Growth perspective
and business opportunities
on Polish offshore wind energy market

Jakub Budzyński
Vice-President

Polish Offshore Wind Energy Society

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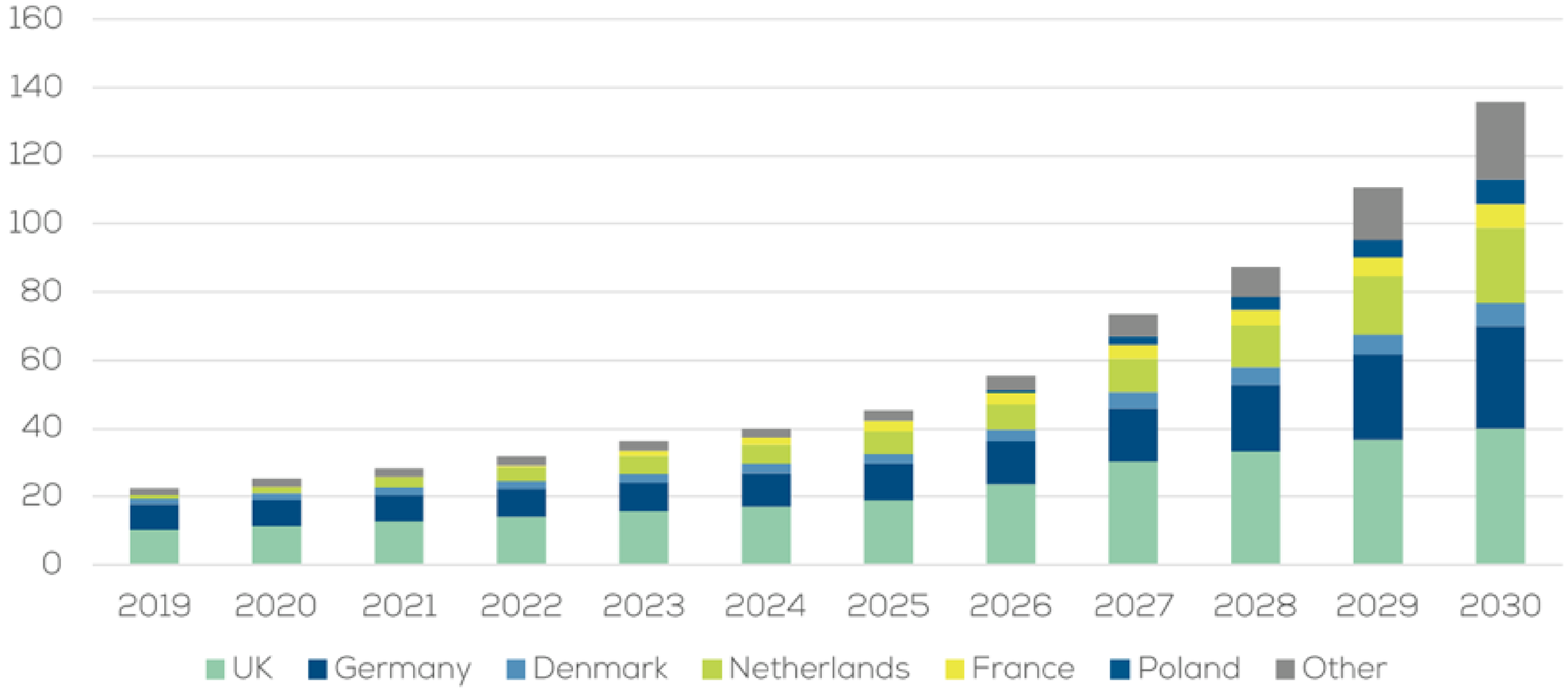
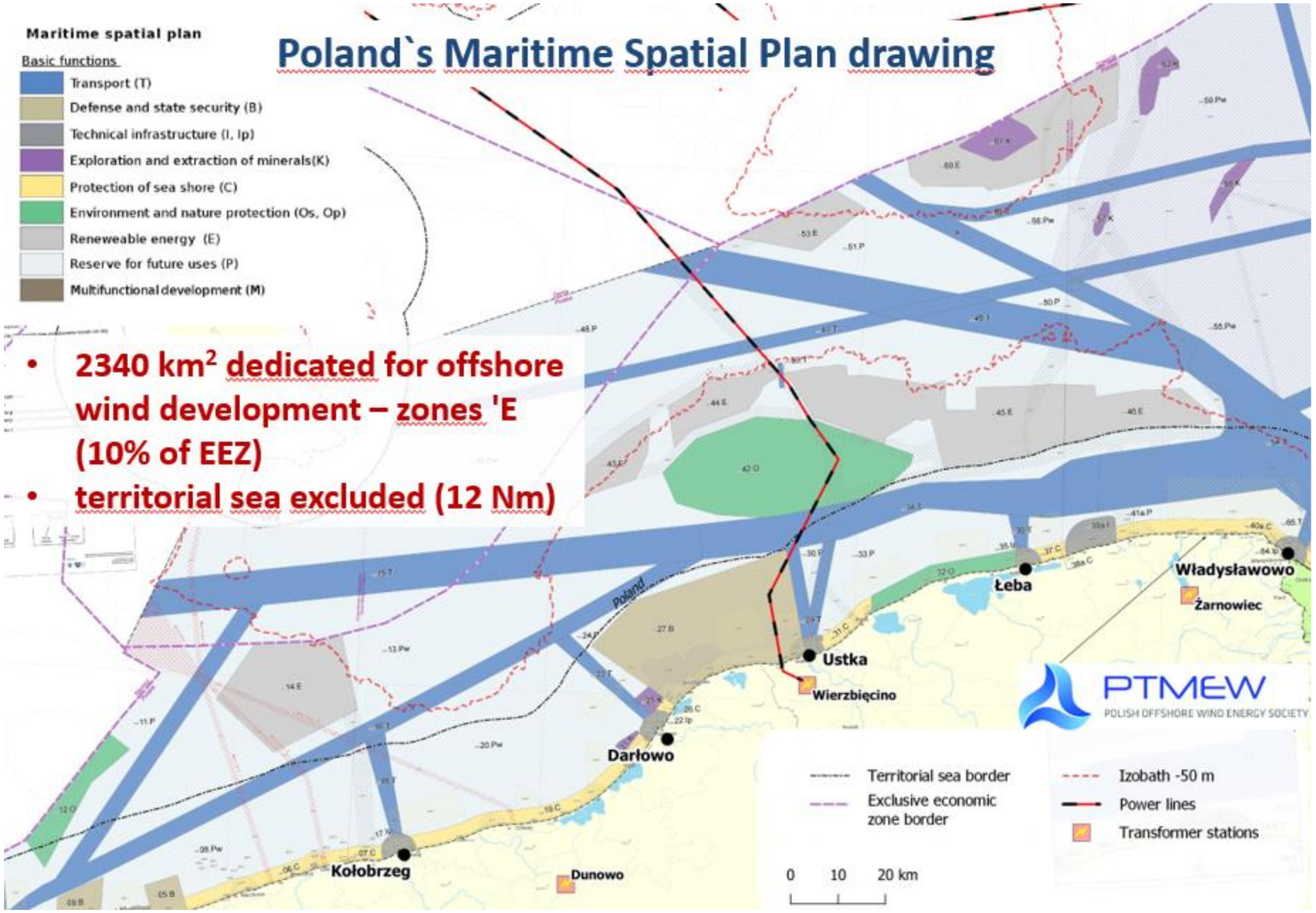
European market per country by 2030

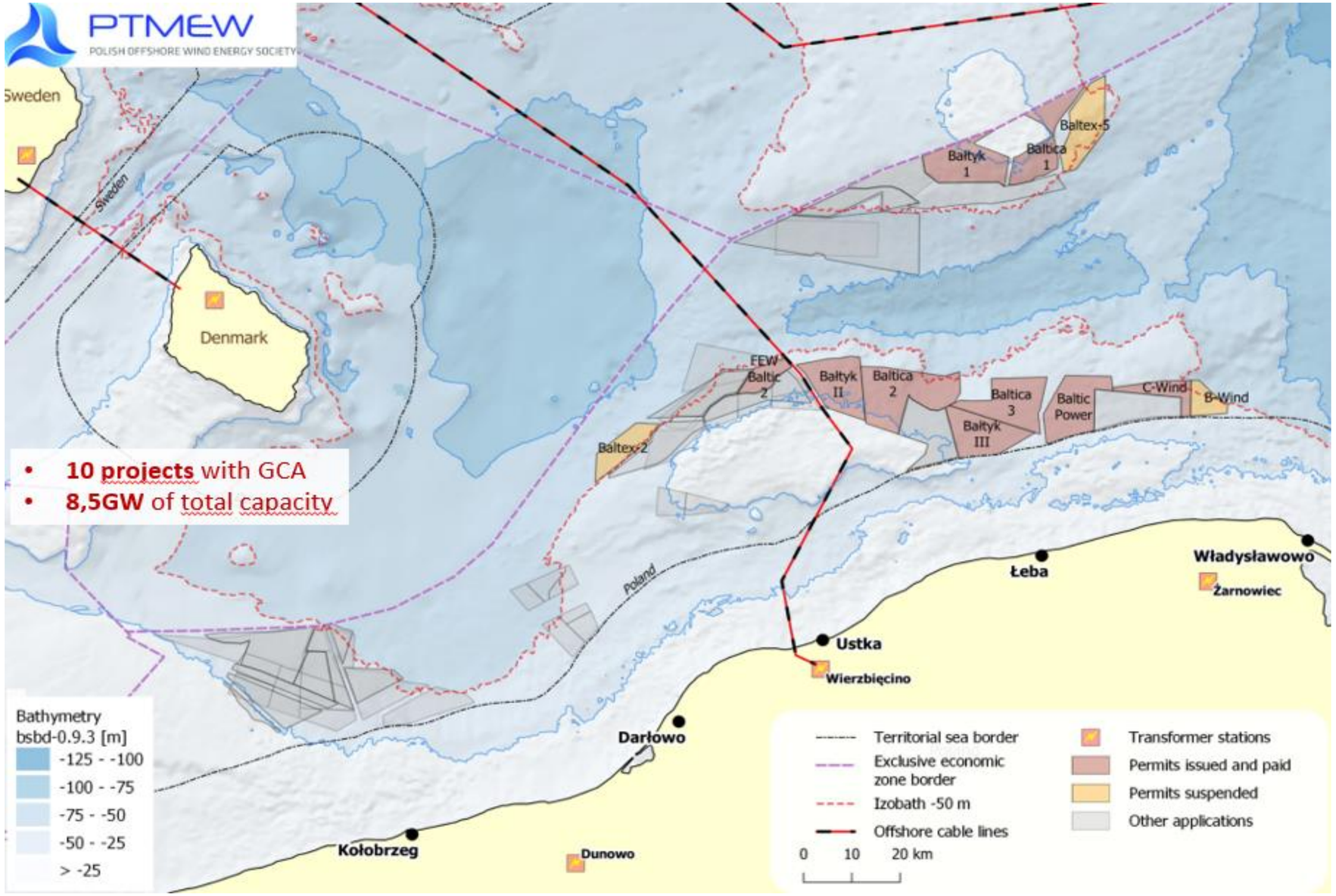


*Other includes countries with a cumulative share <5% of the European capacity in 2030

Offshore wind in Polish Maritime Spatial Planning



Offshore wind location permits in Polish EEZ of the Baltic Sea



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	+	+	+	+/+	-	+	-	200	23	30-50
B-Wind	Ocean Winds	+	+	+	+/+	-	+	-	199	23	30-50

Support scheme for offshore wind sector in Poland*

Under Offshore Wind Act (adopted on 17.12.2020)

Individualy 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

Milestones for Polish OW market in 2020 and 2021

- Offshore Wind Act – final regulations for:
  - support scheme for pipeline of 10,9 GW total capacity
  - integration with transmission system
  - Supply Chain Plan mechanism
  - **adopted 17.12.2020, signed 22.01.2021, in force since 17.02.2021**

- MSP – new areas for offshore wind farm projects, unlock of permitting
  - **in force since May 20221**

- CfD awards for all projects in Phase 1 (until end of June 2021, up to 5,9 GW)

- Sector Deal – trilateral agreement between Government., supply chain and investors for the offshore wind market development in Poland
  - **signed on 15.09.2021 in Warsaw**

- Poland`s Energy Policy till 2040 – offshore wind targets confirmed

Expected market events 2022 in brief

„Round 2" of the location appl. granting – open on 21st Jan. 2022

- Announcements for 9 out of 11 sites available at *https://www.gov.pl/web/infrastruktura/ogloszenia-na-podstawie-art-27c-ustawy-o-obszarach-morskich2*

Ordinances to the Offshore Wind Act – to be done

- Rescue plan and danger fighting
- OWF impact assessment on navigation, state borders and defence
- Technical requirements for power evacuation system devices

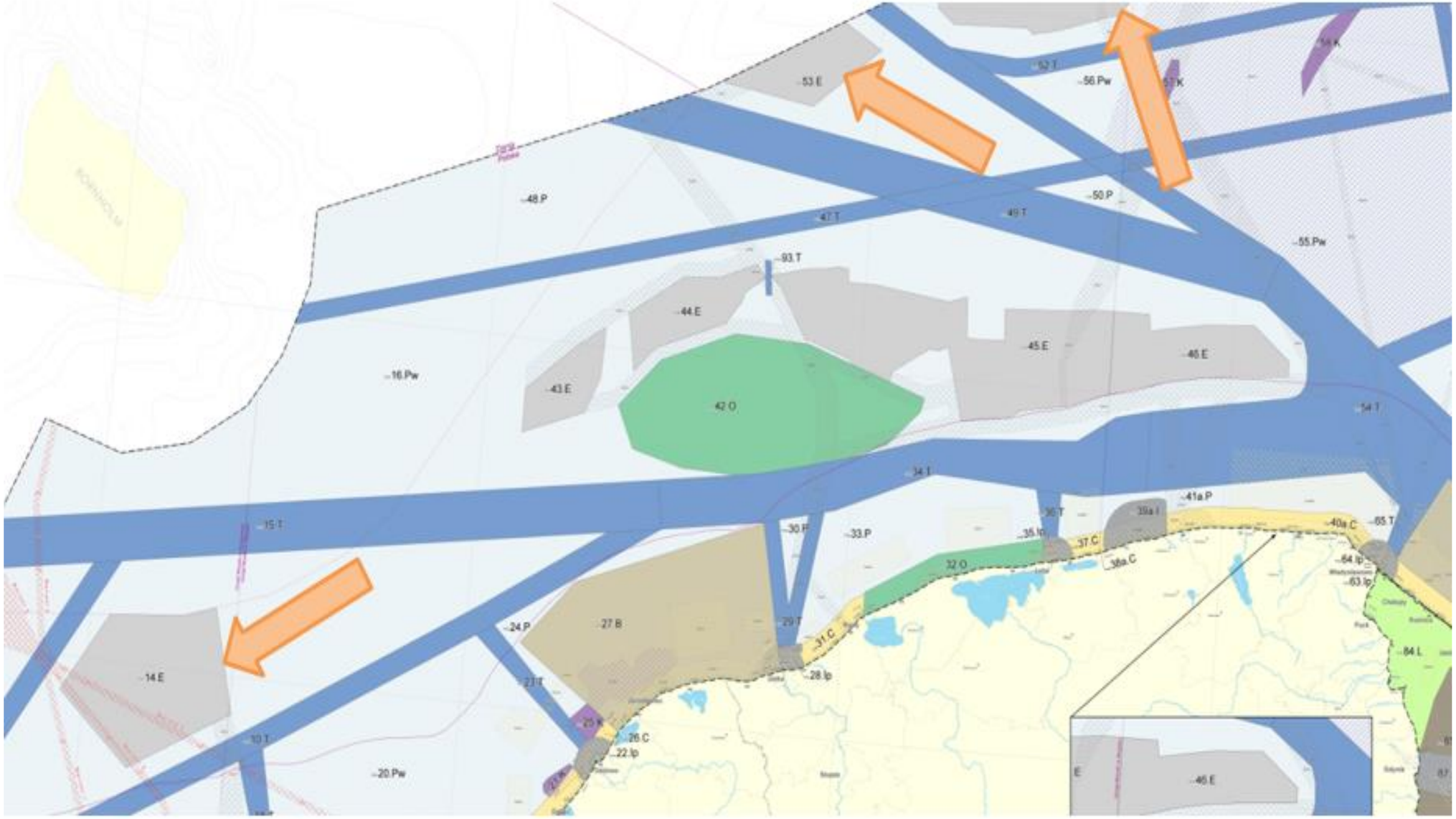
Extended Supply Chain Plans sumbission for phase 1 projects (till Sept.2022)

Maritime Spatial Plan

Areas for new applications

New areas symbols:

- **14E**
- **53E**
- **60E (partially)**

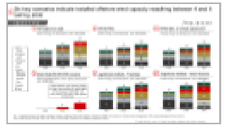


Three scenarios of Polish offshore wind market development dynamics till 2030

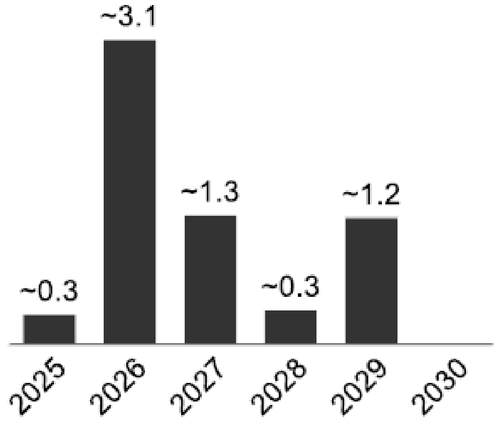
(BAIN & Co. for PTMEW/PSEW)

I Base case

Top-down energy forecast:
2030: ~5GW
2040: ~12GW



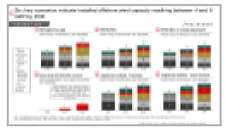
Bottom-up incremental installed capacity to be commissioned (GW, PL Offshore Wind projects)



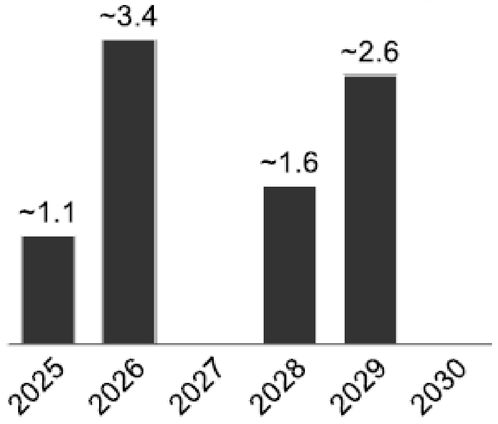
Cumulative cap. (GW)	0.3	3.4	4.7	5.0	6.3	**6.3**

II Optimistic case

Top-down energy forecast:
2030: ~8GW
2040: ~17GW



Bottom-up incremental installed capacity to be commissioned (GW, PL Offshore Wind projects)

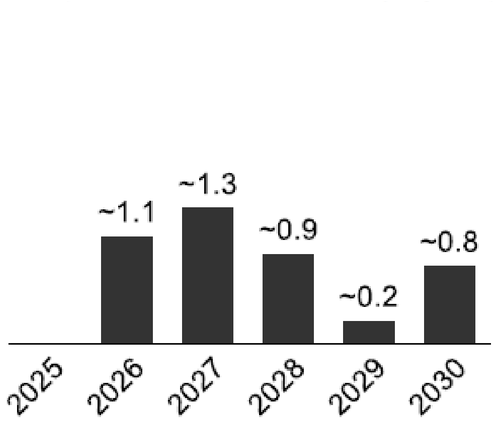


Cumulative cap. (GW)	1.1	4.4	4.4	6.0	8.6	**8.6**

III Pessimistic case

Top-down energy forecast:
2030: ~4GW
2040: ~8GW

Bottom-up incremental installed capacity to be commissioned (GW, PL Offshore Wind projects)



Cumulative cap. (GW)	0.0	1.1	2.4	3.3	3.6	**4.3**

Domestic cumulated demand per category and FTE`s till 2030 in three scenarios

(BAIN & Co. for PTMEW/PSEW)

I Base case

Installed capacity commissioned by 2030 (GW)	6.3
Projected (2020-2030)[2]	
Key cost categories (PLN B)	
Total	**75.8**
Project design	6.1
Turbine	31.9
Foundation and connect.	15.0
Installation	15.8
Operation[4]	7.0
Key material demand (K tonnes)	
Steel	1,886.0
Copper	38.3
Lead	2.2
XLPE insulation	6.8
Polypropylene	3.5
Fiber glass	45.5
Resin	26.4
FTEs[3] (K)	
Total Employment	**55**
Direct Employment	18
Indirect Employment	15
Induced Employment	22

II Optimistic case[1]

Installed capacity commissioned by 2030 (GW)	8.6
Projected (2020-2030)[2]	
Key cost categories (PLN B)	
Total	**99.9**
Project design	7.5
Turbine	41.6
Foundation and connect.	21.3
Installation	21.1
Operation[4]	8.4
Key material demand (K tonnes)	
Steel	2,598.8
Copper	52.4
Lead	2.9
XLPE insulation	9.2
Polypropylene	4.8
Fiber glass	59.4
Resin	34.5
FTEs[3] (K)	
Total Employment	**63**
Direct Employment	21
Indirect Employment	17
Induced Employment	25

III Pessimistic case

Installed capacity commissioned by 2030 (GW)	4.3
Projected (2020-2030)[2]	
Key cost categories (PLN B)	
Total	**50.7**
Project design	3.9
Turbine	21.8
Foundation and connect.	10.4
Installation	10.5
Operation[4]	4.1
Key material demand (K tonnes)	
Steel	1,314.5
Copper	26.2
Lead	1.5
XLPE insulation	4.7
Polypropylene	2.4
Fiber glass	31.0
Resin	18.0
FTEs[3] (K)	
Total Employment	**38**
Direct Employment	13
Indirect Employment	10
Induced Employment	15

Note: 1) Assumes full realization of announced nameplate capacity by announced timeline 2) Based on assumed realizations within given time horizon 3) FTE requirements based on UK benchmarks and polish labor productivity 4) Includes cost category 'Other' (insurance, project mgmt. and spent contingency)

Local content promotion system in Poland

‚Offshore Wind Act', chapter 6 Supply Chain Plan

SCP submittion mechanism steps:

1. Initial SCP to be submitted as attachment to support scheme application to President of ERO
2. Within 14 days President of ERO forwards the SCP to the Minister of Climate and Environment and the Minister of State Assets
3. Initial SCP published by President of ERO in Public Information Bulletin
4. Detailed SCP to be delivered to ERO (URE) within 18 months since date of the application submission for the projects granted CfD

➢ SCP to be prepared after documented technical dialogue with potential suppliers

Local content promotion system in Poland (continuation)

Offshore Wind Act, chapter 6 Supply Chain Plan

SCP reporting mechanism steps:

1. First report within 6 months since the positive decision of President of ERO
2. Next reports annualy since the day of submission of the first report, till the date of obtaining the concession for energy generation
3. Another report within 6 months since the day of obtaining the concession
4. During first 6 years of the OWF operation period: SCP report every 2 years
5. Remaining period of the OWF operation: SCP report every 5 years

- SCP reports to be prepared on the form delivered by minister of climate
- SCP reports published in Public Information Bulletin of ERO

Local content promotion system in Poland (continuation)

Non-legal framework

Polish Offshore Wind Sector Deal

- Trilateral deal between Govt., developers and supply chain representation
- Signed on 15.09.2021 in Warsaw
- Evaluation system under construction
- Execution system under construction (funding tools)
- Areas to be 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

Polish offshore wind industry

General characteristics:

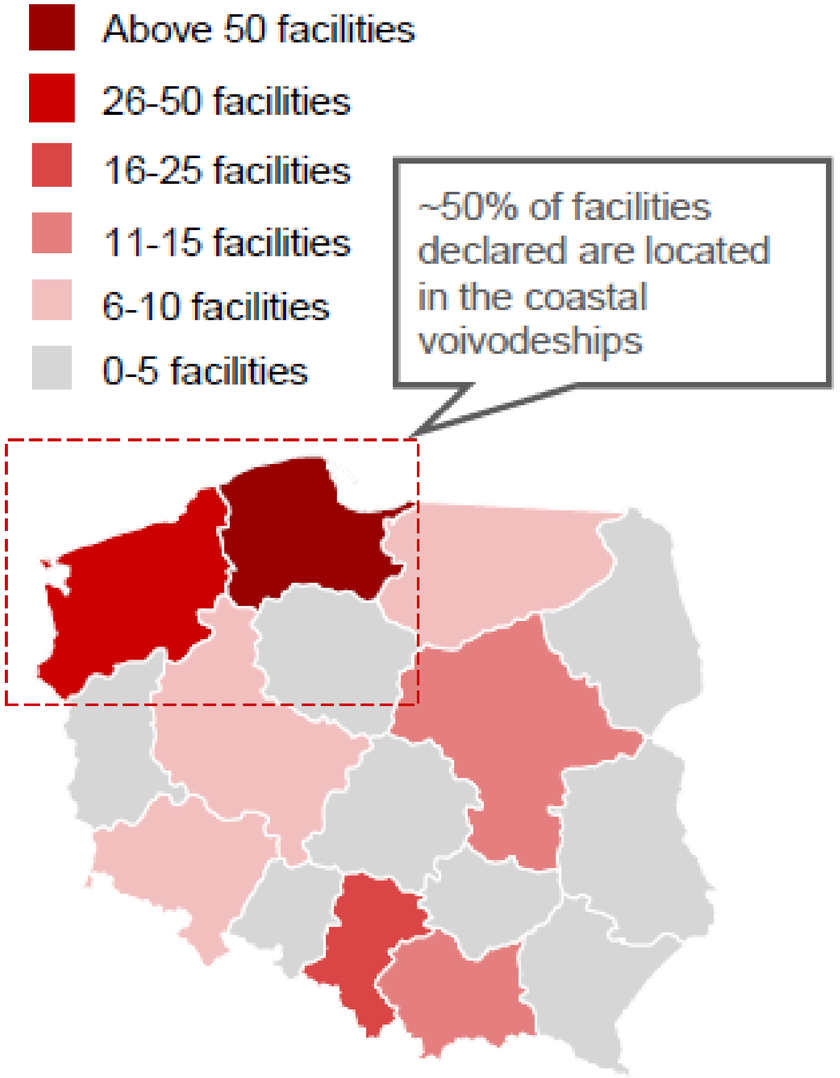
- stronger coastal regions
- shipyard-based production
- existing experience in OWF projects across the Europe
- good quality of supplies
- high potential of innovation
- good experience in pre-construction services and investigations
- over 100 identified entities

Strong sides:

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

Location overview

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



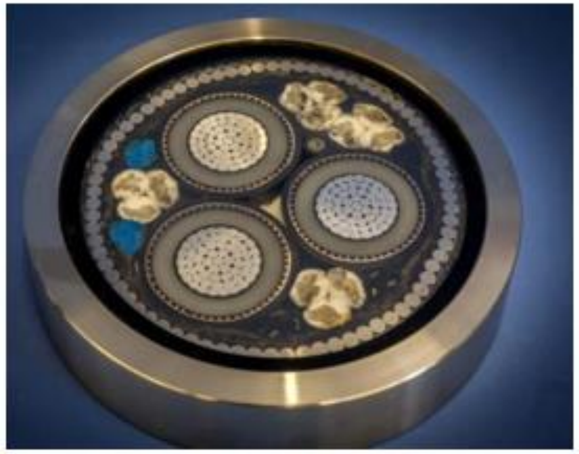
Polish Offshore Wind Industry (continuation)

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

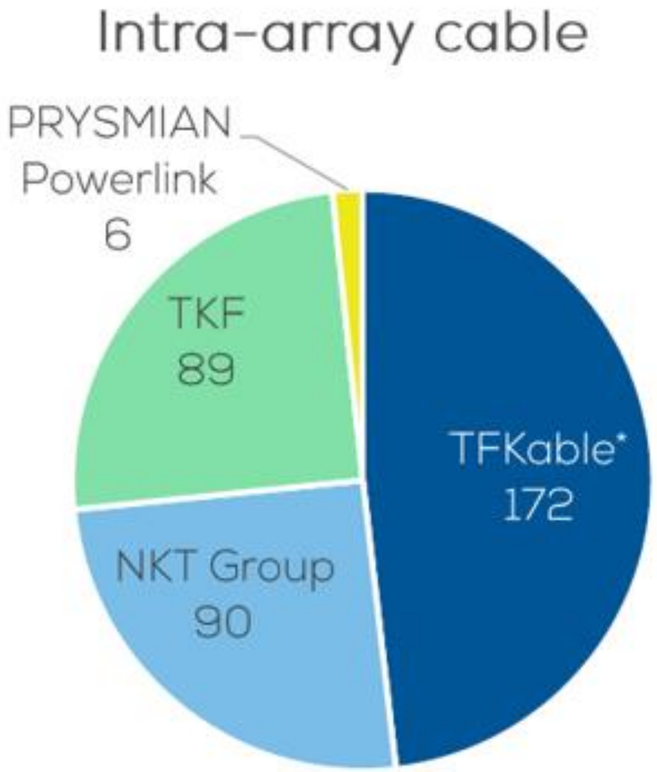
Polish Offshore Wind Industry - steel structures, cathodic protection

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

Polish Offshore Wind Industry - shipbuilding capacity

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

Polish Offshore Wind Industry - MV and HV subsea cables



Tele-Fonika Kable / JDR

Welcome to cooperation
with Polish offshore wind industry

Polish Offshore Wind Energy Society
ul. Tadeusza Wendy 15; 81-341 Gdynia
phone: (+48) 58 342 25 69
e-mail: ptmew@ptmew.pl
www.ptmew.pl