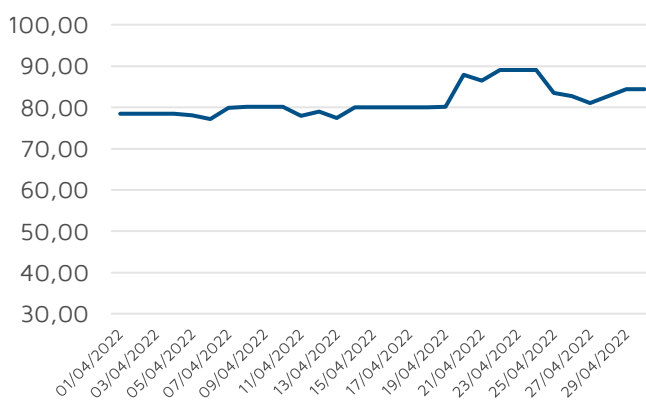
NBP Price [€/MWh]



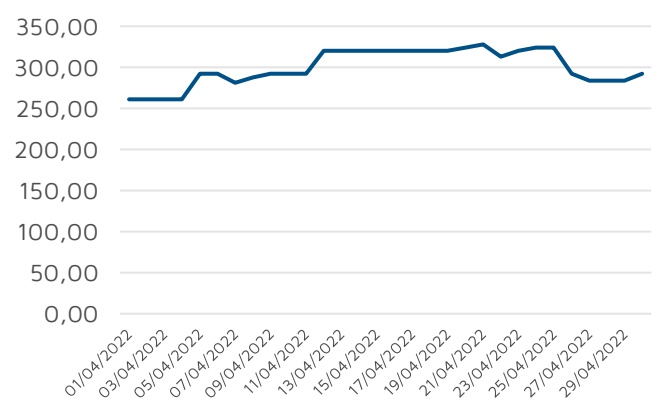
Oil Price [\$/BBL]



Carbon price [€/Ton]



Coal Price [\$/Ton]



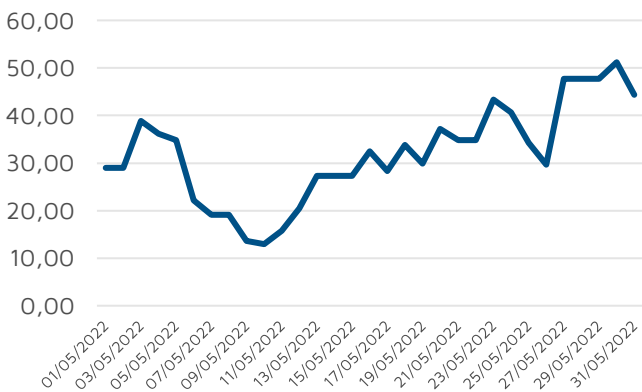
Source: Nordpool, ICE

Day	NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
01/05/2022	29,01	83,04	56,94	96,35	107,58	275,50
02/05/2022	29,01	83,04	72,59	96,35	107,58	275,50
03/05/2022	38,91	88,19	65,61	96,35	104,97	275,50
04/05/2022	36,18	88,31	70,74	102,00	110,14	307,00
05/05/2022	34,81	88,91	70,79	99,00	110,90	315,00
06/05/2022	22,18	91,54	67,59	90,00	112,39	305,00
07/05/2022	19,11	91,54	53,95	90,00	112,39	305,00
08/05/2022	19,11	91,54	74,60	90,00	112,39	305,00
09/05/2022	13,65	87,02	74,61	89,65	105,94	304,00
10/05/2022	12,97	87,34	31,23	81,75	102,46	288,50
11/05/2022	15,70	88,83	13,84	84,00	107,51	303,00
12/05/2022	20,48	88,26	7,13	93,50	107,45	310,00
13/05/2022	27,30	88,48	0,06	93,00	111,55	300,25
14/05/2022	27,30	88,48	29,37	93,00	111,55	300,25
15/05/2022	27,30	88,48	19,91	93,00	111,55	300,25
16/05/2022	32,42	89,56	29,61	91,90	114,24	310,00
17/05/2022	28,33	91,72	32,98	91,90	111,93	320,00
18/05/2022	33,79	84,64	27,79	91,00	109,11	332,00
19/05/2022	29,86	83,18	41,67	86,95	112,04	332,00
20/05/2022	37,20	80,39	19,90	86,50	112,55	332,00
21/05/2022	34,81	80,39	16,72	86,50	112,55	332,00
22/05/2022	34,81	80,39	28,07	86,50	112,55	332,00
23/05/2022	43,34	78,15	44,48	81,00	113,42	332,00
24/05/2022	40,61	81,32	35,84	79,50	113,56	290,00
25/05/2022	34,30	81,40	27,68	81,90	114,03	290,00
26/05/2022	29,69	84,76	27,78	82,25	117,40	295,00
27/05/2022	47,78	84,20	-15,76	80,50	119,43	295,00
28/05/2022	47,78	84,20	2,93	80,50	119,43	295,00
29/05/2022	47,78	84,20	27,51	80,50	119,43	295,00
30/05/2022	51,19	83,97	55,34	87,00	121,67	301,00
31/05/2022	44,37	84,02	65,30	85,90	122,84	301,00

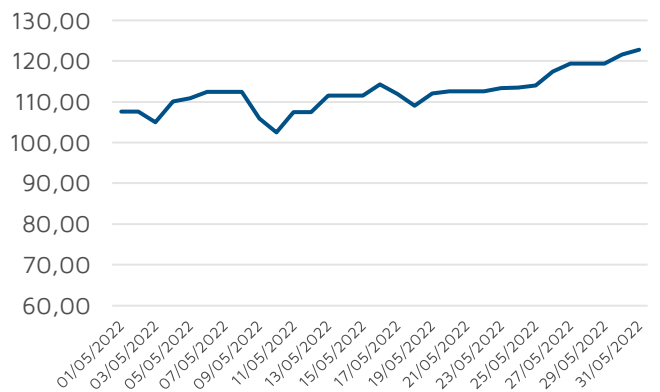
Average Market price

NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
31,97	85,79	37,96	88,65	112,34	304,96

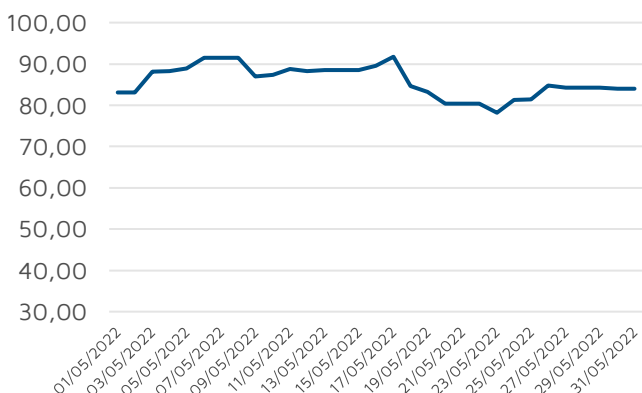
NBP Price [€/MWh]



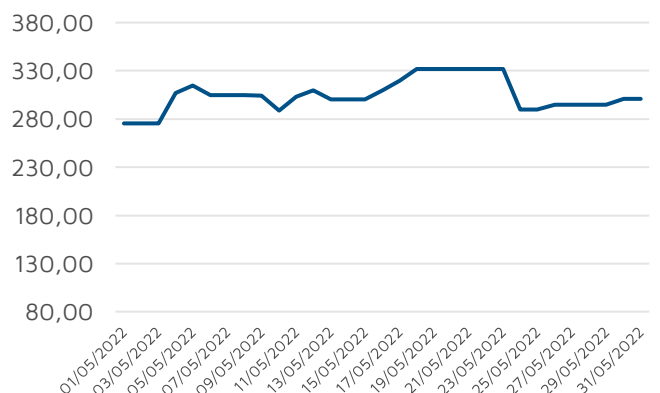
Oil Price [\$/BBL]



Carbon price [€/Ton]



Coal Price [\$/Ton]



Source: Nordpool, ICE

Day	NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
01/06/2022	34,21	86,08	74,91	79,35	116,29	290,00
02/06/2022	34,21	86,34	51,43	83,50	117,61	290,00
03/06/2022	34,21	86,87	28,93	83,50	119,72	290,00
04/06/2022	34,21	86,87	37,71	83,50	119,72	290,00
05/06/2022	34,21	86,87	38,88	83,50	116,29	290,00
06/06/2022	43,69	81,43	28,27	79,25	119,51	290,00
07/06/2022	40,96	81,31	52,38	79,00	120,57	290,00
08/06/2022	29,35	79,81	51,30	76,85	123,58	290,00
09/06/2022	4,10	81,01	89,71	82,60	123,07	290,00
10/06/2022	30,72	81,86	24,75	82,00	122,01	290,00
11/06/2022	30,72	81,86	-24,82	82,00	120,57	290,00
12/06/2022	30,72	81,86	25,38	82,00	123,58	290,00
13/06/2022	52,90	81,54	15,93	81,00	122,27	290,00
14/06/2022	56,66	84,15	22,62	90,43	121,17	290,00
15/06/2022	76,79	86,20	-11,71	116,55	118,51	297,00
16/06/2022	30,72	83,00	99,66	116,60	119,81	297,00
17/06/2022	51,19	82,37	87,64	120,00	113,12	297,00
18/06/2022	44,37	82,37	27,87	120,00	121,17	290,00
19/06/2022	44,37	82,37	46,69	120,00	118,51	297,00
20/06/2022	56,31	84,00	60,45	122,50	114,13	297,00
21/06/2022	67,41	84,73	56,37	124,00	114,65	370,00
22/06/2022	69,62	81,88	41,13	128,55	111,74	370,00
23/06/2022	63,82	84,13	79,75	127,35	110,05	370,00
24/06/2022	50,17	83,43	61,90	128,00	113,12	370,00
25/06/2022	50,17	83,43	31,28	128,00	114,65	370,00
26/06/2022	50,17	83,43	23,69	128,00	111,74	370,00
27/06/2022	48,46	85,05	56,50	129,50	115,09	378,00
28/06/2022	58,02	87,40	12,62	130,00	117,98	372,00
29/06/2022	62,12	88,35	68,87	140,55	116,26	362,00
30/06/2022	53,24	90,16	138,59	149,75	114,81	370,00

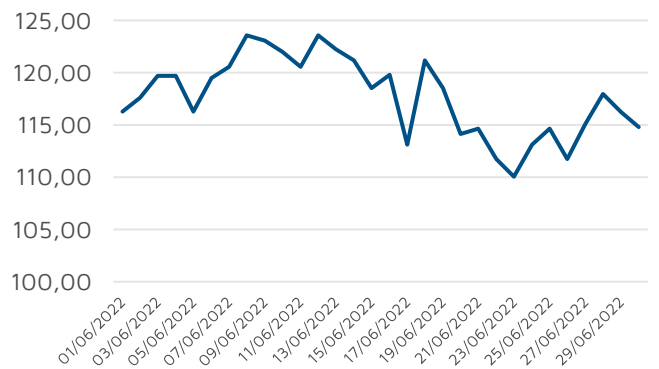
Average Market price

NBP [€/MWh]	CO2 [€/Ton]	Clean Spark Spread [€/MWh]	TTF [€/MWh]	Oil [\$/BBL]	Coal [\$/Ton]
45,59	84,01	46,62	105,93	117,71	317,90

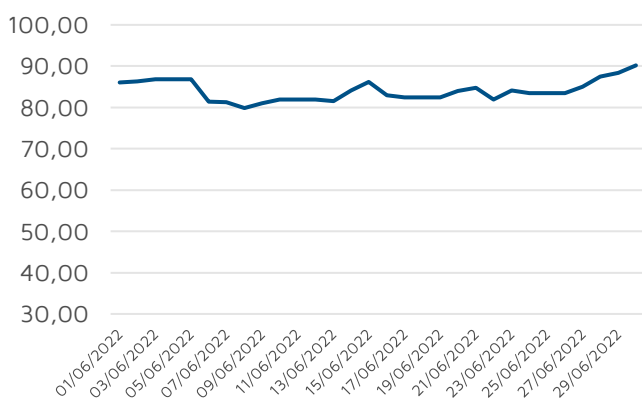
NBP Price [€/MWh]



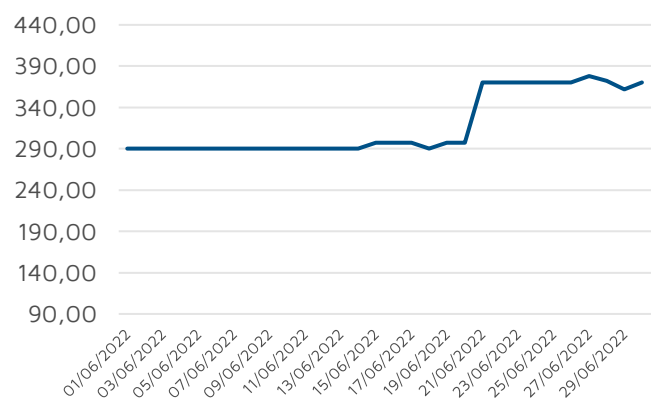
Oil Price [\$/BBL]



Carbon price [€/Ton]

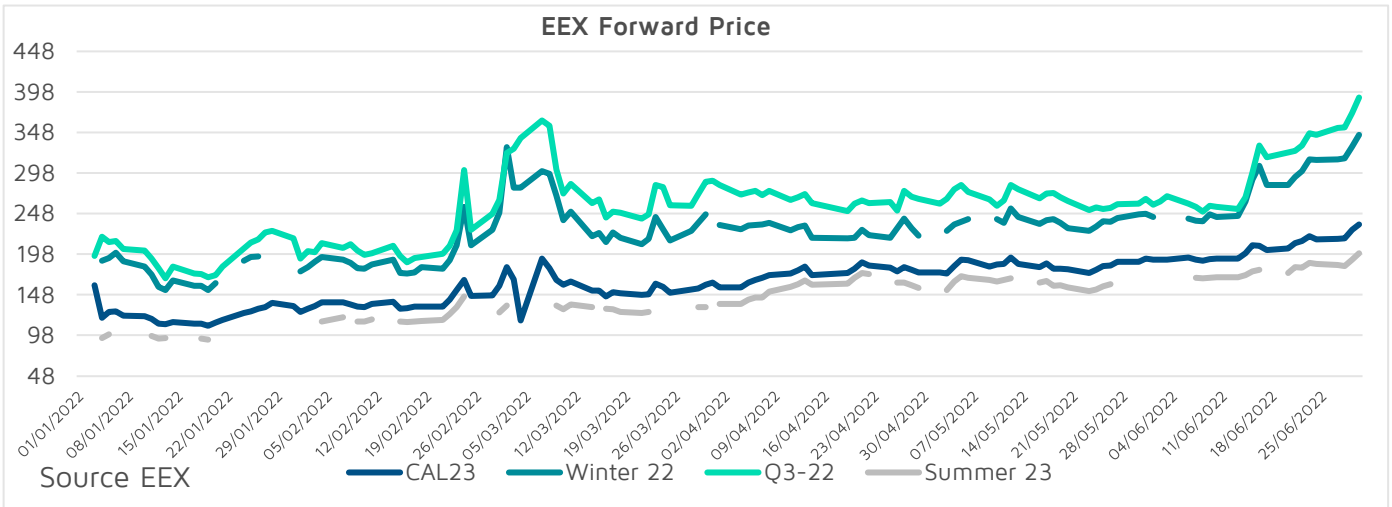


Coal Price [\$/Ton]



Source: EEX [€/MWh]

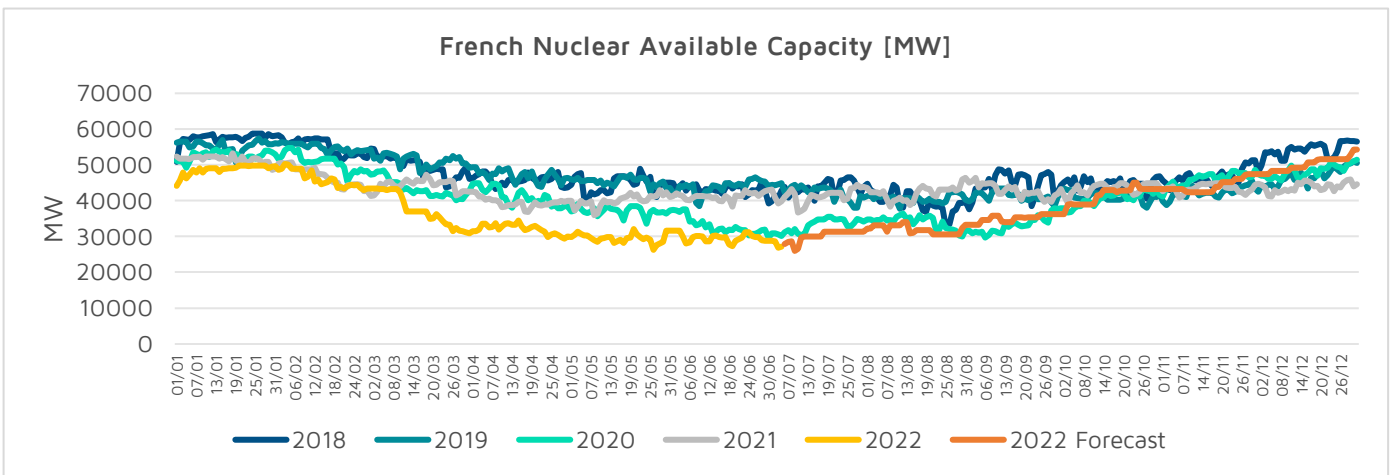
	Q3-22	Summer 23	Winter 22	CAL23
Baseload	255,95	146,20	229,20	164,31



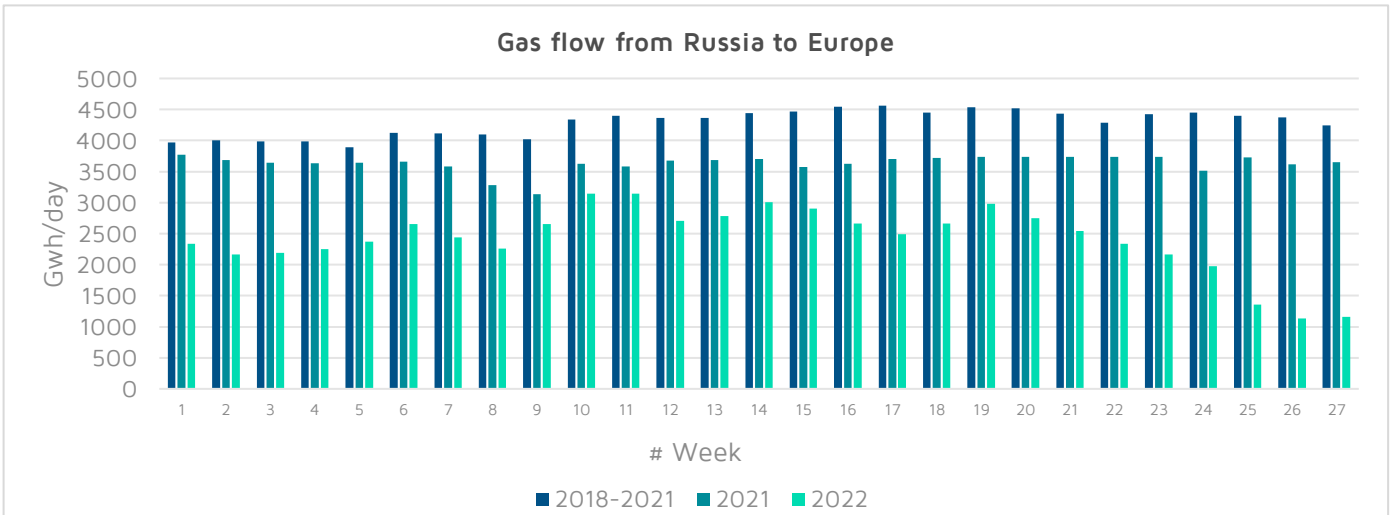
The *main driver* running the movement of Power Futures is still gas price. The Futures for Q3-22 and winter 22 started to raise up when, at the beginning of June, there was a reduction of gas flow through Nord Stream 1 pipeline.

An additional element of tension which is evaluated for calculate the price of autumn and winter futures is the situation of the French nuclear park.

EDF, since the end of last year, is facing continuous maintenance interventions to its nuclear power plants, leading to an all-time low available capacity (below 30 GW). Usually, the maintenance could end by the end of September, but the traders do not trust anymore EDF calendar. Therefore, this winter is likely that UK will have to export part of its Energy to France increasing the pressure on the electrical system.



Analysing more in detail gas flows entering in Europe and UK through pipelines we can observe that Russian flows started to decrease during May and reach its minimum level during June. The official cause is that Gazprom had to replace a broken compressor and it could not do it due to European sanctions, but the analysts think that Russia is using the threat of interrupting gas flows to put pressure on European governments.





NEXT SOLUTIONS

THANK YOU