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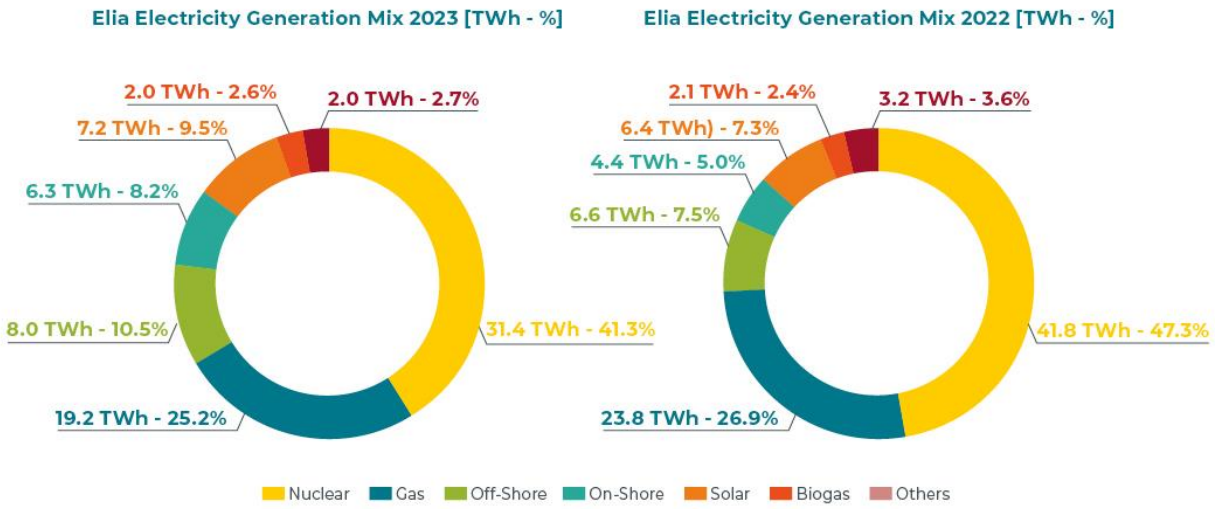
Electricity mix 2023: Belgian renewable generation reaches all-time high while consumption and prices decrease compared to 2022

Trends in 2023

- Total annual wind and photovoltaic generation in Belgium reached an all-time high (21.5 TWh or + 23%), accounting for 28.2% of the electricity mix (19,8% in 2022).
- More than half (66.5%) of the energy mix for 2023 comprised nuclear and gas-powered generation (74,2% in 2022).
- Electricity consumption decreased by 3.5% compared to 2022. This can be explained in part by the high prices of electricity which, despite a decrease (2.5 times lower compared to 2022), still remain historically high in 2023.

Electricity generation mix in 2023 and 2022



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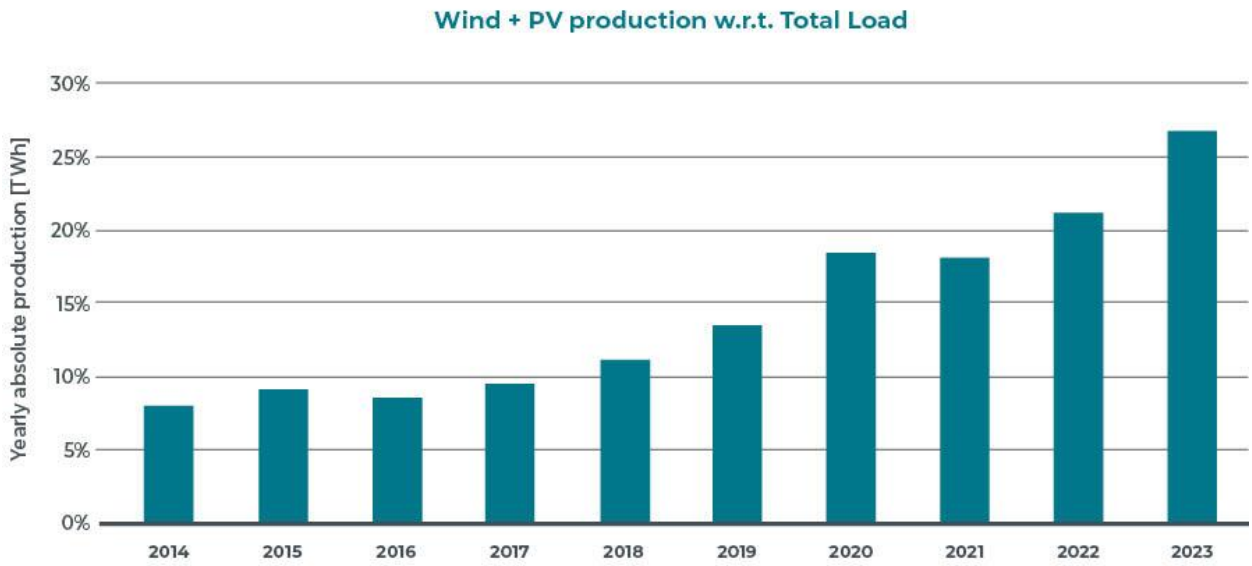
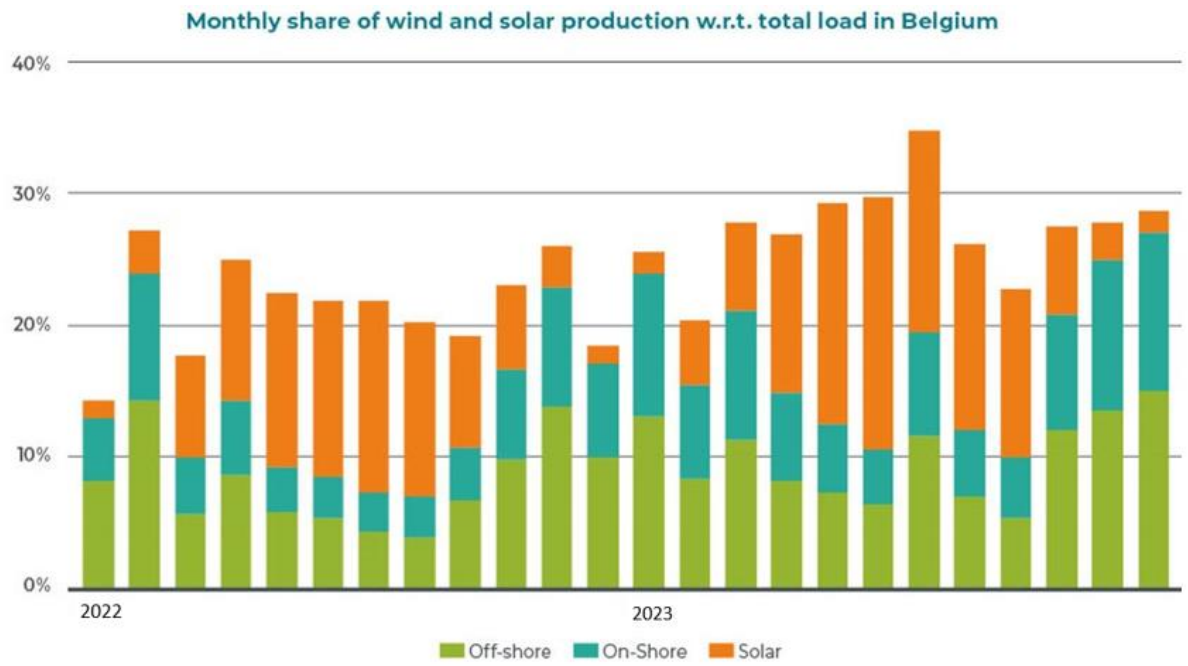
Generation from renewable energies hits all-time high of 28.2%

The share of wind and photovoltaic generation in the Belgian electricity mix continued to rise. In 2023, 28.2% of generation came from renewable sources (compared to 19.8% in 2022), a new record, with generation from renewables totalling 21.5 TWh in 2023 (compared to 17.4 TWh in 2022). Installed onshore wind (up 10%) and photovoltaic (up 31%) generation capacity continued to rise (no increase in the generation capacity from offshore wind farms is forecast before 2028).



July breaks all renewable records

In July 2023, nearly 35% of Belgian consumption was covered by the country's wind and photovoltaic generation, setting a new monthly record. On a monthly basis, we also saw that total photovoltaic and wind generation remained relatively constant due to their asynchronous seasonality.



New renewable daily record set on 29 May 2023

Total generation from photovoltaic and wind sources in Belgium hit a new quarter-hour record of 8,078 MW on 29 May 2023, corresponding to 93% of total consumption for that quarter-hour. Nevertheless, it is still quite rare for half of Belgian consumption to be covered by renewable energies. In 2023, this happened almost 12.5% of the time, i.e. three times more often than in 2022.

Peak photovoltaic generation in June 2023

New photovoltaic generation records were set during the year. June 2023 saw the most photovoltaic electricity generated: 1,170 GWh. In addition, total generation from photovoltaic energy rose significantly in 2023. Total generation was 7,193 GWh, up 12.2% on 2022, with 3 June 2023 setting the all-time daily record for the most solar energy generated in Belgium: 48.8 GWh (the old record was 41 GWh, set on 14 June 2022).

Solar (GWh)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	yearly increase
2013	33	81	167	293	290	328	389	325	235	149	56	67	**2413**	
2014	67	109	295	341	368	404	357	313	269	166	96	36	**2821**	16,9%
2015	65	131	232	390	412	459	388	379	264	162	82	66	**3030**	7,4%
2016	73	135	236	325	411	332	407	380	309	171	82	64	**2925**	-3,5%
2017	80	94	257	338	412	432	397	335	262	164	84	33	**2888**	-1,3%
2018	54	195	228	364	517	464	555	422	344	242	111	57	**3553**	23,0%
2019	60	191	244	414	451	504	477	444	358	196	118	71	**3528**	-0,7%
2020	81	138	386	581	683	578	548	495	397	180	126	66	**4259**	20,7%
2021	86	214	445	596	630	655	597	517	475	274	125	64	**4678**	9,8%
2022	99	222	559	714	888	875	936	859	545	420	198	98	**6413**	37,1%
2023	125	320	471	774	1036	1170	905	848	794	444	196	110	**7193**	12,2%

Record year for Belgium's 399 offshore wind turbines

Since 2023 was quite a windy year, a new record for total **offshore wind** generation was set, 8,011 GWh, significantly higher than the previous record (up 18% compared to the 6,779 GWh generated in 2021). A new monthly record was also set in December. Since no new offshore wind turbines were built, this record can be explained entirely by weather conditions.

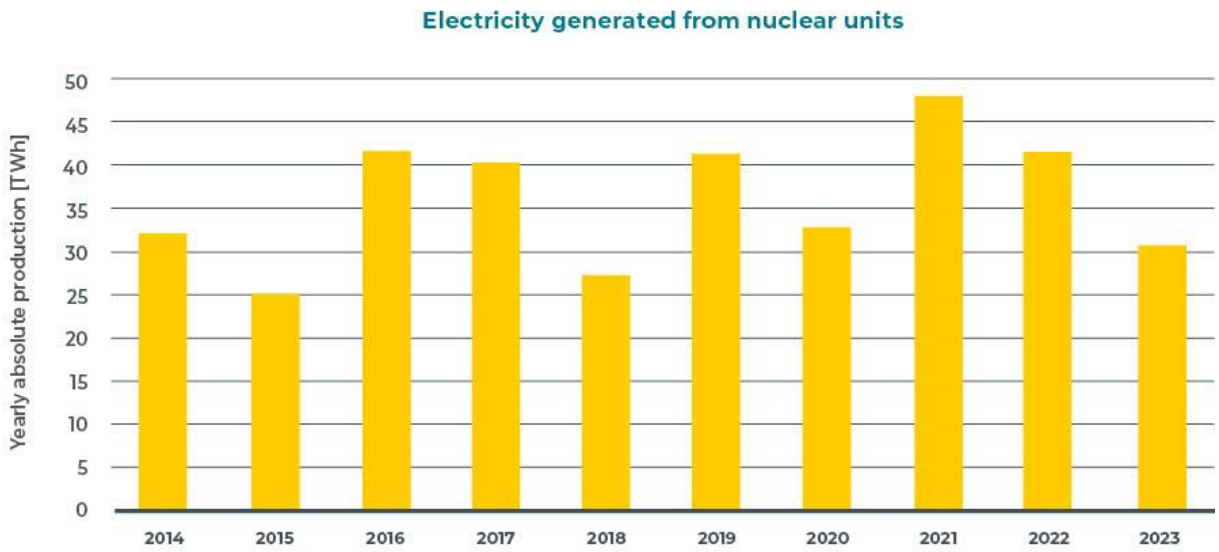
Offshore (GWh)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	yearly increase
2013	65	66	63	66	102	124	75	55	102	165	159	195	**1237**	
2014	237	260	160	121	146	82	134	195	82	239	184	312	**2152**	74,0%
2015	280	194	233	148	194	167	204	138	185	125	331	372	**2571**	19,5%
2016	332	256	212	181	159	143	156	177	131	169	246	182	**2344**	-8,8%
2017	197	240	268	130	166	209	199	159	184	376	291	369	**2788**	18,9%
2018	364	320	274	201	169	196	131	200	281	331	393	452	**3312**	18,8%
2019	412	307	448	247	252	312	243	393	454	518	445	616	**4647**	40,3%
2020	628	803	702	340	419	361	370	357	437	881	639	793	**6730**	44,8%
2021	736	815	609	486	461	213	405	532	328	808	591	795	**6779**	0,7%
2022	657	1003	404	582	393	357	279	259	437	643	909	721	**6644**	-2,0%
2023	979	562	818	534	460	398	690	422	341	789	943	1075	**8011**	20,6%

Onshore wind power: here too a new monthly record was set, with 866 GWh generated in December. The year 2023 was also the most productive in terms of onshore wind electricity, with 6,268 GWh generated for the year as a whole, a massive 43% increase compared to the previous year. This can be explained by the increase in capacity but also by a year that was windier than usual.

Onshore (GWh)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	yearly increase
2013	152	148	152	156	142	133	80	59	87	208	192	301	**1810**	
2014	306	333	139	99	161	74	94	143	69	201	191	303	**2113**	16,7%
2015	303	201	231	149	181	136	162	116	170	93	322	379	**2443**	15,6%
2016	325	302	224	180	141	117	131	156	127	135	220	181	**2239**	-8,4%
2017	173	251	304	145	145	201	195	150	197	311	238	332	**2642**	18,0%
2018	403	277	317	226	158	157	146	185	193	237	296	367	**2962**	12,1%
2019	318	288	460	209	179	198	161	210	248	316	277	499	**3363**	13,5%
2020	444	629	439	227	244	195	204	203	185	494	394	433	**4091**	21,6%
2021	388	439	396	292	426	146	252	255	187	489	277	433	**3980**	-2,7%
2022	375	677	308	385	236	199	192	205	252	442	590	515	**4376**	9,9%
2023	804	471	702	436	321	256	464	298	290	576	784	866	**6268**	43,2%

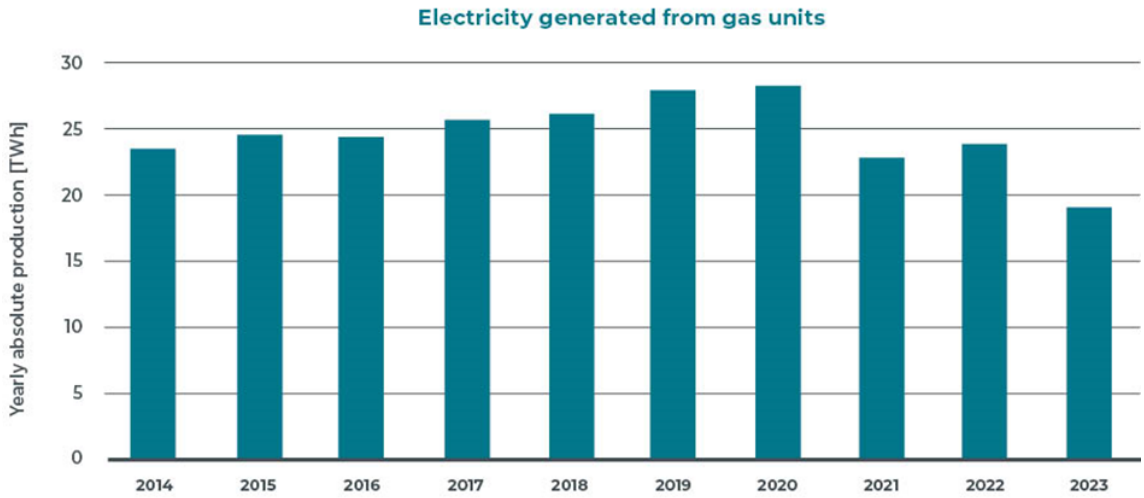
High availability of nuclear generation units

With the definitive closure of the Doel 3 reactor in late September 2022 and Tihange 2 in February 2023, there was a drop in the energy generated by nuclear power plants. The availability rate of the remaining reactors was high. Nuclear energy still accounted for 41.3% of the electricity mix compared to 47.3% in 2022.



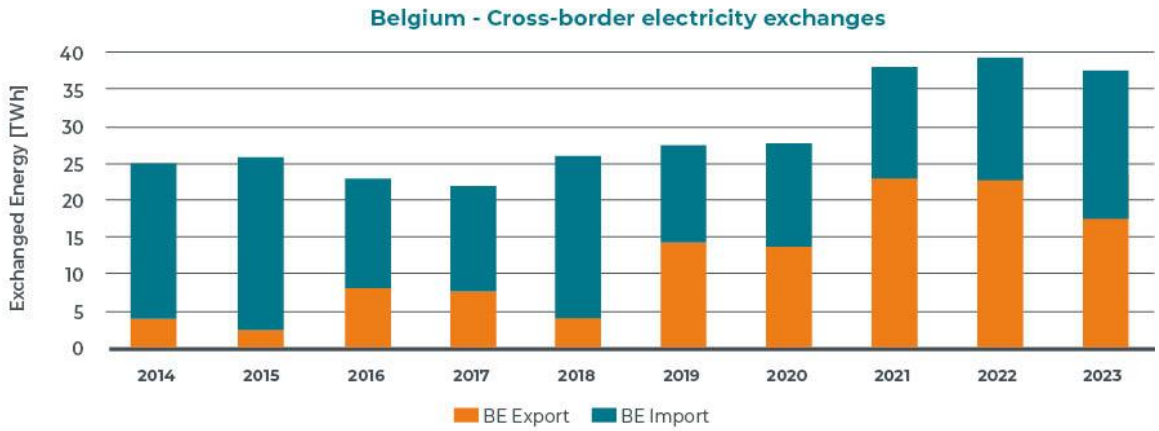
Electricity generation from gas accounts for 25.2% of the mix

Although gas-fired generation remains the norm in terms of percentage of the electricity mix, with 19.2 TWh produced in 2023, it is historically low. This can mainly be explained by still-high gas prices, increased renewable generation, increased imports and historically low consumption.



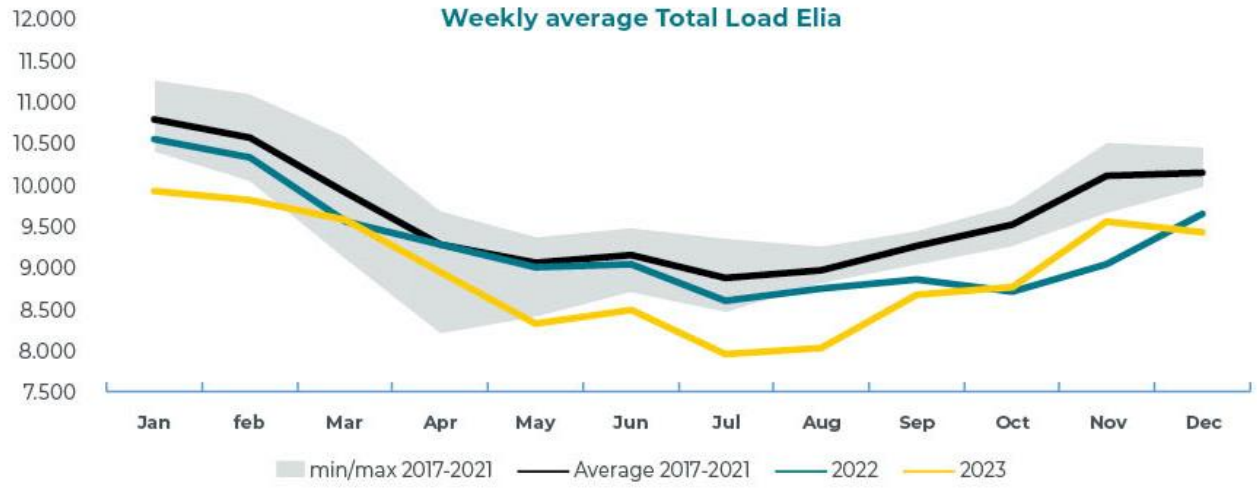
International exchanges remain high

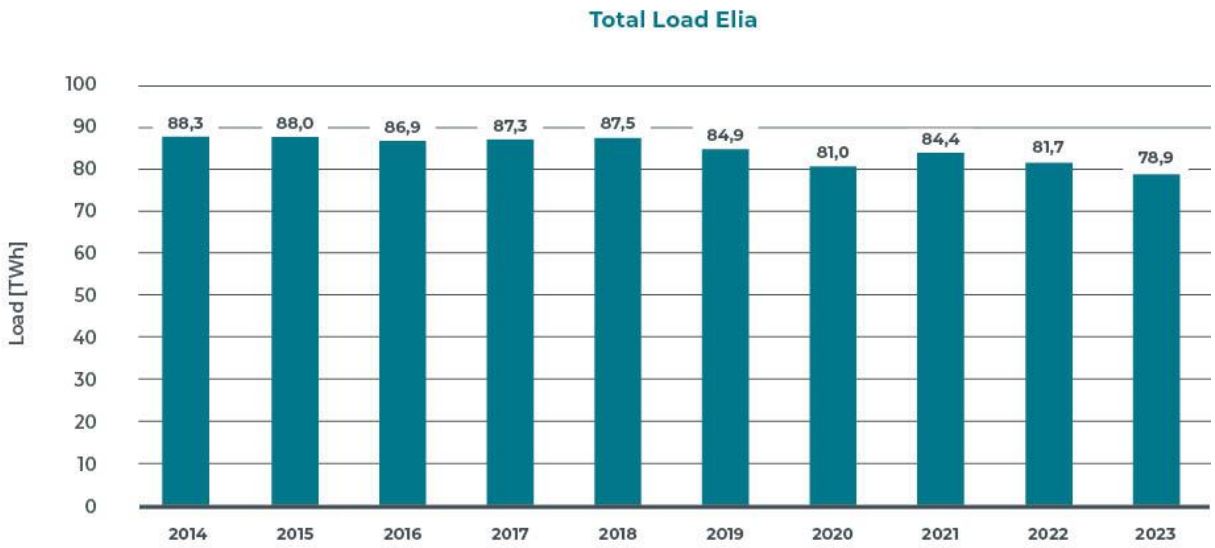
International exchanges remained high during the year. However, there was a change in the balance of international flows. Belgium went from being a net exporter (6.4 TWh in 2022) to a net importer (2.8 TWh in 2023), which can be explained by the improved availability of the French nuclear fleet. We had net imports of 3 TWh from our French neighbours, while in 2022, Belgium had net exports of 10 TWh to France.



Electricity consumption is historically low (down 3.5% compared to 2022)

Electricity consumption in 2023 was 78.9 TWh, which is historically low. Even though electricity prices fell sharply during the year, they were still particularly high due to the international context, which is also pushing consumption down. This downward trend is a temporary phenomenon, as we expect a sharp increase in electricity consumption in the years ahead due to the rapid electrification of industrial processes as well as the marked growth in the number of electric cars and heat pumps. Elia forecasts a 50% increase in consumption by 2032.





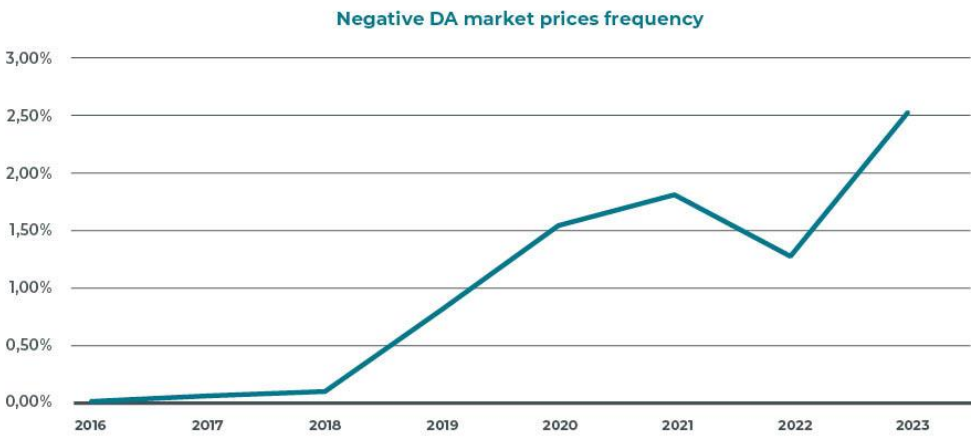
Average price of electricity two and a half times lower compared to 2022 but still higher than normal

In 2023 the average annual MWh price on the day-ahead market remained high (€97/MWh), mainly due to high gas prices. This price is still around double the historical benchmarks, but there was a gradual decline throughout the year.

Clearing price day-ahead [€/MWh]

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
January	39,7	42,9	32,6	72,6	36,8	60,5	37,9	57,5	191,4	126,6
February	38,7	50,5	25,4	47,6	47,4	47,6	28,4	48,6	162,6	143,5
March	37,4	47,1	27,1	34,5	50,7	37,6	24,0	46,6	265,7	109,6
April	41,9	47,7	25,4	37,3	37,8	37,9	14,7	57,0	186,6	105,5
May	38,7	37,6	25,4	37,2	44,5	38,0	15,4	55,6	176,6	78,1
June	36,8	39,0	30,7	32,7	50,0	27,5	25,6	74,4	219,1	93,1
July	33,8	42,6	31,3	33,6	52,9	37,7	29,8	77,4	321,3	75,4
August	37,4	42,4	28,9	31,8	60,7	33,7	35,5	79,5	448,1	92,0
September	46,2	52,5	37,7	37,2	68,8	33,6	44,2	136,2	337,4	94,3
October	46,2	55,4	57,2	49,0	76,0	37,6	39,4	165,2	157,4	86,4
November	45,1	43,1	62,3	66,6	77,8	44,4	39,9	202,2	180,4	91,5
December	47,7	35,9	55,0	55,1	59,7	36,4	47,4	245,4	269,3	69,4
Grand Total	**40,8**	**44,7**	**36,6**	**44,6**	**55,3**	**39,3**	**31,9**	**104,1**	**243,8**	**96,7**

It should also be noted that negative prices occurred with ever increasing frequency, appearing 2.5% of the time in 2023. Negative prices generally appear in periods when there is little consumption and a lot of generation. Faced with the growing significance of renewable generation in the years ahead, price volatility is expected to become even more volatile in the coming years.This price volatility offers opportunities for consumers who can adjust their consumption depending on the availability of cheap renewable energy. Flexibility can thus play an important role in our energy system.



About Elia Group

One of Europe's top 5 TSOs

Elia Group is a key player in electricity transmission. We ensure that production and consumption are balanced around the clock, supplying 30 million end users with electricity. Through our subsidiaries in Belgium (Elia) and the north and east of Germany (50Hertz), we operate 19.349 km of high-voltage connections, meaning that we are one of Europe's top 5 transmission system operators. With a reliability level of 99.99%, we provide society with a robust power grid, which is important for socio-economic prosperity. We also aspire to be a catalyst for a successful energy transition, helping to establish a reliable, sustainable and affordable energy system.

We are making the energy transition happen

By expanding international high-voltage connections and incorporating ever-increasing amounts of renewable energy into our grid, we are promoting both the integration of the European energy market and the decarbonisation of society. We also continuously optimise our operational systems and develop new market products so that new technologies and market parties can access our grid, thus further facilitating the energy transition.

In the interest of society

As a key player in the energy system, Elia Group is committed to working in the interest of society. We are responding to the rapid rise in renewable energy by constantly adapting our transmission grid. We also ensure that investments are made on time and within budget, with a maximum focus on safety. In carrying out our projects, we manage stakeholders proactively by establishing two-way communication channels between all relevant parties very early on in the development process. We also offer our expertise to different players across the sector in order to build the energy system of the future.

International focus

In addition to its activities as a transmission system operator, Elia Group provides various consulting services to international customers through its subsidiary Elia Grid International. In recent years, the Group has launched new non-regulated activities such as re.alto - the first European marketplace for the exchange of energy data via standardised energy APIs - and WindGrid, a subsidiary which will continue to expand the Group's overseas activities, contributing to the development of offshore electricity grids in Europe and beyond.

The legal entity Elia Group is a listed company whose core shareholder is the municipal holding company Publi-T.

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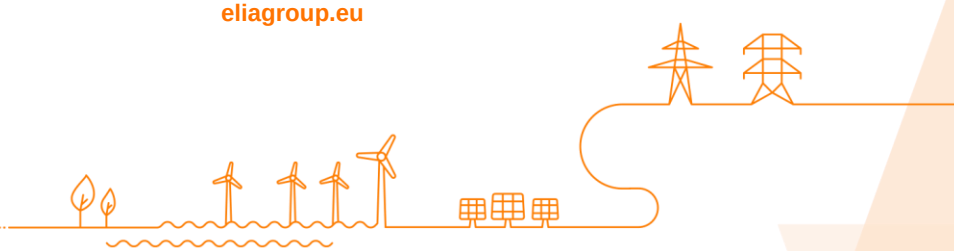

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