



A boost for wind and PV in Poland

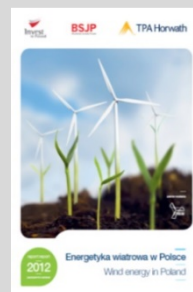
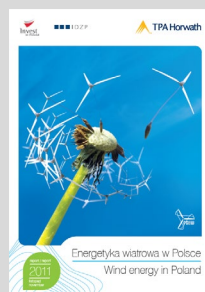
Dr. Wojciech Sztuba





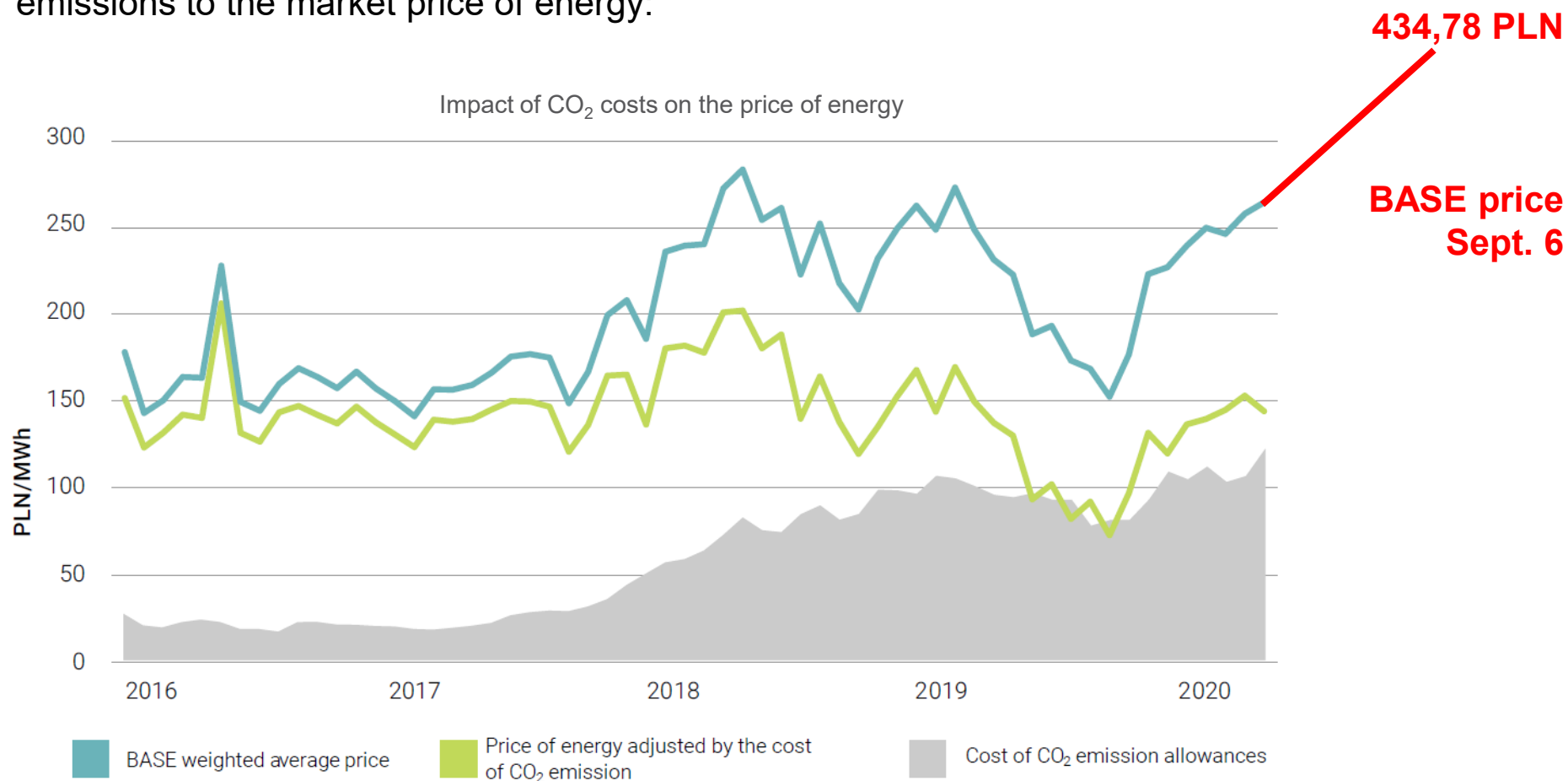
Report „Onshore wind energy in Poland“. 8. Edition (2021)

download free at: www.tpa-group.pl



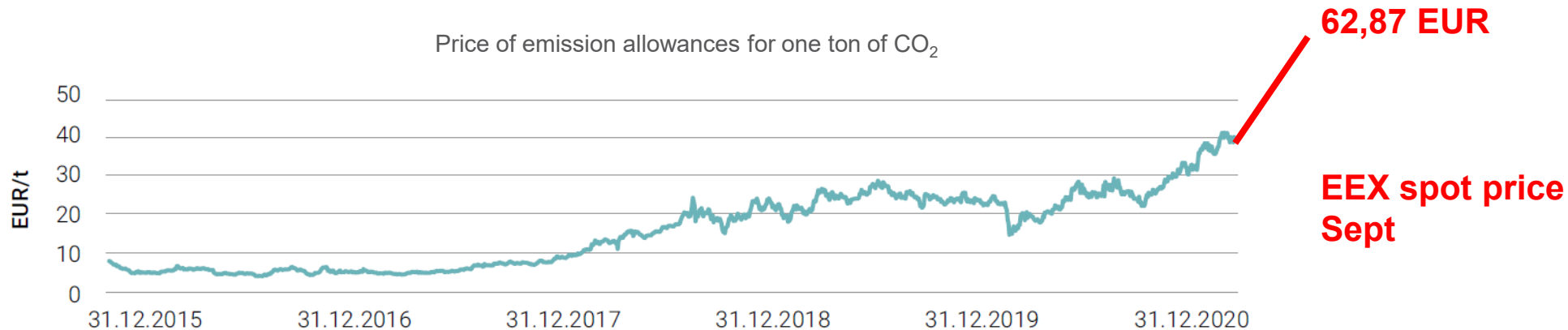
Price of electricity & CO₂ emission rights

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

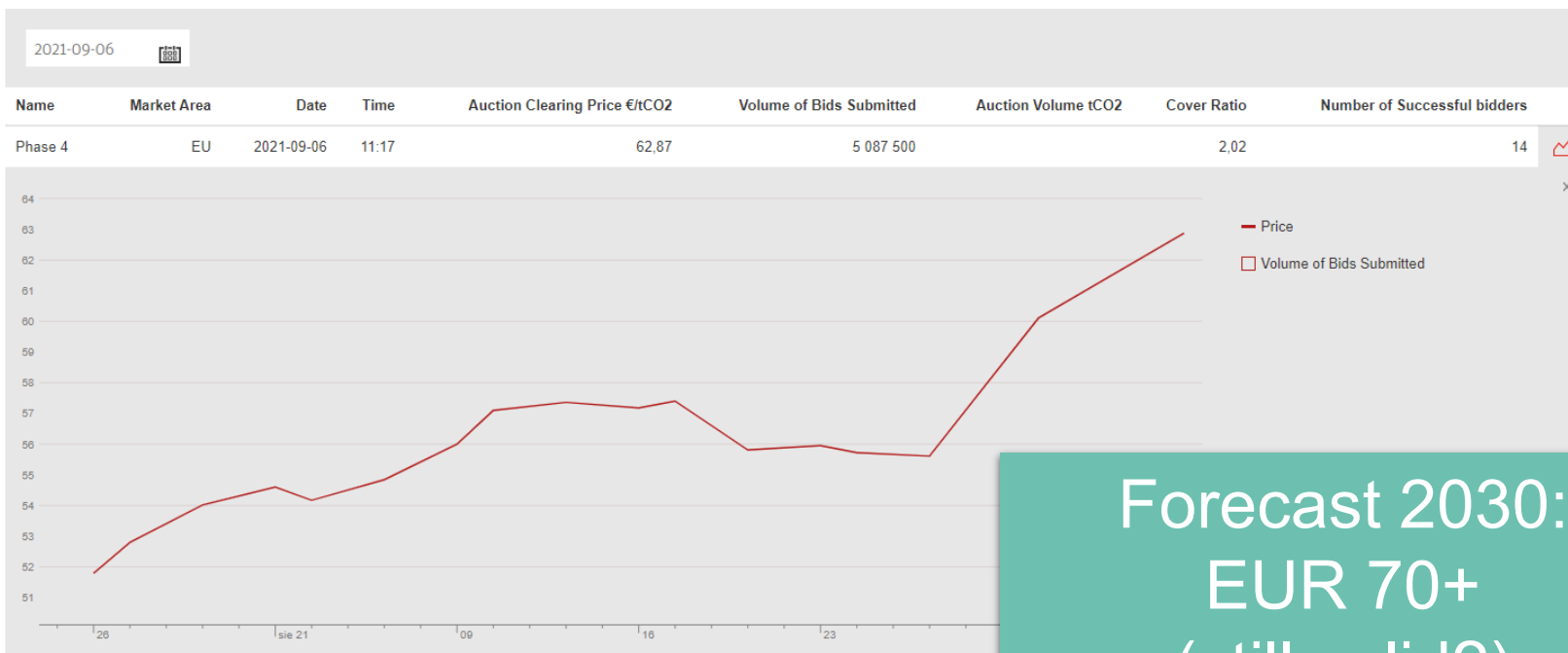


Price of electricity & CO₂ emission rights

Quotations of CO₂ emission allowances:



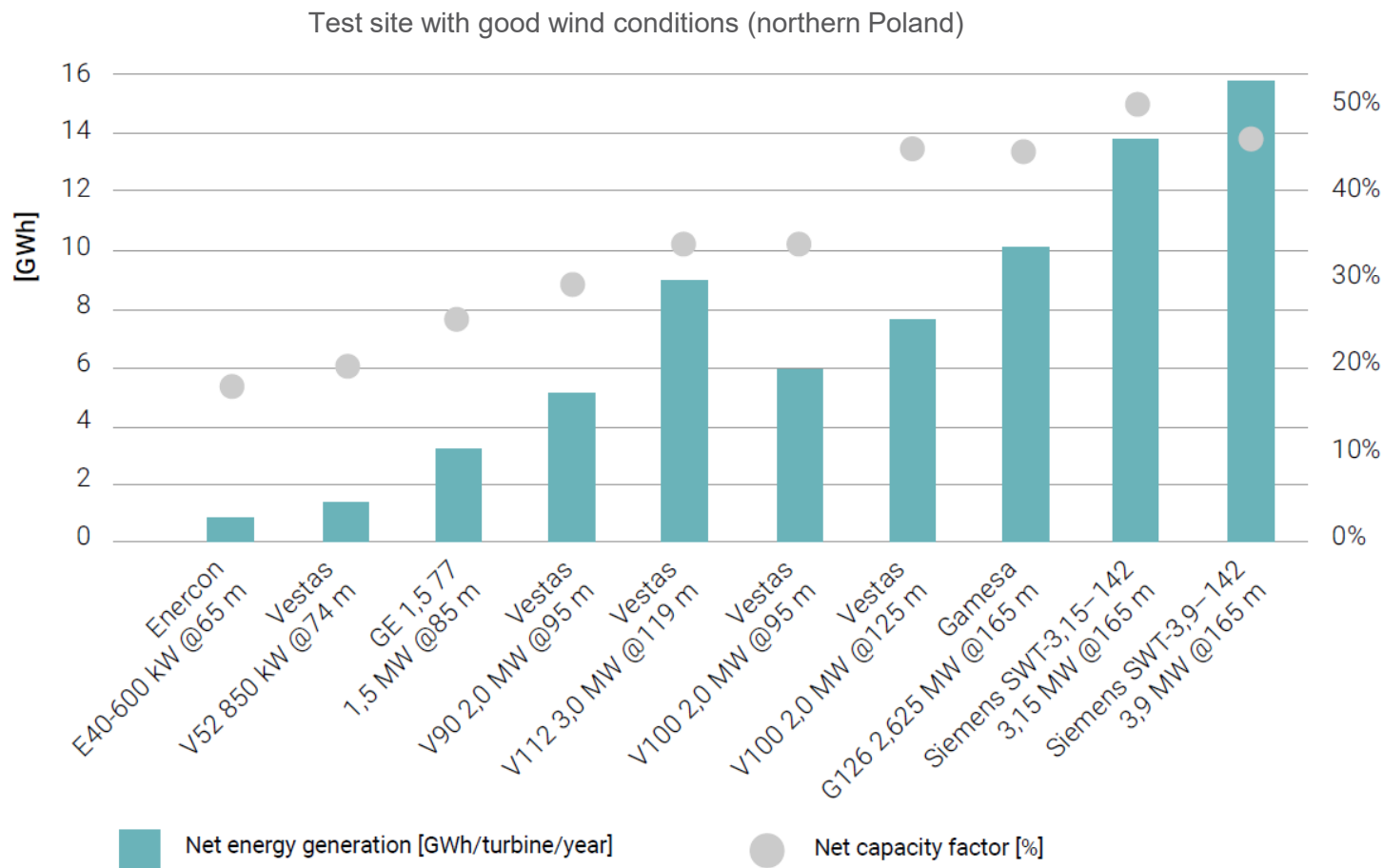
Price of electricity & CO₂ emission rights



Forecast 2030:
EUR 70+
(still valid?)

Polish wind sector

Net energy generation [GWh/turbine/year] and net capacity factor [%] for selected wind turbine models at test site with good wind conditions (northern Poland):



Source: Stąporek P., Tazowski M., 2017, Współczynnik wykorzystania mocy i produktywność różnych modeli turbin wiatrowych dostępnych na polskim rynku, DNV GL, Warszawa (5 pp.)

Polish wind onshore & PV sector

RES auction results in 2018–2020:

RES auctions – wind and solar energy	2018	2019	2020
Auction parameters in the URE announcement			
Maximum amount of electricity (TWh)	45,0	114,0	46,3
Maximum value of electricity (PLN million)	15 750	32 577	14 016
Implied electricity price (PLN/MWh)	350,00	285,84	302,78
Auction results			
Total number of offers	n/a	164	126
The number of bids that won the auction	31	101	96
Total value of electricity sold (PLN million)	8238	16 228	9404
Total amount of electricity sold (TWh)	42,0	77,8	41,9
Installed capacity of winning projects (MW)	n/a	2200	900
The implied average selling price of electricity (PLN/MWh)	196,17	208,49	224,24
Minimum selling price of electricity (PLN/MWh)	157,80	162,83	190,00
Maximum selling price of electricity (PLN/MWh)	216,99	233,29	249,90
Volume budget utilization (%)	93,3%	68,3%	90,6%
Value budget utilization (%)	52,3%	49,8%	67,1%

**Auction 2021
(June 8):**

**wind = 320 MW
PV = >1,2 GW**

Polish wind onshore & PV

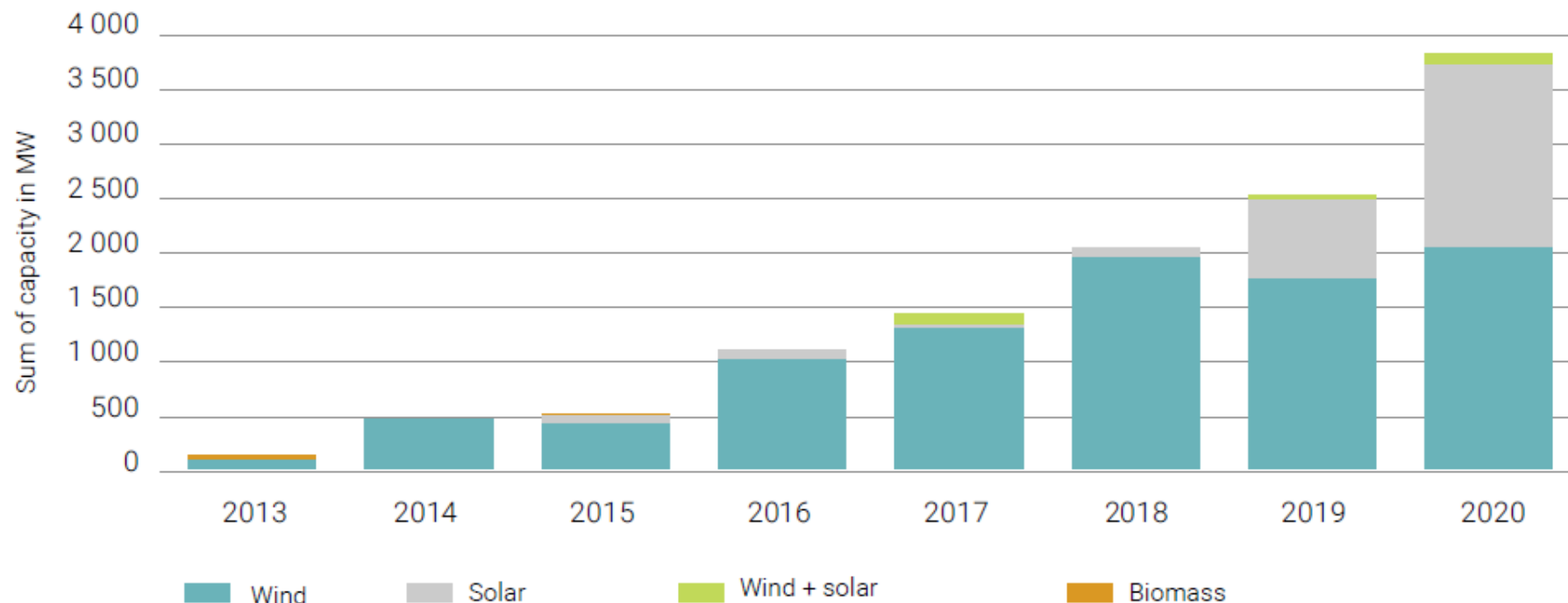
Year	Budget/ Realisation	Volume [MWh]	Capacity [MW]
2016	Budget >1MW	0	
	Realisation	0	
	Budget <1MW	1 575 000	35
	Realisation	1 567 288	10,6
2017	Budget >1MW	0	
	Realisation	0	
	Budget <1MW	4 725 000	105
	Realisation	4 720 962	6,7
2018	Budget >1MW	45 000 000	1 000
	Realisation	41 996 772	933
	Budget <1MW	16 065 000	357
	Realisation	8 169 917	0
2019	Budget >1MW	113 970 000	2 533
	Realisation WIND	99 000 000	2200 (lt. URE)
	Realisation PV	600 000	40 (lt. PSF)
	Budget <1MW	11 445 000	
	Realisation WIND	0	0
	Realisation PV	11 436 780	762
2020	Budget >1MW	46 290 000	1 029 (100% Wind)
	Realisation total	41 939 089	(90,6% v. Budget)
	Realisation WIND	000 000	900 (URE)
	Realisation PV	10 500 000	800 (URE)
	Budget <1MW	11 760 000	
	Realisation WIND	0	0
2021	Realisation PV	11 760 000	784 (800 lt. PSF)
	Budget >1MW	38 760 000	861 (100% Wind)
	Forecast WIND	14 400 000	320 (37% Wind)
	Forecast PV	10 300 000	700 (27% PV)

Auction basket >1MW:

- **2016–2017:** no tenders
- **2018–2019:**
 - Wind takes it all
 - „all“ is less than 100% (2018 = 93%, 2019 = 87%)
 - Rest is not PV (*underbidding*)
- **2020:**
 - Wind takes approx. 80%, PV approx. 20% (*underbidding* non known)
- **2021:**
 - Wind takes less than 40%
 - Realisation at only 64% of the budget
- **Future:**
 - Auctions after 2021?
 - Old wind projects available = max. 1 GW
 - Price competition PV/wind vs. 10H rule

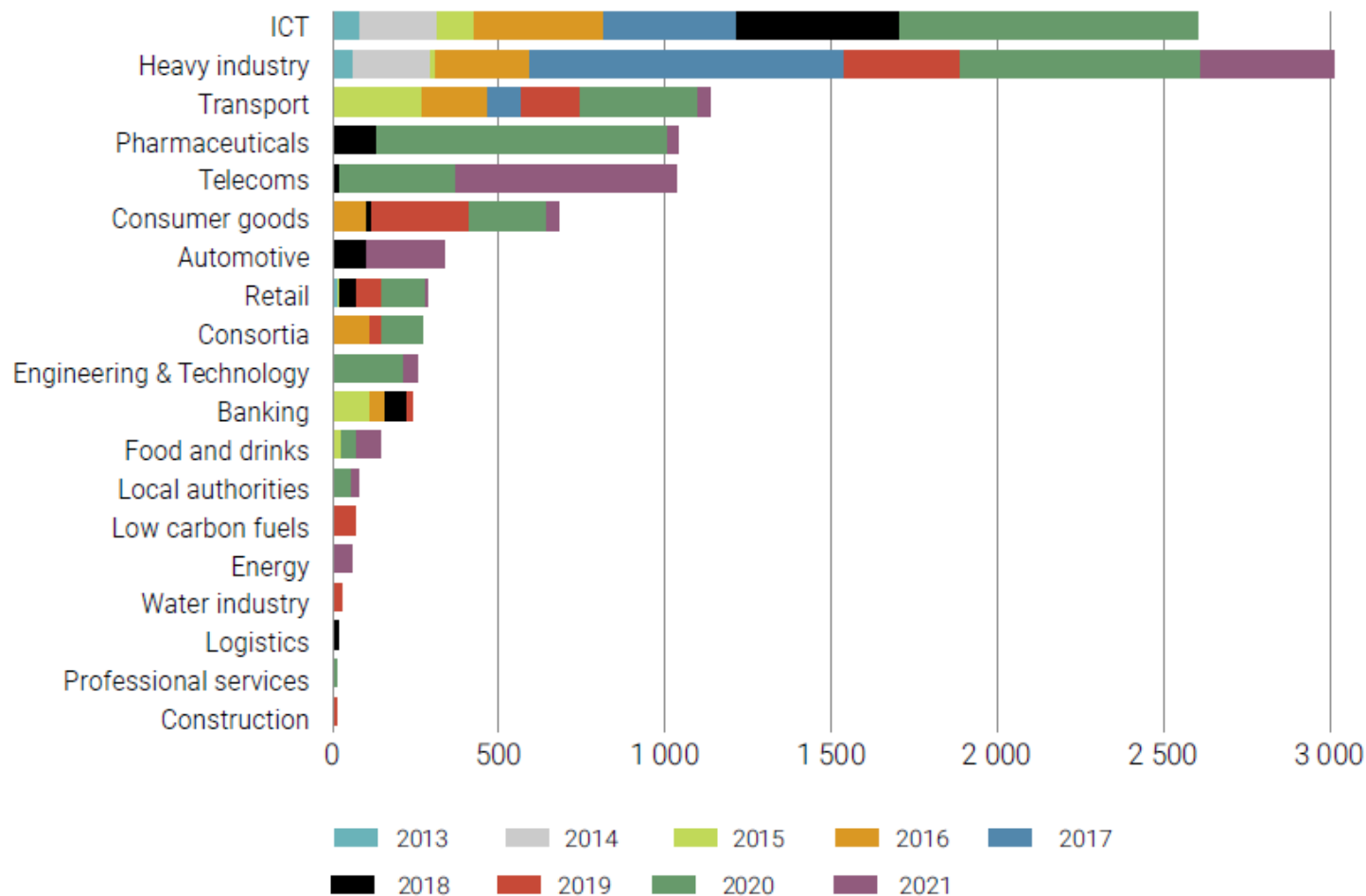
Corporate PPA's

EMEA corporate PPAs by technology:



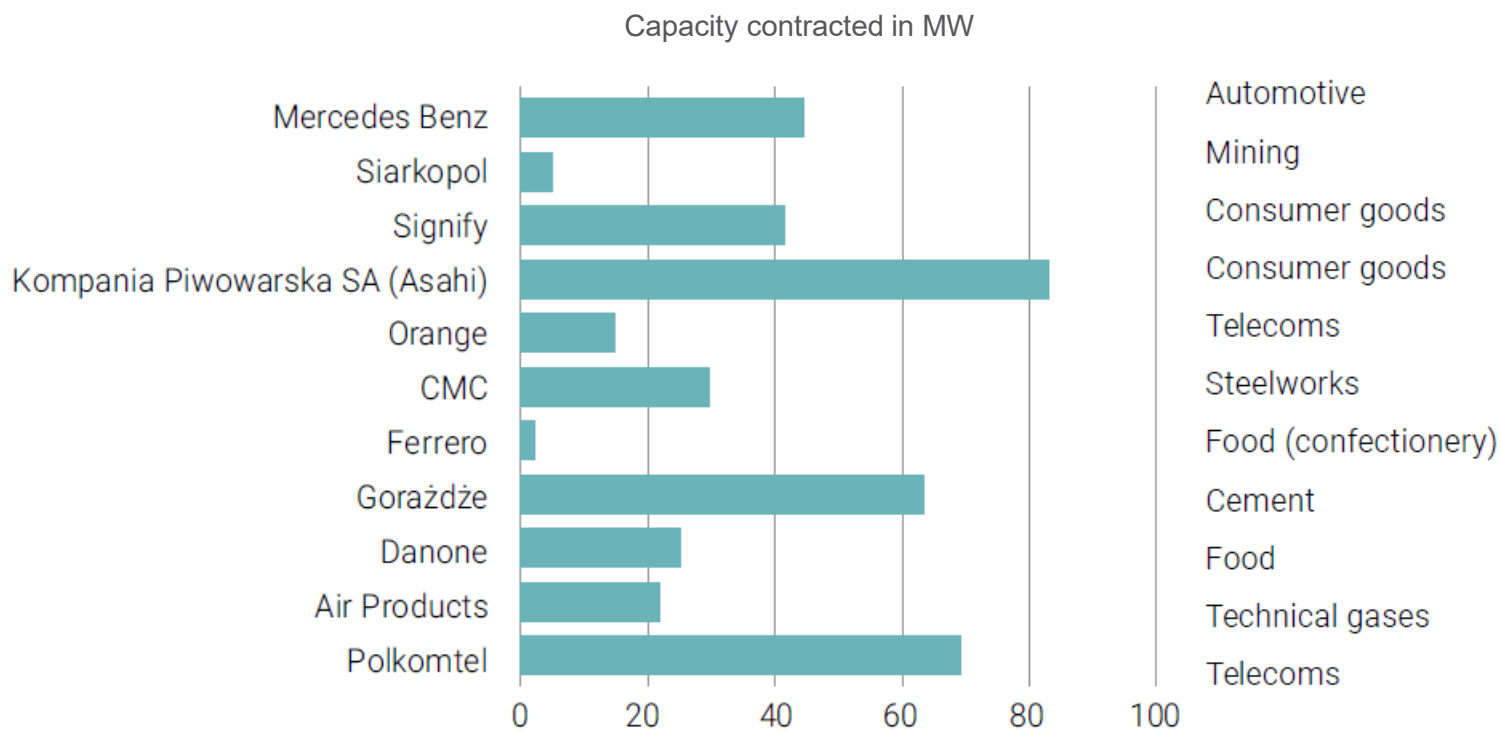
Corporate PPA's

cPPAs in Europe by the energy consumer industry:



Corporate PPA's

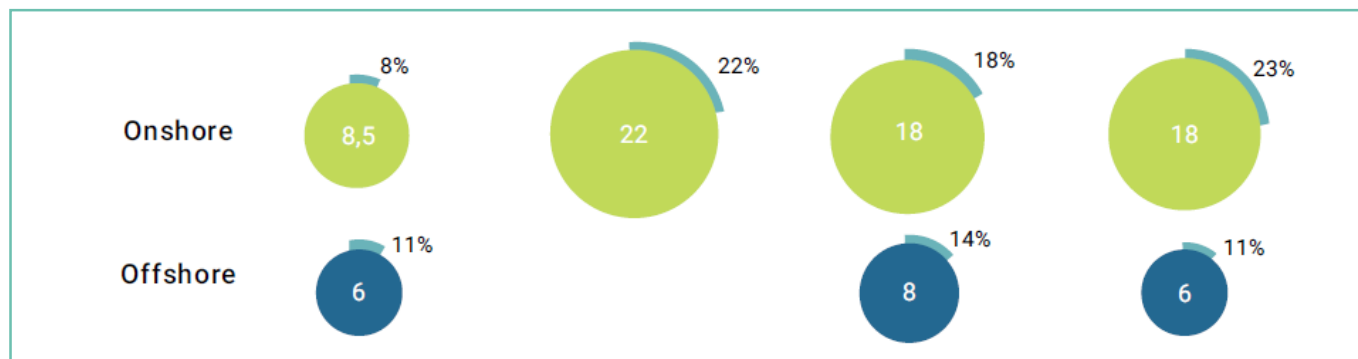
cPPAs in Poland – by firms and branches:



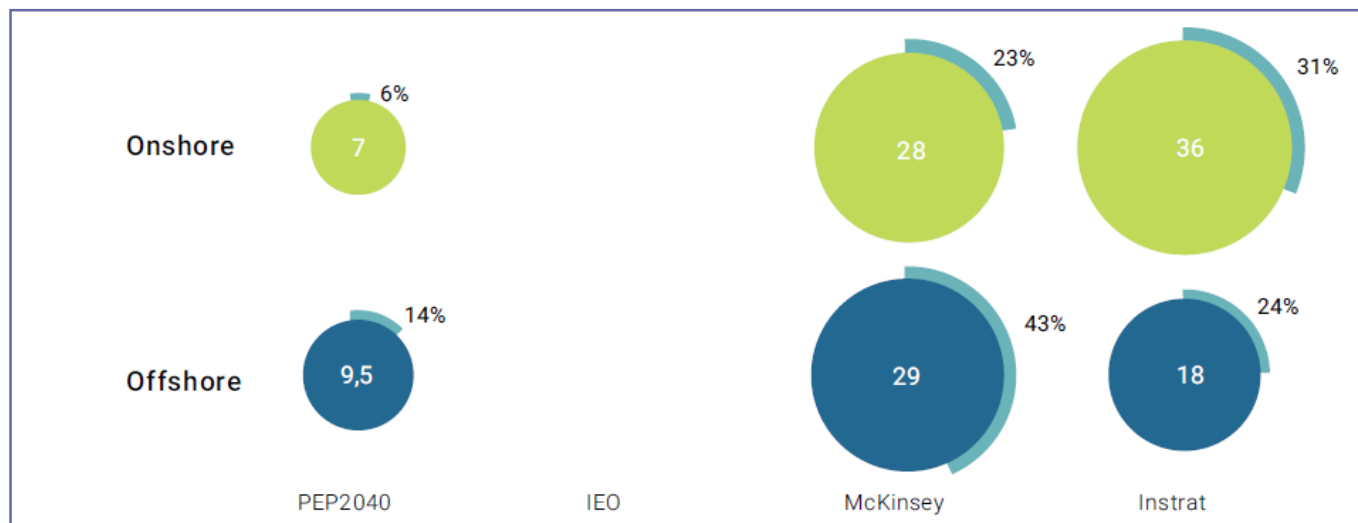
Wind power investment outlook

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

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

Thanks!



Dr. Wojciech Sztuba

Managing Partner

Tel.: +48 61 63 00 500

wojciech.sztuba@tpa-group.pl

