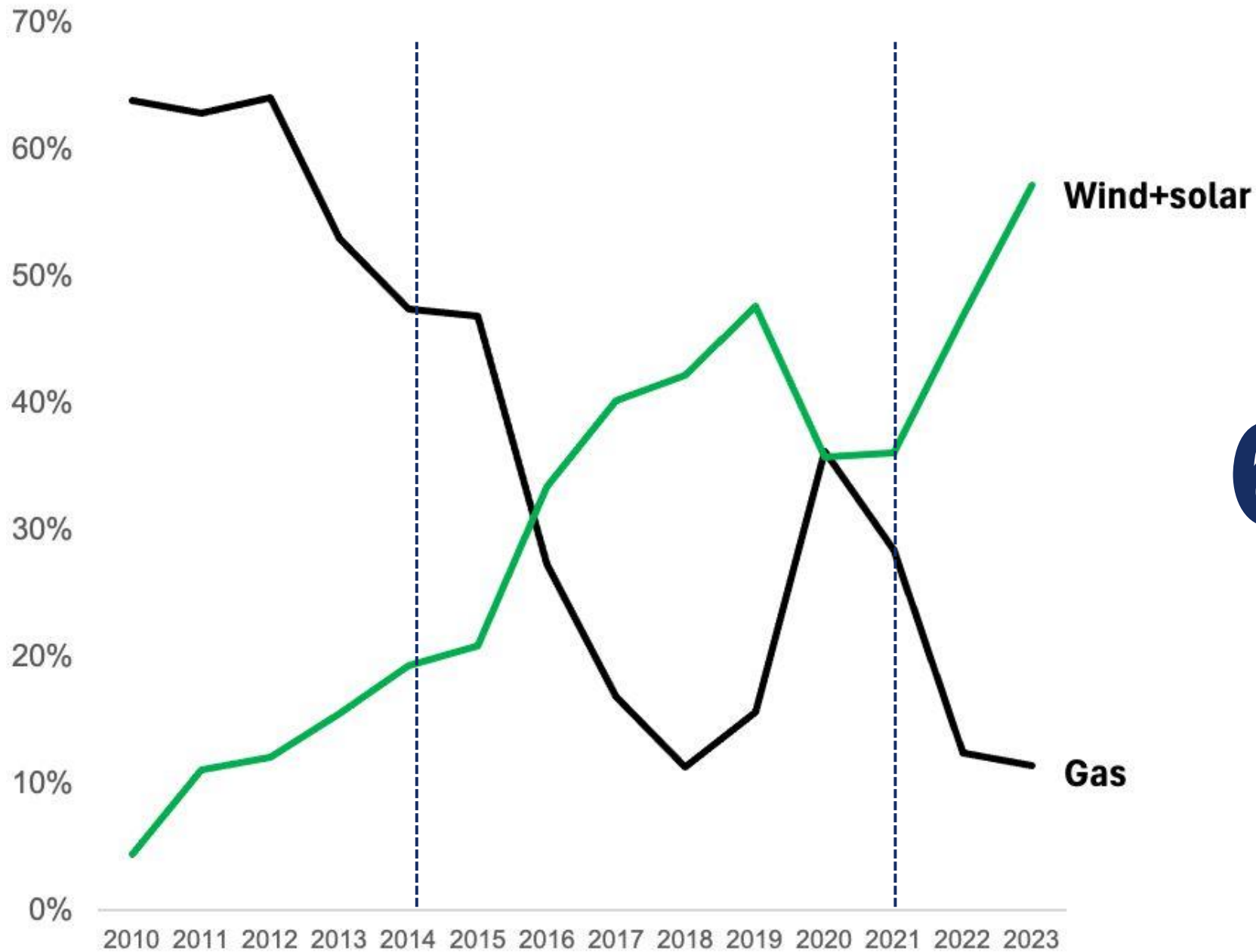


RES - direct way to energy independence?

(Case of Lithuania)



60% of Lithuania's electricity is now from wind + solar



63%

YTD (2024)

Significant opportunities for green energy expansion in the Baltics and Poland

Lithuania: Structural electricity deficit

Only ~40% of electricity consumption is covered by national generation in 2021–2023 on average¹. The country aims to become self-sufficient and electricity-exporting, therefore, a significant build-out of domestic generation assets is expected.

Estonia: Phase-out of oil shale

More than half or ~57% of Estonia's electricity production in 2022³ was from oil shale (49% in 2021), and there is a growing need to further develop new renewable capacities to cover the phase-out of oil shale.

The Baltics: terminated electricity and gas imports from Russia & Belarus

Electricity imports from Russia and Belarus were terminated region-wide following Russia's war in Ukraine. These imports are expected to be replaced by domestic renewables.

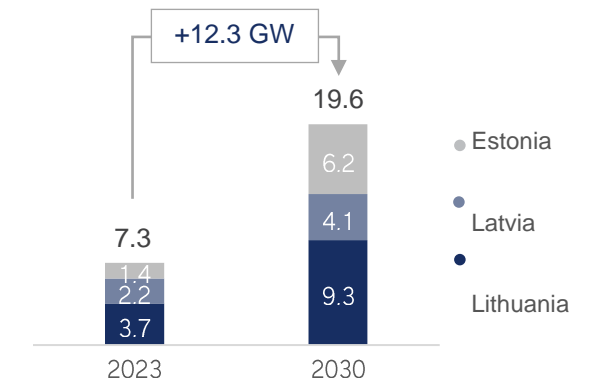
Poland: Transition away from coal generation

Coal generation represented 61% of the generation mix in Poland in 2023² (70% in 2022). This is expected to gradually decline further and be replaced by renewable energy.

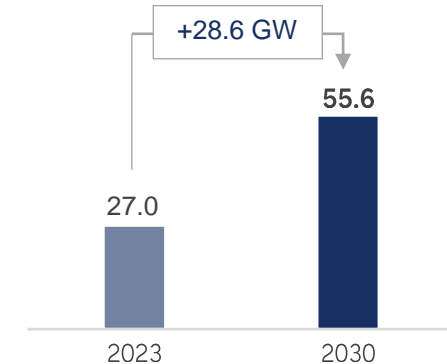
Green energy development forecast, installed capacity GW^{4, 5}
(in the Baltics and Poland)

+41 GW
Capacity additions
by 2030
(vs 2023)

Baltics



Poland



¹ Source: Litgrid. National electricity demand and generation: [Litgrid. National electricity demand and generation.](#)

² Source: Ember. Poland electricity generation by source: [Europe | Electricity Transition | Ember \(ember-climate.org\).](#)

³ Source: Statistics Estonia. Oil shale electricity production: [Oil shale electricity production increased last year | Statistikaamet.](#)

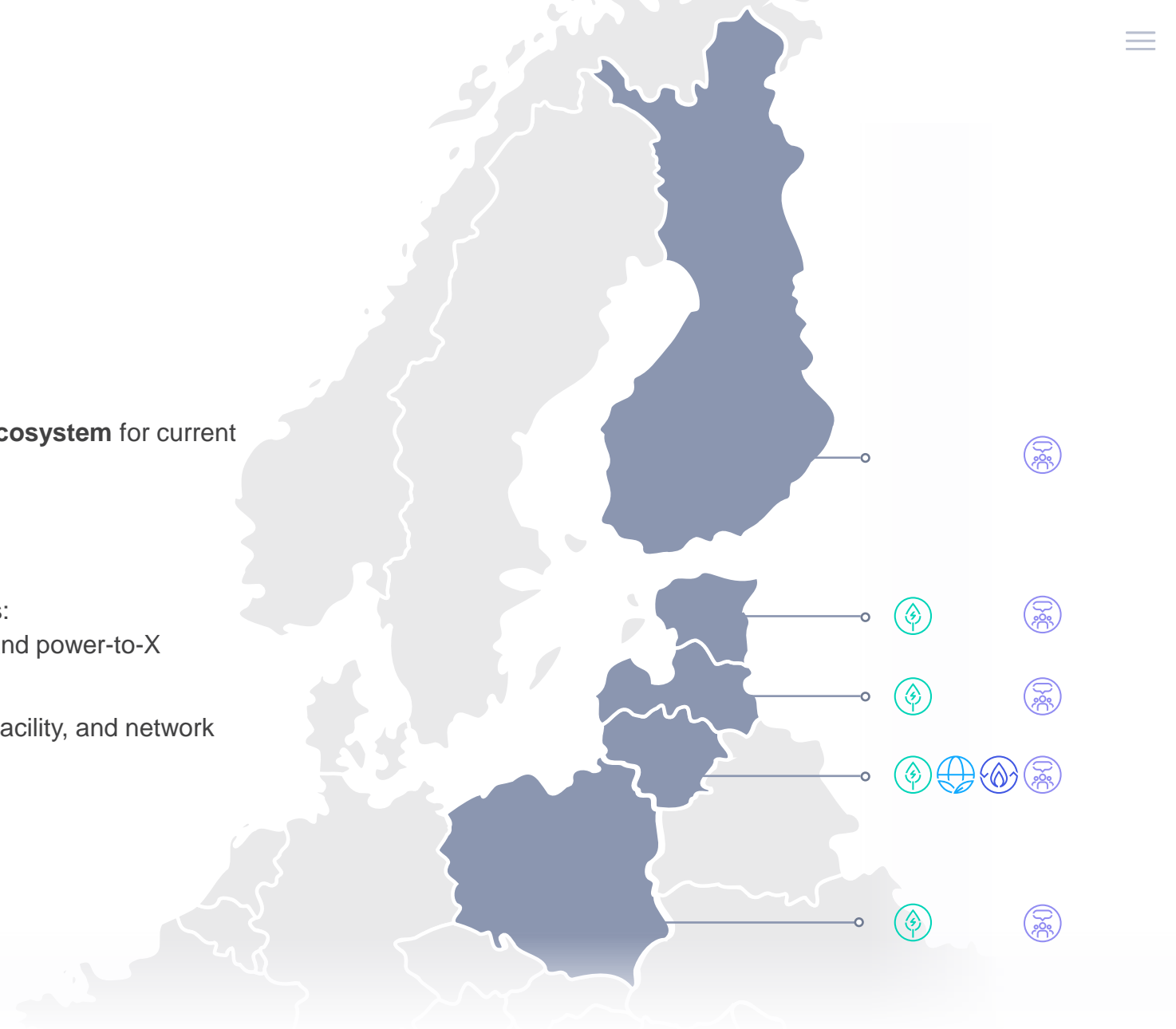
⁴ Installed capacities include: wind, solar, bio, hydro and battery assets.

⁵ Source: Company analysis based on ICIS, Litgrid, ENTSO-E.

Ignitis Group

Renewable-focused integrated utility

- Our purpose is to create a **100% green and secure energy ecosystem** for current and future generations
- **4–5 GW** of installed Green Capacities by 2030
- **Net zero** emissions by 2040–2050
- Focus on green **generation** and green **flexibility** technologies: onshore and offshore wind, batteries, pumped-storage hydro and power-to-X
- Integrated business model: benefiting from the largest customer portfolio, energy storage facility, and network in the Baltics
- Active in the **Baltic states, Poland and Finland**

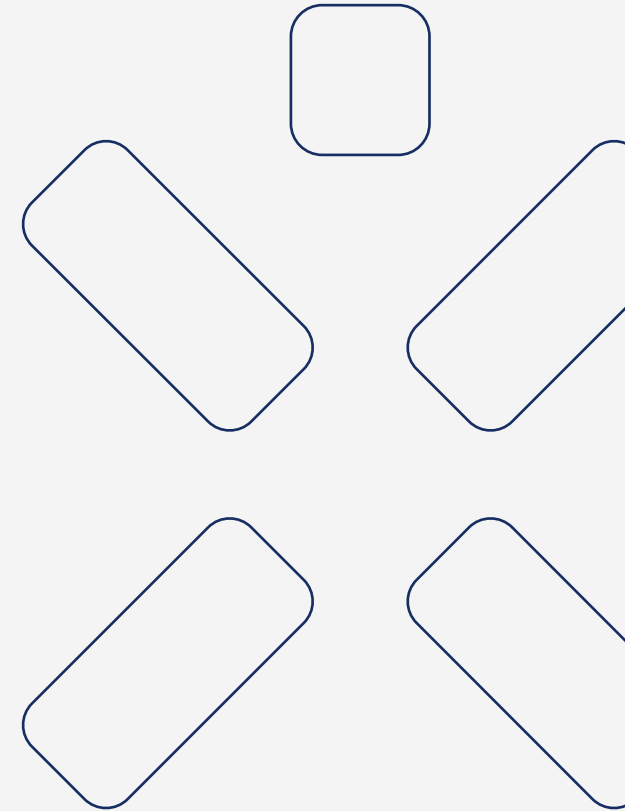
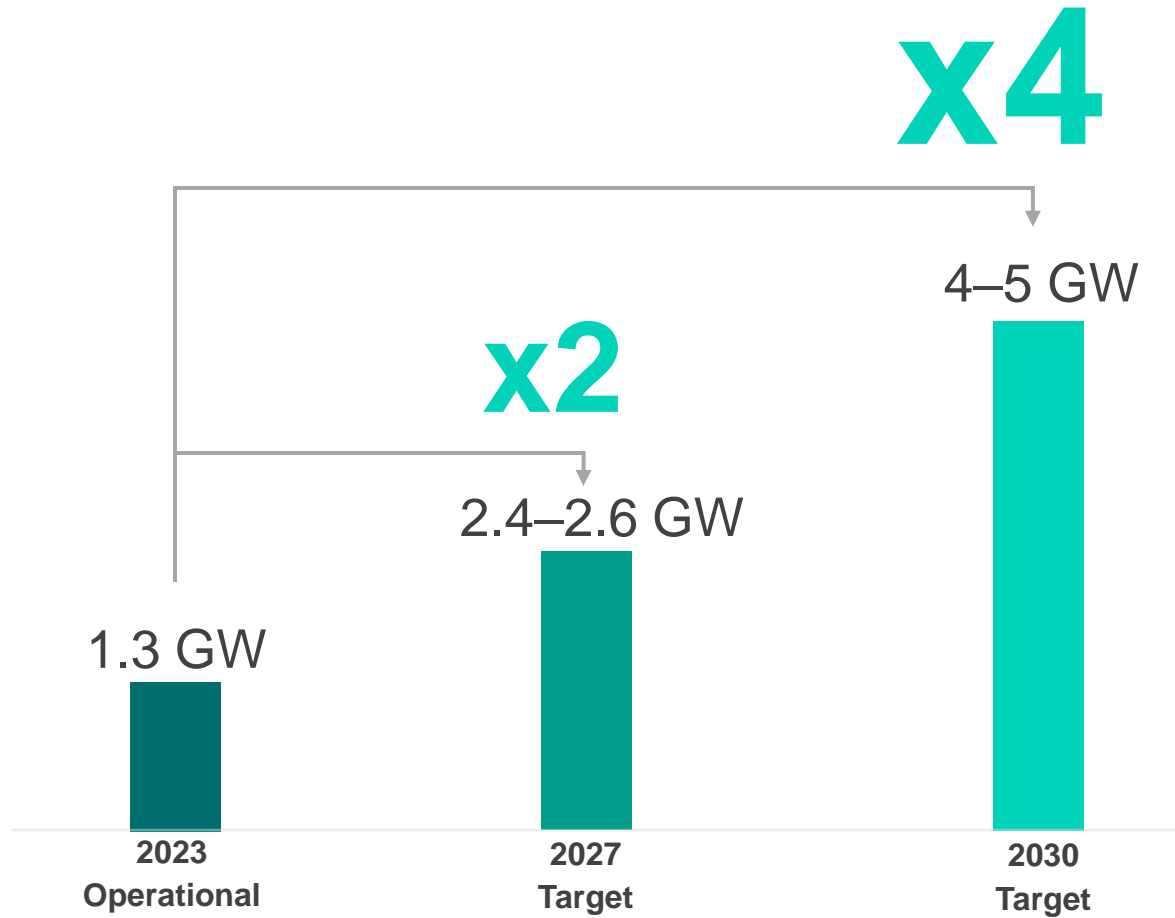




Green Capacity targets

2027: 2.4–2.6 GW¹

2030: 4–5 GW¹

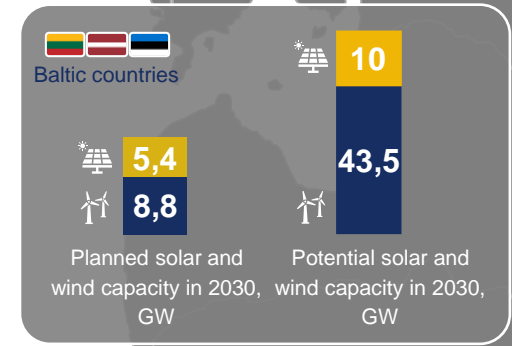
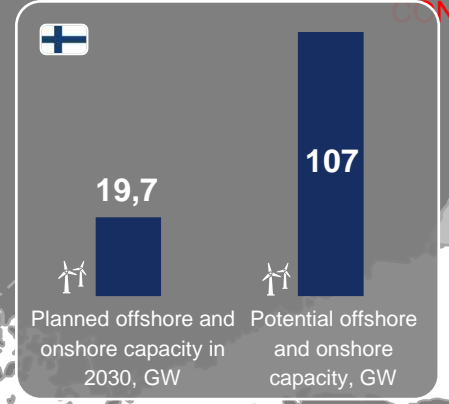


Flexible demand is key to utilize Baltic Offshore and Onshore Wind potential

Beyond 2,4 GW installed offshore and 4 GW onshore wind capacity in the Baltics, investment will become **less attractive / bankable** if no action is taken to improve the flexibility of the energy system.

Baltic state potential combined, if measures are implemented, for offshore wind is 25,5 GW and 18 GW onshore (43,5 GW total).

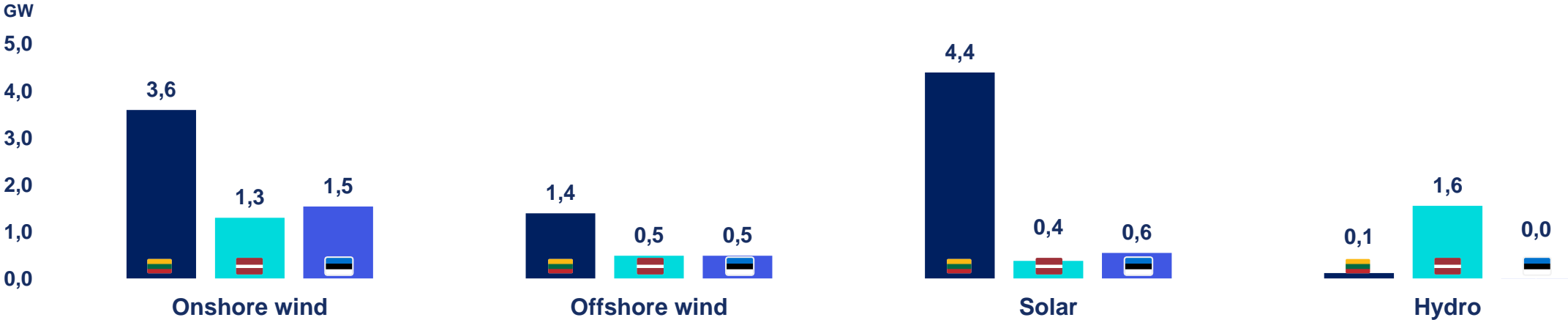
Finland and Sweden has already planned the development of 3,2GW flexible demand – electrolysis capacity.



(1) Study on Baltic offshore wind energy cooperation under BEMIP 2019
 (2) WindEurope at <https://windeurope.org/>
 (3) Fingrid's electricity system vision 2022 – draft scenarios for the future electricity system
 (4) Finnish Wind Power Association at <https://tuulivoimayhdistys.fi/en/>
 (5) Prestudy H2ESIN: Hydrogen, energy system and infrastructure in Northern Scandinavia and Finland

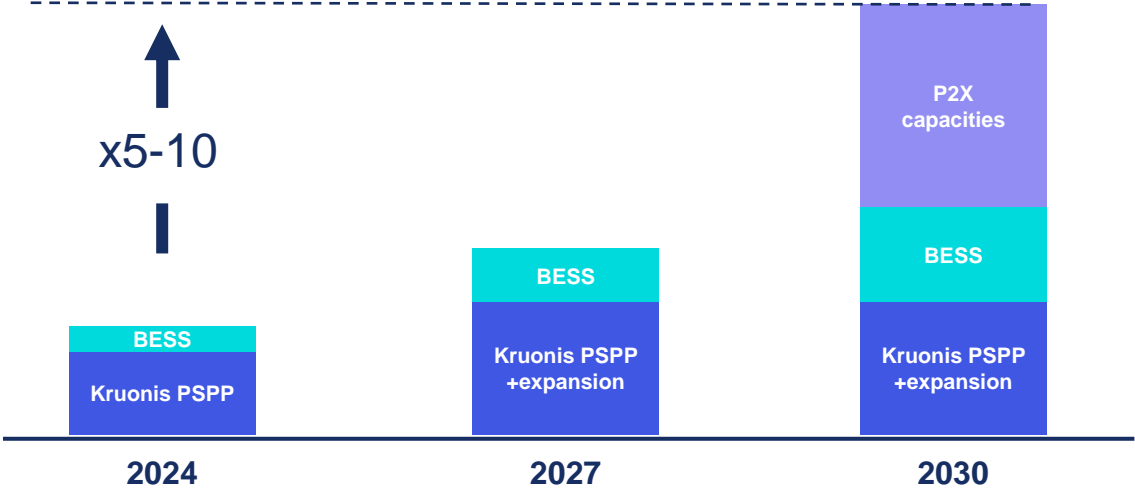
Need for flexibility in the Baltics to avoid REN saturation

Installed capacity assumptions 2030 (Baltics)



Need for Flexibility in the Baltics

x5-10



Kruonis PSPP – short to mid term storage need



BESS – short term storage need



P2X / eFuels – long term storage need

Kruonis PSPP expansion



Kruonis PSPP capability expansion



RES oversupply

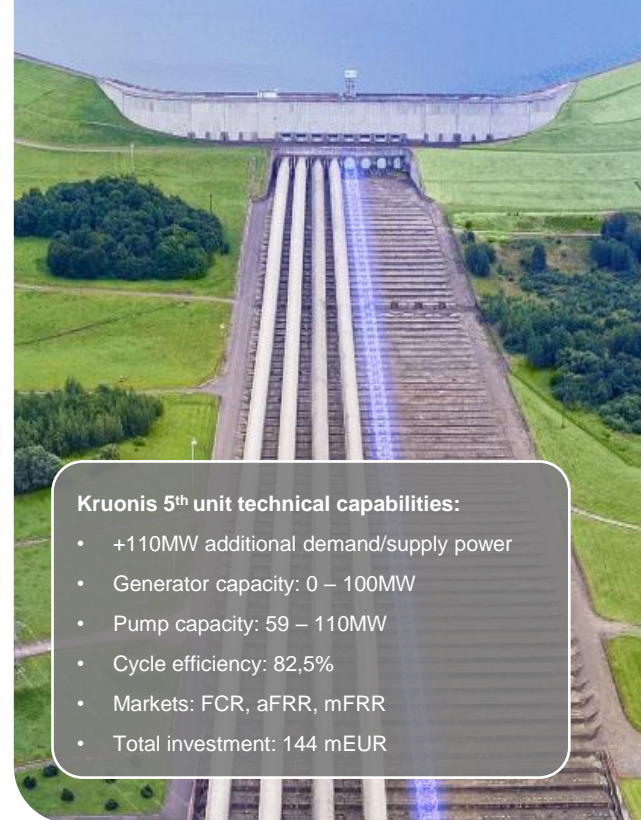


Min. 220MW

Kruonis PSPP flexible demand

Energy demand

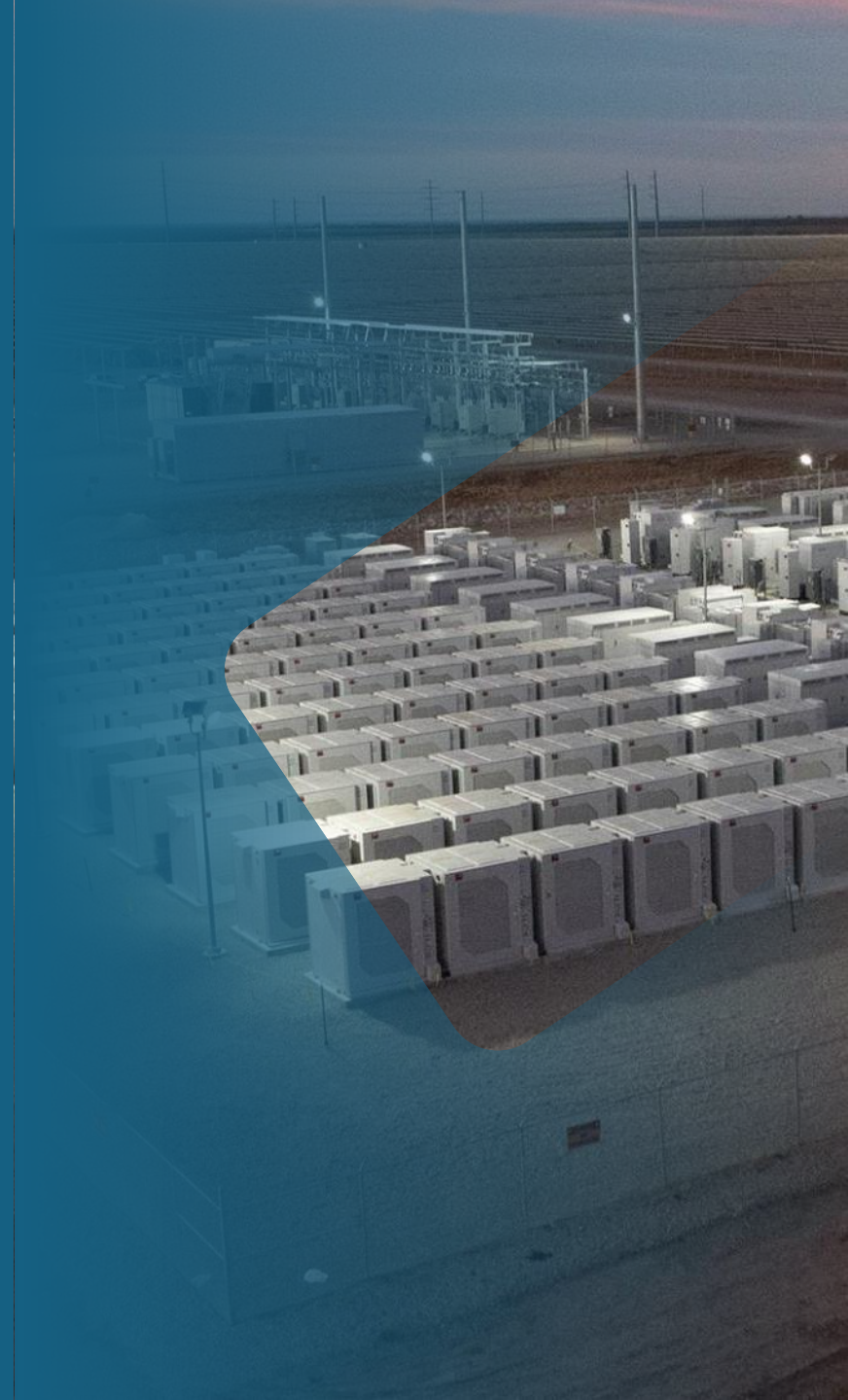
New 5th unit will significantly enhance Kruonis PSPP capabilities to capture energy and follow the supply more closely also stabilizing energy prices



Kruonis 5th unit technical capabilities:

- +110MW additional demand/supply power
- Generator capacity: 0 – 100MW
- Pump capacity: 59 – 110MW
- Cycle efficiency: 82,5%
- Markets: FCR, aFRR, mFRR
- Total investment: 144 mEUR

Utility scale **BESS** and hybridization expansion



State of markets in the region



EU policy

EU mandates every member state to:

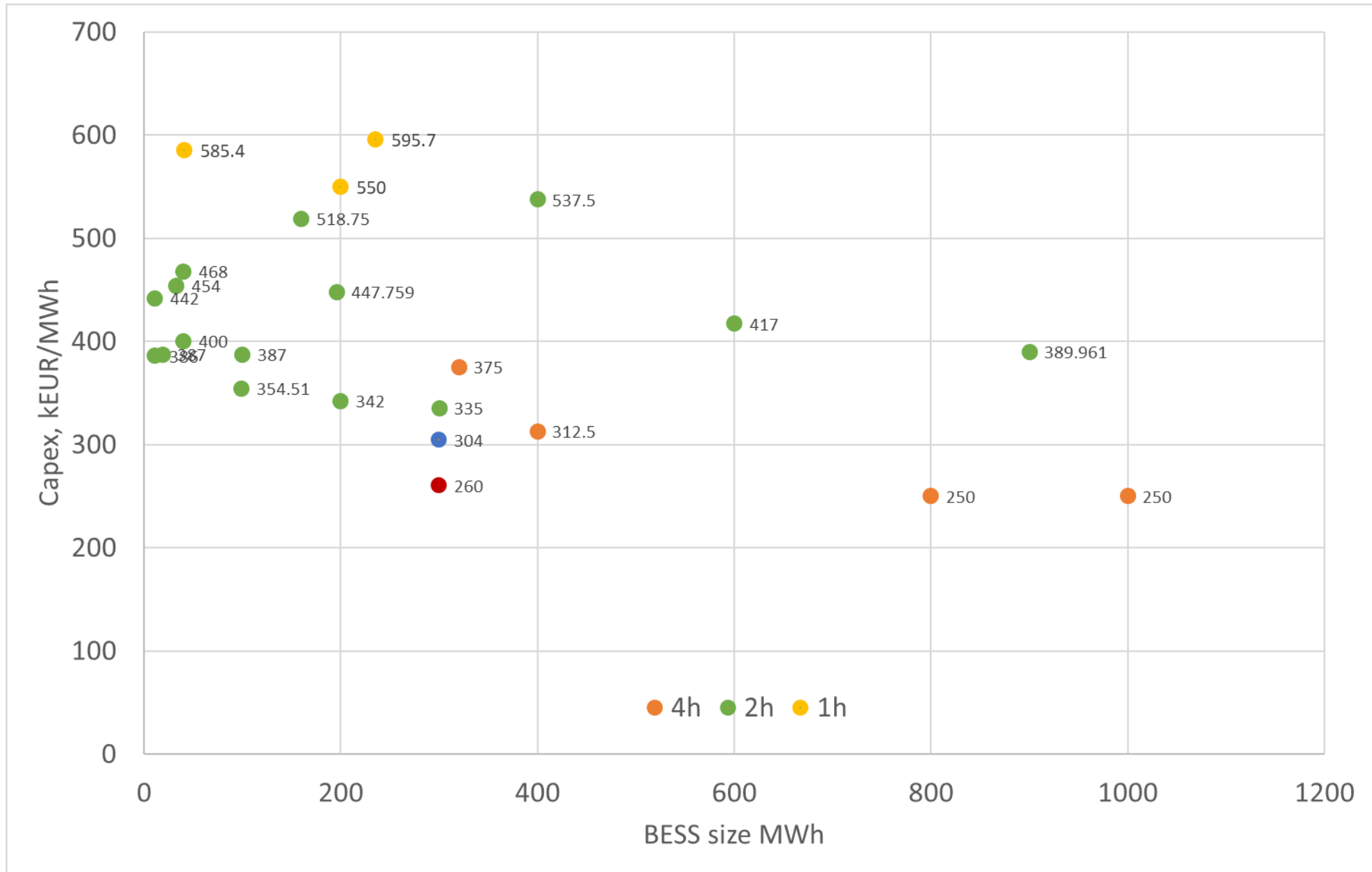
- (1) conduct regular market needs and flexibility assessments;
- (2) set targets for non-fossil flexibility resources and
- (3) provide support for non fossil sources of flexibility only.

Country	Wholesale market	Capacity auction market	Fast frequency services	Other balancing services	Clear government policy	Regulatory
	<i>Availability and volatility</i>	<i>Availability</i>	<i>Availability and depth</i>	<i>Availability and depth</i>	<i>Targets and support</i>	<i>Grid connection, permitting</i>
 Poland	●	●	◐	◐	◐	●
 Lithuania	●	○	◐	◐	◐	●
 Latvia	●	○	◐	◐	○	◐
 Estonia	●	○	◐	◐	◐	◐

EK patvirtino 180 mln. eurų Valstybės pagalbos schemą Lietuvos investicijoms į elektros energijos kaupimo įrenginius

Europos Komisija patvirtino 180 mln. eurų Valstybės pagalbos schemą, skirtą elektros energijos kaupimo įrenginiams remti – valstybė remis iki 30 proc. investicinių išlaidų. Tai atveria kelią naujų elektros energijos kaupimo pajėgumų augimui, kurie užtikrins sklandų elektros gamybos iš atsinaujinančių šaltinių integravimą į sistemą, prisidės prie konkurencingos balansavimo rinkos plėtros ir ženkliai padidins tiek nacionalinį, tiek Baltijos regiono energetinį saugumą.

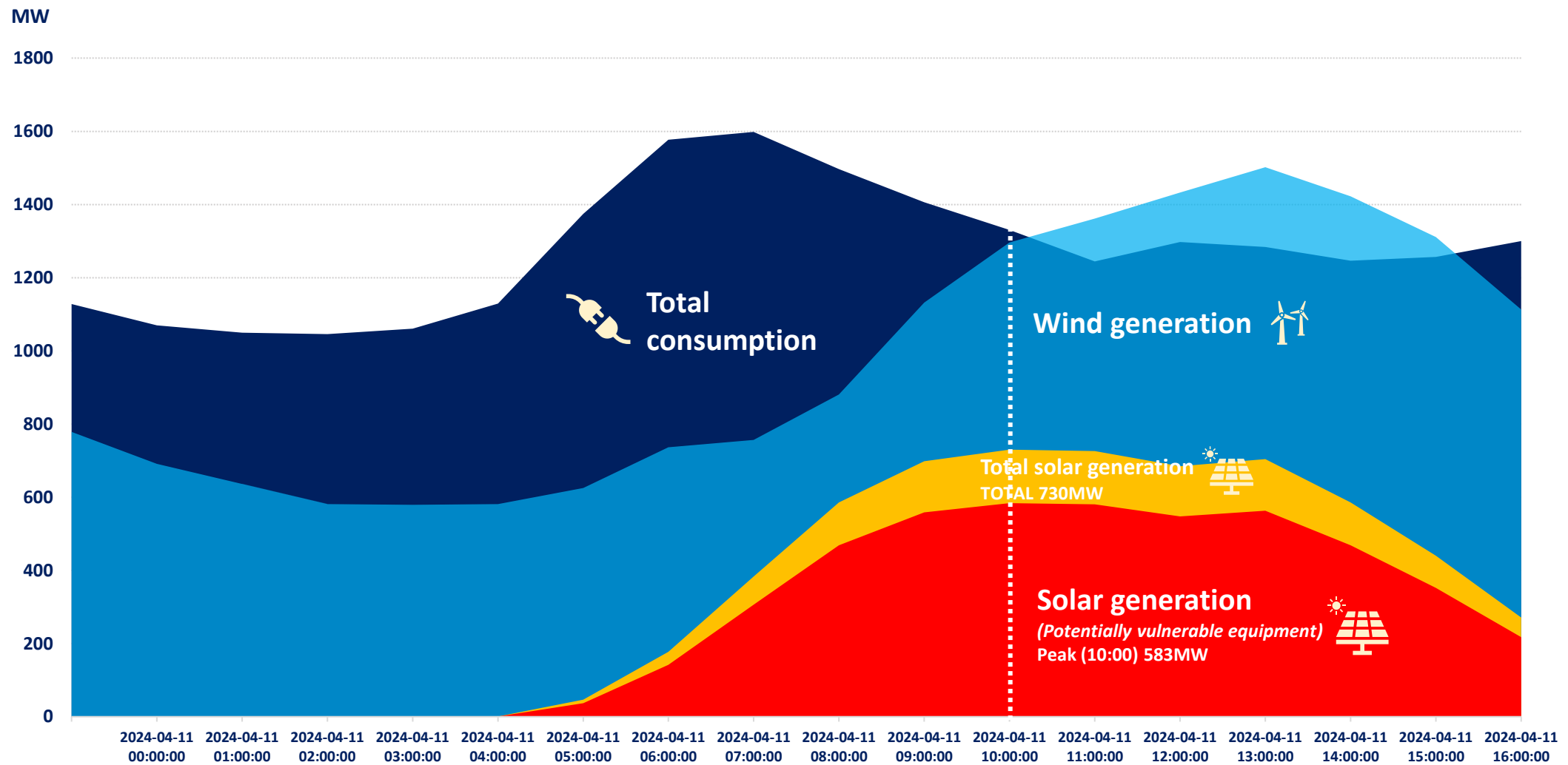
BESS technology prices are falling



New energy trends & threats



New electricity generation trends in LT



Strategically important reserve and legacy capacities





Reserve Capacities

Strategic priorities:

Contributing to the security of the energy system

Focus markets:

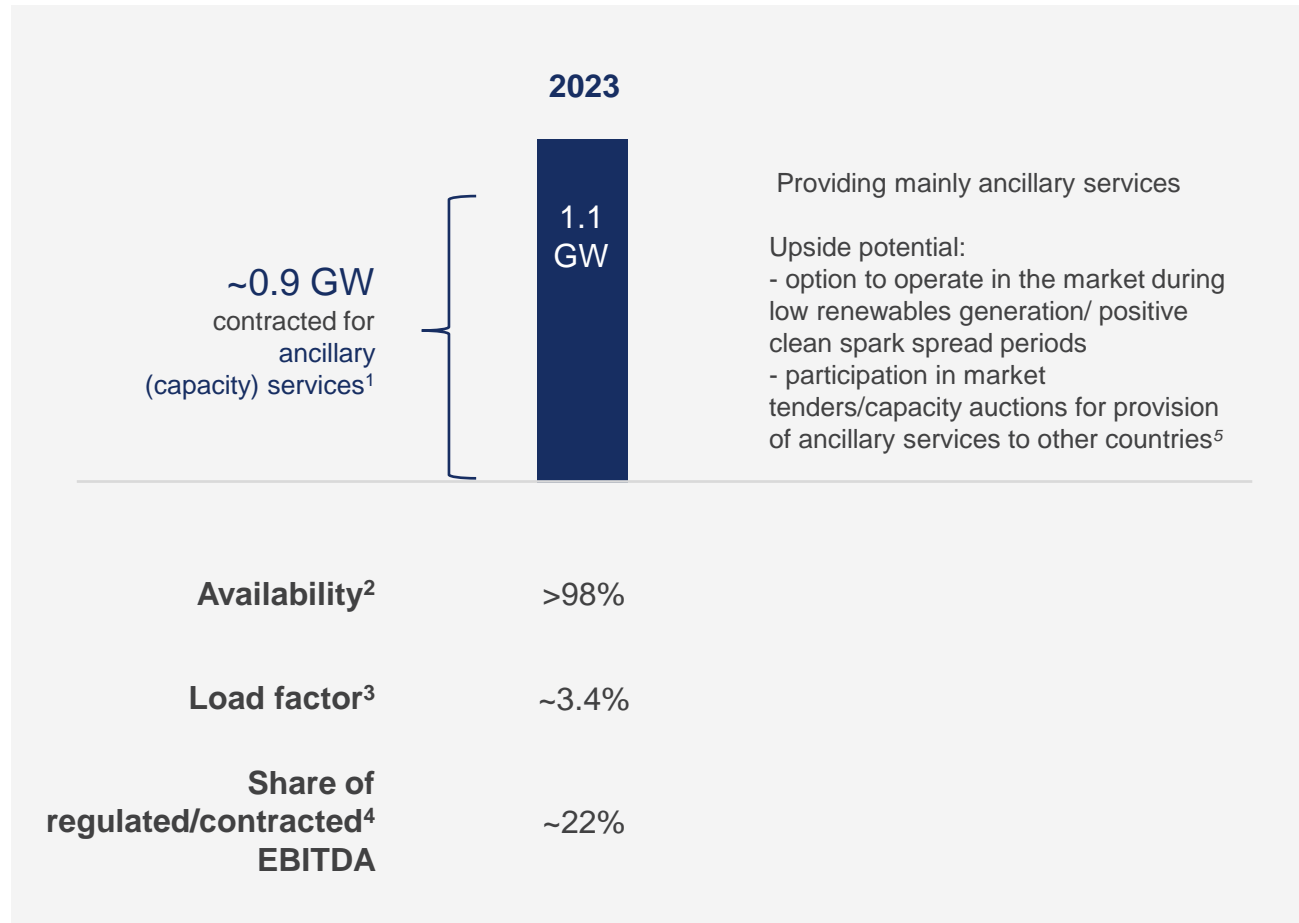
Lithuania





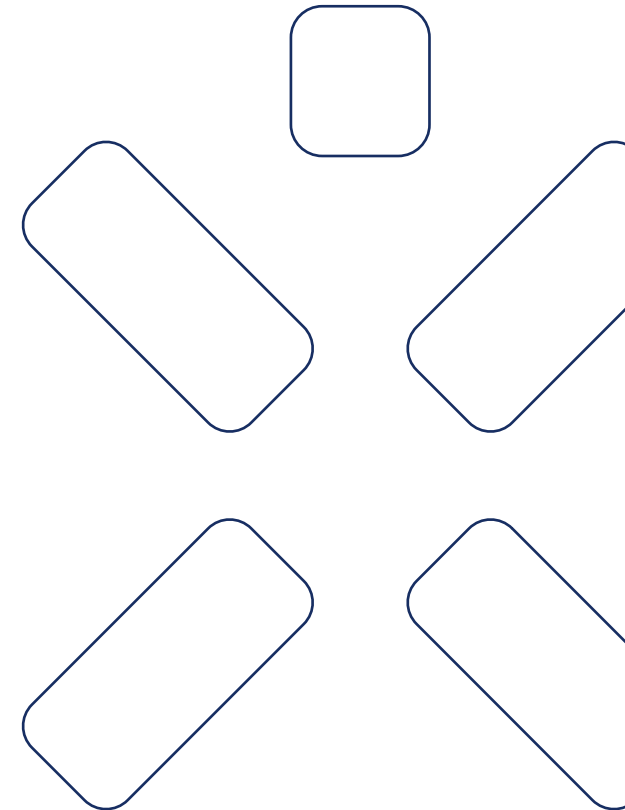
We utilise reserve capacities to ensure reliability and security of the power system

Option to generate electricity in the market during low renewables generation /positive clean spark spread periods



2023–2030

No significant changes



¹ In 2023, gas-fired capacity of 891 MW has been dedicated to isolated regime services.

² Average availability of Elektrėnai Complex, excluding scheduled repairs in 2023 – 99.4%: CCGT – 99.7%, Unit 7– 98.4%; Unit 8 – 99.9%.

³ Production volumes of electricity in Elektrėnai Complex in 2023 were low due to unfavourable market conditions (high gas prices).

⁴ Share from EBITDA, which was earned in Elektrėnai Complex.

⁵ Services for ensuring of availability of capacity in the amount of 250 MW will be provided to Polish TSO in 2027. Participation in Polish TSO's market tenders is planned for other periods as well.

Potential, Investment & Regional security

Energy transition is **potentially the largest growth opportunity for the Baltics** and their major future export commodity products towards central Europe and Germany.



Baltics offshore wind potential – 25,5 GW or 85B EUR

A substantial part of the potential is expected NOT to be realized without the **security of investment**



Baltics onshore wind potential – 18 GW or 27,5B EUR



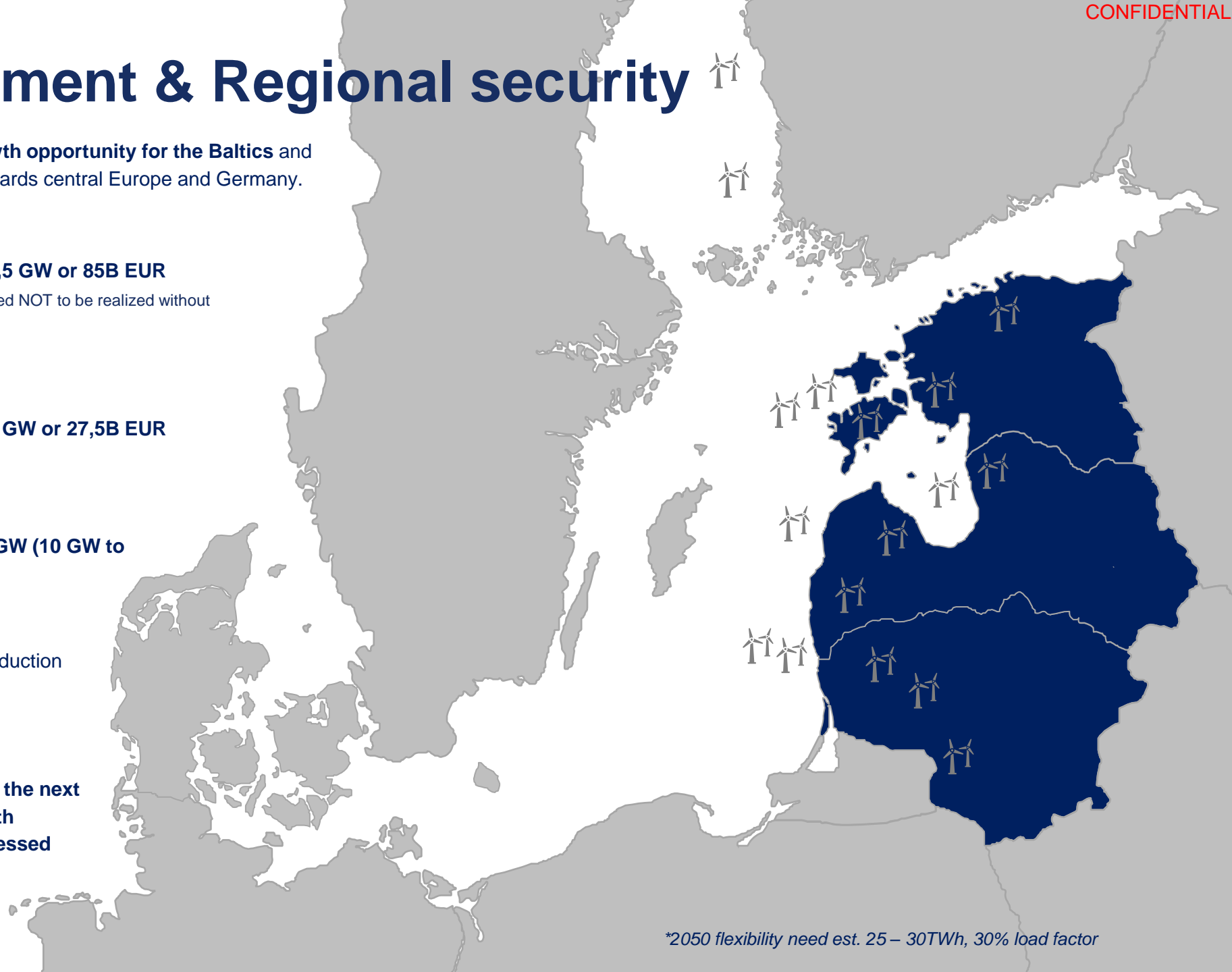
Baltics solar energy potential – 40 GW (10 GW to be realized) or 8B EUR



Onshore/offshore synthetic fuel production facilities (10GW) – 25B EUR*



150B EUR value investment over the next 25-30 years shall be expected with regional security measures addressed



**2050 flexibility need est. 25 – 30TWh, 30% load factor*



Thank you!

About Ignitis Innovation Hub

Here at Ignitis Innovation Hub we believe in the #EnergySmart world and work every day to bring the future closer.

We aim to create the leading EnergyTech ecosystem based on the principles of Open Innovation development.

As an integral part of the Ignitis Group we open the local infrastructure, funding, partnerships, culture, data and more.

For questions, please contact us or find more information at www.ignitisinnovation.com

