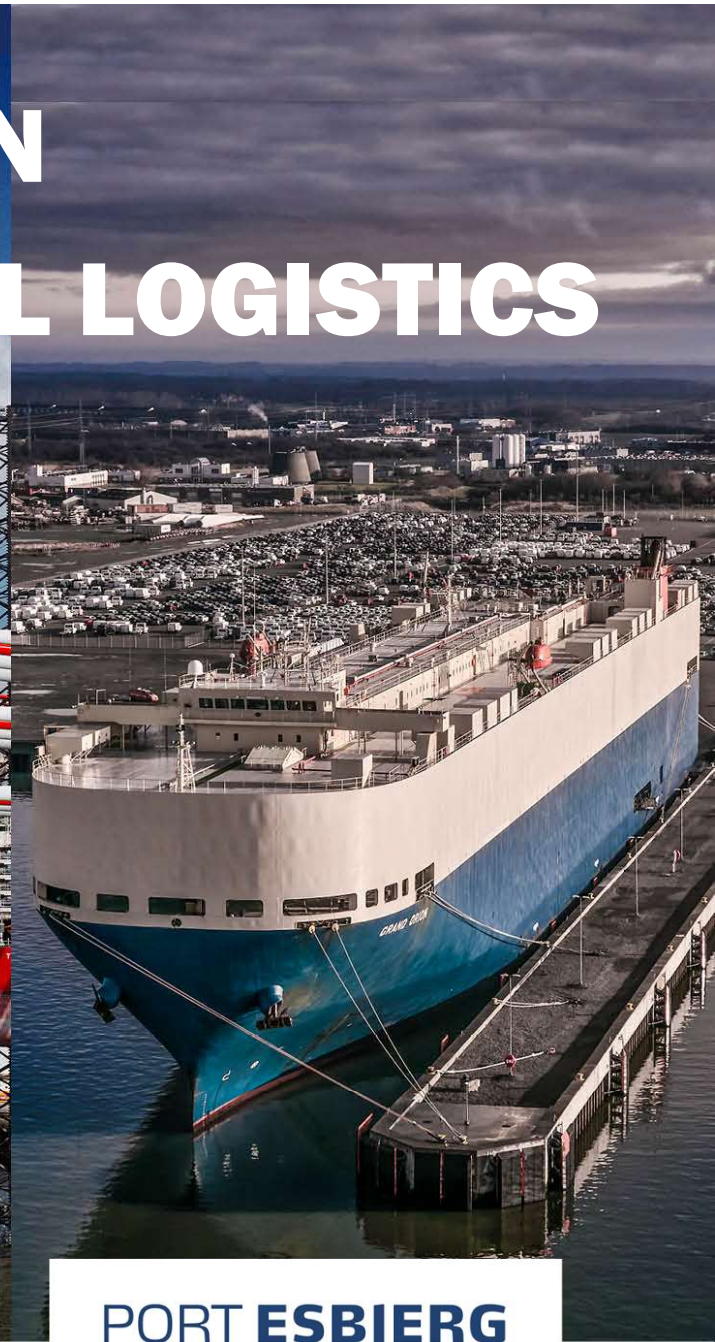


EXCELLENCE IN ENERGY AND INTERMODAL LOGISTICS



PORT **ESBJERG**
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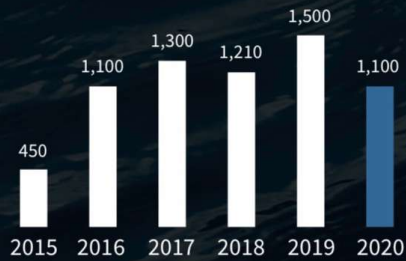
PORT **ESBJERG**





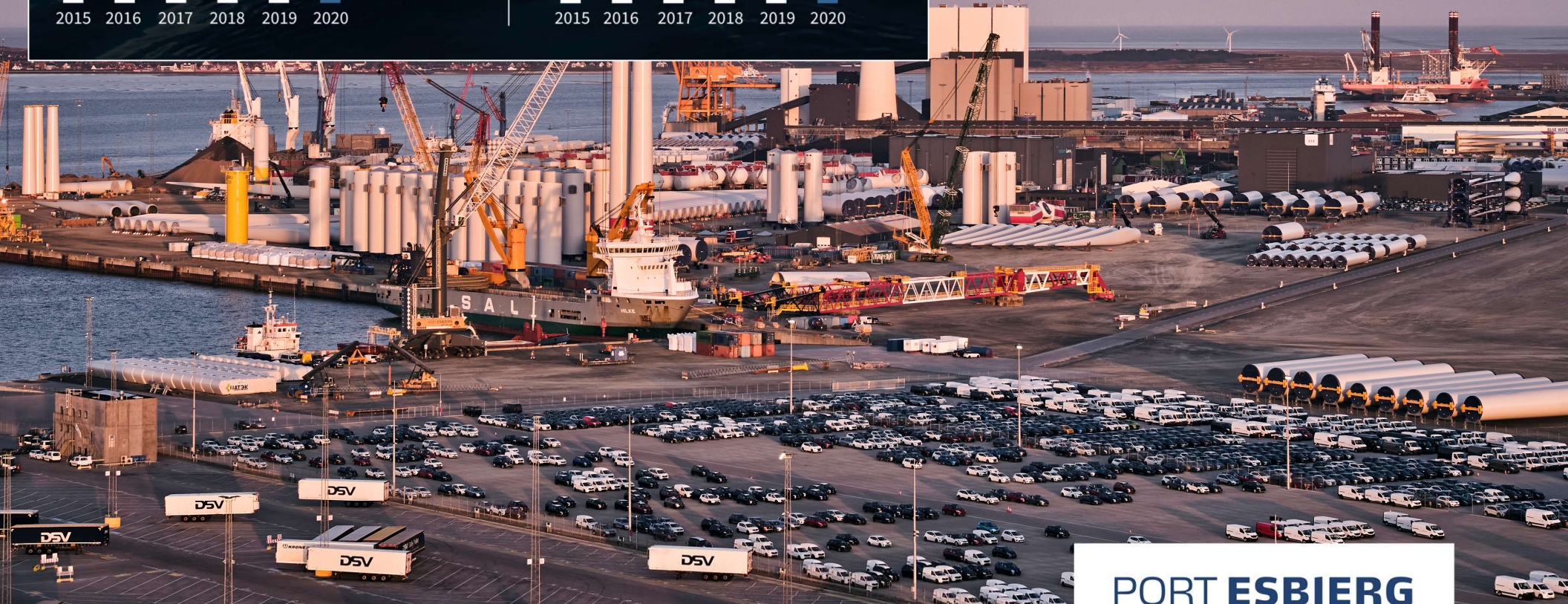
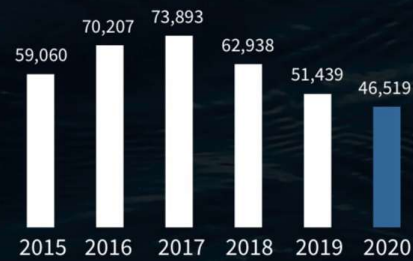
## OFFSHORE WIND SHIPPED

 **1,100** MW



## CARS

 **46,519**



**PORT ESBJERG**  




# CARGO TYPES



**RoRo Cargo**



**Trailers**



**Project Cargo**



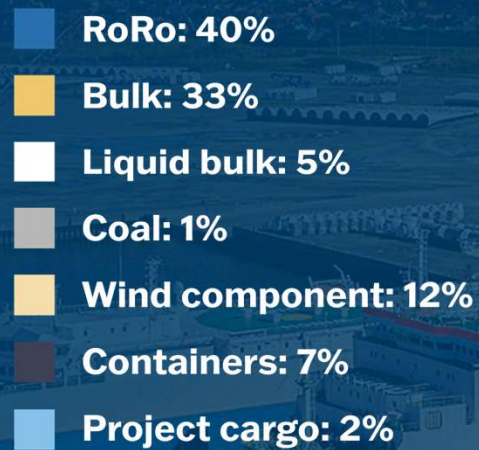
**Automotive**



**Containers**

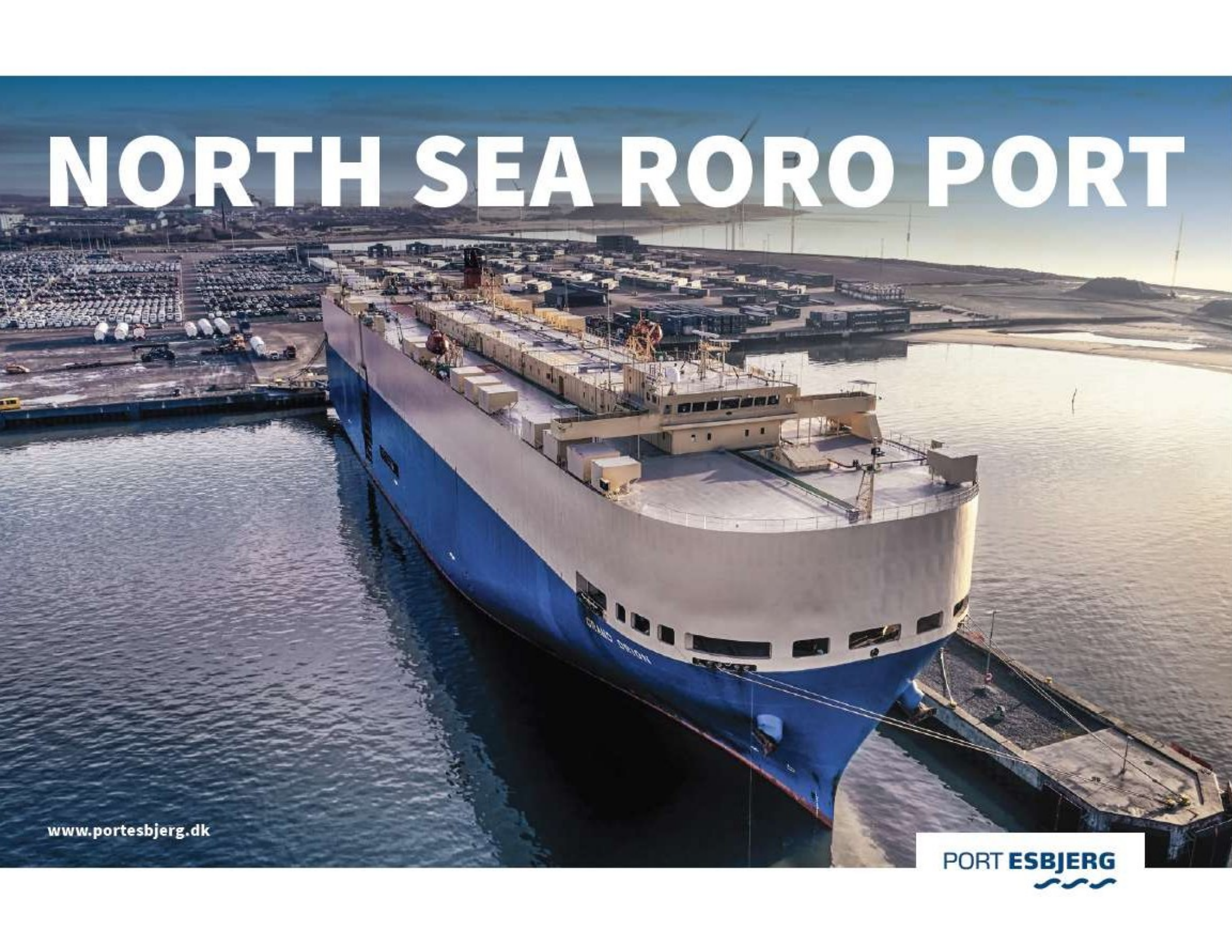


**Cargo by type**





# NORTH SEA RORO PORT

An aerial photograph of a large blue and white Roll-on/Roll-off (RORO) ship docked at a port. The ship is positioned diagonally, with its bow towards the bottom right. The deck is filled with various cargo, including yellow and white containers. In the background, a vast container yard is visible, filled with numerous stacked containers. The port is situated on a body of water, and the sky is clear and blue.

[www.portesbjerg.dk](http://www.portesbjerg.dk)

PORT **ESBJERG**  
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RORO TERMINALS – INTERMODAL TERMINALS



INTERMODAL COMBI TERMINAL

Approx. 100,000 m² of terminal area with paved surface and equipped with lighting

- Access to the renovated railways and bridges between Esbjerg train station and the combi terminal
- 2 x 835 metres of parallel tracks for loading/offloading
- 1 x 100 metres of side track
- ISPS fencing around the terminal and entrance gate

MULTIMODAL TRANSPORT CENTRE

Liner service



Flight to/from
Esbjerg



International
airport



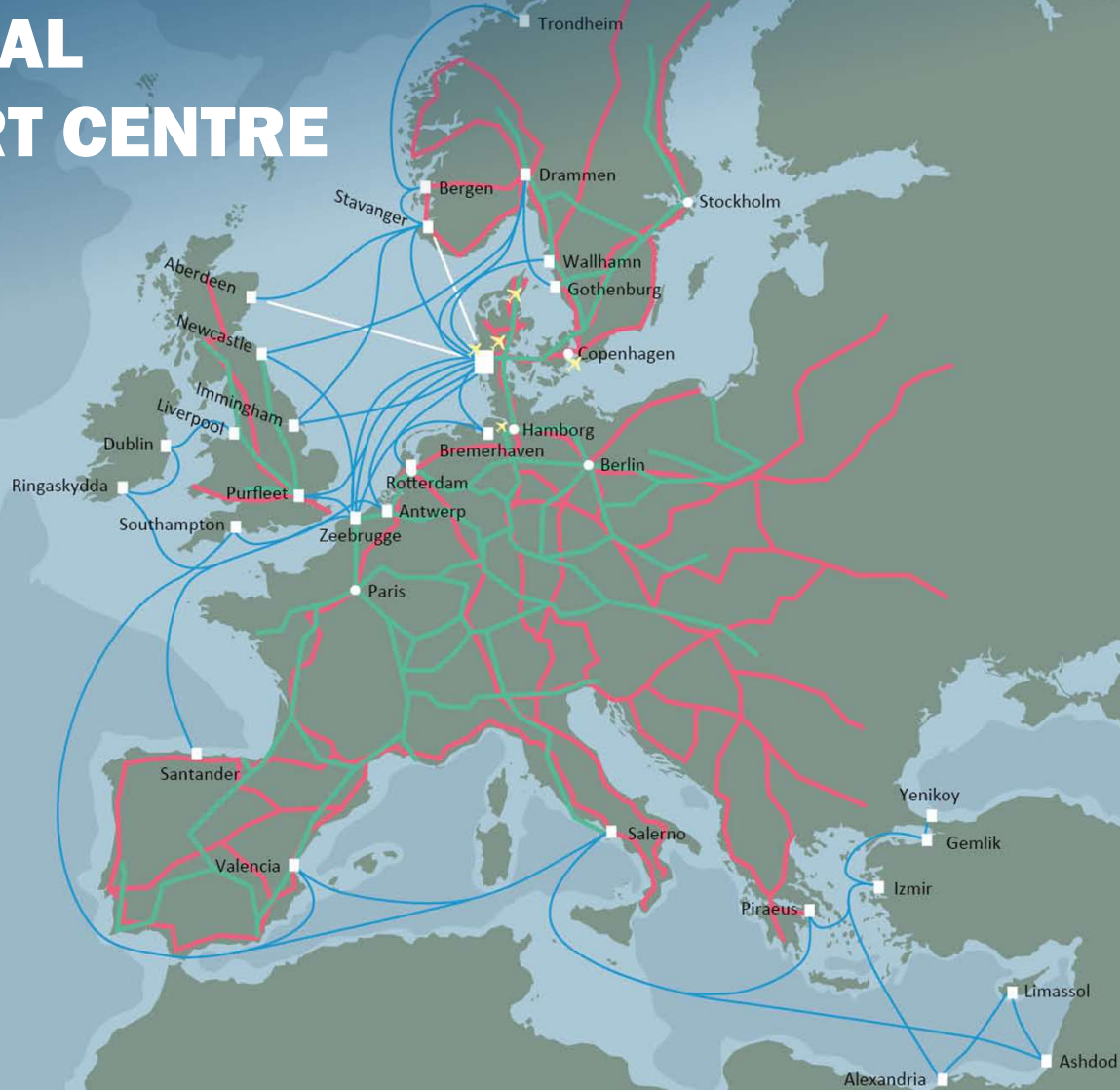
Motorway



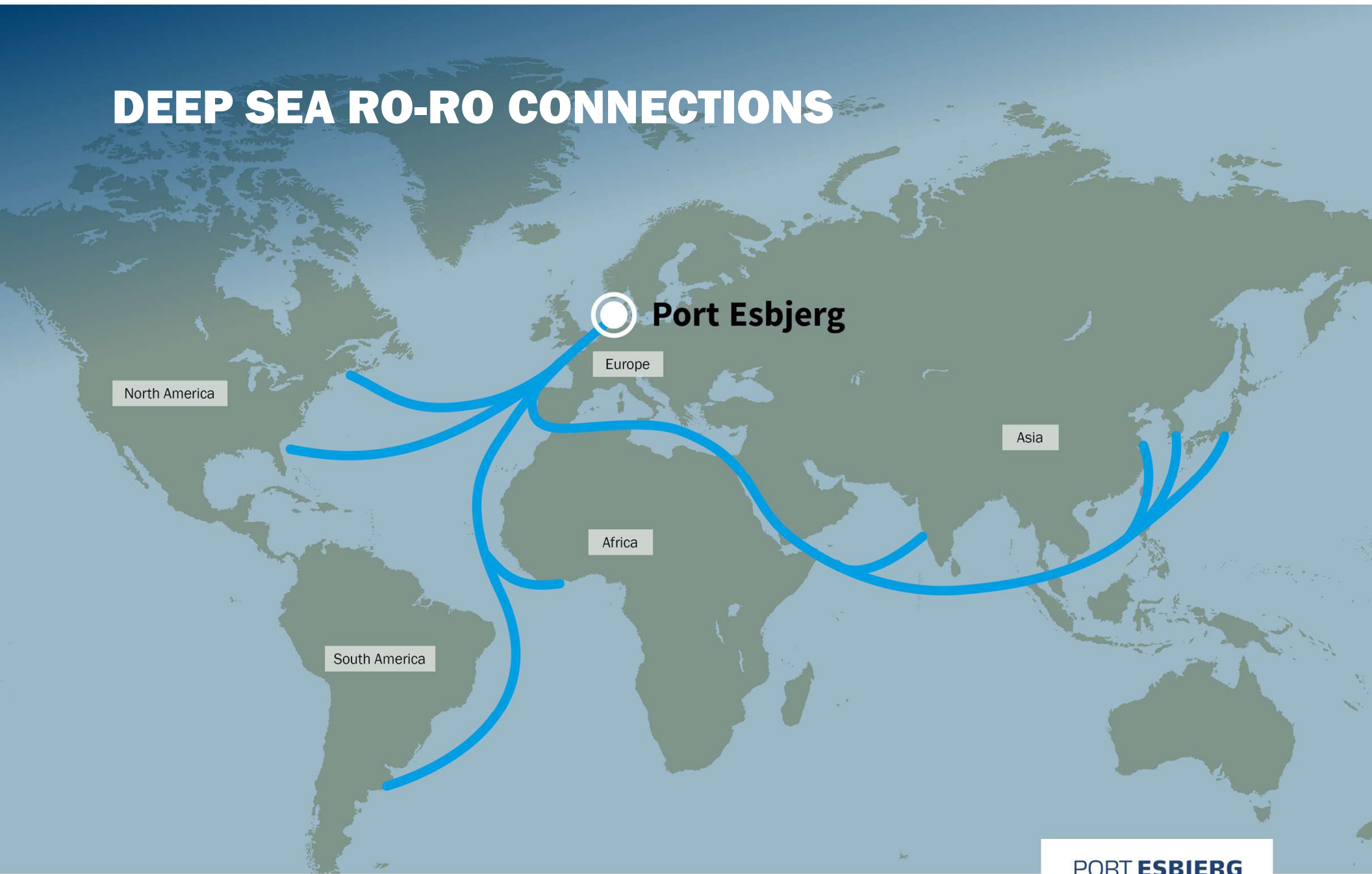
Railway



200 km



DEEP SEA RO-RO CONNECTIONS





PORT **ESBJERG**
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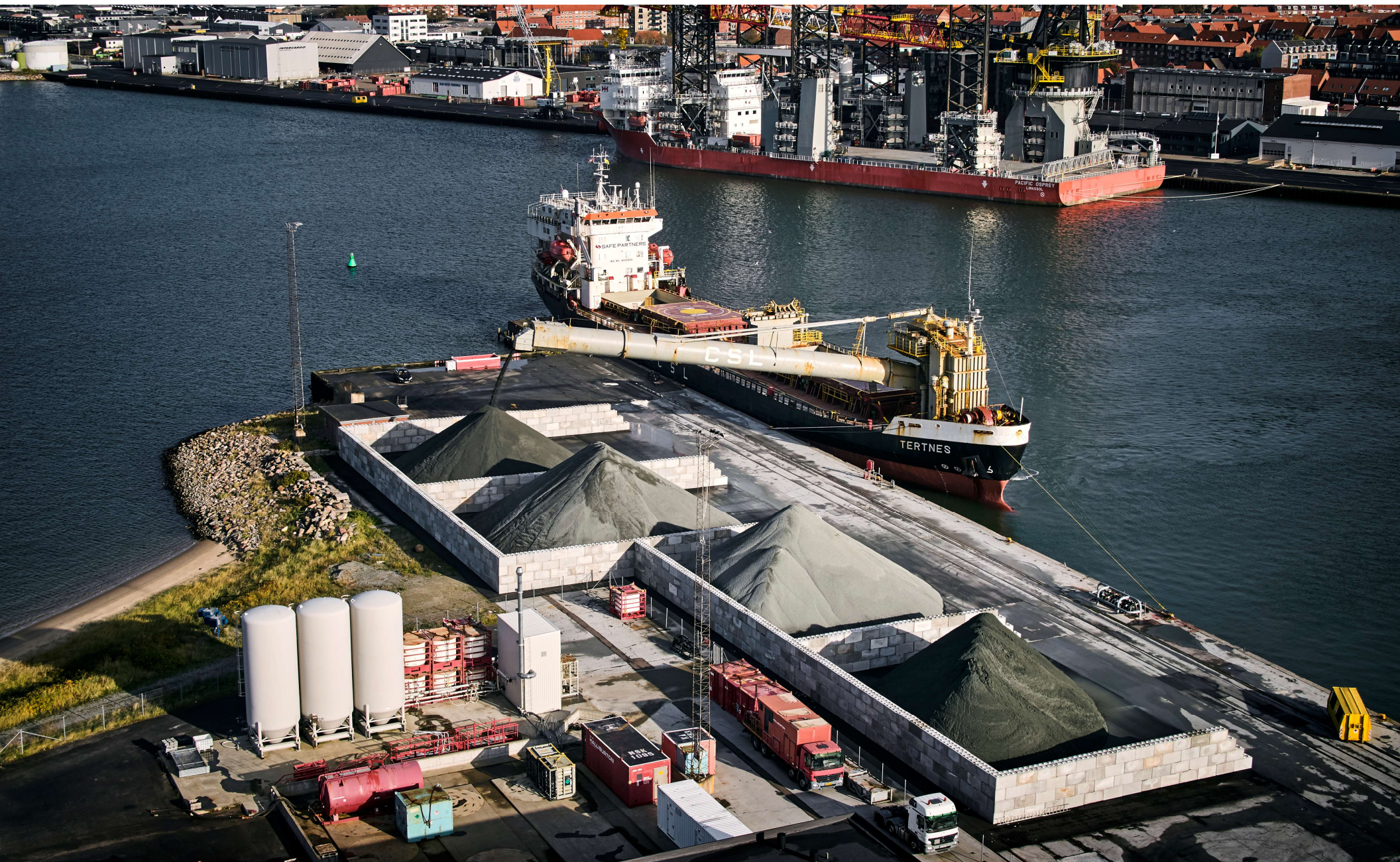




# NORTH SEA OFFSHORE HUB

[www.portesbjerg.dk](http://www.portesbjerg.dk)

PORT **ESBJERG**  
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PORT HISTORY

1873 - 2007

Fishing port



Uniquely positioned in the North Sea for fishing industry and transport to the UK

1972 →

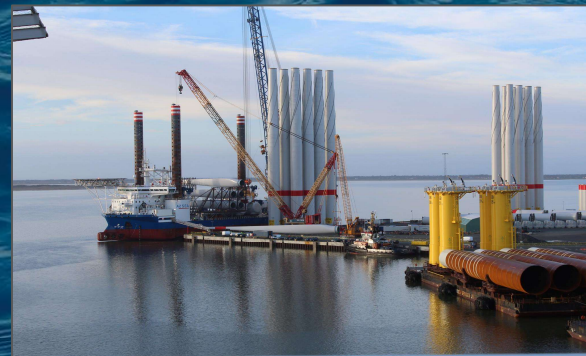
Service hub for Danish oil & gas production



Uniquely positioned for oil/gas exploration and production in the Danish North Sea sector

2000 →

Installation/service hub for North Sea offshore wind farms

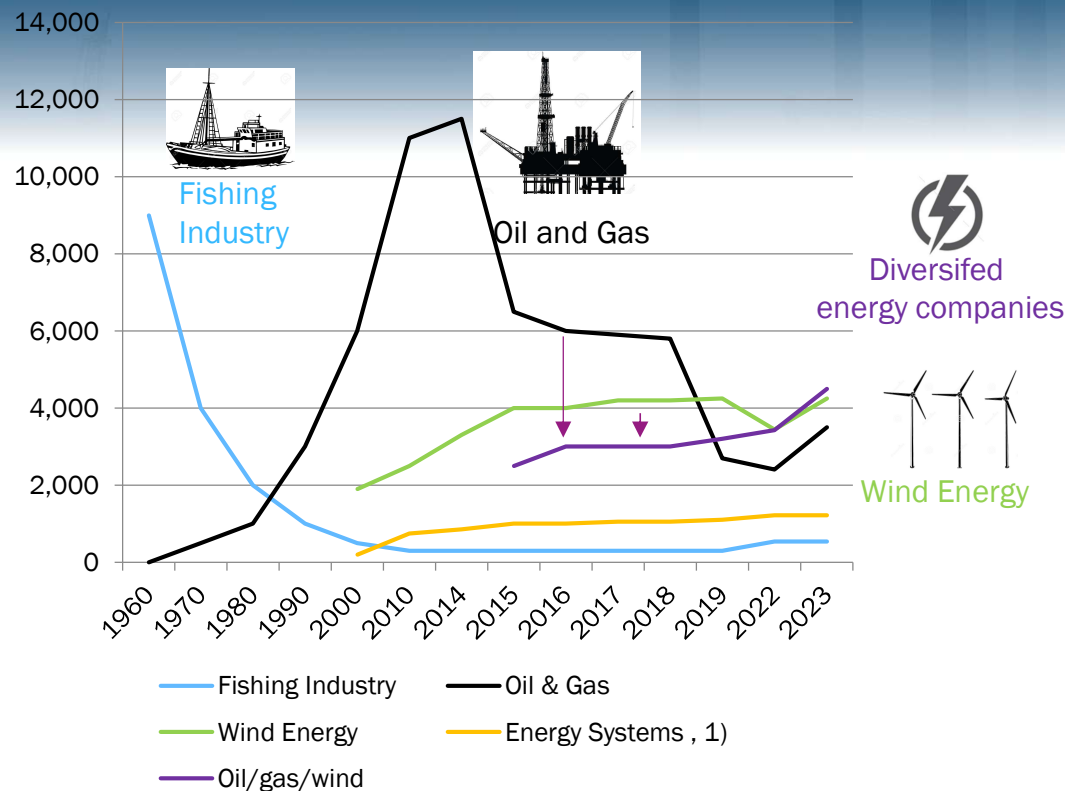


Uniquely positioned for North Sea wind farms and for wind turbine production

1868 → : Import/export - Intermodal Logistics

THE TRANSFORMATION - FROM FISHING TO ENERGY

NUMBER OF JOBS IN ESBJERG



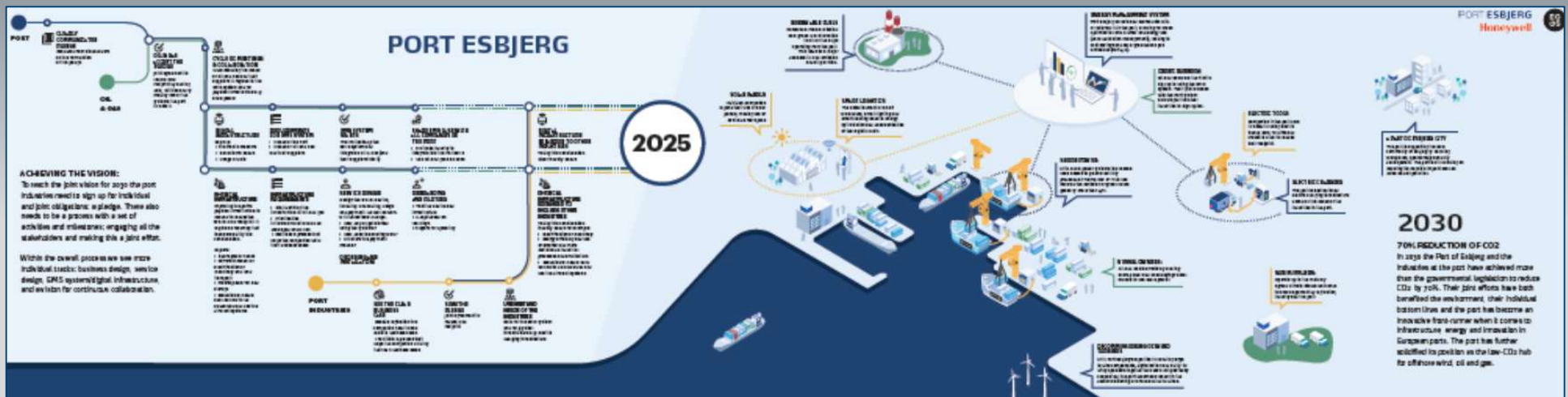
Jobs in the Esbjerg area:

Oil and gas	2,400 jobs
Wind energy	3,500 jobs
Oil/gas/wind	3,400 jobs
Energy systems	1,225 jobs

There are approx. 60,000 jobs within the municipality. 25 % of all jobs in the municipality are energy-related.

There are 8.000-10,000 jobs within the Port area.

WIND ENERGY – SHORE POWER – FUEL CELLS
POWER2X – EXCESS HEAT – CITY HEATING -
ALTERNATIVE VESSEL FUELS - E-VESSELS – GREEN
BUNKERING - E-CARS - BIOMASS - HEAT PUMPS –
SOLAR POWER – LNG – HYDROGEN



1 GW



Σ

9,451

Full Time Equivalent (FTE)

10,000

9,000

8,000

7,000

6,000

5,000

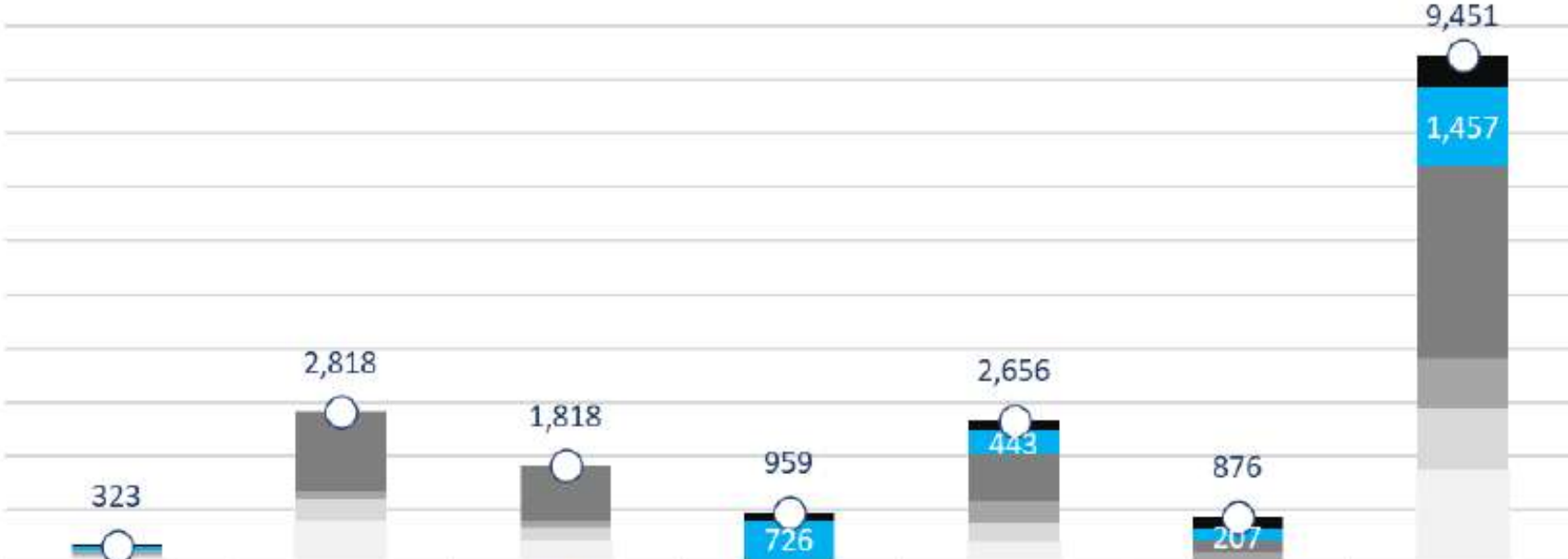
4,000

3,000

2,000

1,000

0



	P1 - Development	P2A - Wind turbines	P2B - Balance of plant	P3 - Installation	P4 - O&M	P5 - Decommissioning	Total
■ Operators	7	0	0	155	177	248	587
■ Ship crews	82	0	0	726	443	207	1,457
■ Workers + technicians	6	1,479	1,005	2	885	216	3,593
■ Engineers	76	134	143	37	413	130	934
■ Outdoor experts	64	402	244	20	333	75	1,137
■ Indoor experts	88	803	427	20	405	0	1,743
○ Total	323	2,818	1,818	959	2,656	876	9,451

4,959 / 52 %

4,492 / 48 %



PORT **ESBJERG**
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# GLOBAL OFFSHORE WIND AMBITIONS

**North America**

**2035**

**43,3 GW**

**Europe**

**2035**

**174,2 GW**

**Asia**

**2035**

**133,7 GW**

Fully commissioned in 2023:

64.0 GW

Announced towards 2035:

489.9 GW

CAGR

18.5 %



# TRACK RECORD AND POSITION IN OFFSHORE WIND



## PORT ESBJERG PROJECT INVOLVEMENT

- 62 PROJECTS
- 27.4 GW
- +4,424 OFFSHORE TURBINES

\*INCL. PIPELINE



## PORT ESBJERG CAPACITY

- 3 INSTALLATION SITES
- 4,5 GW PER YEAR
- FULL SUPPLY CHAIN HUB



## GLOBAL PIVOTAL LOGISTICAL HUB

- NACELLES, BLADES, TOWERS
- SEMI COMPONENTS
- EUROPEAN DISTRIBUTION

MW Offshore wind  
Port Esbjerg involvement/shipped from

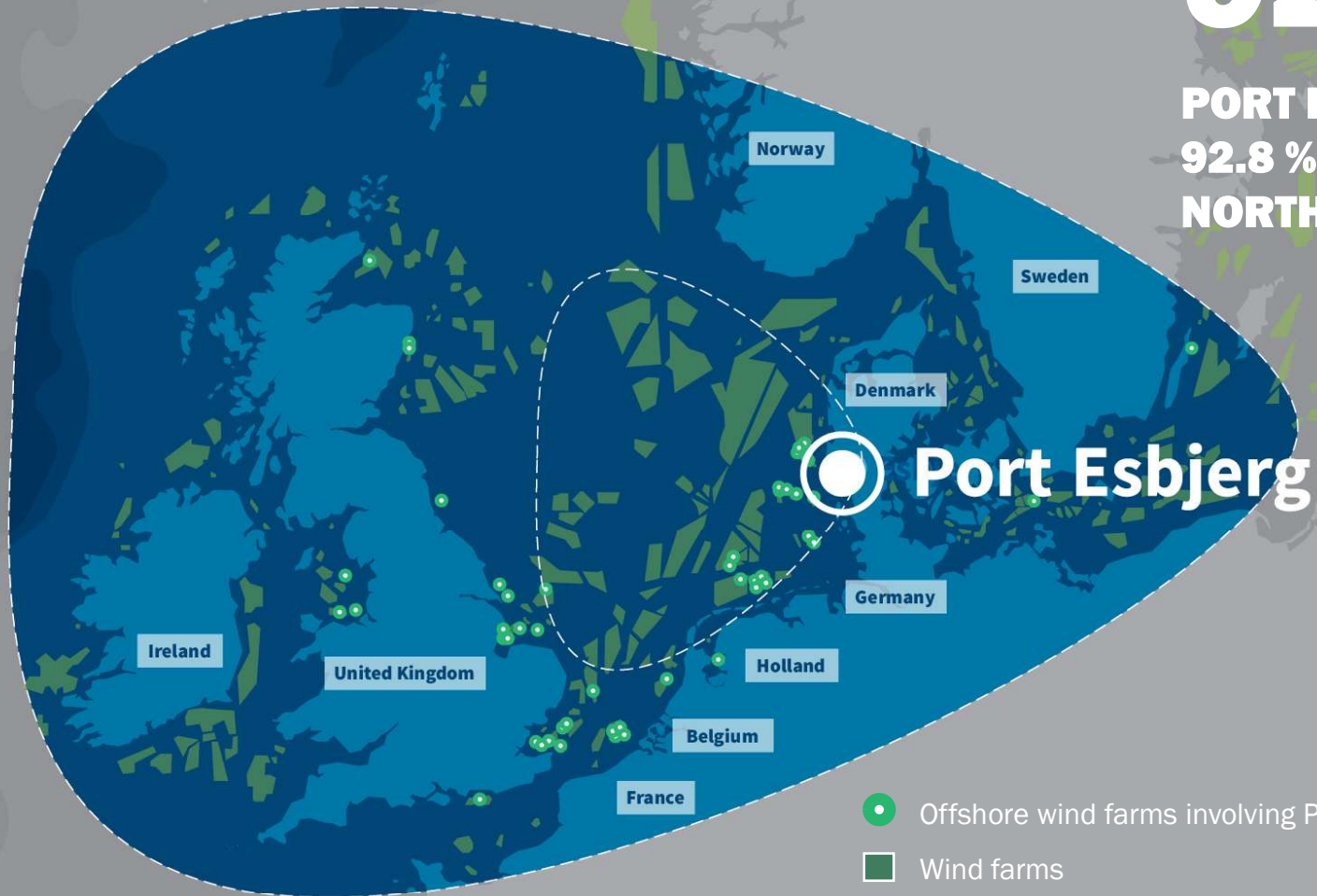




**MARKET REACH 161.7 GW**

**92.8 %**

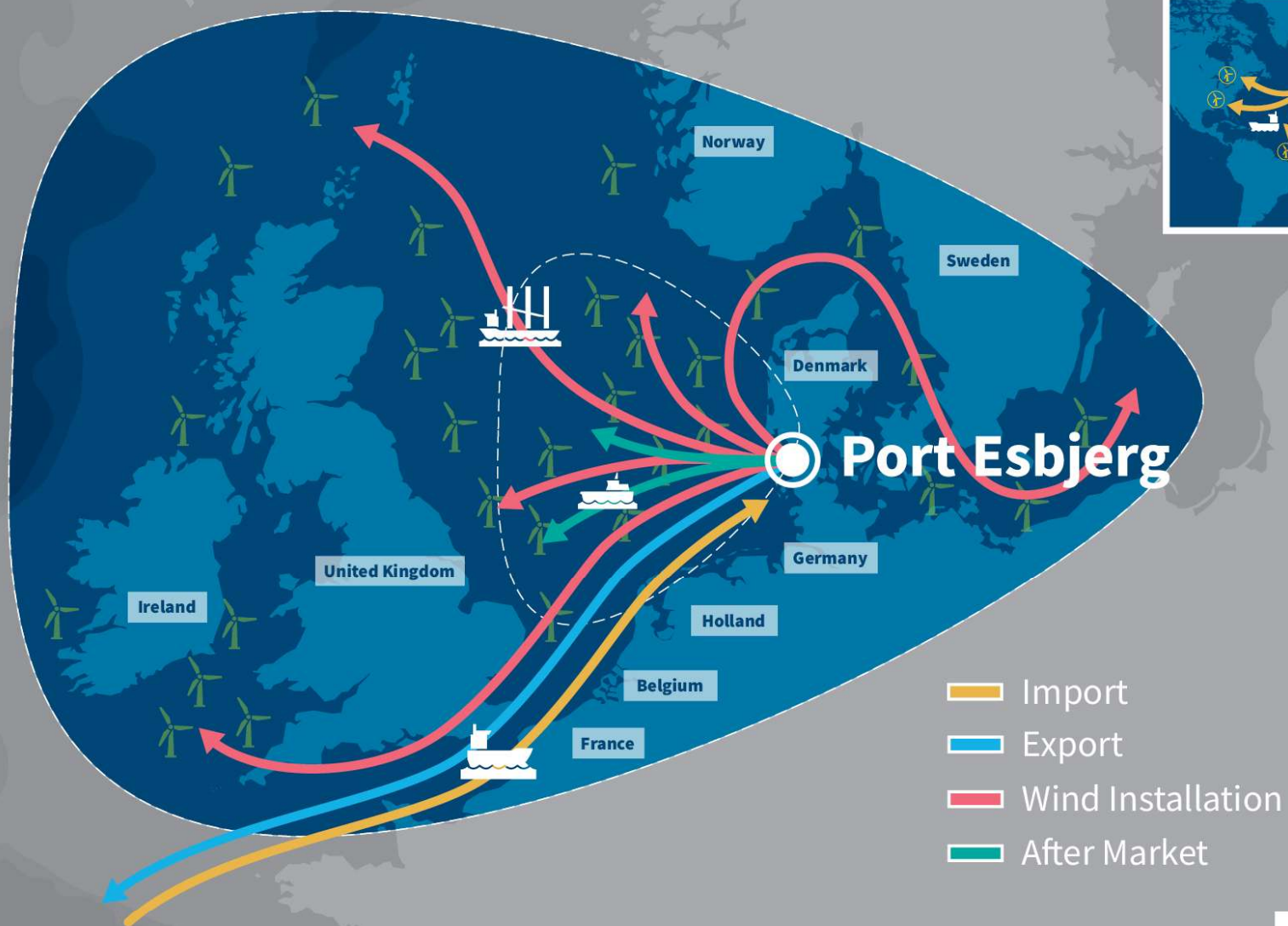
**PORT ESBJERG COVERS  
92.8 % OF THE TOTAL  
NORTH EUROPEAN MARKET**



- Offshore wind farms involving Port Esbjerg
- Wind farms

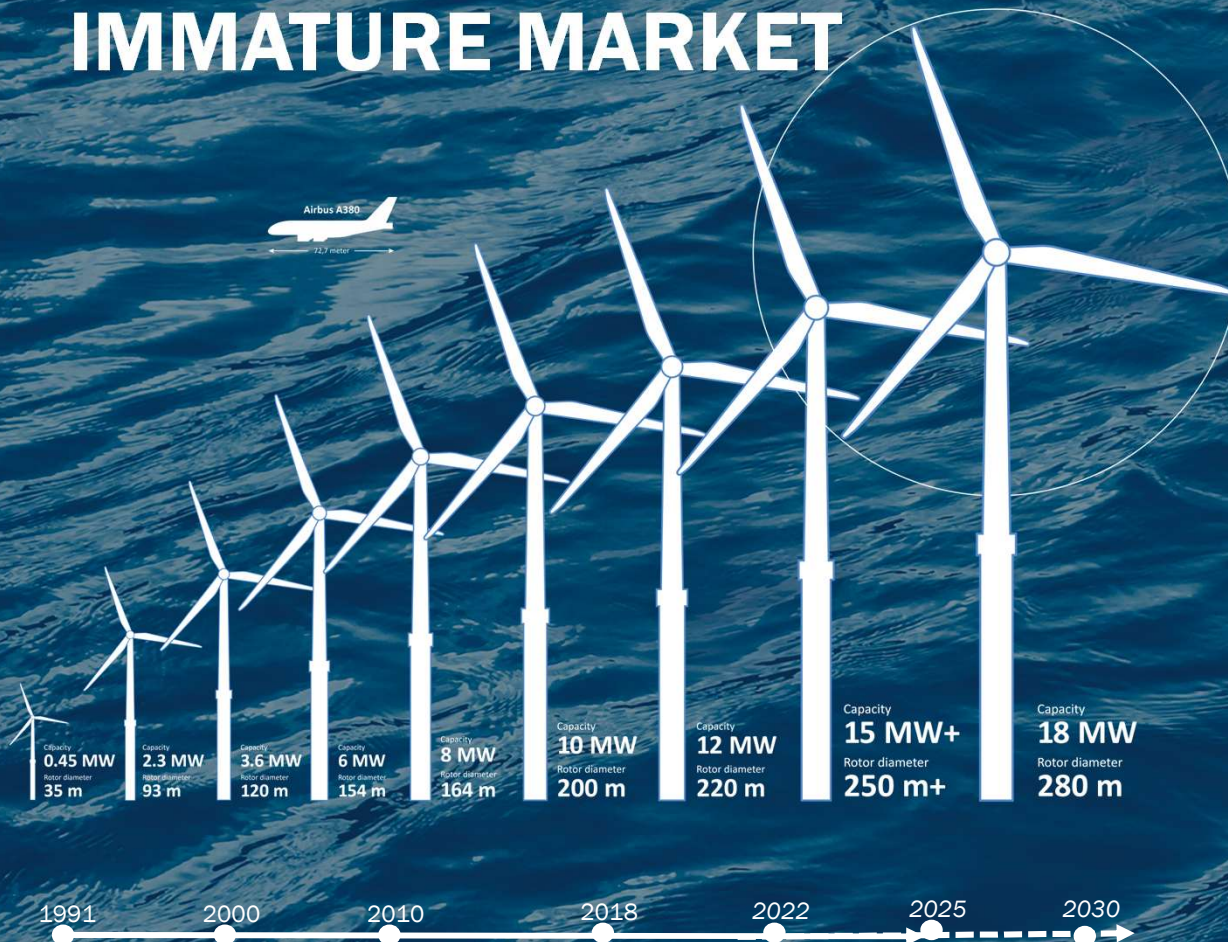


# PORT ESBJERG HUB





# IMMATURE MARKET



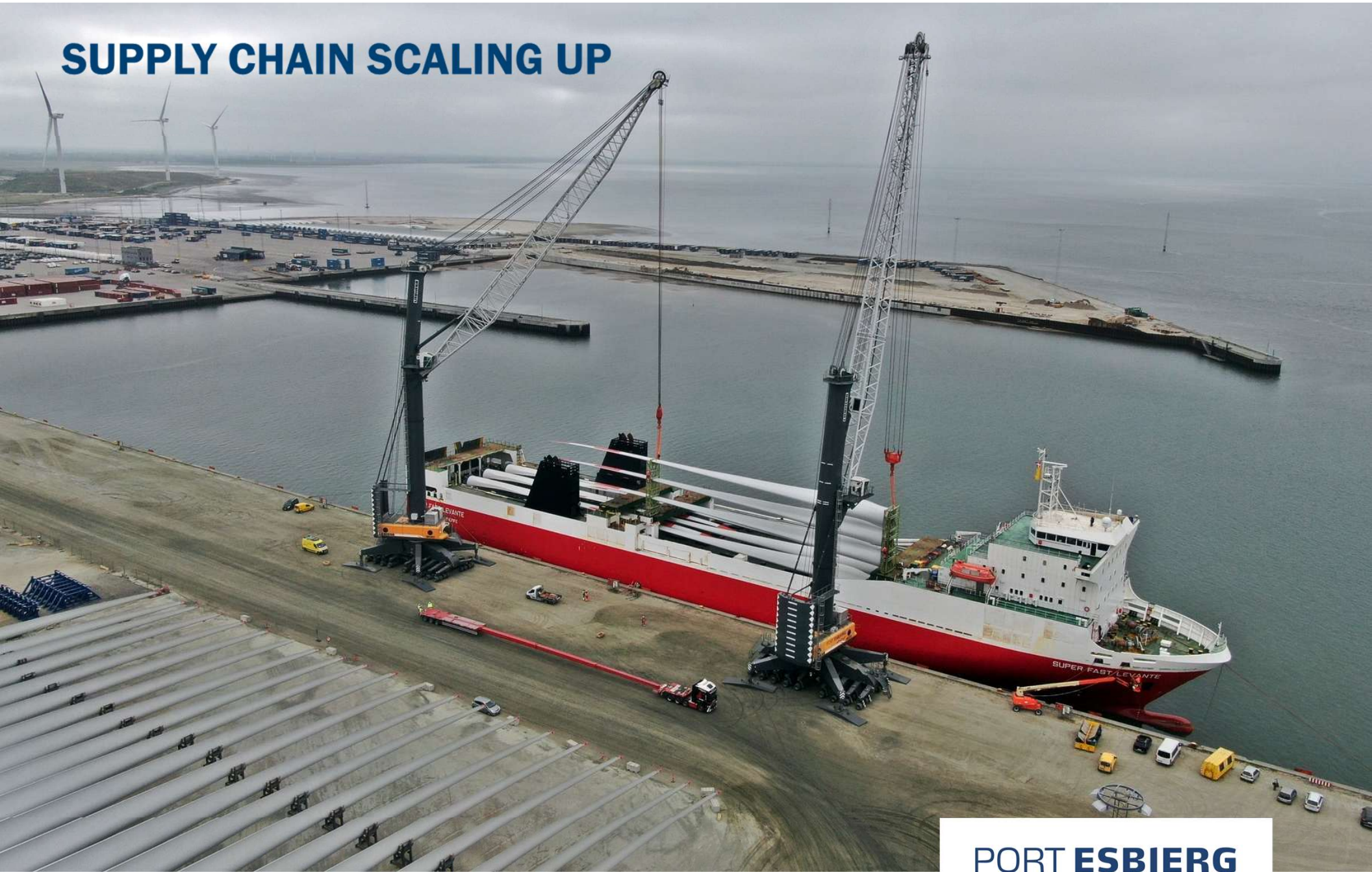


# SUPPLY CHAIN SCALING UP





# SUPPLY CHAIN SCALING UP



PORT **ESBJERG**  
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PORT **ESBJERG**
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# PREASSEMBLY / PROJECT INSTALLATION





# HINTERLAND STORAGE









# PORT EXPANSION – 750,000 M2





# Digital twin:

- Effect in silo: 20%-30%
- Effect in collaboration: 50%-70%

| PROJECT                    |       |                                                  |
|----------------------------|-------|--------------------------------------------------|
|                            | INPUT | DESCRIPTION / (EXAMPLE)                          |
| Project Size               |       | How many MW/OSW in the Planned Project? / (1 GW) |
| Turbine Capacity           |       |                                                  |
| Storage Quantity           |       |                                                  |
| Installation Method        |       |                                                  |
| Installation Frequency     |       |                                                  |
| Sets Per Install Location  |       |                                                  |
| Installation Turntime      |       |                                                  |
| Loadout Time               |       |                                                  |
| Timeline                   |       |                                                  |
| Terminal Load-up Site Date |       |                                                  |
| Installation Start Date    |       |                                                  |
| Installation Season        |       |                                                  |

| PREASSEMBLY AREA         |       |                                                                                                                                                                                                                                            |
|--------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | INPUT | DESCRIPTION / (EXAMPLE)                                                                                                                                                                                                                    |
| Load-up Timing           |       | When are the components moved from uplands storage to the preassembly area? / (The components are moved on March 15th OR Two weeks before first install vessel)                                                                            |
| Tower Preassembly Timing |       | If applicable, when are the towers preassembled in relation to the arrival of the first installation vessel? / (Tower preassembly starts 2 weeks before first install vessel arrives)                                                      |
| Quantity                 |       |                                                                                                                                                                                                                                            |
| Blades                   |       | How many blades are kept in the preassembly area (near the installation berth)? / (8)                                                                                                                                                      |
| Nacelles                 |       | How many nacelles are kept in the preassembly area (near the installation berth)? / (3)                                                                                                                                                    |
| Tower Sections           |       | How many tower sections are kept in the preassembly area (near the installation berth)? / (3)                                                                                                                                              |
| Assembled Towers         |       | Are the tower sections stored horizontally or vertically in uplands storage? / (Stored vertically)<br>If applicable, how many assembled (or partially assembled) towers are kept in the preassembly area? / (3 with 2 tower sections each) |

| SITE/EQUIPMENT RESTRICTIONS |       |                                                                                                                                       |
|-----------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------|
|                             | INPUT | DESCRIPTION / (EXAMPLE)                                                                                                               |
| Speed Limits                |       | Does the site equipment indicated in component inputs have speed limits? (Yes, SPMTs travel 5 mph)                                    |
| Crane Lift Wind Thresholds  |       | What is the max allowable wind speed for the cranes on site? Please indicate if there are different limits for single and dual lifts. |
| Delivery Limitations        |       | Are there certain times of year deliveries are not occurring (both components and manufacturing)? / (Yes - no deliveries in January)  |
| Storage Method              |       | Are they stored on frames?<br>Is there a general rule of thumb for spacing between the tower sections in storage?                     |
| Storage Spacing             |       |                                                                                                                                       |
| Handling Equipment          |       |                                                                                                                                       |
| Delivery                    |       |                                                                                                                                       |
| Quantity per Truck          |       |                                                                                                                                       |
| Truck Speed                 |       |                                                                                                                                       |
| Method                      |       |                                                                                                                                       |
| Frequency                   |       |                                                                                                                                       |
| Equipment                   |       |                                                                                                                                       |
| Duration                    |       |                                                                                                                                       |
| Export                      |       |                                                                                                                                       |
| Transit Equipment           |       |                                                                                                                                       |
| Transit Speed               |       |                                                                                                                                       |
| Quantity per Vessel         |       |                                                                                                                                       |
| Method                      |       |                                                                                                                                       |
| Frequency                   |       |                                                                                                                                       |

| PROJECT(S)                 |       |                                                                               |
|----------------------------|-------|-------------------------------------------------------------------------------|
|                            | INPUT | DESCRIPTION / (EXAMPLE)                                                       |
| Project                    |       | Project Name                                                                  |
| Turbine Capacity           |       | # MW per turbine                                                              |
| Tower Sections per Turbine |       | Number of Tower Sections per turbine                                          |
| Total Tower Sections       |       | How many tower sections will be transported through the port for this project |
| Project                    |       | Project Name                                                                  |
| Turbine Capacity           |       | # MW per turbine                                                              |
| Tower Sections per Turbine |       | Number of Tower Sections per turbine                                          |
| Total Tower Sections       |       | How many tower sections will be transported through the port for this project |
| Project                    |       | Project Name                                                                  |
| Turbine Capacity           |       | # MW per turbine                                                              |
| Tower Sections per Turbine |       | Number of Tower Sections per turbine                                          |
| Total Tower Sections       |       | How many tower sections will be transported through the port for this project |
| Transit Equipment          |       |                                                                               |
| Transit Speed              |       | What speed is the equipment moving at?                                        |
| Quantity per Vessel        |       | How many tower sections will be transported on each export vessel?            |
| Method                     |       | Are the tower sections transported horizontally or vertically on the vessel?  |
| Frequency                  |       |                                                                               |

| Scenario 3 - M1                                    |       |                  |          |         |
|----------------------------------------------------|-------|------------------|----------|---------|
| Description                                        | Value | Units            | Variance | Units   |
| Delivery Vessel Blade Interarrival Time            | 11    | Days             | 10       | Percent |
| Delivery Vessel Nacelle Interarrival Time          | 11    | Days             | 10       | Percent |
| Delivery Vessel Tower Sections Interarrival Time   | 10    | Days             | 10       | Percent |
| Install Vessel Interarrival Time                   | 7     | Days             | 10       | Percent |
| Project Size                                       | 1005  | MW               | 0        | Percent |
| Power Generated per Turbine                        | 15    | MW / Turbine     | 0        | Percent |
| Install Vessel Arrival offset date                 | 30    | Days             | 0        | Percent |
| Number of Blades Per Delivery Vessel               | 12    | Blades           | 0        | Percent |
| Number of Assembled Nacelles Per Delivery Vessel   | 4     | Nacelles         | 0        | Percent |
| Number of Tower 1 Per Delivery Vessel              | 4     | T1 Sections      | 0        | Percent |
| Number of Tower 2 Per Delivery Vessel              | 4     | T2 Sections      | 0        | Percent |
| Number of Tower 3 Per Delivery Vessel              | 4     | T3 Sections      | 0        | Percent |
| Number of Blades Per Install Vessel                | 9     | Blades           | 0        | Percent |
| Number of Assembled Nacelles Per Install Vessel    | 3     | Nacelles         | 0        | Percent |
| Number of Assembled Towers Per Install Vessel      | 3     | Assembled Towers | 0        | Percent |
| Blade Vessel Stay Time                             | 34    | hours            | 10       | Percent |
| Install Vessel Loading and Berthing Time           | 36    | hours            | 10       | Percent |
| Install Vessel Capacity (OSW Sets)                 | 3     | Sets             | 0        | Percent |
| Nacelle Vessel Stay Time                           | 32    | hours            | 10       | Percent |
| Tower Section Vessel Stay Time                     | 34    | hours            | 11       | Percent |
| Tower Assembly Time (In preassembly area at berth) | 24    | hours            | 10       | Percent |

|                                                    |    |       |    |         |
|----------------------------------------------------|----|-------|----|---------|
| Install Vessel Loading and berthing Time           | 36 | hours | 10 | Percent |
| Install Vessel Capacity (OSW Sets)                 | 3  | Sets  | 0  | Percent |
| Nacelle vessel stay time                           | 36 | hours | 10 | Percent |
| Tower Assembly Time (In preassembly area at berth) | 24 | hours | 10 | Percent |





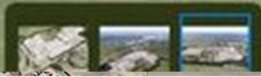
# H2 Production Plant in Måde



PORT **ESBJERG**  
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EUROPEAN
ENERGY

H2ENERGY – HYDROGENE PRODUCTION



PORT **ESBJERG**
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# HØST – AMMONIA PRODUCTION



PORT **ESBJERG**  
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VESSEL SERVICE



TRAINING, EDUCATION, SKILLS, CERTIFICATES



New Sustainable Fishing Center

1. Service centre fishery (ice, cleaning)
2. Waste handling hazardous waste
3. Waste handling station fishery
4. Fish handling area (cranes, cover roof)
5. Water surface waste-collecting
6. Renewable shore power and water supply
7. Pontons for easy and secure access
8. Bunker fuel centre
9. Fishing net handling area
10. Fiskernes Hus



PORT **ESBJERG**
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VISIT:

[HTTPS://WINDEUROPE.ORG/WINDFLIX/VIDEOS/WORLD-OF-WIND-INTERVIEW-WITH-JESPER-BANK-PORT-OF-ESBJERG/](https://windeurope.org/windflix/videos/world-of-wind-interview-with-jesper-bank-port-of-esbjerg/)

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=SWNAR4TNQYE&T=12S](https://www.youtube.com/watch?v=SWNAR4TNQYE&T=12S)

[HTTPS://WWW.SEBROCHURE.DK/PORT-ESBJERG/WEBVIEW/](https://www.sebrochure.dk/port-esbjerg/webview/)