



EnAppSys
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European Electricity Market Summary

Q3-2023

July to September

Generation and Contribution by Fuel Type

Renewables: 297.3TWh

Fossil Fuels: 179.9TWh

Nuclear: 150.4TWh

1 Quarterly Review of European Electricity Market Q3 2023

In Q3 2023, the European electricity market bore witness to a sustained downturn in wholesale electricity prices, extending a downward trajectory that had its origins in the third quarter of 2022. This trend's initiation has been primarily attributed to dropping gas prices and the robust reserves of natural gas in the region in Q3 2022, exerting significant downward pressure on pricing dynamics. The prices within the third quarter were mostly driven by a mix of lower gas prices, abundant wind power and lower electricity demand. Negative prices were often seen, especially in the first weeks of the third quarter of this year. Moving into July onwards, electricity prices generally remained steady, occasionally dipping, especially towards the end of September when wind generation was high. However, there was a surge in electricity prices in late August, attributed to a rise in gas prices due to the announcement of a strike planned for early September by Australian LNG workers, which impacted the entire continent.

European demand continued its declining trend from Q1 2023 with total generation at 627TWh, which was 7% lower than Q3 2022 and was the lowest for any Q3 in recent years with demand across many markets, reaching generation levels as low as during the Covid pandemic. Consequently, gas-fired generation decreased by 27% from Q3 2022 to 103TWh, marking the lowest level in recent quarters. It is important to note that next to demand destruction, the massive build-out of behind-the-meter solar, has caused net demand to drop in many countries. Where published demand is not corrected for embedded solar by the local TSO, the netting effect of solar vs demand has dropped the demand numbers significantly.

TTF gas prices were 5% lower than the previous quarter, with an average price of €33/MWh; conventionally, Q3 prices are seasonally higher than Q2 prices however gas prices have been seeing a continued declining trend that began in Q3 2022 as a result of high gas stocks. This is the lowest quarterly average gas price seen since Q3 2021. See Figure 1 below for the TTF gas prices across the quarter and the year.

Figure 1: 2023 TTF Gas Prices (EUR/MWh)



Renewable generation in this quarter increased by 12% compared to Q3 2022, marking the highest growth rate for any third quarter so far. This is primarily due to the wind generation, which reached 95TWh and surpassed 84TWh in Q3 2022. With many countries seeing an increase in wind generation compared to the Q3 from previous years, Germany, the country with the largest wind fleet in the continent, saw a 20% increase in wind generation from Q3 2022. Solar generation also increased by 13% compared to Q3 2022, reaching 95.2TWh this quarter.

Nuclear generation this quarter was 150TWh, which is slightly higher than in Q3 2022 but still materially lower than in Q3 2021. In the previous quarter, nuclear plants were closed in Germany and Belgium. Due to these closures, the overall nuclear generation in Europe saw a decline despite continued improvements in the availability of the French nuclear fleet. The French nuclear generation this quarter was 35% higher than in Q3 2022, which is a significant improvement. France continues to be a net exporter of power in the European market, as it was in Q2, which was not the case for the better part of 2022.

Coal and lignite generation saw a significant drop of around 38% versus Q3 2022. Demand destruction, and high renewables were the main causes of this trend. Furthermore, dropping gas prices reversed the merit order position of coal and gas-fired assets in favour of gas-fired power. In summary, conventional power generation was lower than in the previous year, despite the nuclear closures in Germany and Belgium. This drop in European coal generation primarily came from the phasing out of power plants in Germany, including Heilbronn 7 (750 MW) which didn't run for all of Q2 and Q3 2023. However, in preparation for winter, government officials in Germany have approved a plan to bring some shuttered coal-fired power plants back online as a precautionary measure.

As a result of reduced demand, lower gas prices and favourable renewable generation, wholesale prices this quarter have been lower than in the previous quarter as well as lower than in Q3 2022 across the European countries. France saw some of the highest prices in 2022, however, due to the improvements of its nuclear fleet as well as the aforementioned reasons, the EPEX day-ahead average price for France this quarter was EUR 85.7/MWh, which is 6% lower than in the previous quarter and 80% lower than in Q3 2022.

Gas and Hydro Storage levels are quite high across Europe. Forward prices for gas are much lower, French nuclear availability is much higher than last year. The outlook for the upcoming winter appears more moderate in contrast with the prior winter's extreme market conditions. However, geopolitical events may impact commodity prices significantly. The impact of strikes in Australia, issues with gas infrastructure and the recent flare up of violence in the Arab/Israeli conflict may all affect commodity markets. In case of extremely cold weather in winter we may see gas stocks decrease rapidly, a moderate start to October has helped keep stocks intact so far, further bolstering the winter resilience of the market. Harsh winter weather may deplete gas stocks sooner if it occurs.

2 Day-ahead Price Trends

Table 1 below shows key statistics on pricing in the quarter and all previous quarters over the last seven years. The EPEX Day-ahead prices shown are averages across the quarter.

Table 1: EPEX Day-ahead quarterly average prices (EUR/MWh)

	BE	DE	DK (Ave)	ES	FR	GB	IT (Ave)	NL	NO 1-2-5	NO 3-4	SE 3-4	SE 1-2
Q1 2015	47.0	33.0	28.1	45.9	45.2	39.6	51.9	43.2	27.3	28.0	27.7	27.7
Q2 2015	41.4	28.3	23.0	48.4	32.6	42.0	47.6	39.1	20.0	20.9	20.8	20.8
Q3 2015	45.8	32.8	19.9	55.7	35.8	41.4	56.6	40.2	11.0	13.8	14.7	14.7
Q4 2015	44.8	33.2	23.8	51.2	40.6	37.6	52.5	37.9	21.2	20.8	21.6	21.6
Q1 2016	28.4	25.2	22.9	30.7	28.8	34.7	39.3	27.7	22.7	22.9	23.1	23.1
Q2 2016	27.1	24.8	25.7	29.5	25.9	35.1	36.3	28.4	22.8	24.1	26.4	26.4
Q3 2016	32.6	28.3	28.9	41.7	32.3	39.6	42.1	31.4	22.4	27.3	29.5	29.5
Q4 2016	58.1	37.6	34.6	56.5	59.8	52.4	53.1	41.4	33.7	33.1	36.7	36.7
Q1 2017	51.7	41.3	31.0	55.6	55.0	48.0	55.3	42.8	31.0	28.7	31.7	31.7
Q2 2017	35.7	29.8	28.7	47.0	33.9	40.0	46.4	34.6	27.1	26.2	28.5	28.5
Q3 2017	34.2	32.7	33.8	48.4	34.5	43.0	52.1	35.4	27.6	25.6	33.0	33.0
Q4 2017	56.8	33.0	30.6	58.0	56.5	50.2	61.0	44.5	29.9	30.0	30.2	30.2
Q1 2018	44.9	35.5	36.8	48.1	43.8	52.7	54.2	45.1	37.8	38.3	38.9	38.9
Q2 2018	44.1	36.0	39.7	52.0	36.8	52.7	55.0	46.1	38.7	39.7	38.5	38.5
Q3 2018	60.7	53.5	53.2	65.8	57.2	61.3	70.3	58.1	49.7	50.2	51.8	51.8
Q4 2018	71.1	52.6	50.4	63.0	62.7	63.0	68.3	60.6	46.8	47.1	47.4	47.4
Q1 2019	48.6	40.9	43.0	55.0	47.2	51.8	59.3	48.6	48.0	46.1	46.0	46.0
Q2 2019	34.5	35.8	36.9	48.7	34.9	41.3	52.3	39.1	37.0	35.3	33.0	33.0
Q3 2019	35.0	37.4	38.0	46.2	35.5	38.5	52.9	37.9	33.2	34.7	35.3	35.3
Q4 2019	39.4	36.6	38.9	41.0	40.3	40.1	48.5	39.3	39.0	37.7	37.5	37.5
Q1 2020	30.1	26.6	21.2	34.9	29.4	32.7	40.4	30.5	15.1	15.4	15.6	15.6
Q2 2020	18.5	20.3	20.5	23.2	18.0	24.3	25.2	20.9	4.5	5.6	8.2	8.2
Q3 2020	36.5	36.1	33.9	37.5	39.0	36.4	43.9	35.3	4.8	5.7	18.6	18.6
Q4 2020	42.3	38.8	31.0	40.1	42.2	47.5	49.5	42.1	12.6	10.0	15.1	15.1
Q1 2021	51.0	49.6	49.1	45.2	53.0	72.5	58.8	50.6	46.8	35.5	37.5	37.5
Q2 2021	62.3	60.3	58.7	71.8	63.9	83.8	77.2	62.1	47.2	30.0	33.1	33.1
Q3 2021	97.3	97.1	96.0	117.8	96.6	150.3	126.2	101.5	77.8	45.1	54.8	54.8
Q4 2021	204.3	178.9	147.1	211.0	221.4	241.9	237.4	196.0	126.4	41.5	44.5	44.5
Q1 2022	208.0	184.6	152.6	229.4	232.2	240.1	246.0	207.5	151.4	20.1	24.8	24.8
Q2 2022	193.9	187.0	179.6	182.8	226.0	183.4	247.0	195.5	167.1	18.6	51.7	51.7
Q3 2022	372.3	375.8	347.9	146.3	429.7	344.9	461.6	365.4	309.7	22.4	49.0	49.0
Q4 2022	202.6	192.8	176.5	113.2	214.1	197.3	236.3	198.0	164.8	71.3	115.6	115.6
Q1 2023	127.4	115.8	103.1	96.4	130.4	144.5	152.9	121.4	107.8	47.4	53.4	53.4
Q2 2023	92.8	92.3	83.8	80.3	91.6	101.9	114.8	89.4	77.9	29.9	42.3	42.3
Q3 2023	87.1	90.8	78.7	96.5	85.7	90.8	113.2	87.1	30.8	16.1	20.5	20.5

3 Generation Activity Overview

Table 2: Quarterly generation summary

	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	
TOTAL GENERATION BY FUEL (TWh)										
Biomass	22.0	25.5	23.9	21.3	22.9	23.5	24.2	18.5	19.8	
Coal/Lignite	110.5	132.6	126.2	101.5	118.5	122.4	109.4	67.6	74.0	
Gas	120.0	153.0	148.8	122.6	142.8	137.0	113.0	86.4	103.7	
Hydro	110.9	110.5	109.3	107.3	91.4	110.2	118.4	114.9	103.0	
Nuclear	184.0	194.5	190.7	149.5	146.0	158.8	172.4	142.4	150.4	
Oil	3.3	3.6	3.2	1.9	2.2	2.7	3.1	1.9	2.1	
Peat	0.6	1.4	1.5	1.1	0.5	0.9	1.1	0.4	0.2	
Solar	50.3	19.9	29.5	63.9	63.3	23.3	30.9	70.8	75.0	
Waste	4.2	4.2	4.2	3.8	3.8	3.8	3.7	3.6	4.4	
Wind	77.5	135.4	153.6	97.9	84.0	137.2	159.5	94.4	95.2	
FOSSIL FUELS	234.4	290.6	279.8	227.1	264.0	263.1	226.5	156.2	179.9	
NUCLEAR	184.0	194.5	190.7	149.5	146.0	158.8	172.4	142.4	150.4	
RENEWABLE (INCLUDES WASTE)	264.9	295.5	320.5	294.2	265.3	298.0	336.7	302.2	297.3	
TOTAL	683.3	780.6	790.9	670.8	675.4	719.9	735.6	600.8	627.6	
Fossil Fuel Percentage										
Fossil Fuel Percentage	34%	37%	35%	34%	39%	37%	31%	26%	29%	
Clean Percentage										
Clean Percentage	66%	63%	65%	66%	61%	63%	69%	74%	71%	
Renewable Share of Clean Power										
Renewable Share of Clean Power	59%	60%	63%	66%	65%	65%	66%	68%	66%	
SHARE OF GENERATION (%)										
Biomass	3.2%	3.3%	3.0%	3.2%	3.4%	3.3%	3.3%	3.1%	3.2%	
Coal/Lignite	16.2%	17.0%	16.0%	15.1%	17.6%	17.0%	14.9%	11.2%	11.8%	
Gas	17.6%	19.6%	18.8%	18.3%	21.1%	19.0%	15.4%	14.4%	16.5%	
Hydro	16.2%	14.2%	13.8%	16.0%	13.5%	15.3%	16.1%	19.1%	16.4%	
Nuclear	26.9%	24.9%	24.1%	22.3%	21.6%	22.1%	23.4%	23.7%	24.0%	
Oil	0.5%	0.5%	0.4%	0.3%	0.3%	0.4%	0.4%	0.3%	0.3%	
Peat	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	
Solar	7.4%	2.5%	3.7%	9.5%	9.4%	3.2%	4.2%	11.8%	11.9%	
Waste	0.6%	0.5%	0.5%	0.6%	0.6%	0.5%	0.5%	0.6%	0.7%	
Wind	11.3%	17.3%	19.4%	14.6%	12.4%	19.1%	21.7%	15.7%	15.2%	
FOSSIL FUELS	34.2%	37.0%	35.2%	33.7%	39.0%	36.4%	30.6%	25.9%	28.6%	
NUCLEAR	26.9%	24.9%	24.1%	22.3%	21.6%	22.1%	23.4%	23.7%	24.0%	
RENEWABLE (INCLUDES WASTE)	38.8%	37.9%	40.5%	43.9%	39.3%	41.4%	45.8%	50.3%	47.4%	

Table 3: Year-on-year comparison of Q2 generation (TWh and %)

	Q3 2018	Q3 2019	Q3 2020	Q3 2021	Q3 2022	Q3 2023
TOTAL GENERATION BY FUEL (TWh)						
Biomass	21.5	22.0	22.6	22.0	22.9	19.8
Coal/Lignite	150.4	101.8	93.0	110.5	118.5	74.0
Gas	110.2	150.9	154.6	120.0	142.8	103.7
Hydro	102.2	101.2	112.0	110.9	91.4	103.0
Nuclear	188.5	189.2	158.1	184.0	146.0	150.4
Oil	3.2	3.6	3.3	3.3	2.2	2.1
Peat	1.3	1.0	0.4	0.6	0.5	0.2
Solar	39.5	39.6	46.6	50.3	63.3	75.0
Waste	4.0	3.6	3.8	4.2	3.8	4.4
Wind	62.6	73.9	79.6	77.5	84.0	95.2
FOSSIL FUELS	265.2	257.2	251.4	234.4	264.0	179.9
NUCLEAR	188.5	189.2	158.1	184.0	146.0	150.4
RENEWABLE (INCLUDES WASTE)	229.8	240.2	264.5	264.9	265.3	297.3
TOTAL	683.5	686.7	674.0	683.3	675.4	627.6
Fossil Fuel Percentage	39%	37%	37%	34%	39%	29%
Clean Percentage	61%	63%	63%	66%	61%	71%
Renewable Share of Clean Power	55%	56%	63%	59%	65%	66%
CHANGE SINCE Q1 2017 (%)						
Biomass		3%	5%	3%	6%	-8%
Coal/Lignite		-32%	-38%	-27%	-21%	-51%
Gas		37%	40%	9%	30%	-6%
Hydro		-1%	10%	9%	-11%	1%
Nuclear		0%	-16%	-2%	-23%	-20%
Oil		10%	1%	1%	-34%	-35%
Peat		-22%	-66%	-51%	-63%	-83%
Solar		0%	18%	27%	60%	90%
Waste		-12%	-6%	4%	-6%	10%
Wind		18%	27%	24%	34%	52%
FOSSIL FUELS		-3%	-5%	-12%	0%	-32%
NUCLEAR		0%	-16%	-2%	-23%	-20%
RENEWABLE (INCLUDES WASTE)		5%	15%	15%	15%	29%

4 Notes on the Report

The figures used in the report refer to data provided through ENTSO-E for the period from 2015 which have been aggregated by EnAppSys into a European total. This data does sometimes suffer from outages or gaps in reporting, but it is considered generally complete. This report is based on the most recently available data as at quarter and year ends. National Grid data is used for GB demand.

Included Countries

Albania	Germany	Norway
Austria	Great Britain	Poland
Belgium	Greece	Portugal
Bosnia & Herzegovina	Hungary	Romania
Bulgaria	I-SEM	Serbia
Croatia	Italy	Slovakia
Czech Republic	Latvia	Slovenia
Denmark	Lithuania	Spain
Estonia	Montenegro	Sweden
Finland	Netherlands	Switzerland
France	North Macedonia	

EnAppSys offers incredibly detailed market insights and consultancy services for companies in the energy industry.

*This report has been created using our pan-European **market data platform**, which has flexible configurable screens and automated data feeds. If you would like to gain more detailed information and insight, please contact us to arrange trial access to the platform via: sales@enappsys.com*

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