

Morska energetyka wiatrowa w Polsce i na świecie - stan bieżący, perspektywy rozwoju

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Spotkanie Business Club Szczecin
Szczecin, 07.12.2022 r.

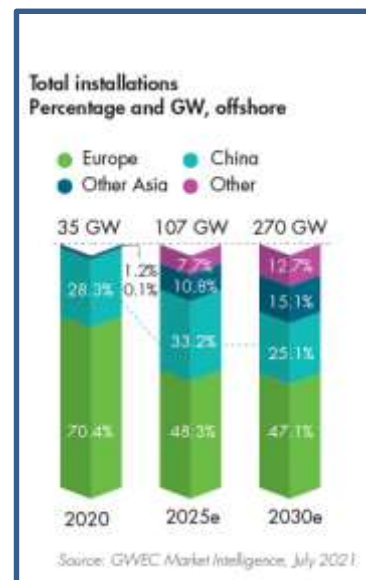
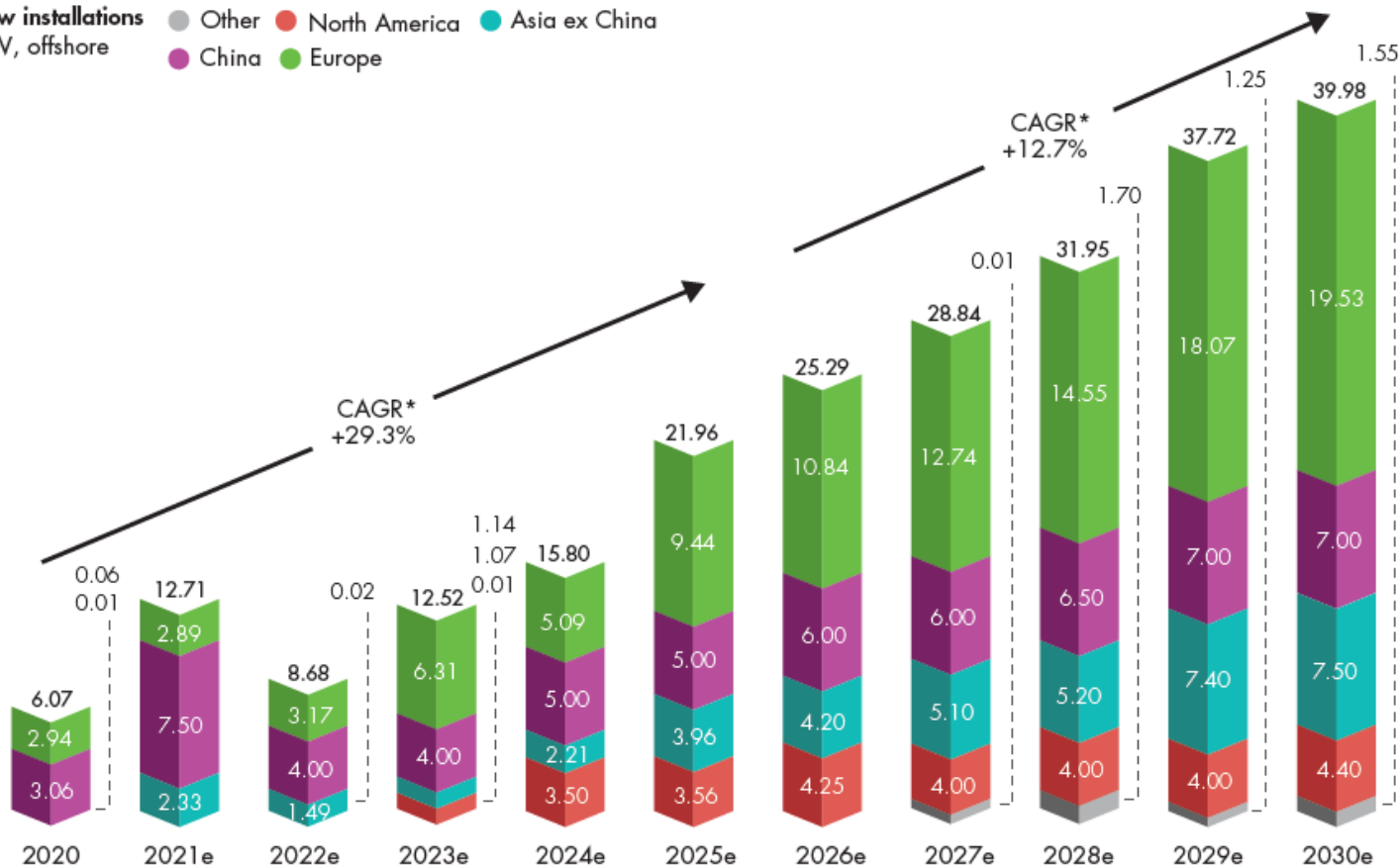
Gobal market

~270 GW till 2030

Global offshore wind growth to 2030

New installations
 GW, offshore

- Other
- North America
- Asia ex China
- China
- Europe



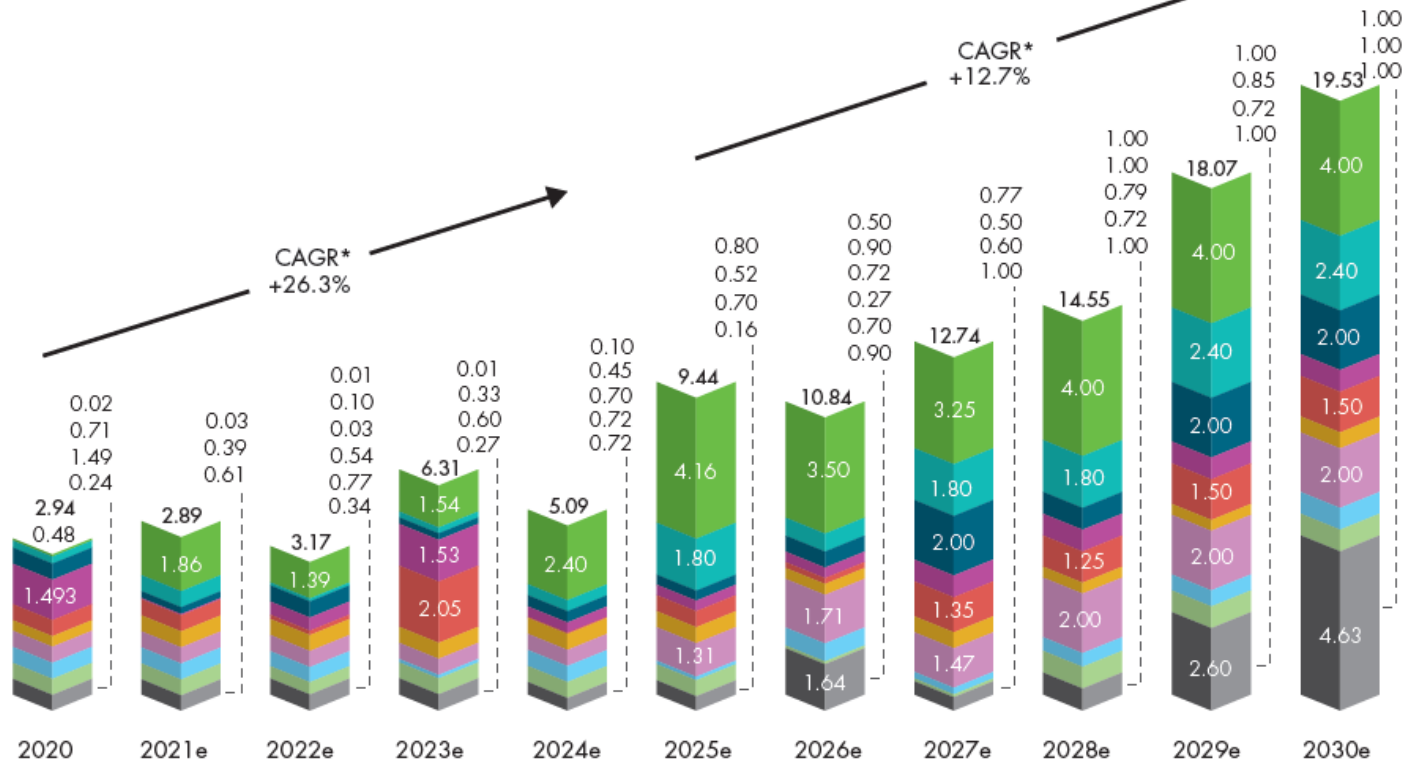
*CAGR = Compound Annual Growth Rate
 Source: GWEC Market Intelligence, July 2021

European markets

~100 GW till 2030

Global offshore wind growth to 2030 in Europe

New installations ● The UK ● Germany ● Denmark ● Netherlands ● France
GW, offshore ● Belgium ● Poland ● Ireland ● Norway ● Rest of Europe



*CAGR = Compound Annual Growth Rate
 Source: GWEC Market Intelligence, July 2021

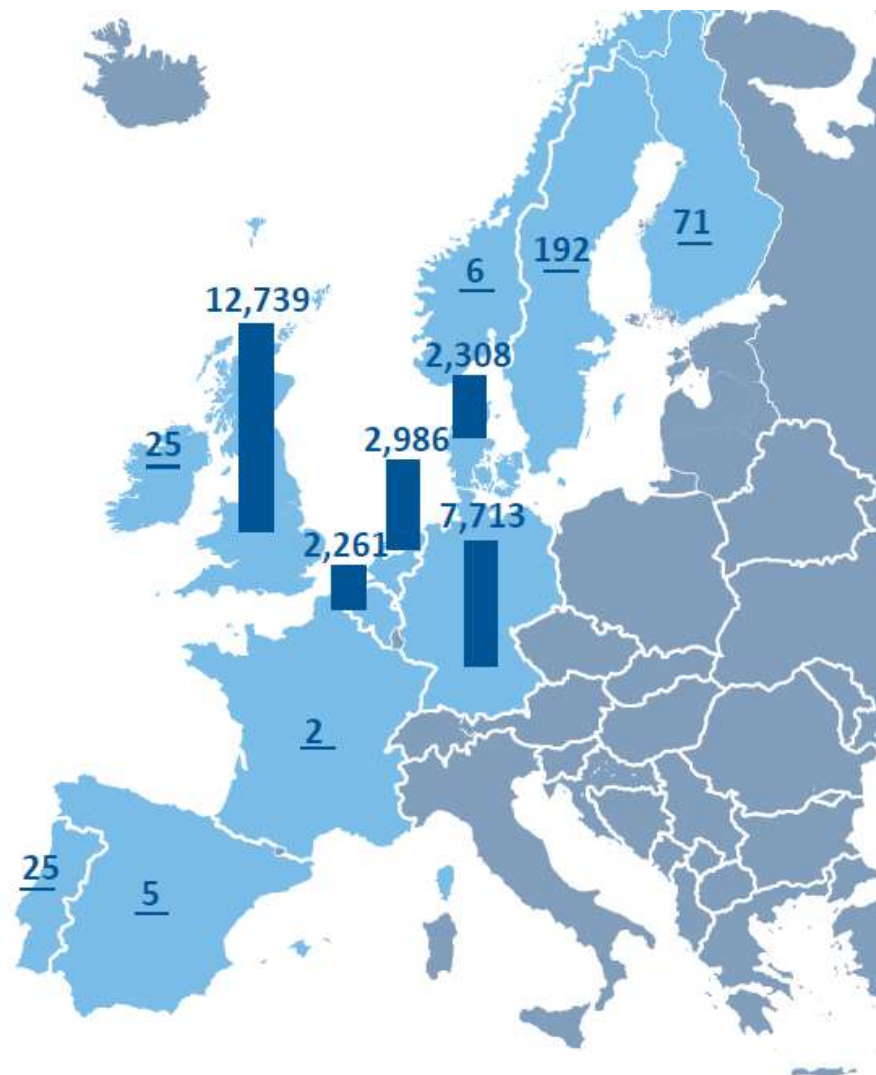
European market

28,333 MW
Connected to the grid

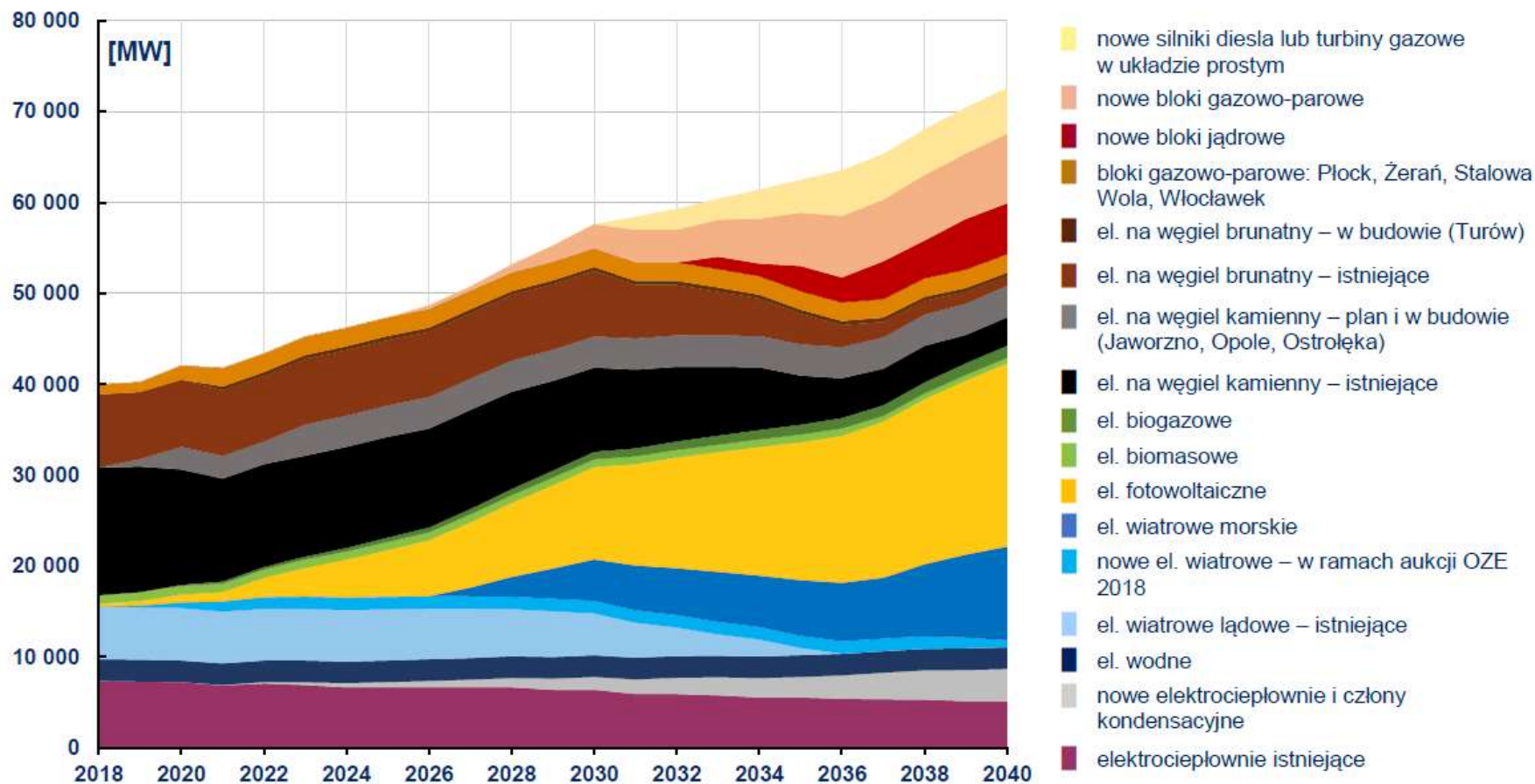
12 Countries

5,785 Turbines

122 Wind Farms



Energy mix vision in Poland`s Energy Policy till 2040



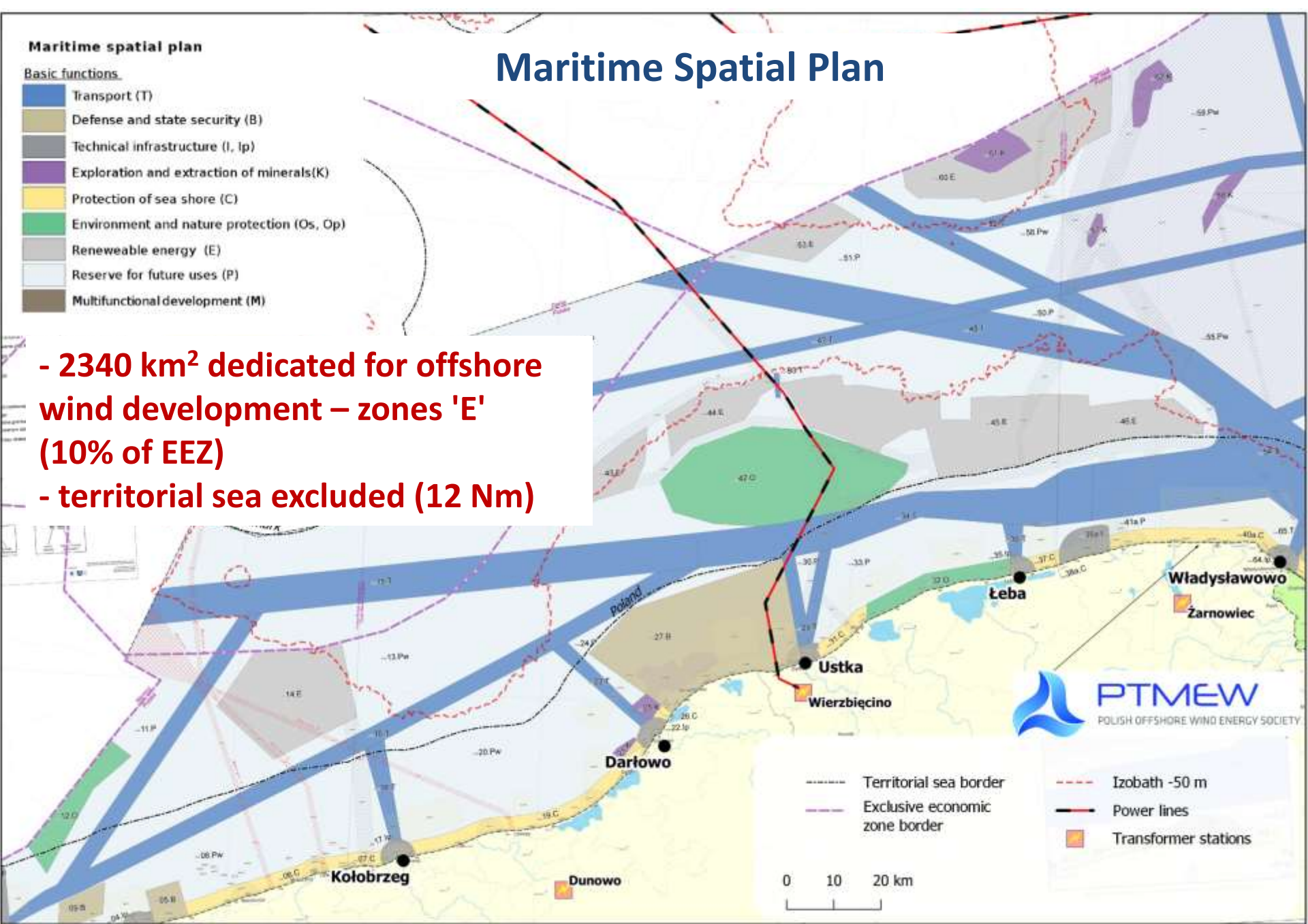
Maritime Spatial Plan

Maritime spatial plan

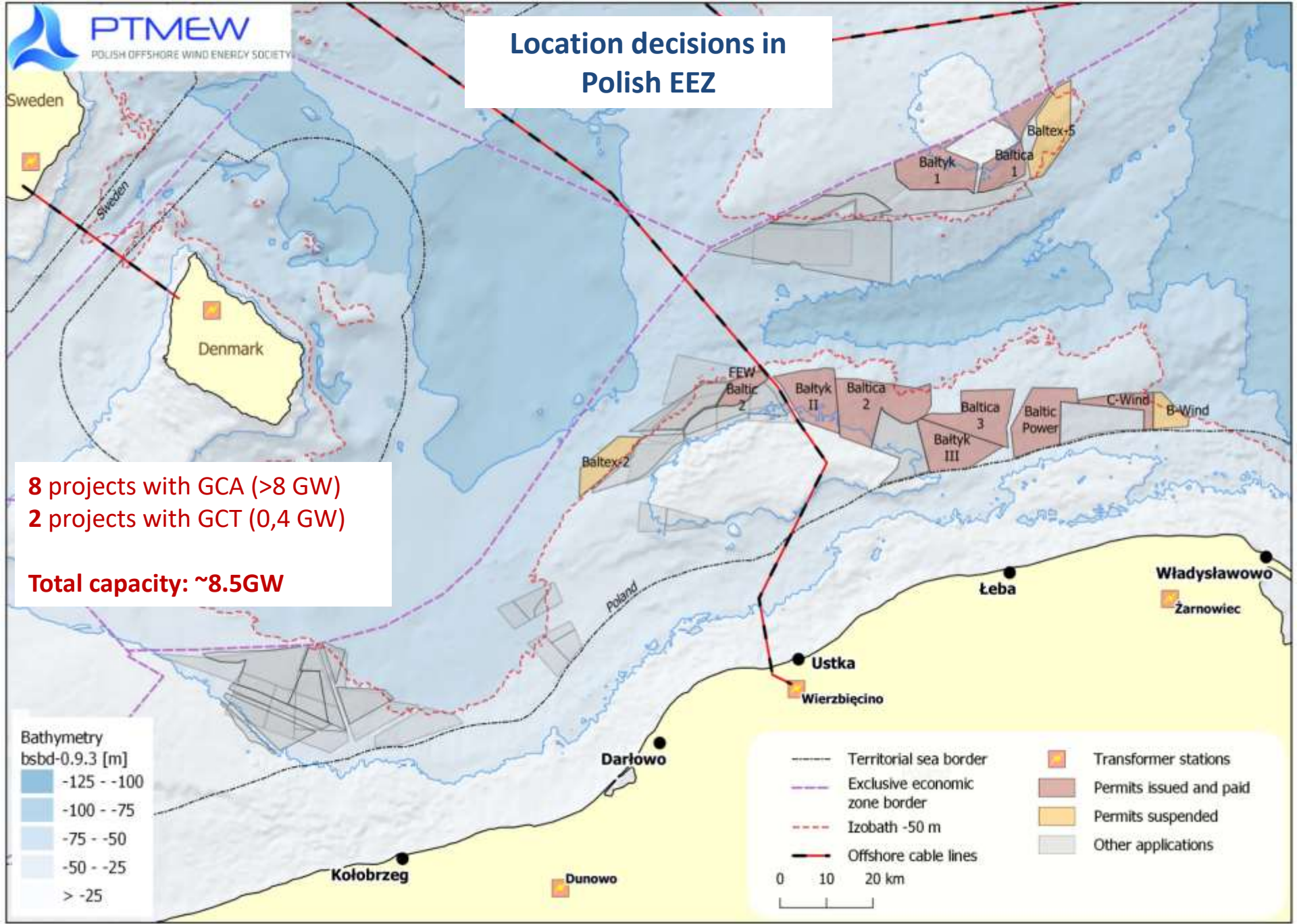
Basic functions

- Transport (T)
- Defense and state security (B)
- Technical infrastructure (I, Ip)
- Exploration and extraction of minerals(K)
- Protection of sea shore (C)
- Environment and nature protection (Os, Op)
- Renewable energy (E)
- Reserve for future uses (P)
- Multifunctional development (M)

- 2340 km² dedicated for offshore wind development – zones 'E'
 (10% of EEZ)
 - territorial sea excluded (12 Nm)



Location decisions in Polish EEZ



8 projects with GCA (>8 GW)
2 projects with GCT (0,4 GW)
Total capacity: ~8.5GW

Bathymetry
 bsbd-0.9.3 [m]

- 125 - -100
- 100 - -75
- 75 - -50
- 50 - -25
- > -25

— Territorial sea border	■ Transformer stations
- - - Exclusive economic zone border	■ Permits issued and paid
- - - Izobath -50 m	■ Permits suspended
— Offshore cable lines	■ Other applications

0 10 20 km

Status of the most developed OWF projects in Poland

Project	Developer	Location approved	Location permit granted	Location permit paid	Grid connection terms / agreement	Export cable route approved	EIA surveys	Environ. decision granted	Total capacity	Distance to shore	Water depth
Baltyk III	Polenergia/Equinor	+	+	+	+/+	+	+	+	600*	22	25-39
Baltyk II	Polenergia/Equinor	+	+	+	+/+	+	+	+	480*	37	23-41
Baltica 3	PGE Baltica / Oersted	+	+	+	+/+	-	+	+	1045	25	30-50
Baltica 2	PGE Baltica / Oersted	+	+	+	+/+	-	+	+	1500	31	20-50
FEW Baltic II	BTI / RWE	+	+	+	+/+	+	+	+	350	50	40
Baltica 1	PGE Baltica	+	+	+	+/+	-	ongoing	-	900	77	20-40
Baltyk I	Polenergia/Equinor	+	+	+	+/+	-	ongoing	-	1560	81	25-35
Baltic Power	Orlen/NPI	+	+	+	+/+	-	+	+	1200	23	30-50
C-Wind	Ocean Winds	+	+	+	+/-	-	ongoing	+	200	23	30-50
B-Wind	Ocean Winds	+	+	+	+/-	-	ongoing	+	199	23	30-50

Support scheme in Poland*

Offshore Wind Act

Individually granted support		Total volume
▪ 2021	– max. 5,9 GW	5,9 GW
Auction system		
▪ 2025	– max. 2,5 GW	8,4 GW
▪ 2027	– max. 2,5 GW	10,9 GW
▪ 2028 (optional)	>500 MW	

* The EC has approved Polish state aid scheme for offshore wind on 20.05.2021

Maritime Spatial Plan areas for new location appl.

New 11 areas symbols:

14.E (4 sites)

43.E (1 site)

44.E (1 site)

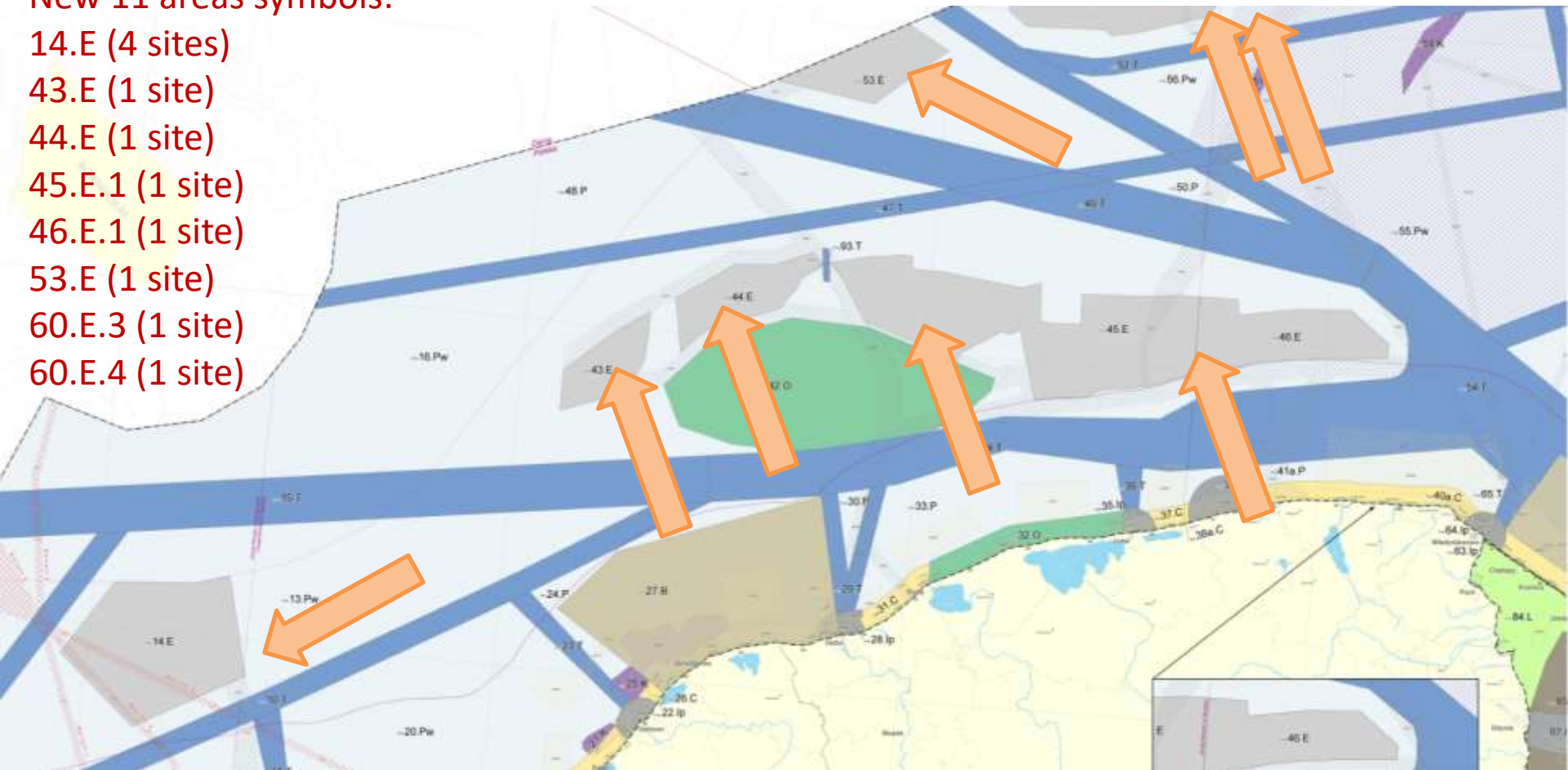
45.E.1 (1 site)

46.E.1 (1 site)

53.E (1 site)

60.E.3 (1 site)

60.E.4 (1 site)

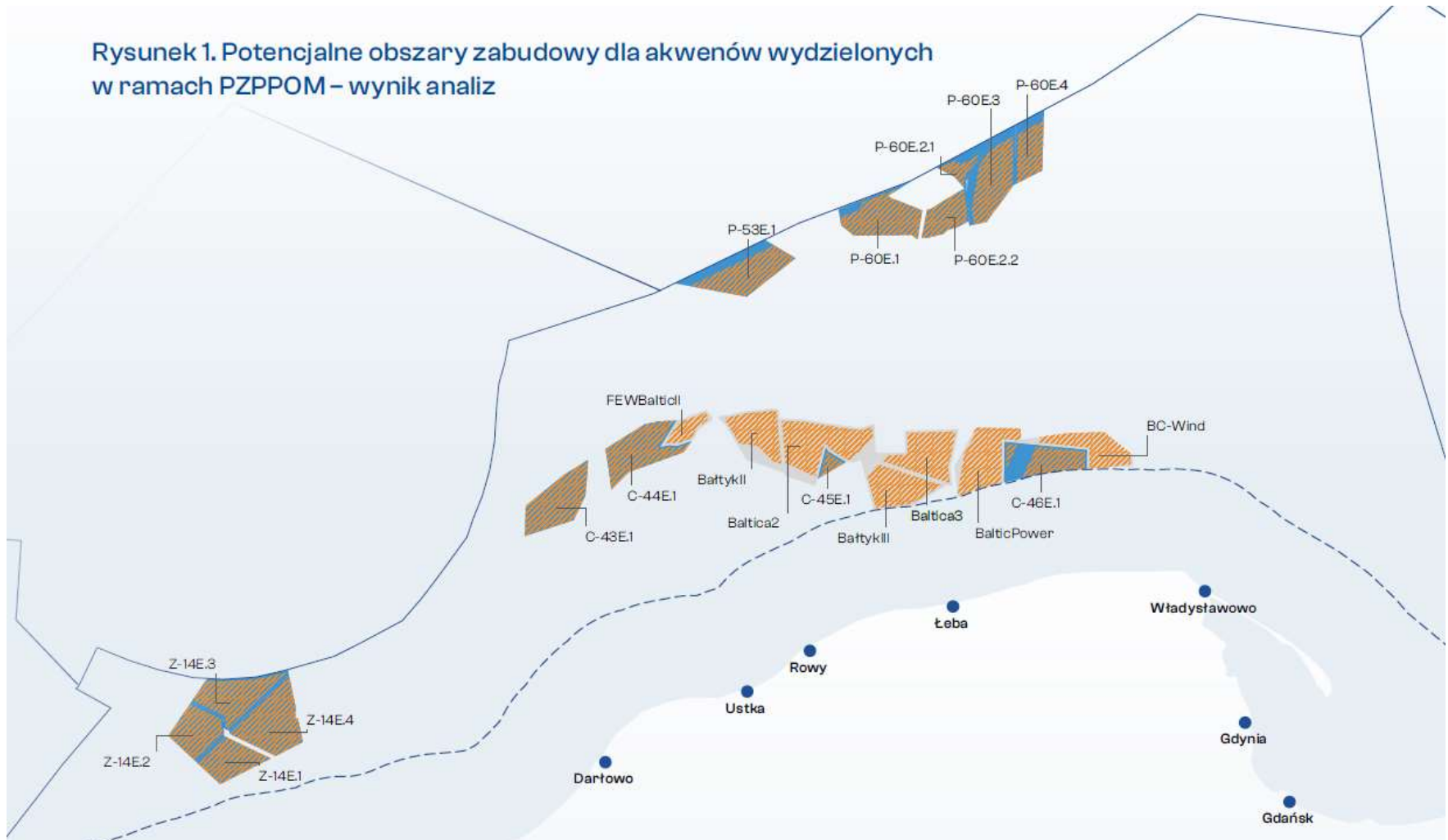


Polish Maritime Areas

Offshore wind-dedicated sites of I and II phase

(source: „Potencjał Morskiej Energetyki Wiatrowej, PWEA, 2022)

Rysunek 1. Potencjalne obszary zabudowy dla akwenów wydzielonych w ramach PZPPOM – wynik analiz



Legal framework

Ustawa o promowaniu wytwarzania energii elektrycznej w morskich farmach wiatrowych z dnia 17 grudnia 2020 roku (*Offshore Wind Act*)

- Supply Chain Plan document as obligatory part of CfD application
- Mandatory, documented and well-prepared technical dialogue with potential suppliers

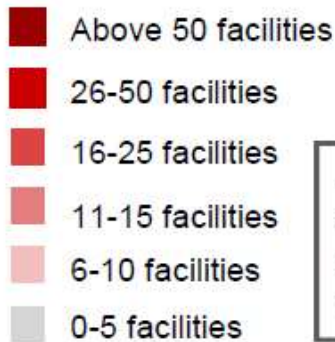
Non-legal framework

Porozumienie sektorowe na rzecz rozwoju morskiej energetyki wiatrowej w Polsce
(Polish Offshore Wind Sector Deal)

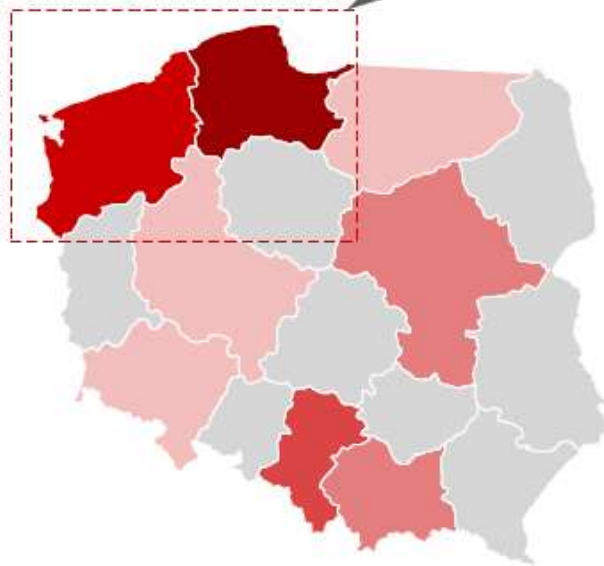
- **Trilateral deal** between Govt., developers and supply chain representation
- **Signed** on 15.09.2021 in Warsaw
- **Areas** covered: financial support for supply chain, export promotion support for supply chain, R&D facilitation tools for offshore wind sector, professional and higher education program framework for offshore wind in PL, social education around offshore wind sector development in PL, co-existence of the offshore wind sector with other sea users

General characteristics:

Number of facilities declared by the respondents in voivodeships (#)



~50% of facilities declared are located in the coastal voivodeships



- stronger coastal regions
- shipyard-based production
- existing experience in OWF projects across the Europe
- good quality of supplies
- high potential of innovation
- good experience in pre-construction services and investigations
- over 100 identified entities

Strong sides:

- steel structures
- cabling systems
- shipbuilding and design
- electrical equipment
- hydraulics
- EIA
- anticorrosion systems



Shipbuilding capacity
CRIST, StoGda



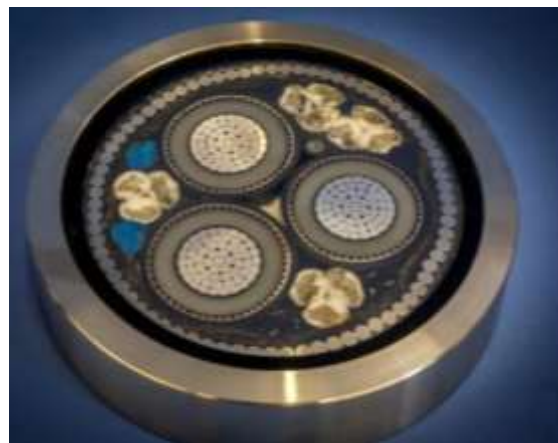
Steel structures fabrication
GSG, EPG, MPG



Offshore transformers
Hitachi ABB



EIA surveys
MEWO



Subsea HV cables
TELEFONIKA Kable



Secondary steel
GOTECH, Spomasz

Steel structures, cathodic protection



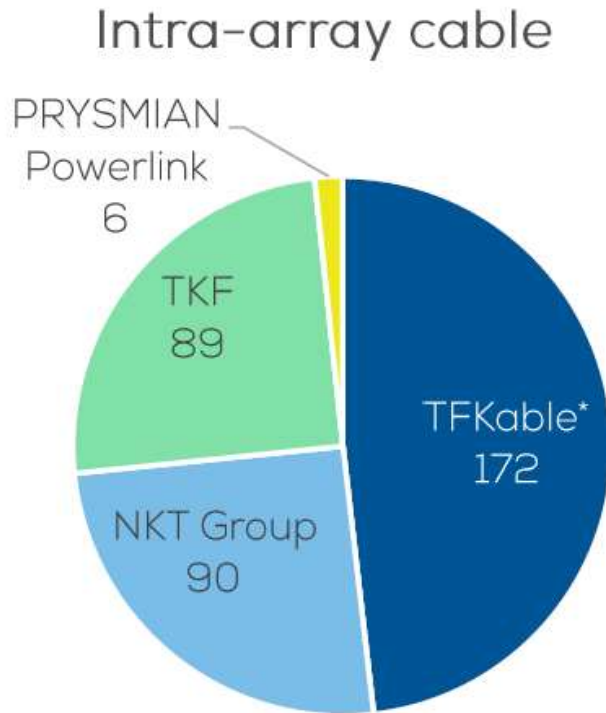
EPG
Mostostal-Pomorze
GOTECH
CRIST
MAKROMOR
GOTECH
• **Spomasz (Smulders)**
Mostostal Chojnice

Shipbuilding capacity



- **CRIST shipyard**
- **StoGda Ship Design**
- **Remontowa Shipyard**
- **Stocznia Gdansk Shipyard**
- **SAFE Shipyard**
- **NAVA Ship Design**

MV and HV subsea cables / cabling systems



Tele-Fonika Kable / JDR



**Welcome to cooperation
with Polish offshore wind industry**

Polish Offshore Wind Energy Society

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