

Renewable energy market in Poland / CEE

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War's aftermath in electricity prices (Europe)



Source: Reuters



War's aftermath in electricity prices (CZ, RO, PL)



Source: Reuters

Price of electricity: spot vs. forward





Source: TGE (Commodity Stock Exchange, Poland)



Price of electricity & CO₂ emission rights



Quotations of CO₂ emission allowances:



Source: TPA report Wind energy in Poland 4.0 (2022)

Impact of CO₂ costs on the price of energy

Price of electricity & CO₂ emission rights

Comparison of the price of energy subject to adjustment by the cost of CO₂ emissions to the market price of energy:





Polish wind sector



Chart 17. Installed RES capacity broken down by individual technologies



Source: TPA report Wind energy in Poland 4.0 (2022)



Auctions for wind onshore & PV (PL)

Table 3. RES auction results in 2018-2021

Aukcje OZE – energetyka wiatrowa i solarna RES auctions – wind and solar energy	2018	2019	2020	VI 2021	XII 2021	
Parametry aukcji w ogłoszeniu URE / Auction parameters in the ERO announcement						
Maksymalna ilość energii elektrycznej (TWh) Maximum amount of electricity (TWh)	45,0	114,0	46,3	38,8	14,1	
Maksymalna wartość energii elektrycznej (mln PLN) Maximum value of electricity (PLN million)	15 750	32 577	14 016	10 748	5 090	
Implikowana cena energii elektrycznej (PLN/MWh) Implied electricity price (PLN/MWh)	350,00	285,84	302,78	277,31	361,69	
Wyniki aukcji / Auction results						
Liczba wszystkich ofert / Total number of offers	b.d. / n/a	164	126	111	89	
Liczba ofert, które wygrały aukcję The number of bids that won the auction	31	101	96	91	62	
Łączna wartość sprzedanej energii elektrycznej (mln PLN) Total value of electricity sold (PLN million)	8 238	16 228	9 404	5 658	2 513	
Łączna ilość sprzedanej energii elektrycznej (TWh) Total amount of electricity sold (TWh)	42,0	77,8	41,9	24,7	11,0	
Moc zainstalowana zwycięskich projektów (MW) Installed capacity of winning projects (MW)	b.d. / n/a	2 200	900	1 500	1 030	
Implikowana średnia cena sprzedaży energii elektrycznej (PLN/MWh) The implied average selling price of electricity (PLN/MWh)	196,17	208,49	224,24	229,20	227,79	
Minimalna cena sprzedaży energii elektrycznej (PLN/MWh) Minimum selling price of electricity (PLN/MWh)	157,80	162,83	190,00	179,00	139,64	
Maksymalna cena sprzedaży energii elektrycznej (PLN/MWh) Maximum selling price of electricity (PLN/MWh)	216,99	233,29	249,90	242,98	261,07	
Wykorzystanie budżetu wolumenu (%) Volume budget utilization (%)	93,3%	68,3%	90,6%	63,7%	78,4%	
Wykorzystanie budżetu wartościowego (%) Value budget utilization (%)	52,3%	49,8%	67,1%	52,6%	49,4%	
Źródło: Opracowanie Baker Tilly TPA na podstawie danych URE Source Regula	3aker Tilly TPA na podstawie danych URE Source: Baker Tilly TPA analysis based on data from the Energy Regulatory Office					

Total = 5,6 GW wind = ca. 4 GW PV = ca. 2 GW (+ ca. 2,5 GW from "small basket")



Wind power outlook - Poland

Installed capacity (GW) of onshore and offshore farms and share in gross production (%) in 2030–2040:



The size of the bubble indicates the capacity in GW, the circle shows the percentage share in the total production

Source: Baker Tilly TPA analysis based on data from McKinsey, Instrat, IEO, PEP2040

RES outlook - Poland



- Are auctions / support schemes still needed (except for offshore)?
- Public support vs. Development fast track
- Wind offshore (Poland 6 GW under advanced development until 2030, 11 GW realistic by 2040)
- Grid connection constrains
- 10H regulation for wind offshore
- Master planning constrains
- cPPAs/ direct line/ off-grid options
- Balancing/ storage challanges

RES outlook – Czech Republic





Hydroelectric power plants

Photovoltaic power plants
Wind power plants

Source: Energy Regulatory Office, TPA analysis



RES outlook – Czech Republic

- Continued growth of PV is expected mainly due to:
 - The most suitable natural conditions of all renewable sources.
 - High potential for rooftop PV on industrial halls, office buildings, shopping malls etc.
 - High potential for small scale PV (family houses).
- Due to present high demand, deliveries of pohotovoltaics panels last more than a year.
- Demand for photovoltaics will be driven by EU (climate goals) and also by Czech government (alternative for Russian gas).
- Czech government and CEZ plan to build a new nuclear reactor in Dukovany (to be operational by 2036)

RES outlook - Bulgaria



- 0,7 GW of wind onshore and 1,1 GW of PV installed so far
- All RES (incl. Hydro of 3,4 GW) represents 40% of overall generation installed capacity (approx. 23% of gross power consumption)
- Bulgarian Recovery & Resilience Plan foresees 1,7 bn EUR for RES related investments – mainly for SME's
- 3 GW of RES to be installed by 2030 (27% of gross consumption)
- PV fast developing since 2020 (large volume of connection applications filed, grid connection becomes an issue)

RES outlook - Romania



- 3 GW of wind onshore and 1,5 GW PV installed so far.
- Approx. 3 GW of wind onshore and PV capacities shall be installed by 2026
- Currently no support scheme for renewables in place
- Expansion of wind onshore requires long-term revenue security either via CfD support scheme or decentralized PPAs market
- PV expansion is well underway including large scale projects 100MW+, but grid connections hardly available
- Green hydrogen storage considered as a way out in light of grid bottlenecks
- Black Sea offshore wind potential is highly ranked (up to 22GW on fixed foundations)





Report *Wind energy in Poland 4.0* 9. Edition (2021)

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Raport / Report 2021



Thanks!





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