Kundziņsala Wind Hub - a Large-scale Offshore Wind Component Manufacturing & Logistics Complex

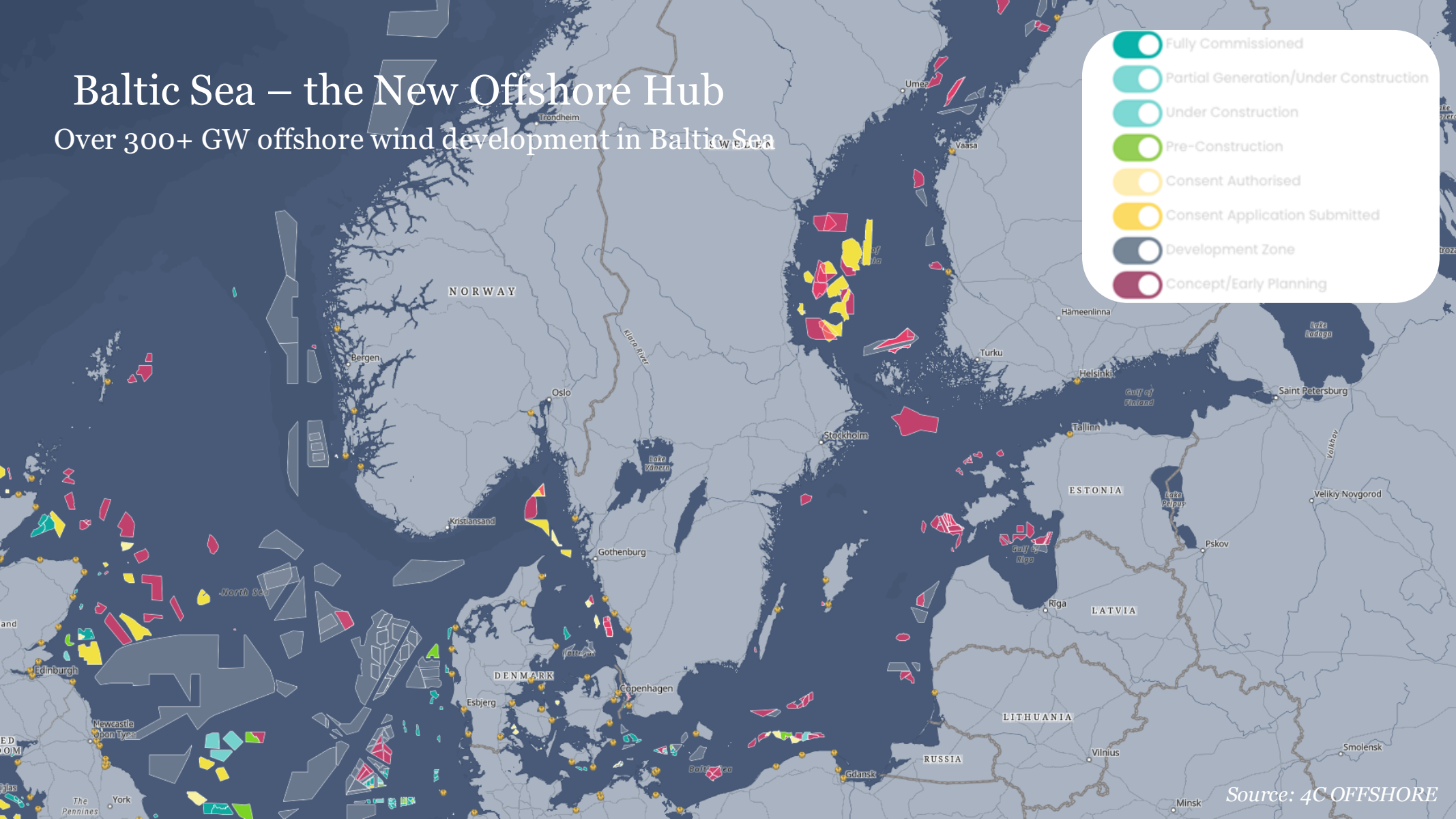
Freeport of Riga Authority, Latvia

FREEPORT OF RIGA

Baltic Sea – the Next Frontier for the European Wind Industry

Baltic Sea – the New Offshore Hub

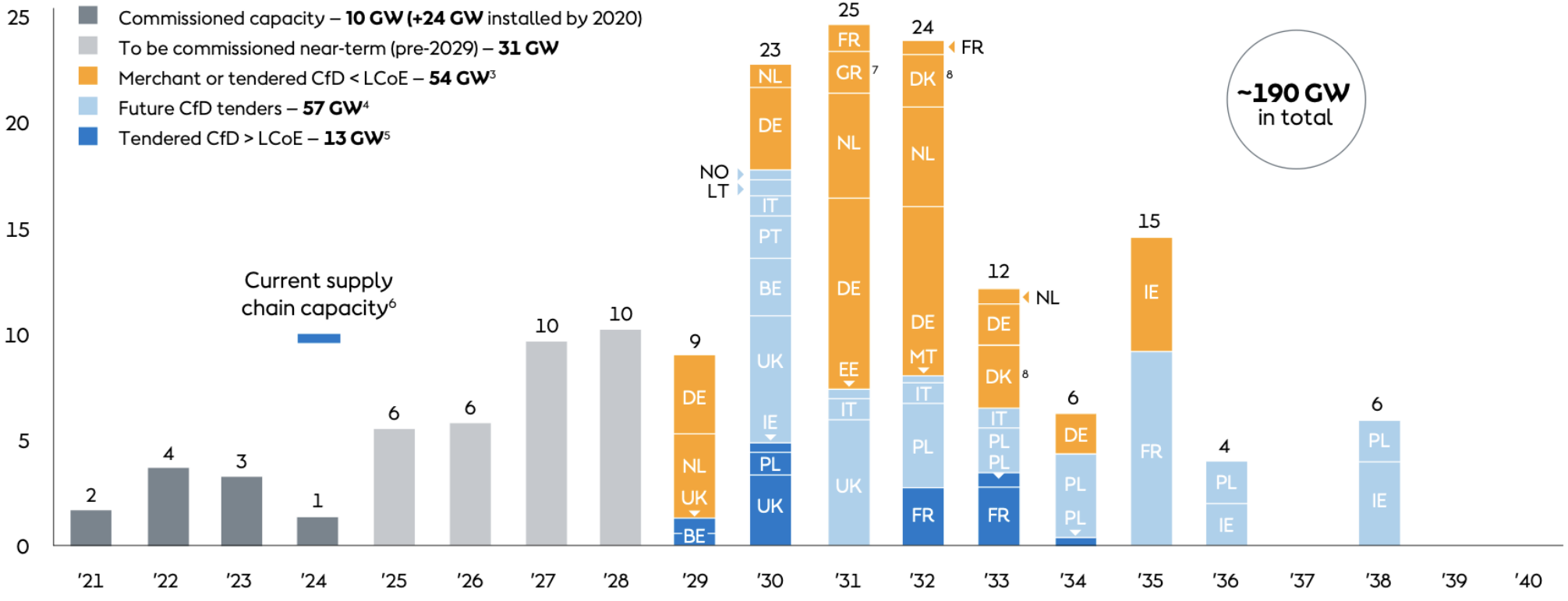
Over 300+ GW offshore wind development in Baltic Sea



Source: 4C OFFSHORE

European Offshore Wind Development

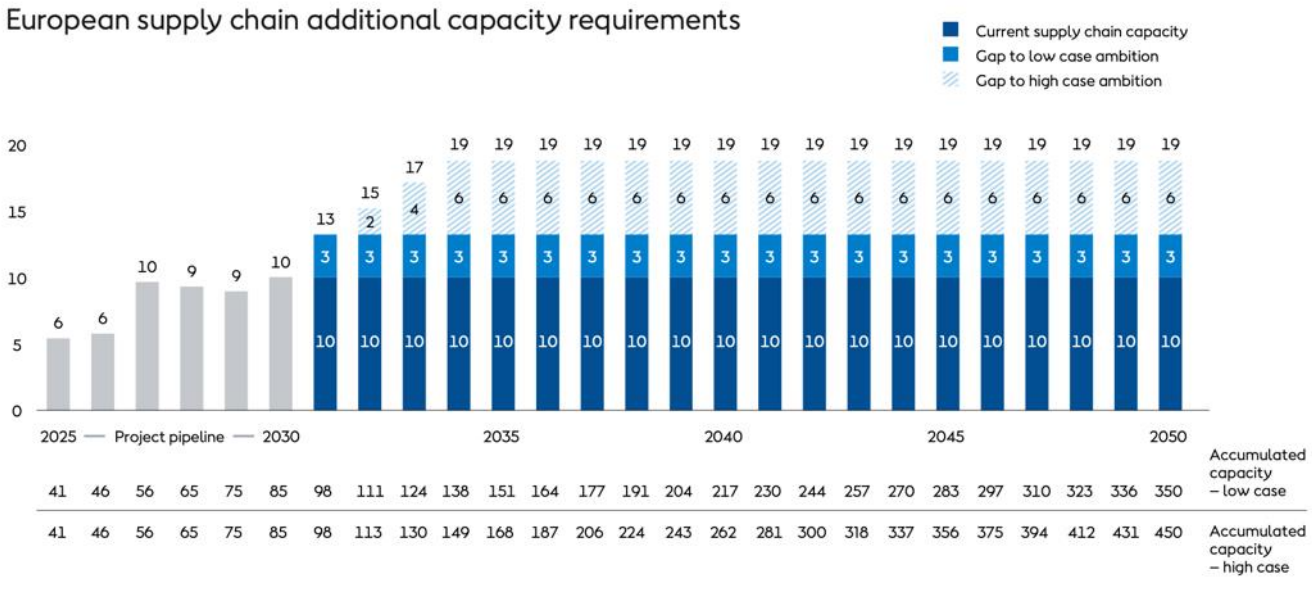
By 2040 over 190 GW of offshore wind projects confirmed & Communicated in Europe



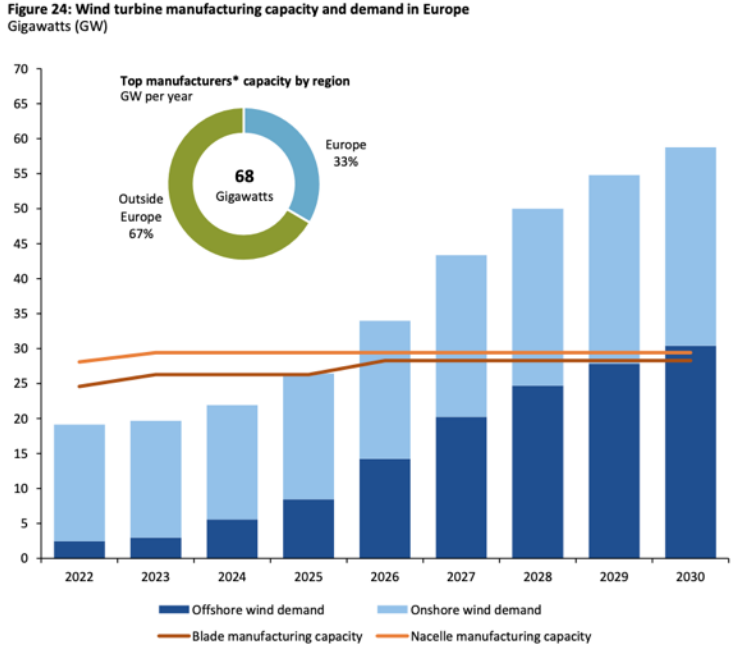
Source: Orsted report "Offshore wind at crossroads"

European Offshore Wind Development

European supply chain is lacking production capacity to satisfy turbine component demand



Source: Orsted report "Offshore wind at crossroads"



Source: Wind Europe

Baltic Region Ports – the Unused Manufacturing Potential

Baltic region is suitable for new greenfield manufacturing projects of next-gen turbines

Figure 26: European wind turbine manufacturing capacity and demand by size group
Gigawatts (GW)

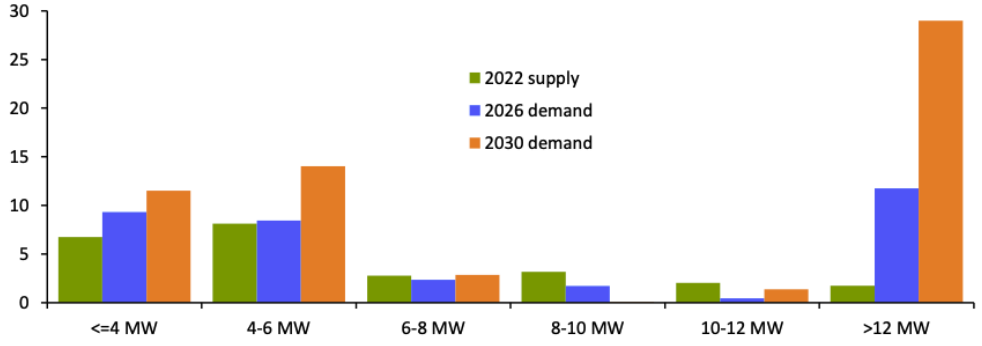


Figure 27: Wind turbine manufacturing capacity and demand for >12 MW turbines
Gigawatts (GW)

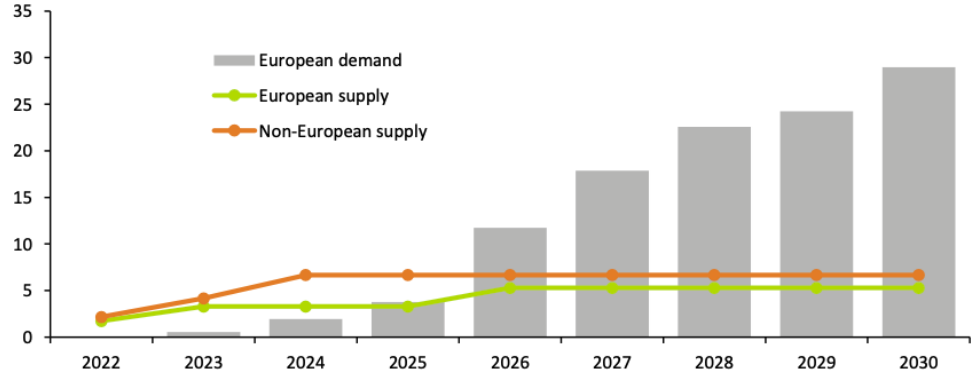
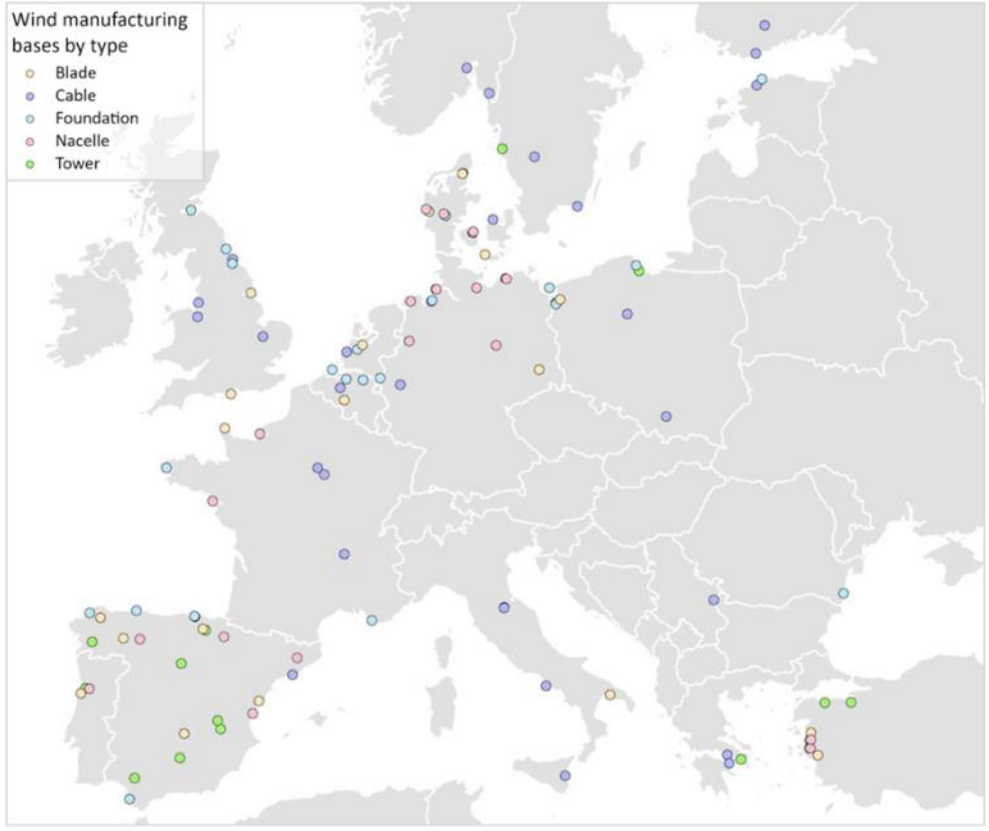


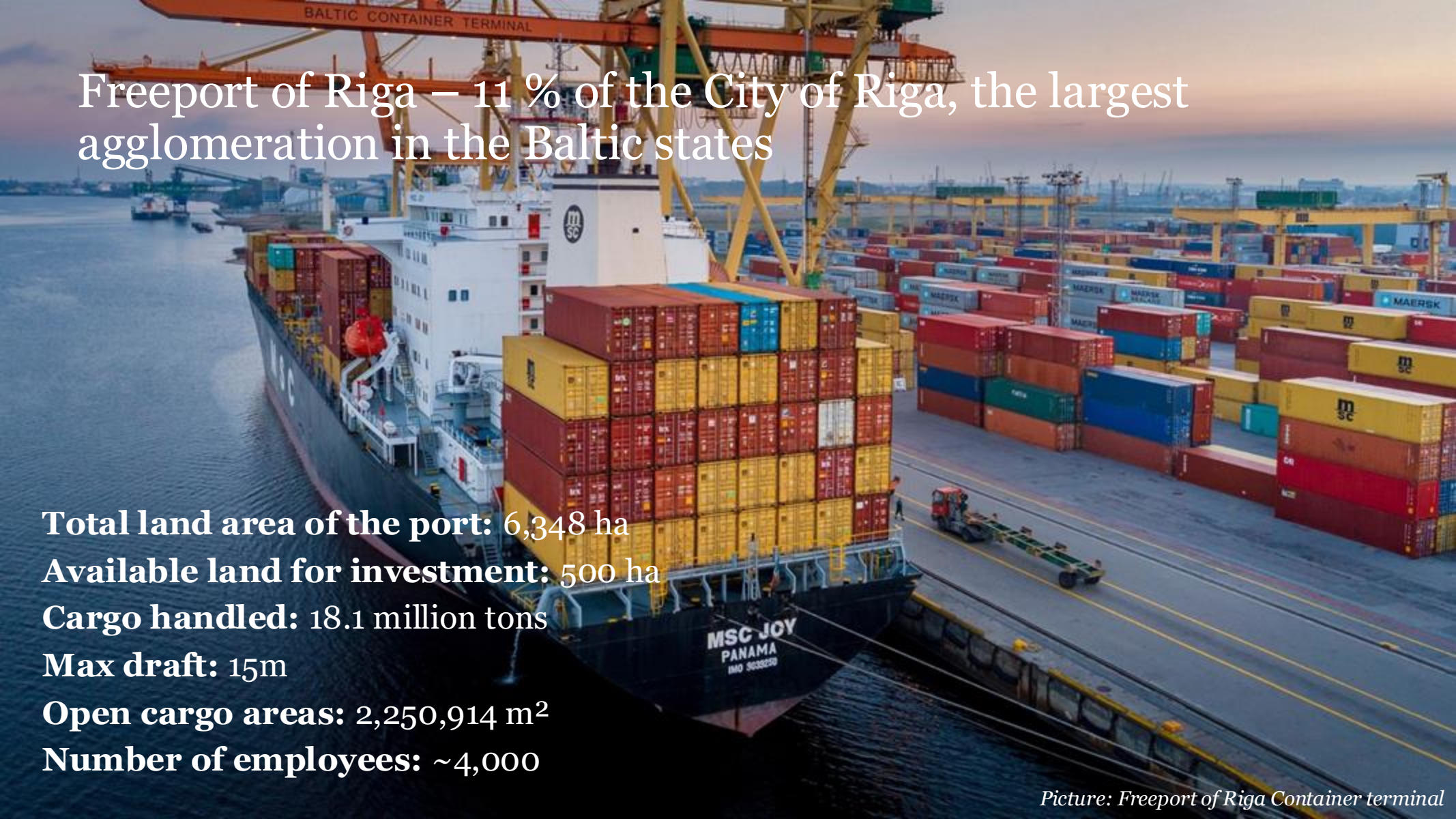
Figure 2: Manufacturing facilities for main wind power components in Europe*



Source: Wind Europe

Freeport of Riga – the Regional Leader in Connectivity & Economic Development

Freeport of Riga – 11 % of the City of Riga, the largest agglomeration in the Baltic states



Total land area of the port: 6,348 ha
Available land for investment: 500 ha
Cargo handled: 18.1 million tons
Max draft: 15m
Open cargo areas: 2,250,914 m²
Number of employees: ~4,000

Picture: Freeport of Riga Container terminal

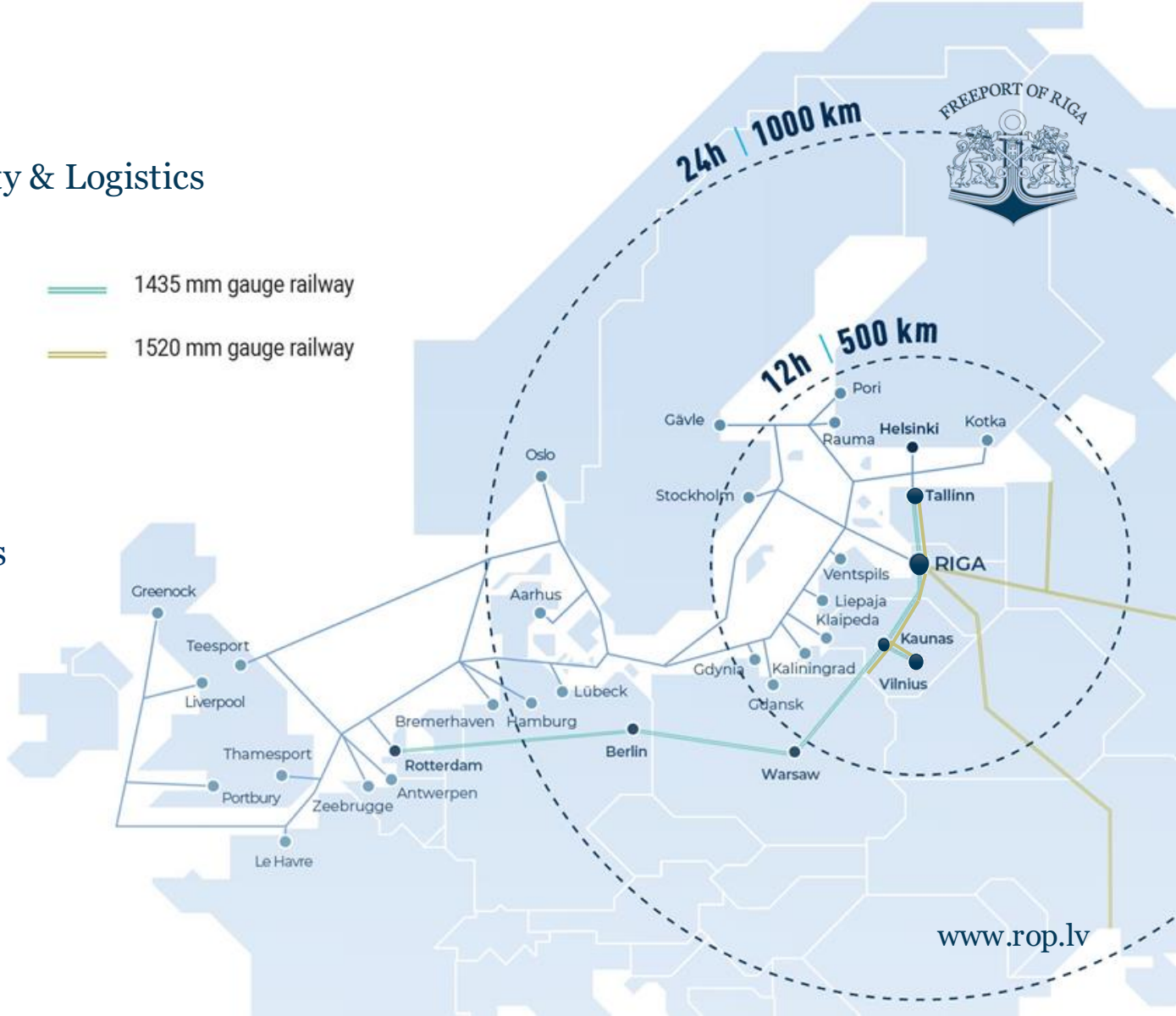
Freeport of Riga

Regional Leader in Port Connectivity & Logistics

Riga Airport –
the largest air hub
in Eastern Europe

Maritime connections
with more than 50
countries

Convenient
road and railway
connections



Freeport Status & Tax Benefits

Special Economic Zones Regulation

Accumulated direct tax relieves can amount to **30 – 50 %** of total capital investment in the project:

30% - large companies
40% - medium companies
50% - small companies

Maximum accumulated direct tax relieves may amount to EUR 22.5 mln. for large investment projects (i.e., exceeding EUR 50 mln.)

COMMISSION REGULATION (EU) No 651/2014

National Tax Regulation

Company Income Tax – 20% (0% on reinvested profit)

Value Added Tax – 21%

Personal Income Tax – 25,5%

Long-term land lease

- up to 45 years

Free zone regime

Tax reliefs:

- VAT (fixed assets) 100 %
- Excise tax (fuel) 100 %
- Reinvested profit 0%

Status of a licensed company

Tax reliefs:

- Income tax up to 80 %
- Real estate duty up to 100 %
- Reinvested profit 0%

National Support for Large Investments

The Coordination Council For Large and Strategically Significant Investment Projects

The Coordination Council for Large and Strategically Significant Investment Projects, led by the Prime Minister and key ministers, manages large, strategic investment projects in Latvia. It reviews necessary regulation changes, support mechanisms, and infrastructure needs to ensure successful project implementation.

The Council consists of:

- The Prime Minister;
- The Minister of Economics;
- The Minister of Finance;
- The Minister of Smart Administration and Regional Development;
- The Minister of Transport;
- The Minister of Foreign Affairs.

Freeport of Riga – the Opportunity for European Offshore Businesses

Roles of Ports in Offshore Wind

Import/export ports

- ✓ Multimodal (rail, road, water connections
- ✓ Cago handling infrastructure
- ✓ Short-term storage areas
- ✓ non-standard cargo handling infrastructure

Manufacturing ports

- ✓ Sufficient large-scale manufacturing facilities 15-25ha
- ✓ Deep-water high-load quays and port infrastructure
- ✓ Electricity connection for manufacturing
- ✓ Availability materials for manufacturing
- ✓ Resources and trained staff
- ✓ Commercial benefits

Freeport of Riga focus segments

Marshaling / Assembly ports

- ✓ Proximity to offshore wind parks
- ✓ Large-scale areas for component storage 4-20 ha
- ✓ Assembly and test facilities
- ✓ Turbine and component handling infrastructure
- ✓ Service and installation vessel access
- ✓ Resources and trained staff

Intallation ports

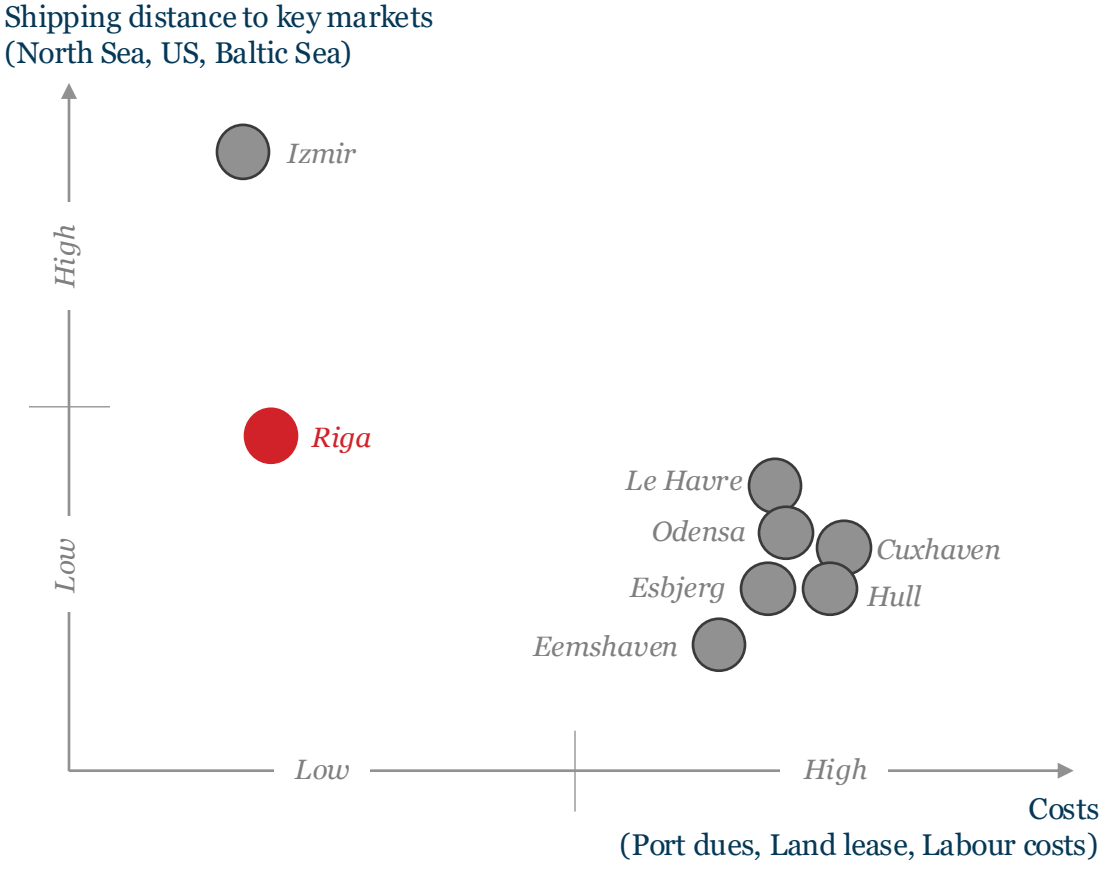
- ✓ Proximity to offshore wind parks
- ✓ Cargo ship access
- ✓ Multimodal connections
- ✓ Large-scale areas for storage of wind-park construction components (incl. concrete blocks)
- ✓ Handling infrastructure

Operation and maintenance ports

- ✓ Proximity to offshore wind parks
- ✓ Long-term and short term storage facilities 2-3ha
- ✓ Berthing of multiple small service and crew vessels
- ✓ Faclilties for service crew
- ✓ Minimal vessel access restrictions

Picture: Siemens-Gamesa factory & port terminal in Cuxhaven

Competitivness Comparison of Regional Offshore Ports



Freeport of Riga - the most competitive location for offshore wind manufacturing

- ✓ Salary & Tax level below EU average
- ✓ Competitive Port dues & Land lease rate
- ✓ Financial aid for large-scale investment
- ✓ Close proximity to next offshore key market – Baltic Sea region
- ✓ Availability of sufficient land (70+ ha) for new large-scale manufacturing
- ✓ Development of tailor made offshore port infrastructure for next-gen components handling
- ✓ Located in the heart a major European capital with 1+million agglomeration
- ✓ Leading country in R&D research

Source: Freeport of Riga analysis from public data

FREEPORT OF RIGA

Kundzinsala Wind Hub–
Opportunities for Investors and Manufacturers

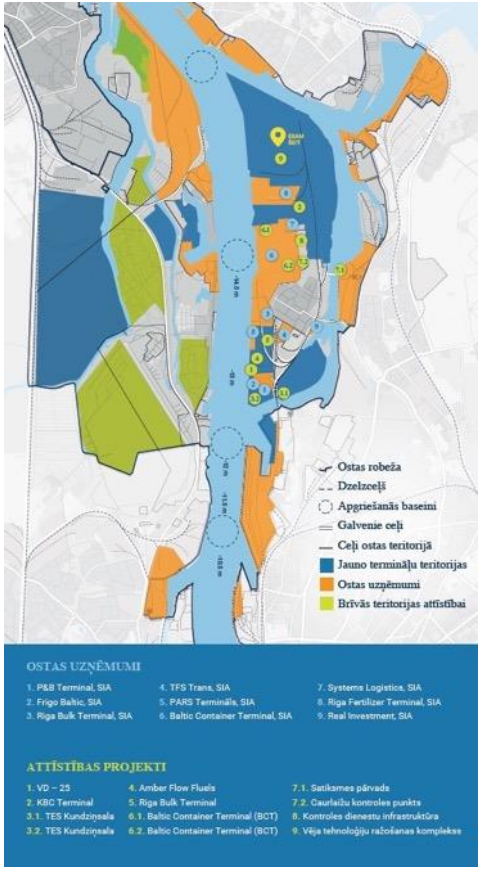
Kundzinsala Island

Prime development territory of the Freeport of Riga

- Total development **area 92,2 ha**
- Located **6 km from the city center** (a 15-minute drive)
- **Special Economic Zone** offering tax benefits and favorable conditions for importing, exporting, and storing goods
- The most **strategically significant area** of the port
- **Deep-water** access
- Modern **customs facilities** & new **overpass connecting to TEN-T network**
- Well-developed **road & rail infrastructure**
- **Existing container terminal** (Baltic Container Terminal)
- Located near **«University mile»**

Kundzinsala Island: **The NEW RIGA PORT**

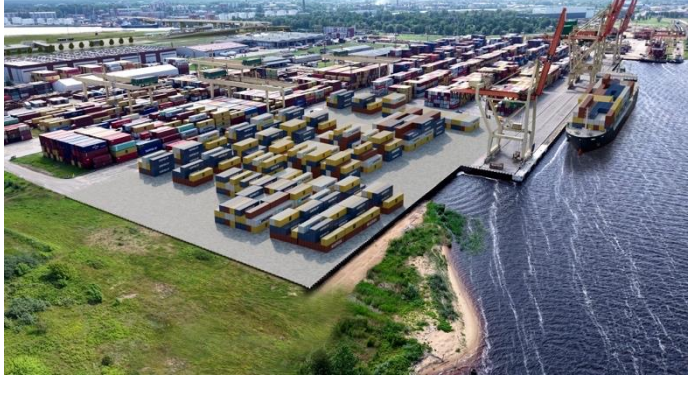
Fastest growing and a priority development territory in the Freeport of Riga, **Additional 500million EUR investment until 2030**



Kundzinsala Wind HUB

New bridge, digital-first port access gate & New customs and border control center

Increase capacity of Baltic Container Terminal



HVO fuels production plant

Kundziņsala Wind Hub

Renewable Energy Component Production Complex

The Freeport of Riga Authority is developing a large-scale offshore **wind component manufacturing complex** and is making **90 hectares** of land available for the development of **Renewable Energy Production facilities** and building the necessary port infrastructure.

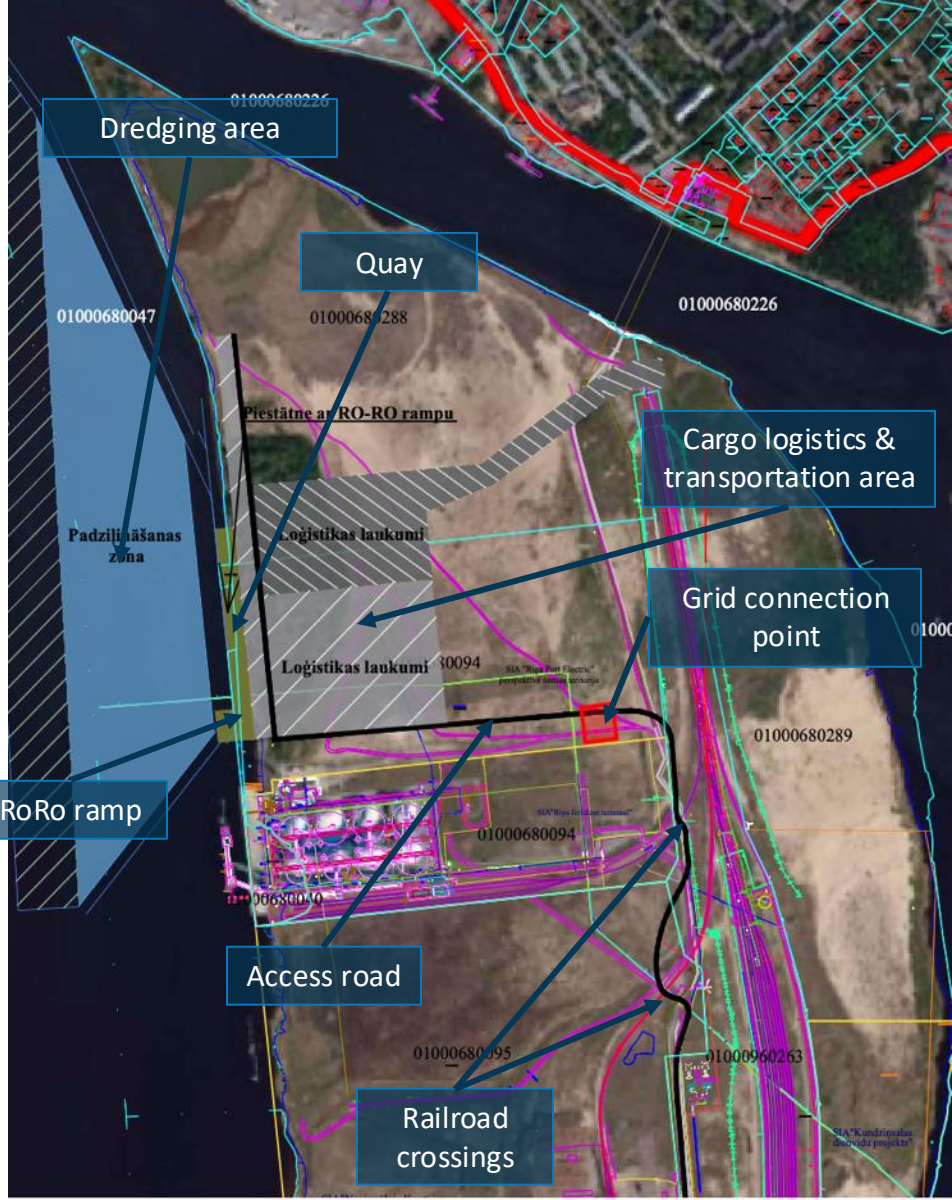
Aerial view of the Kundziņsala Wind Hub

Kundziņsala Wind Hub

Kundzinsala

Port infrastructure to be developed by 2029

- **Site preparation** (site planning, amendments to existing land lease agreements, etc.)
- High-load (25 t/m²) **deep-water quay** (290 meters lenght, 13.5 meters depth)
- High-load (25 t/m²) **Ro-Ro ramp** (area 60x50 meters)
- 19.5 ha high-load (25 t/m²) **cargo logistics and transportation areas**,
- Reconstruction and construction of **road and railway** infrastructure (2.3 km total lenght),
- New **water & sewage** infrastructure,
- New **electricity connection** and substation (up to 10 MW),
- **Dredging** of the main waterway to 13.5 meters.
- Co-funded by the EU under the **Strategic Technologies for Europe Platform (STEP)** Regulation.
- Total **CAPEX 86 million EUR**



Kundzinsala Wind Hub

For Investors & Developers

- **Lease of the new port infrastructure** for cargo handling
- **Lease of 70 hectares** of land around the port infrastructure:
  - Land plot A - 18 ha
  - Land plot B – 30 ha
  - Land plot C – 28 ha
- **Brownfield territory with necessary infrastructure** for the development of large-scale Renewable Energy Component Production facilities
- Infrastrucuture supporting **next-gen offshore wind components: nacelle (>2'000 tons) & blade sizes (120+metres)**
- **Auction for lease rights** will take place **on 3rd quarter of 2025**

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Kundzinsala Wind Hub–
Timeline and Infrastructure Lease


- 19,7 ha
25 t/m²
25 t/m²

Kundzinsala

Infrastructure & Land Lease

- **Competitive auction** for the lease rights of:
  - Port infrastructure (Quay, RoRo ramp, Cargo logistics areas)
  - Development land plots (A, B and C)
- **Qualification criteria for leasors:**
  - Lease of port infrastructure + at least 1 land plot (A, B or C)
  - Development of offshore /onshore wind component manufacturing facilities
  - Minimum investment by end of 2029 – EUR 40 million
- **Special terms:**
  - At least **25 year lease** period
  - **Lease price compensation** based on achieved cargo turnover
- **Inital annual lease price (EUR without VAT):**
  - Port infrastructure: EUR 2'600'000,00 (incl. CAPEX reinvestments)
  - Land plot A: EUR 50'000,00
  - Land plot B: EUR 80'000,00
  - Land plot C: EUR 77'000,00

Kundzinsala Wind Hub

Project Timeline

Development timeline

The port infrastructure will be completed by december 31, 2029.

Port infrastructure is co-funded by the EU under the Strategic Technologies for Europe Platform (STEP) Regulation.

- **2025**
  - Port infrastructure design Investor selection process
  - Port infrastructure & land lease rights auction
- **2026**
  - Investment agreement signed
  - Design of RES manufacturing facilities
- **2027**
  - Construction of port infrastructure
  - RES manufacturing facilities construction initiated
- **2029**
  - Completion of port infrastructure
  - Completion of RES manufacturing facilities

Picture: Vestas V236-15.0MW turbine loading

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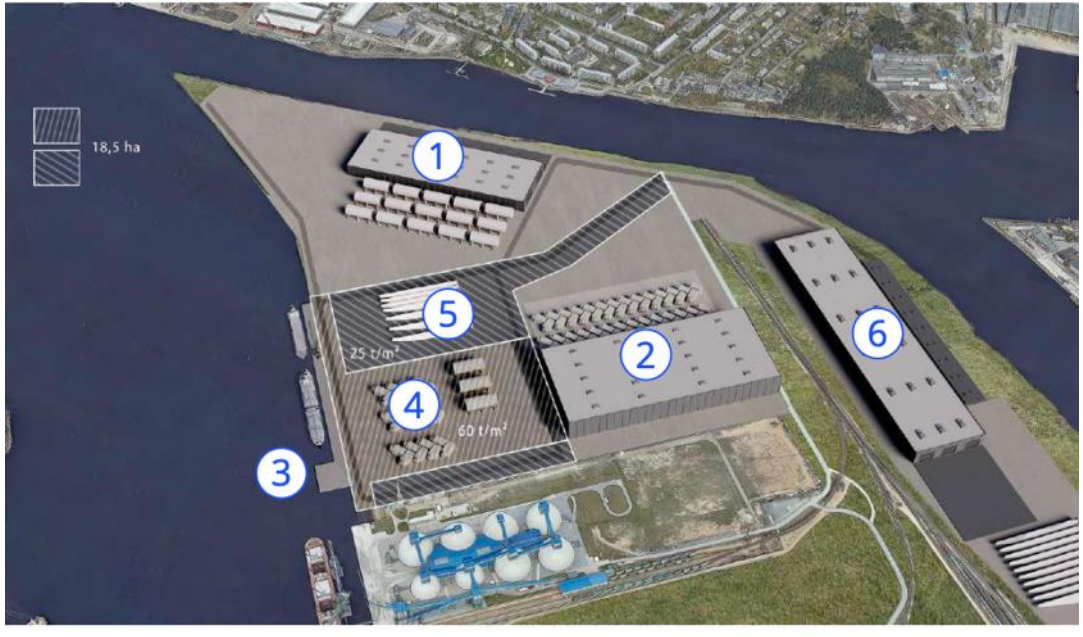
Kundzinsala Wind Hub–
Development Scenarios for Manufacturing

Kundzinsala Wind Hub

Scenario Summary for Blades, Nacelles & Towers



1 – Wind Turbine Towers factory
(length – 350 m; width – 120 m; height – 25 m)

2 – Wind Turbine Nacelles factory
(length – 350 m; width – 160 m; height – 40 m)

3 – Quay with Ro-Ro ramp

4 – Cargo logistics area with a load-bearing capacity of 60 t/m²

5 – Cargo logistics area (25 t/m²)

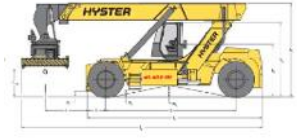
6 – Wind Turbine Blades factory
(length – 500 m; width – 120 m; height – 25 m)

Requirements	Towers factory	Nacelle factory	Blade factory
Min. plot size (factory + storage)	15ha	15ha	40ha
Plant	35.000m2	45.000m2	60.000m2
Optimal outdoor Storage inbound	15ha (based on 4wks stock)	20ha (based on 4wks stock)	5ha
Optimal outdoor storage outbound	15ha (150 Towers) – 20ha for 200 Towers	15ha (150 Nacelles) – 20ha for 200 Nacelles	35ha
Min. plot length and width	L 300m/ W 200m	L 300m/ W 200m	L 800m/ W 400m
Plot shape (efficiency)	Rectangular (as much as possible)	Rectangular (as much as possible)	Rectangular (as much as possible)
Min. building height limitations	25m (manufactory part 1 floor; related auxiliary functions up to 3 floors)	40m (manufactory part 1 floor; related auxiliary functions up to 3 floors)	25m (manufactory part 1 floor; related auxiliary functions up to 3 floors)
Max. distance from factory to export quay	<0,3km (straight road)	<0,3km (straight road)	<0,3km (straight road or there need to be 150m turning radius)
Min. road width for transported goods	W 15m	W 15m	W 15m
Access	Unrestricted/ exclusive access to road	Unrestricted/ exclusive access to road	Unrestricted/ exclusive access to road
Min. load bearing capacity for roads	40t per axle	40t per axle	40t per axle
Min. length, width and depth for quay infrastructure	L 270m/ W 30m/ D 12m (LAT)	L 270m/ W 30m/ D 12m (LAT)	L 270m/ W 30m/ D 12m (LAT)
Min. baseline ground pressure	25t/m2	60t/m2	25t/m2
Min. availability of export quay	100 days per year	100 days per year	200 days per year
Min. buffering area size at quay side (first/last place of rest)	5.000m2	5.000m2	10.000m2 (200m x 50m)
Min. Lo-Lo quay requirements e.g. weight and load distance	750t/ 2 meters from quay side	750t/ 2 meters from quay side	600t/ 2 meter from quay side
Min. channel depth/ width	D 12/ W 55m	D 12/ W 55m	D 12/ W 55m
Min. ship length/ width allowance	L 210m/ W 33m	L 210m/ W 33m	L 210m/ W 33m
Optim. ship turning radius	250m	250m	250m
Max. Crawler crane height	300m	120m	120m

Kundzinsala Wind Hub

Scenario for Blade manufacturing

Description	Metric	Imperial
Service weight	35,000 kg	77,175 lbs
Payload	61,667 kg	135,976 lbs
Contact load	96,667 kg	213,151 lbs
Axle load frontal mode	48,334 kg	106,575 lbs
Per wheel assy	24,167 kg	53,288 lbs
Per wheel load	12,083 kg	26,644 lbs
Contact area	1,660 cm2	3,660 cm
Ground pressure	**7.28 kg/cm2**	**16.05 lb/cm2**
ROOT LOAD	61,667 kg	135,976 lbs
Axle loading	48,334 kg	106,575 lbs
Wheel loading	24,167 kg	53,288 lbs



Pre-assembly and storage areas – Ground pressure (σ)

Area	Component	Weight (t)	Baseline ground pressure σ_{bas} (t/m²)	Spreading measure for baseline
Storage	Blade	83	25	steel plate

1 – Wind Turbine Blades factory (length – 500 m; width – 120 m; height – 25 m)

2 – Blades storage area

3 – Quay with Ro-Ro ramp

4 – Cargo logistics area with a load-bearing capacity of 60 t/m² is recommended, though not required, as other scenarios may also provide this capacity

5 – Cargo logistics area (25 t/m²)

6 – Potential development area

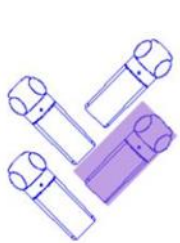
Kundzinsala Wind Hub

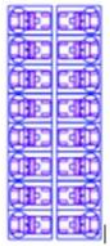
Scenario for Nacelle manufacturing

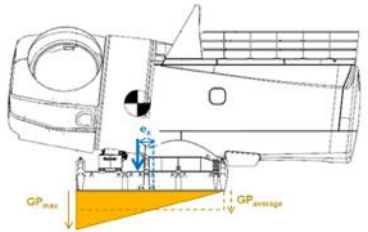
Pre-assembly and storage areas – Ground pressure (σ)

Area	Component	Weight (t)	Baseline ground pressure σ_{bas} (t/m²)	Spreading measure for baseline
Storage	Nacelle on transport Frame + load spread blocks + SPT	1400	60.0	Timber mats or Concrete block footprint
Axle Weight predicted:	1400t with 2 files of 17 axles with 34 axles total = 34t/axle line			
Max Inclination:	3 degrees ~ 5% (Preferred slope for pre-operations and drainage is 1.5% (+/- 0.5%))			

	Load case	Value	Unit
TF dimensions	Length (L) - CIRCA	10	m
	Width (W) - CIRCA	5	m
	Beam width (b) - CIRCA	0,6	m
Ground pressure	Local scale - point load (GP_{max}) without large spreader blocks	60	t/m²
	Local scale - average ($GP_{average}$) with large spreader blocks	35	t/m²
	Medium scale (LxW)	8	t/m²
	Large scale *(indicative only)*	2.5	t/m²







1 – Wind Turbine Nacelles factory
(length – 350 m; width – 160 m; height – 40 m)

2 – Nacelles storage area

3 – Quay with Ro-Ro ramp

4 – Cargo logistics area (60 t/m²)

5 – Cargo logistics area (25 t/m²)

6 – Potential development area

Kundzinsala Wind Hub

Scenario for Tower manufacturing

Towers storage areas – Ground pressure (σ)

Area	Component	Weight (t)	Baseline ground pressure σ_{bas} (t/m²)	Spreading measure for baseline
Storage	Towers	100	25	Timber mats or Concrete block footprint
Max Inclination:	Preferred slope for operations and drainage is 1.5% (+/- 0.5%)			

Description	Metric	Imperial
Service weight	35,000 kg	77,175 lbs
Payload	61,667 kg	135,976 lbs
Contact load	96,667 kg	213,151 lbs
Axle load frontal mode	48,334 kg	106,575 lbs
Per wheel assy	24,167 kg	53,288 lbs
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Contact area	1,660 cm2	3,660 cm
Ground pressure	**7.28 kg/cm2**	**16.05 lb/cm2**
ROOT LOAD	61,667 kg	135,976 lbs
Axle loading	48,334 kg	106,575 lbs
Wheel loading	24,167 kg	53,288 lbs

1 – Wind Turbine Towers factory (length – 350 m; width – 120 m; height – 25 m)

2 – Towers storage area

3 – Quay with Ro-Ro ramp

4 – Cargo logistics area with a load-bearing capacity of 60 t/m² is recommended, though not required, as other scenarios may also provide this capacity

5 – Cargo logistics area (25 t/m²)

6 – Potential development area

Kundzinsala Wind Hub

Recommended scenario – Development scenario for Blades, Towers & Supporting Components

1, 2, 3 – Available lease land (approximately 90 hectares in total are designated for development, of which approximately 70 hectares of land are available for lease (1. - 26,8 ha; 2. - 15,9 ha; 3. – 27,7 ha)

4 – Cargo logistic area (25 t/m²)*

5 – Quay with Ro-Ro ramp (25 t/m²)*

** Theoretical load-bearing capacities for blades and towers manufacturing scenarios (excluding the possibility of nacelles production) have been set at a minimum of 25 t/m² for the cargo logistics zone and quay. This solution should be evaluated in due time, with the final decision made during the design stage.*

Contact information

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