



PORT AS GREEN ENERGY HUB OUTLOOK FOR VENTSPILS

VISION • DEVELOPMENT • OPPORTUNITIES





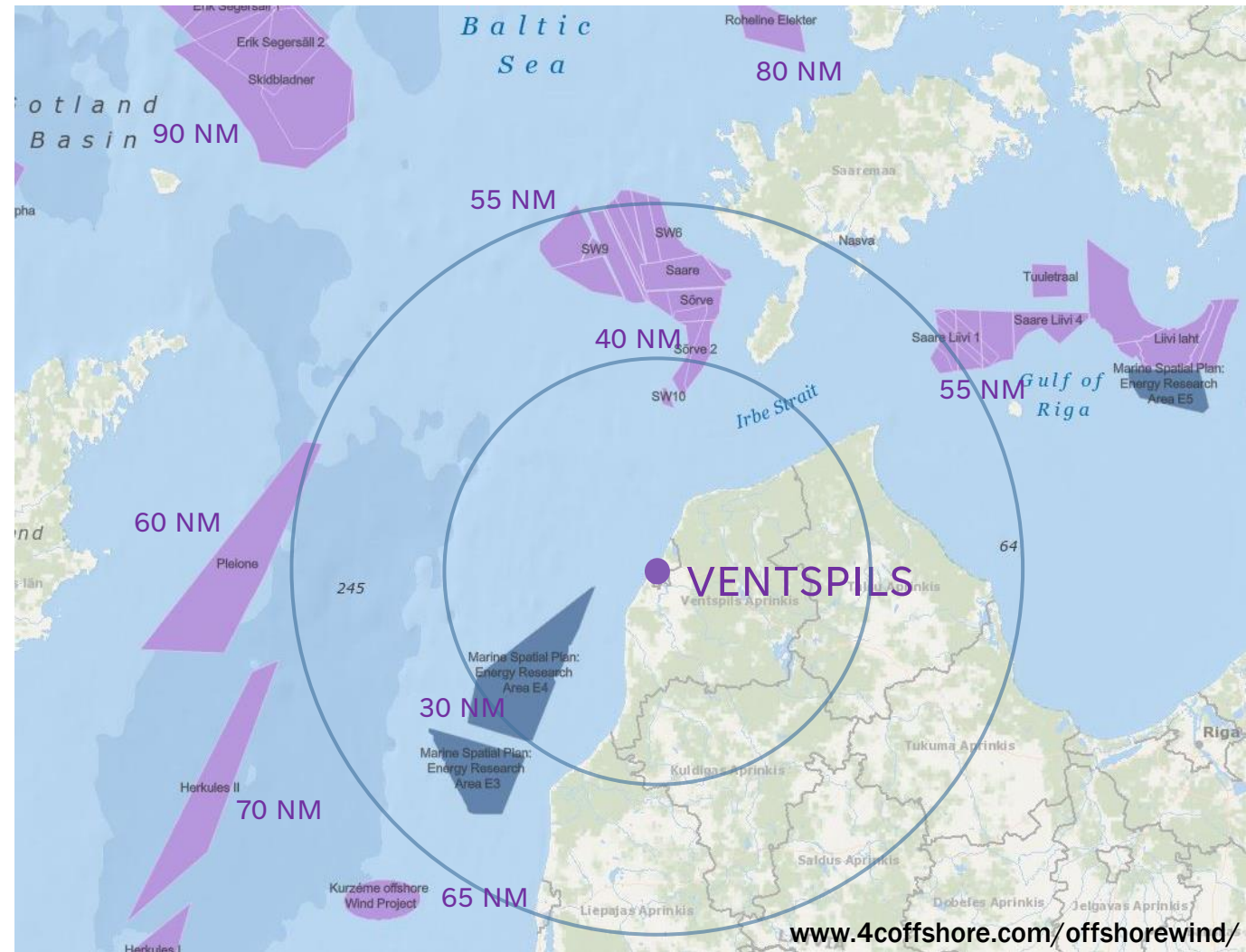
KEY FACTS

- Area ~2450 ha
- Non-freezing, deep-water harbour (17 m)
- Ro-Ro cargo centre of Latvia
- Main commodities: oil products, coal, timber, metals, mineral fertilizers, food etc.
- Closed and open storage facilities
- Available area for industrial development ~500 ha
- Total number of companies in the port area 118, out of which 34 special economic zone companies and 14 port terminals
- 2nd Largest Latvian port and 3rd largest industrial city in Latvia



POTENTIAL OFFSHORE WIND FARM SERVICE PORT

- ✓ Distance
 - The closest location to the development sites of several offshore wind farms
- ✓ Existing port parameters
 - Ice-free port - no use of icebreaker or restrictions in shipping traffic has ever been necessary because of ice
 - deep-water port - we serve the largest ships entering the Baltic Sea
- ✓ Building a new port designed for offshore wind farms
 - Design of the Northern port in line with the specific infrastructure requirements
- ✓ **Power-to-X** cluster in the port of Ventspils
 - ~500 ha available for industrial development, including the development of a green energy economy (wind turbine production)
 - planned construction of the electricity cable corridor Ventspils-Sweden
 - terminal experience in the storage and handling of wind farm wings and turbines



PORT FOR RENEWABLE ENERGY

Construction of several offshore wind farms is planned in the Baltic Sea, including the ELWIND farm within the joint Latvian-Estonian offshore wind project, located close to Ventspils and linked with the interconnectors to the port.

Port involvement is possible at several levels:

- Manufacturing base for wind turbine oversized structures and components
- Assembly port for assembling turbines before installation
- Service port and wind farm control center
- **Power-to-X** - converting energy from wind and solar farms into hydrogen, green ammonia or other green fuels
- Green fuel storage and transport through the port

The European Green Deal, the long-term availability of fossil energy and the examples of other European countries indicate that the creation and development of a hydrogen economy cluster in Ventspils is possible and necessary.

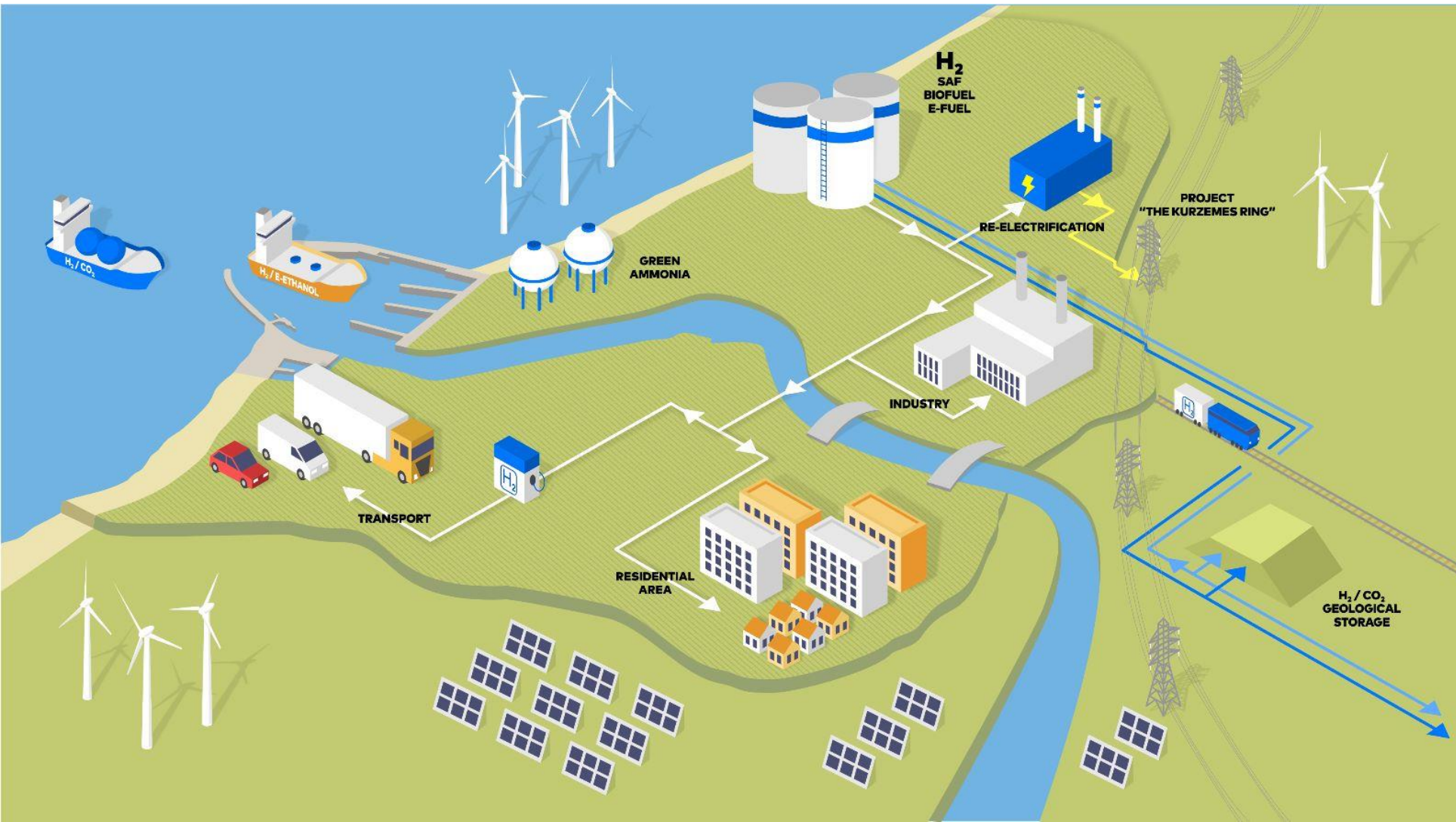


PORT FOR RENEWABLE ENERGY



Power-to-X

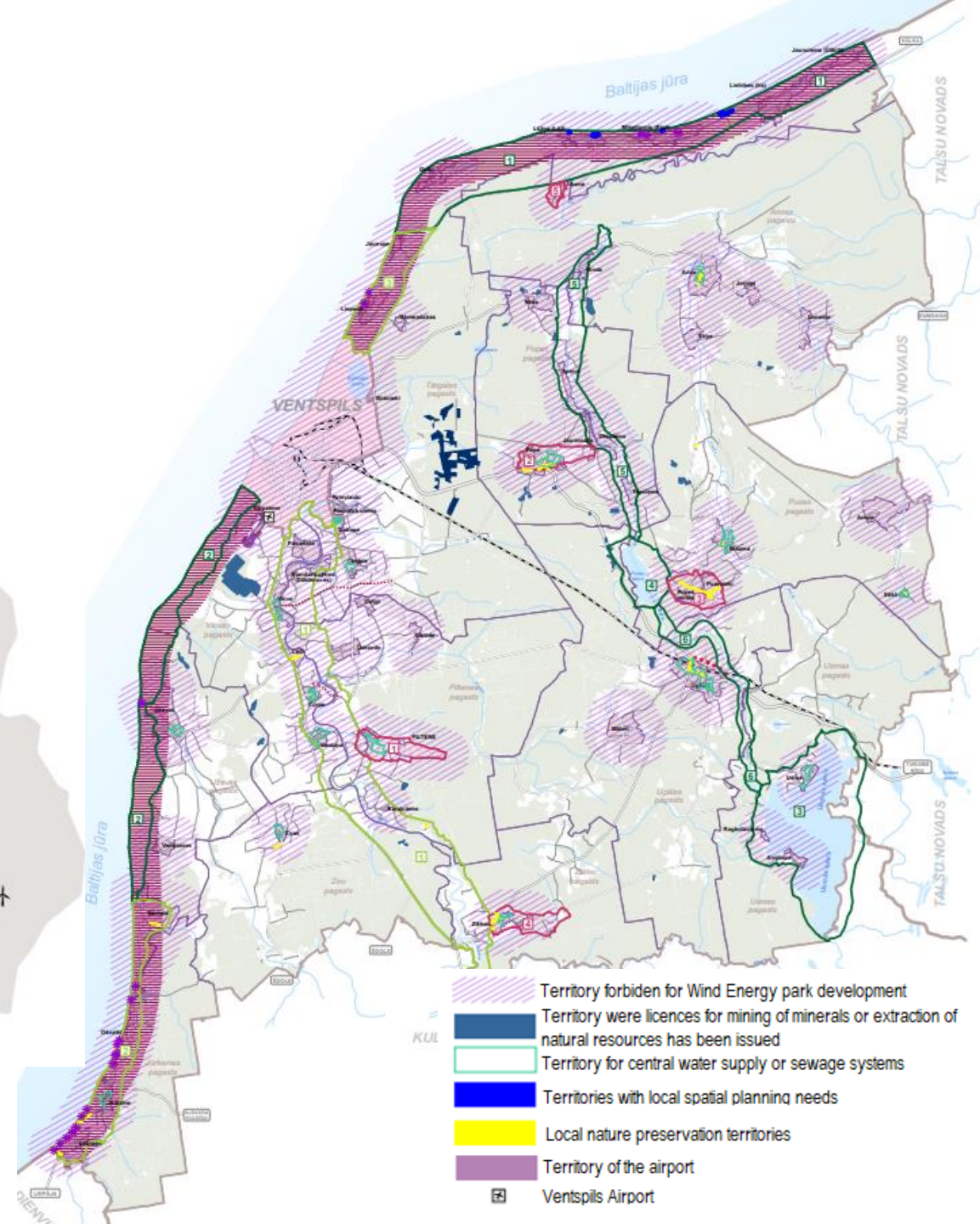
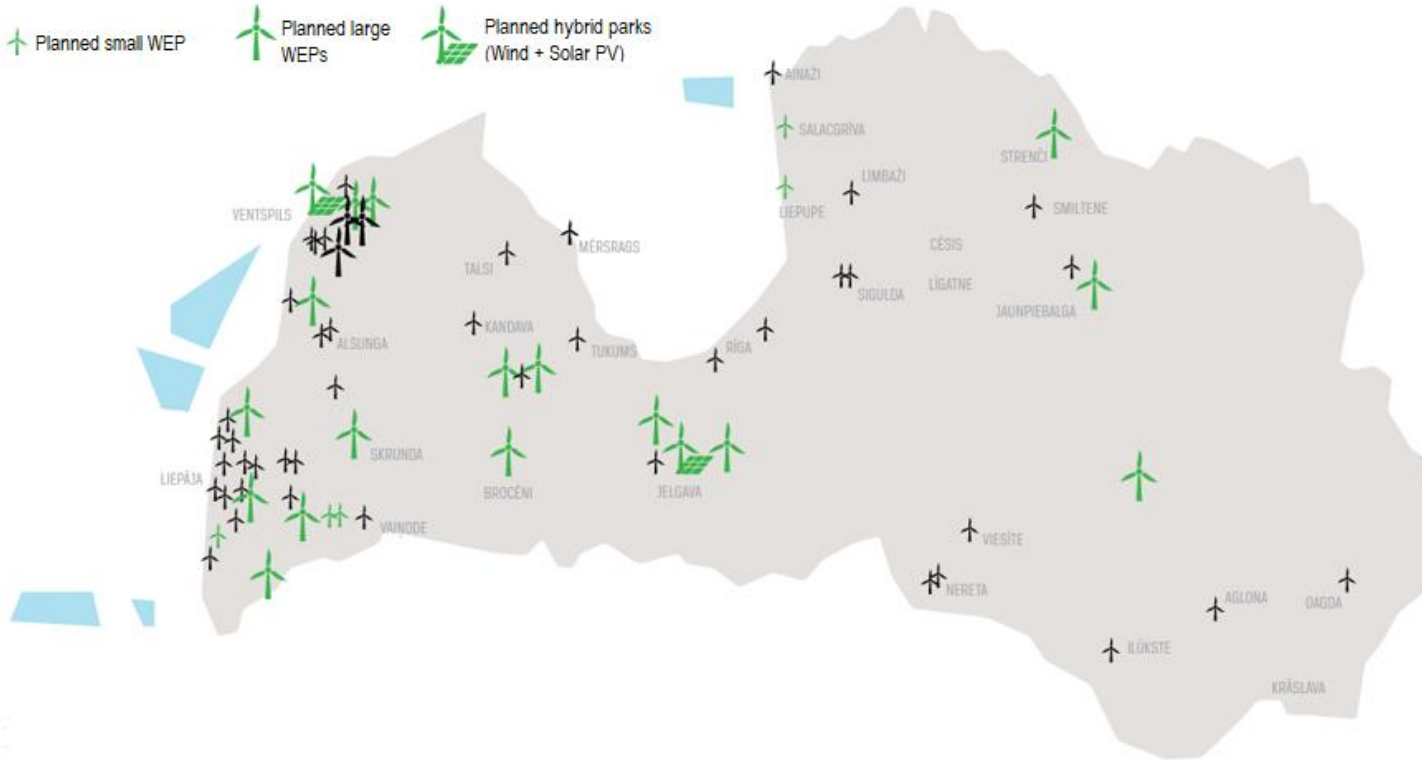
Green energy cluster in the port of Ventspils: wind farm service, solar energy production, H₂, e-methanol, green ammonia, SAF, biofuels, etc.



RENEWABLE POTENTIAL IN REGION

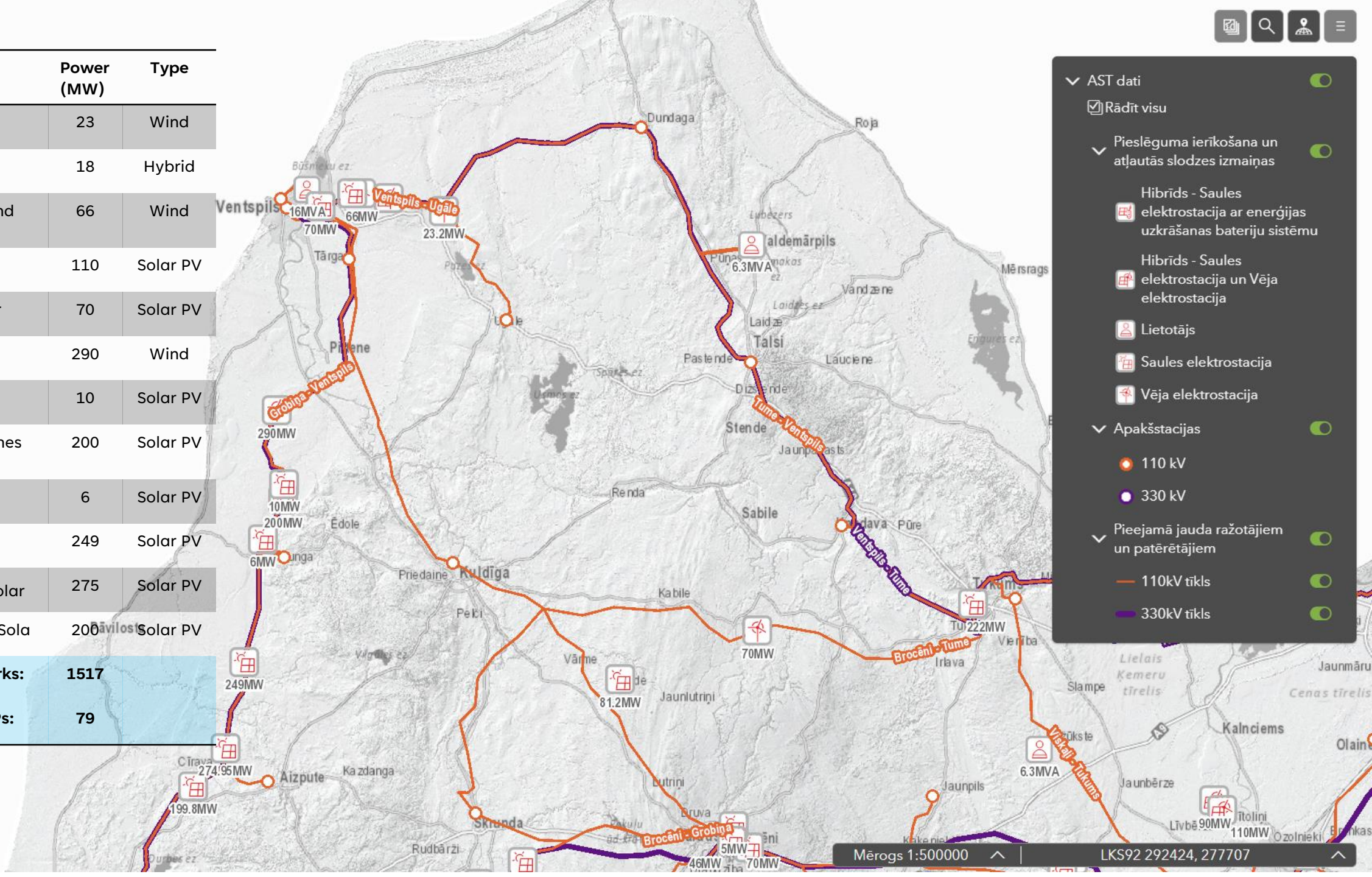
EXISTING AND PLANNED WIND PARKS IN LATVIA

- ✦ Existing small WEP (up to 15 MW)
- ✦ Existing large WEPs
- Potential offshore wind development sites
- ✦ Planned small WEP
- ✦ Planned large WEPs
- ✦ Planned hybrid parks (Wind + Solar PV)





Developer	Power (MW)	Type
4 WIND	23	Wind
Greenpower	18	Hybrid
Ventspils Wind	66	Wind
Stelo Orienta	110	Solar PV
Monedi Solar	70	Solar PV
Envirsus	290	Wind
Alsun Energy	10	Solar PV
Vestman Zemes Fonds	200	Solar PV
Alsun Energy	6	Solar PV
Utilitas Wind	249	Solar PV
DSE Lazas Solar	275	Solar PV
DSE Aizpute Sola	200	Solar PV
Potential parks:	1517	
Existing WEPS:	79	



AST dati 🟢

Rādīt visu

Pieslēguma ierīkošana un atļautās slodzes izmaiņas 🟢

Hibrīds - Saules elektrostacija ar enerģijas uzkrāšanas bateriju sistēmu

Hibrīds - Saules elektrostacija un Vēja elektrostacija

Lietotājs

Saules elektrostacija

Vēja elektrostacija

Apakšstacijas 🟢

110 kV 🟡

330 kV 🟣

Pieejamā jauda ražotājiem un patērētājiem 🟢

110kV tīkls 🟡

330kV tīkls 🟣

Offshore Wind potential in the Baltic Sea according to Maritime Spatial Plans

	Total area available for OWE	Potential capacity	Percentage share of exclusive economic zone	
Baltic Sea States	Denmark	11.000 km ²	42.3 GW	10%
	Germany*	8.400 km ²	70 GW	15%
	Poland	3.600 km ²	17.2 GW	12%
	Finland	3.500 km ²	15.7 GW	4.3%
	Estonia	1.850 km ²	9 GW	5%
	Sweden**	1.400 km ²	6-7 GW	1%
	Lithuania***	664 km ²	2.4 GW	9.4%
	Latvia	300 km ²	4 GW	1%
	European Union	52.000 km ²	220 GW	2,9%

* 2,000 km² are priority areas (20 to 23 GW) and 6,400 km² reserve areas (40 GW).

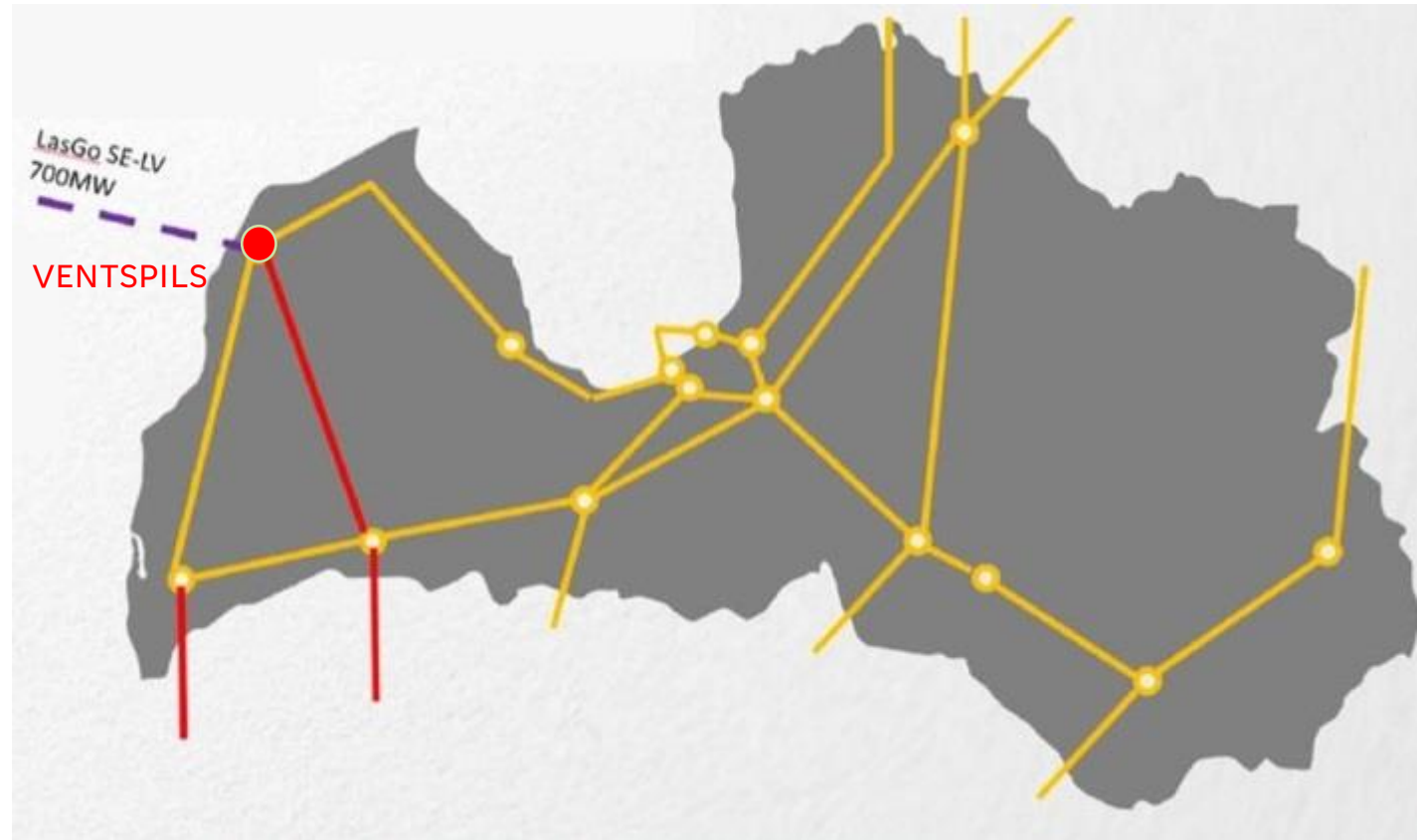
** Available area can be extended up to 4,400 km², therefore increasing capacity to 22 GW and extending sea percentage up to 3%.

*** The potential capacity can be extended to 3.3GW.

Source: WindEurope Report on the "Offshore Wind in EU Maritime Spatial Plans" published on 19 October 2022.

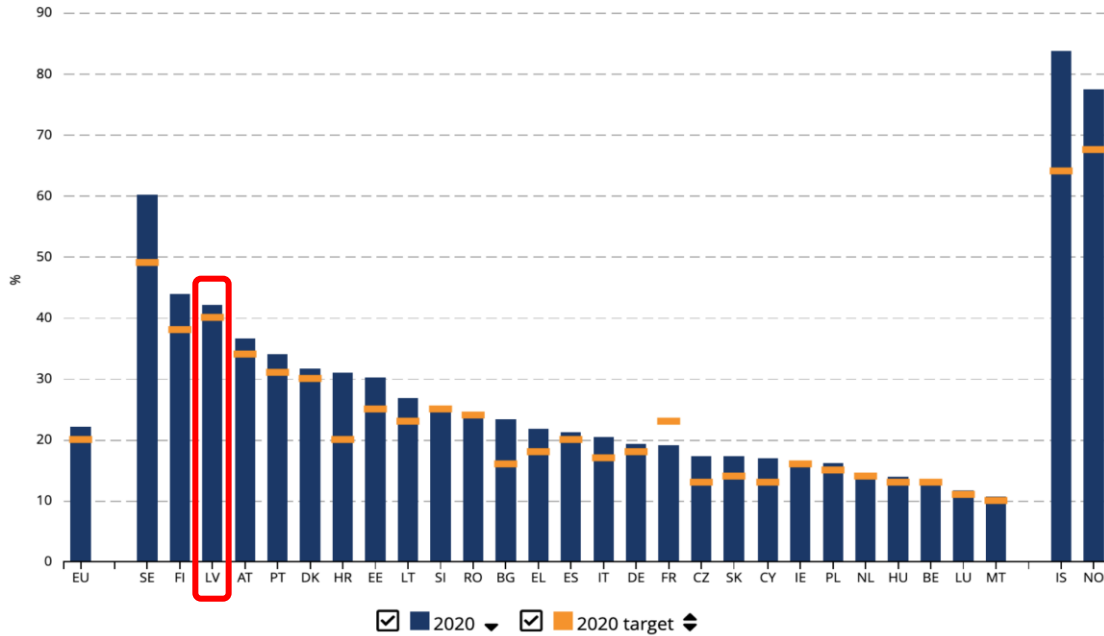
POWER GRID DEVELOPMENT

- According to AST's calculations of power flows, reliability and dynamic stability of the network, in compliance with the scope of the already issued technical requirements for onshore RES connections, connecting the offshore wind farm to the electricity transmission network in Latvia with a capacity of more than **500 MW** will require strengthening interconnections with Lithuania (Grobiņa - Darbenai and Ventspils - Brocēni - Telši)
- If the total capacity of marine parks exceeds **1000 MW**, the construction of an additional power transmission connection between Latvia and Sweden will be necessary.



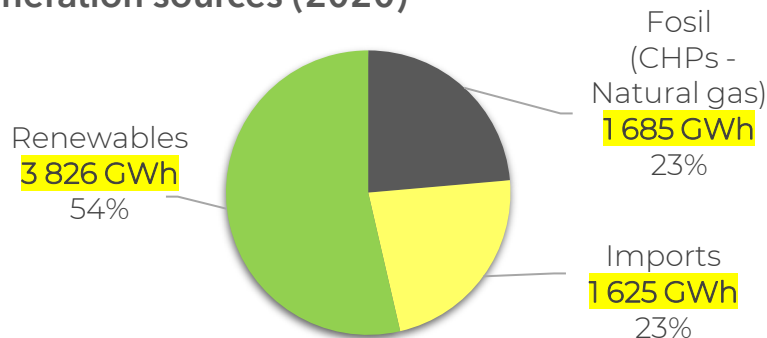
RENEWABLES IN LATVIA

Share of energy from renewable sources
(in % of gross final energy consumption)



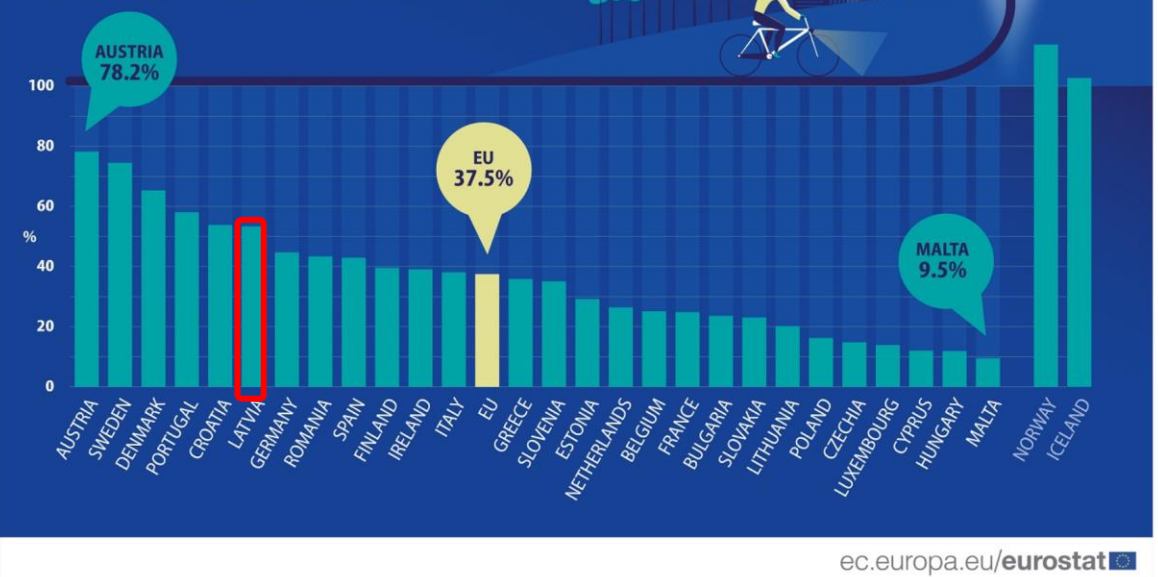
https://ec.europa.eu/eurostat/cache/infographs/energy/ima/pdf/she-dding-light-in-the-EU-2022_en.pdf?lang=en

Power consumption in Latvia by generation sources (2020)



3 310
GWh/a
«deficit»

Electricity from renewable sources % of total gross electricity consumption, 2020



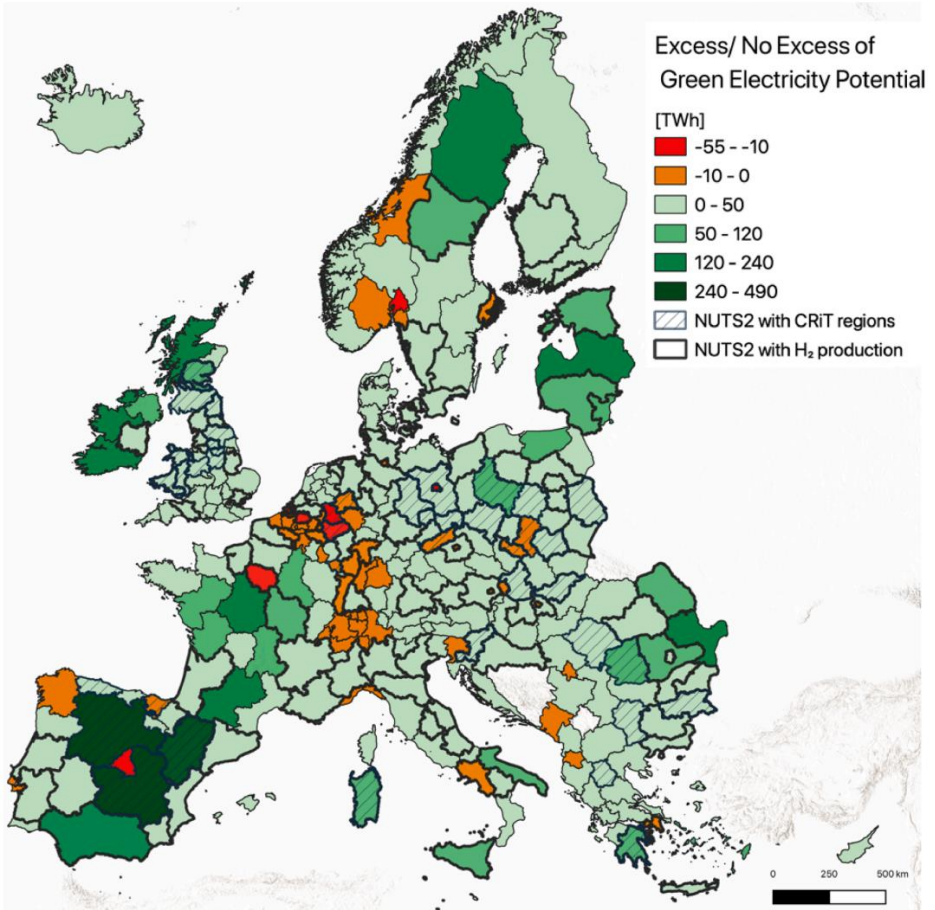
ec.europa.eu/eurostat

<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220126-1>

Energy in Latvia - Key figures:

- **3rd** «greenest» in EU by the gross final energy consumption (2020)
- **6th** «greenest» in EU by the Power production (from RES 2020)
- Average power consumption per year ~ **7.1 TWh/a**
- Maximum load in the power system (coldest winter peak) **1 400 MW**

HYDROGEN & HYDROGEN DERIVATIVES PRODUCTION & EXPORT

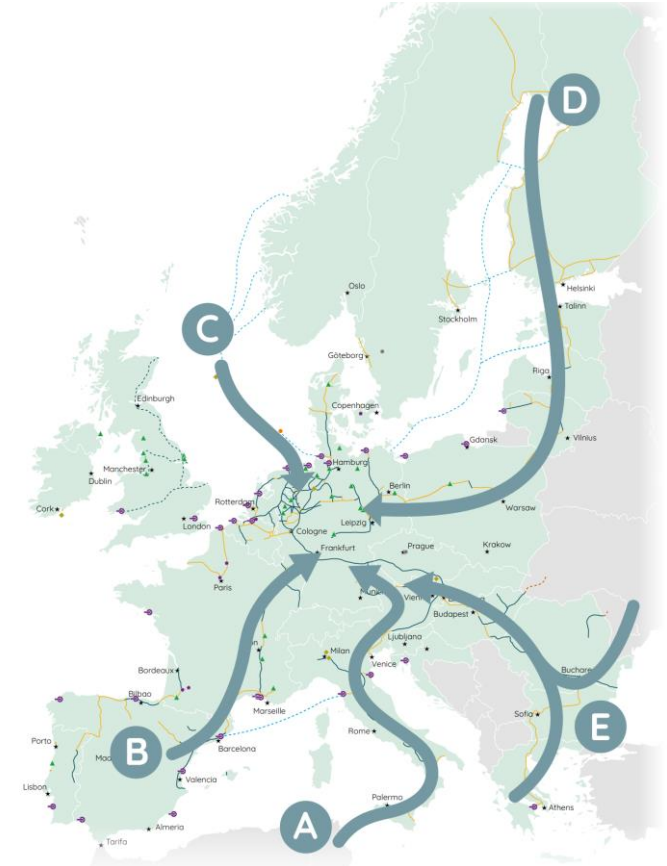
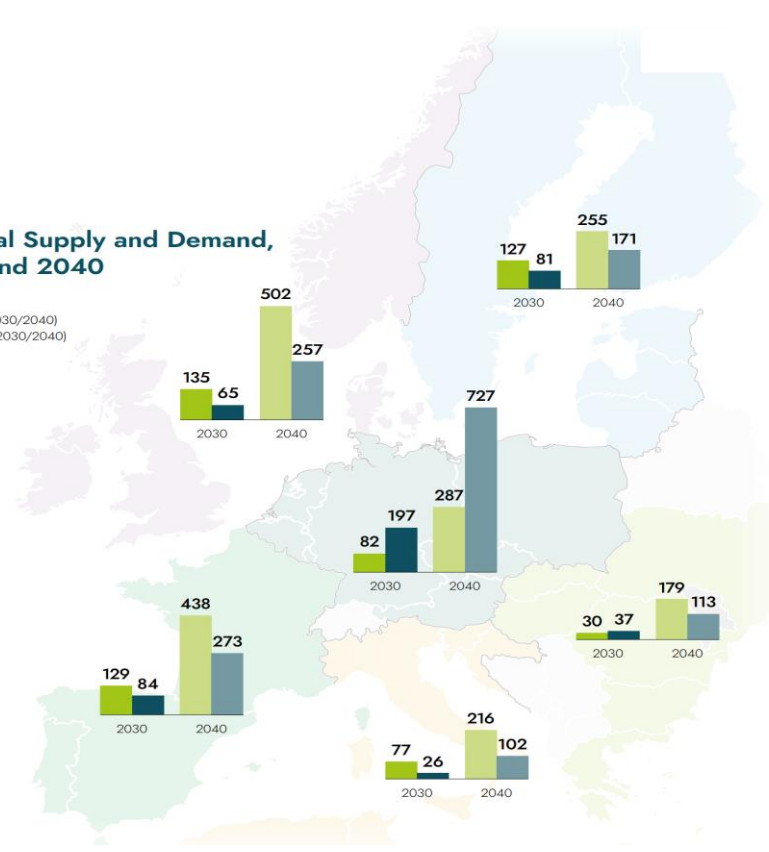


https://www.researchgate.net/publication/346060165_Green_hydrogen_in_Europe_-_A_regional_assessment_Substituting_existing_production_with_electrolysis_powered_by_renewables/download

Regional Supply and Demand, 2030 and 2040

(TWh)^{1,2,3}

Supply (2030/2040)
Demand (2030/2040)



<https://ehb.eu/files/downloads/EHB-Supply-corridors-presentation-ExecSum.pdf>

EXPORT RATIONALE / CROSSBORDER PROJECTS

FIGURE 6

Identified conventional hydrogen production sites (2020)¹⁰



Legend for Figure 6:

- Grey cylinder: Captive reforming
- Yellow cylinder: Merchant reforming
- Green cylinder: By-product (ethylene, styrene)
- Purple cylinder: By-product (electrolysis)

- There are no existing H₂ (fossil) consumers in Latvia and minor consumption North of the border
- Closest potential off-takers are located in Lithuania - oil refinery and fertilizer plant

<https://hydrogeneurope.eu/clean-hydrogen-monitor2022/>



- BaltisSeaH₂ - Horizon Europe project for large scale hydrogen valley across the Nordic and Baltic countries with the focus on hydrogen export «corridor» («D» corridor)

PORT OF VENTSPILS

Port terminals potentially capable of servicing green fuels:

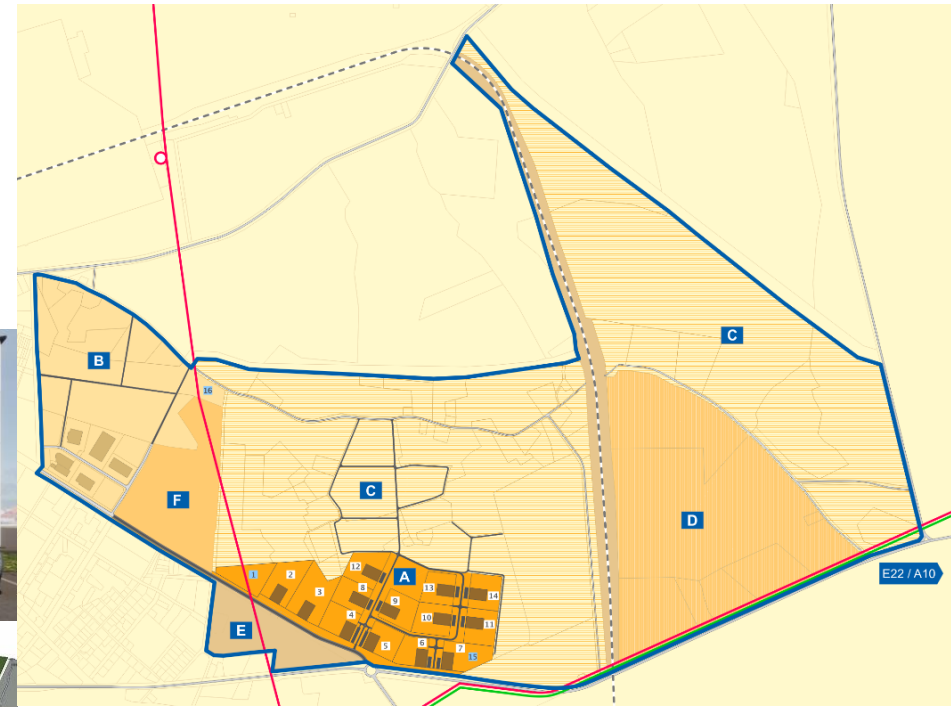
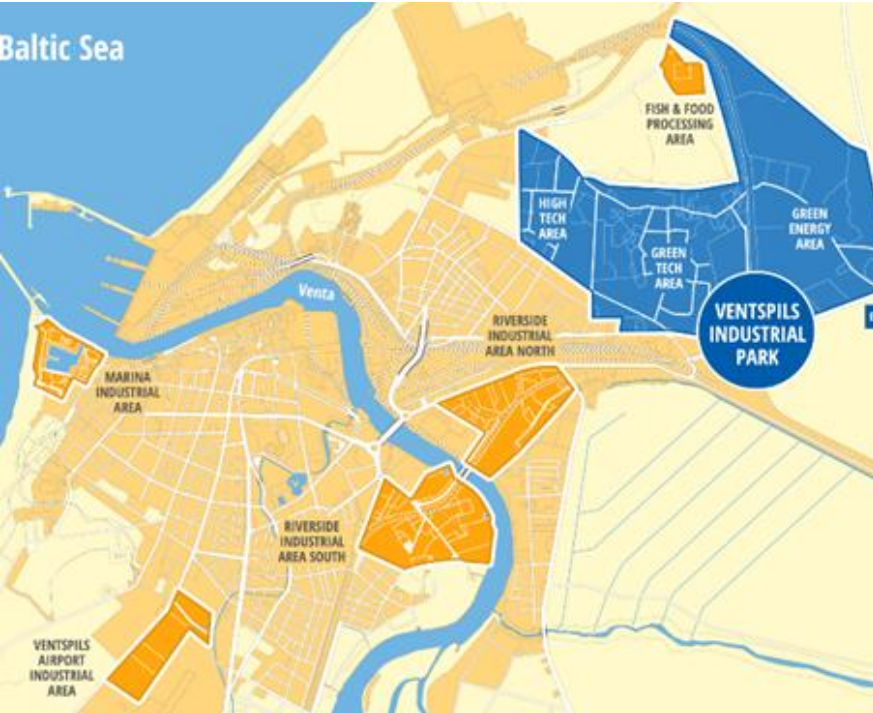
- Fossil fuel storages ~1.6 mln. m³
- Ammonia handling terminal 58 kt storage



VENTSPILS INDUSTRIAL DEVELOPMENTS

Ventspils Industrial Park (planned):

- Various large scale land lots from 1 to 100 ha
- Industrial premises of ~ 4350 m²
- Special Economic zone = tax benefits



A	GREEN TECH AREA	D	GREEN ENERGY AREA	1 15	POSSIBLE LOCATIONS FOR HIGH VOLTAGE SUBSTATION
B	HIGH TECH AREA	E	SERVICE AND INFRASTRUCTURE AREA	—	ROADS
C	SOLAR PARKS	F	RECREATION AREA	- - -	RAILWAY LINE





THANK YOU!

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Authority

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