1. Identification

Call	Date of submission
C1	23/04/2022

1.1. Full name of the project

CLEAN ENERGY TRANSITION AND ENERGY INDEPENDENCE IN THE BALTIC POWER SYSTEM

74 / 250 characters

1.2. Short name of the project

Go2Green Baltic

15 / 20 characters

1.3. Programme priority

3. Climate-neutral societies

1.4. Programme objective

3.2 Energy transition

1.6. Project duration

Contracting start	22/09/2022	**Contracting end**	31/12/2022
Implementation start	01/01/2023	**Implementation end**	31/12/2025
		Duration of implementation phase (months)	36
Closure start	01/01/2026	**Closure end**	31/03/2026

1.7. Project summary

With the growing concern about the impacts of climate change, the EU commits to the potential solutions to obtain net-zero emissions. In addition, European energy independence has become a crucial urgent priority. Green energy investments are increasingly seen as part of European defence policy and the development and integration of RES as part of National targets an emerging set of actions to provide navigation towards a low-carbon future targeting the energy sector. It will also be reflected in the Baltic Sea region countries, where their unified energy power system in the long term (until 2050 or earlier) will expertise major challenges considering technical and economic issues.

The proposed approach allows finding solutions that optimize the interaction between different generation types aimed to improve the planning of new renewable energy objects along with consideration of different optimization scenarios of the energy consumption. Both the proposed mathematical model and considered sustainable scenarios will be especially beneficial to the Latvian, Estonian, and Lithuanian unified power system after exiting the BRELL energy ring which is scheduled in 2025 considering the long-term planning of its operating modes including extensive use of the RES perspective.

1,289 / 1,500 characters

1.8. Summary of the partnership

All involved participants present their role and responsibility in the energy sector that must be shared under current challenging conditions when targeting full energy transition to green, sustainable, and smart both generation and grid development. The project partners will develop a Roadmap and guidelines targeting energy strategy 2050 of the Baltic Sea region countries (focus on Latvia, Lithuania, and Estonia) leading to achieving potentially maximum use of renewable energy and reducing carbon dioxide emissions.

The following list presents involved partners/associated organizations and their roles in the project:

1. Riga Technical University (RTU), Latvia
2. Kaunas University of Technology (KTU), Lithuania
3. Tallinn University of Technology (TalTech), Estonia
4. Halmstad University (HU), Sweden
5. Technical University of Denmark (DTU), Denmark
6. AS “Augstsprieguma tīkls” (TSO), Latvia
7. Litgrid (TSO), Lithuania
8. Elering (TSO), Estonia
9. AS Sadales tīkls (DSO), Latvia
10. AB Ignitis Group (IG), Lithuania
11. Ministry of Economics Republic of Latvia (MEA)
12. Latvian Association of Power Engineers and Energy Constructors (LEEA), Latvia
13. Estonian Society for Electrical Power Engineering (EES), Estonia
14. Latvian Wind Energy Association (LWEA), Latvia
15. Union of Electricity Industries of Estonia (UEIE)

The consortium participants will share the following key roles: conceptualization of the development of sustainable scenarios and formulation of the optimization tasks (RTU, KTU, TalTech, HU, DTU, TSOs & DSO, IG, MEA); the proposal of methodology, and development of the optimal mathematical model (RTU, KTU, TalTech, HU); validation and testing of the proposed model (RTU, KTU, TalTech, HU, DTU, TSOs & DSO, IG); development of Roadmap/guidelines (RTU, KTU, TalTech, HU, DTU, TSOs & DSO, IG, MEA, LEEA, EES, LWEA, UEIE).

The project team will propose a procedure for required steps implementation in terms of technical and economic restrictions by developing potential solutions including AI applications and analysis of big data (all participants will be involved). The project concept will be tested and verified in three pre-feasibility studies covering the scenario of the isolated operating mode of the Baltic region unified power system after disconnection from BRELL.

2,321 / 3,000 characters

1.11. Project Budget Summary

Financial resources [in EUR]		Preparation costs	Planned project budget
ERDF	ERDF co-financing	0.00	3,159,999.60
	Own contribution ERDF	0.00	789,999.90
	ERDF budget	0.00	3,949,999.50
NO	NO co-financing	0.00	0.00
	Own contribution NO	0.00	0.00
	NO budget	0.00	0.00
NDICI	NDICI co-financing	0.00	0.00
	Own contribution NDICI	0.00	0.00
	NDICI budget	0.00	0.00
RU	RU co-financing	0.00	0.00
	Own contribution RU	0.00	0.00
	RU budget	0.00	0.00
TOTAL	**Total Programme co-financing**	0.00	3,159,999.60
	Total own contribution	0.00	789,999.90
	Total budget	0.00	3,949,999.50

2. Partnership

2.1. Overview: Project Partnership

2.1.1 Project Partners

No.	LP/PP	Organisation (English)	Organisation (Original)	Country	Type of partner	Legal status	Partner budget in the project	Active/inactive	
								Status	from
1	LP	Riga Technical University	Rīgas Tehniskā universitāte	LV	Higher education and research institution	a)	987,500.00 €	Active	22/09/2022
2	PP	Kaunas University of Technology	Kauno technologijos universitetas	LT	Higher education and research institution	a)	868,850.00 €	Active	22/09/2022
3	PP	Tallinn University of Technology	Tallinna Tehnikaülikool	EE	Higher education and research institution	a)	886,149.50 €	Active	22/09/2022
4	PP	Halmstad University	Högskolan i Halmstad	SE	Higher education and research institution	a)	661,500.00 €	Active	22/09/2022
5	PP	JSC "Augstsprieguma tīkls"	AS “Augstsprieguma tīkls”	LV	Large enterprise	a)	130,000.00 €	Active	22/09/2022
6	PP	AB Litgrid	AB Litgrid	LT	Large enterprise	a)	65,000.00 €	Active	22/09/2022
7	PP	Elering AS	Elering AS	EE	Large enterprise	a)	65,000.00 €	Active	22/09/2022
8	PP	JSC "Sadales tīkls"	AS "Sadales tīkls"	LV	Large enterprise	a)	65,000.00 €	Active	22/09/2022
9	PP	AB Ignitis Group	AB Ignitis grupė	LT	Large enterprise	a)	39,000.00 €	Active	22/09/2022
10	PP	Ministry of Economics of the Republic of Latvia	Latvijas Republikas Ekonomikas ministrija	LV	National public authority	a)	78,000.00 €	Active	22/09/2022
11	PP	The Assocation of Power Engineers and Energy Constructors	Biedrība "Latvijas Elektroenerģētiķu un Energobūvnieku asociācija"	LV	NGO	a)	26,000.00 €	Active	22/09/2022
12	PP	Estonian Society for Electrical Power Engineering	Eesti Elektroenergeetika Selts	EE	NGO	a)	26,000.00 €	Active	22/09/2022
13	PP	Latvian Wind Energy Association	Vēja enerģijas asociācija	LV	NGO	b)	26,000.00 €	Active	22/09/2022
14	PP	Union of Electricity Industries of Estonia	Eesti Elektritööstuse Liit MTÜ	EE	NGO	a)	26,000.00 €	Active	22/09/2022

2.1.2 Associated Organisations

No.	Organisation (English)	Organisation (Original)	Country	Type of Partner
AO 1	Technical University of Denmark	Danmarks Tekniske Universitet	DK	Higher education and research institution

2.2 Project Partner Details - Partner 1

LP/PP Lead Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Rīgas Tehniskā universitāte

27 / 250 characters

Organisation in English Riga Technical University

25 / 250 characters

Department in original language Elektrotehnikas un vides inženierzinātņu fakultāte, Enerģētikas institūts

74 / 250 characters

Department in English	Faculty of Electrical and Environmental Engineering, Institute of Power Engineering (83 / 250 characters)

Partner location and website:

Address	Azenes street 12 (16 / 250 characters)	**Country**	Latvia
Postal Code	LV-1048 (7 / 250 characters)	**NUTS1 code**	Latvija
Town	Riga (4 / 250 characters)	**NUTS2 code**	Latvija
Website	www.rtu.lv/en (13 / 100 characters)	**NUTS3 code**	Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	90000068977
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV90000068977 (13 / 50 characters)
PIC	999920718 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Financial data	**Reference period**	01/01/2021 –	31/12/2021
	Staff headcount [in annual work units (AWU)]		2,786.0
	Employees [in AWU]		1,362.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		1,362.0
	Owner-managers [in AWU]		62.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		81,641,442.00
	Annual balance sheet total [in EUR]		201,241,280.00
	Operating profit [in EUR]		0.00

Role of the partner organisation in this project:

• Management of the consortium: management of contractual issues and supervision of their effective compliance by consortium participants;
• Project coordination: coordination and supervision of project workflow, to ensure the compliance of the work plan within the defined project budget and to achieve project objectives;
• Project administration: The main responsibilities are the organization and administration of coordination group meetings. Additionally, it includes being responsible for the project files and ensuring correct archiving and audit capability as well as maintaining the project communication and reporting plans. Furthermore, it has to be granted by the administration that all partners perform project administration duties in a cohesive and standardized fashion;
• Scientific management of the consortium;
• WP1 leader and the second leader of WP3, WP1.1, WP1.3, WP3.1 and WP3.2 leader, participation in WP1.2-1.5, WP2.1-2.4 and WP3.3-3.4.

966 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 2

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Kauno technologijos universitetas (33 / 250 characters)
Organisation in English	Kaunas University of Technology (31 / 250 characters)
Department in original language	Elektros ir elektronikos fakultetas, Elektros energetikos sistemų katedra (73 / 250 characters)
Department in English	Faculty of electrical and electronics engineering, Department of electrical power systems (89 / 250 characters)

Partner location and website:

Address	Studentu street 48 (18 / 250 characters)	**Country**	Lithuania
Postal Code	LT-50244 (9 / 250 characters)	**NUTS1 code**	Lietuva
Town	Kaunas (6 / 250 characters)	**NUTS2 code**	Vidurio ir vakarų Lietuvos regionas
Website	www.ktu.edu/en (14 / 100 characters)	**NUTS3 code**	Kauno apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	111950581
VAT Number Format	LT + 9 digits
VAT Number	N/A ☐ LT119505811 (11 / 50 characters)
PIC	999844961 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Financial data	**Reference period**	01/01/2020 –	31/12/2020
	Staff headcount [in annual work units (AWU)]		2,195.0
	Employees [in AWU]		2,195.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
	Owner-managers [in AWU]		0.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		67,591,632.00
	Annual balance sheet total [in EUR]		126,226,215.00
	Operating profit [in EUR]		-488,597.00

Role of the partner organisation in this project:

Kaunas University of Technology (KTU) is a leading Lithuanian university providing a wide range of studies and closely cooperating with business. The University provides studies of engineering, technologies, physical and social sciences, humanities, and arts. The research groups working at KTU contribute to the global scientific knowledge by conducting cutting edge interdisciplinary research on the most important questions of the current time. KTU has many years of experience in contributing to power system research and development, integration of renewables, and applications of AI in power system.

The role of KTU in this project is the main leader of WP2 and the second leader of WP1, the leader of subtasks 1.4, 2.2, and 3.4; participation in subtasks 1.1-1.3, 1.5, 2.1, 2.3-2.4, and 3.1-3.3.

803 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 3

LP/PP	Project Partner
Partner Status	Active
Active from	22/09/2022
Inactive from	

Partner name:

Organisation in original language	Tallinna Tehnikaülikool (23 / 250 characters)
Organisation in English	Tallinn University of Technology (33 / 250 characters)
Department in original language	Elektroenergeetika ja mehhatroonika instituut (45 / 250 characters)
Department in English	Department of electrical power engineering and mechatronics (59 / 250 characters)

Partner location and website:

Address	Ehitajate street (16 / 250 characters)	**Country**	Estonia
Postal Code	19086 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tallinn (8 / 250 characters)	**NUTS2 code**	Eesti
Website	https://taltech.ee/ (19 / 100 characters)	**NUTS3 code**	Põhja-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	74000323
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE100224841 (11 / 50 characters)
PIC	999842536 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	No

Financial data			
Reference period	01/01/2020	–	31/12/2020
Staff headcount [in annual work units (AWU)]			1,897.0
Employees [in AWU]			1,897.0
Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]			0.0
Owner-managers [in AWU]			0.0
Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]			0.0
Annual turnover [in EUR]			117,165,834.00
Annual balance sheet total [in EUR]			168,263,269.00
Operating profit [in EUR]			8,873,543.00

Role of the partner organisation in this project:

Taltech is the only technological university in Estonia and the flagship of Estonian engineering and technology education. Within this project, the department of electrical power engineering and mechatronics is focusing on market and power grid models and modelling of the future power system from an economical point of view. The whole Taltech team has long experience in international projects and extensive partnerships with businesses, NGOs, and ministries.

The role of Taltech in this project is the main leader of WP3 and the second leader of WP2, the leader of subtasks 1.5, 2.1, 2.4, and 3.3; participation in subtasks 1.1-1.4, 2.2-2.3, 3.1-3.2, and 3.4.

663 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 4

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Högskolan i Halmstad (20 / 250 characters)
Organisation in English	Halmstad University (20 / 250 characters)
Department in original language	Akademin för informationsteknologi (34 / 250 characters)
Department in English	School of Information Technology (32 / 250 characters)

Partner location and website:

Address	Kristian IV:s väg 3 (21 / 250 characters)	**Country**	Sweden

Postal Code	30118 (5 / 250 characters)	**NUTS1 code**	Södra Sverige
Town	Halmstad (9 / 250 characters)	**NUTS2 code**	Västsverige
Website	https://www.hh.se/english/ (26 / 100 characters)	**NUTS3 code**	Hallands län

Partner ID:

Organisation ID type	Organisation number (Organisationsnummer)
Organisation ID	202100-3203
VAT Number Format	SE + 12 digits
VAT Number	N/A ☐ SE202100320301 (14 / 50 characters)
PIC	998196931 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Financial data	**Reference period**	01/01/2021 –	31/12/2021
	Staff headcount [in annual work units (AWU)]		607.0
	Employees [in AWU]		607.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
	Owner-managers [in AWU]		0.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		70,000,000.00
	Annual balance sheet total [in EUR]		41,000,000.00
	Operating profit [in EUR]		6,600,000.00

Role of the partner organisation in this project:

The Center for Applied Intelligent Systems Research of Halmstad University (HU) has a scientific focus on “aware” intelligent systems. This means research on the design of systems that, as autonomously as possible, can construct knowledge from real-life streaming data, created through the interaction between a system and its environment. Our motivation for working with aware systems research is to approach the construction of intelligent systems that can do “life-long self-learning”, i.e., require less supervision and are capable of handling surprising situations. Those capabilities are clearly crucial for optimizing interactions of different generation types, improving planning, and considering different scenarios of energy consumption, a key project part.

The role of HU in this project is the leader of subtasks 1.2 and 2.3; participation in subtasks 1.1, 1.3-1.5, 2.1-2.2, 2.4, and 3.1-3.4.

907 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 5

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	AS “Augstsprieguma tīkls” (27 / 250 characters)
Organisation in English	JSC "Augstsprieguma tīkls" (27 / 250 characters)
Department in original language	n/a (3 / 250 characters)
Department in English	n/a (3 / 250 characters)

Partner location and website:

Address	Darzciema street 86 (19 / 250 characters)	**Country**	Latvia
Postal Code	LV-1073 (7 / 250 characters)	**NUTS1 code**	Latvija
Town	Riga (4 / 250 characters)	**NUTS2 code**	Latvija
Website	www.ast.lv/en (13 / 100 characters)	**NUTS3 code**	Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	40003575567
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV40003575567 (13 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	a) Public

Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	35.12 - Transmission of electricity	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, data, and information for the analysis and simulations, provide practical input and guidance from the industry perspective, and validate the results of scenario simulations and analysis.

The role of AST in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

385 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 6

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language: AB Litgrid
20 / 250 characters

Organisation in English: AB Litgrid
19 / 250 characters

Department in original language: Sistemos valdymo departamentas
39 / 250 characters

Department in English: Power system operations department
43 / 250 characters

Partner location and website:

Address	Karlo Gustavo Emilio Manerheimo g. 8 (36 / 250 characters)	**Country**	Lithuania
Postal Code	LT-05131 (8 / 250 characters)	**NUTS1 code**	Lietuva
Town	Vilnius (7 / 250 characters)	**NUTS2 code**	Sostinės regionas
Website	www.litgrid.eu (17 / 100 characters)	**NUTS3 code**	Vilniaus apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	302564383
VAT Number Format	LT + 12 digits
VAT Number	N/A ☐ LT100005748413 (14 / 50 characters)
PIC	959572404 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	35.12 - Transmission of electricity	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, data, and information for the analysis and simulations, provide practical input and guidance from the industry perspective, and validate the results of scenario simulations and analysis.

The role of AST in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

385 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 7

LP/PP	Project Partner		
Partner Status	Active		
	Active from 22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Elering AS (19 / 250 characters)
Organisation in English	Elering AS (19 / 250 characters)
Department in original language	Energiasüsteemi juhtimiskeskus (39 / 250 characters)
Department in English	Power System Control Centre (36 / 250 characters)

Partner location and website:

Address	Kadaka Road 42 (14 / 250 characters)	**Country**	Estonia
Postal Code	12915 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tallinn (7 / 250 characters)	**NUTS2 code**	Eesti
Website	www.elering.ee/en (17 / 100 characters)	**NUTS3 code**	Põhja-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	11022625
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE100889639 (11 / 50 characters)
PIC	100889639 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	35.12 - Transmission of electricity	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, data, and information for the analysis and simulations, provide practical input and guidance from the industry perspective, and validate the results of scenario simulations and analysis.

The role of partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

389 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 8

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	AS "Sadales tīkls" (18 / 250 characters)
Organisation in English	JSC "Sadales tīkls" (19 / 250 characters)
Department in original language	Inovāciju vadības funkcija (35 / 250 characters)
Department in English	Research & Development department (42 / 250 characters)

Partner location and website:

Address	Šmerļa street 1 (15 / 250 characters)	**Country**	Latvia
Postal Code	LV-1006 (7 / 250 characters)	**NUTS1 code**	Latvija
Town	Riga (4 / 250 characters)	**NUTS2 code**	Latvija
Website	www.sadalestikls.lv (19 / 100 characters)	**NUTS3 code**	Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	40003857687
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV40003857687 (13 / 50 characters)
PIC	896894205 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	35.13 - Distribution of electricity	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, data, and information for the analysis and simulations, provide practical input and guidance from the industry perspective, and validate the results of scenario simulations and analysis.

The role of partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

389 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 9

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	AB Ignitis grupė (16 / 250 characters)
Organisation in English	AB Ignitis Group (16 / 250 characters)
Department in original language	n/a (3 / 250 characters)
Department in English	n/a (3 / 250 characters)

Partner location and website:

Address	Laisvės pr. 10 (15 / 250 characters)	**Country**	Lithuania
Postal Code	LT-04215 (8 / 250 characters)	**NUTS1 code**	Lietuva
Town	Vilnius (7 / 250 characters)	**NUTS2 code**	Sostinės regionas
Website	www.ignitisgrupe.lt (19 / 100 characters)	**NUTS3 code**	Vilniaus apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	301844044
VAT Number Format	LT + 12 digits
VAT Number	N/A ☐ LT100004278519 (14 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	64.20 - Activities of holding companies	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, data, and information for the analysis and simulations, provide practical input and guidance from the industry perspective, and validate the results of scenario simulations and analysis.

The role of partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

389 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 10

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Latvijas Republikas Ekonomikas ministrija

50 / 250 characters

Organisation in English Ministry of Economics of the Republic of Latvia

56 / 250 characters

Department in original language Ilgtspējīgas enerģētikas politikas departaments

56 / 250 characters

Department in English Department of Sustainable Energy Policy

48 / 250 characters

Partner location and website:

Address Brivibas street 55

19 / 250 characters

Postal Code LV - 1519

9 / 250 characters

Town Riga

4 / 250 characters

Website www.em.gov.lv

13 / 100 characters

Country Latvia

NUTS1 code Latvija

NUTS2 code Latvija

NUTS3 code Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	90000086008
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV90000086008 (13 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	National public authority	Ministry, etc.
Sector (NACE)	84.11 - General public administration activities	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The partner will take part in all working packages and will contribute to the project with consultations, provide support via consultations/meetings and required data to the higher education institutions to proceed with power network development strategy, testing, and validation for the designed model.

The role of the partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

404 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 11

LP/PP	Project Partner		
Partner Status	Active		
	Active from	22/09/2022	**Inactive from**

Partner name:

Organisation in original language	Biedrība "Latvijas Elektroenerģētiķu un Energobūvnieku asociācija" (66 / 250 characters)
Organisation in English	The Assocation of Power Engineers and Energy Constructors (57 / 250 characters)
Department in original language	n/a (6 / 250 characters)
Department in English	n/a (7 / 250 characters)

Partner location and website:

Address	Šmerļa street 1 15 / 250 characters	**Country**	Latvia
Postal Code	LV-1006 7 / 250 characters	**NUTS1 code**	Latvija
Town	Riga 4 / 250 characters	**NUTS2 code**	Latvija
Website	www.leea.lv 12 / 100 characters	**NUTS3 code**	Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	40008116388
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV40008116388 13 / 50 characters
PIC	n/a 3 / 9 characters

Partner type:

Legal status	a) Public	
Type of partner	NGO	Non-governmental organisations, such as Greenpeace, WWF, etc.
Sector (NACE)	94.11 - Activities of business and employers membership organisations	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The Association of Power Engineers and Energy Constructors (LEEA) is an association of companies in the industry that unites legal and natural persons engaged in:

- problems of security and stability of power system supply;
- power system prospects for development problems;
- vocational education problems;
- manufacture of various electrical equipment and hardware;
- design (electricity production, management, distribution, power supply, automation, etc.);
- provision of consultations and other services.

The main objectives of LEEA within this project are participation in the elaboration of energy field legislation; participation in the elaboration of Latvian energy system development strategies and scenarios and being involved with project dissemination and providing feedback on project publications and reports via active participation in webinars/seminars/kick of meetings.

The role of the partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

991 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 12

LP/PP	Project Partner

Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Eesti Elektroenergeetika Selts (30 / 250 characters)
Organisation in English	Estonian Society for Electrical Power Engineering (50 / 250 characters)
Department in original language	n/a (3 / 250 characters)
Department in English	n/a (3 / 250 characters)

Partner location and website:

Address	Ehitajate street 5 (18 / 250 characters)	**Country**	Estonia
Postal Code	19086 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tallinn (7 / 250 characters)	**NUTS2 code**	Eesti
Website	http://www.eees.ee/ (19 / 100 characters)	**NUTS3 code**	Põhja-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	80067515
VAT Number Format	EE + 9 digits
VAT Number	**N/A** ☑ (0 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	NGO	Non-governmental organisations, such as Greenpeace, WWF, etc.
Sector (NACE)	94.11 - Activities of business and employers membership organisations	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	No

Role of the partner organisation in this project:

Estonian Society for Electrical Power Engineering (EEES) is a non-governmental organization of engineers, students, and enterprises acting in the field of electrical power engineering. Activities of the members are electricity generation, transmission, and distribution, electricity sales, construction of substations, power lines, and equipment, training of students, and continuing education of specialists in the energy field. EEES has more than 150 members and the Society is a member of the Estonian Association of Engineers. The main objectives of EEES within this project are participation in the elaboration of energy field legislation; participation in the elaboration of Estonian energy system development strategies and scenarios to be involved with project dissemination and giving feedback on project publications and reports.

The role of the partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

944 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 13

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Vēja enerģijas asociācija

25 / 250 characters

Organisation in English Latvian Wind Energy Association

32 / 250 characters

Department in original language n/a

3 / 250 characters

Department in English n/a

3 / 250 characters

Partner location and website:

Address Kalku street 7

14 / 250 characters

Postal Code LV-1050

7 / 250 characters

Town Riga

4 / 250 characters

Website www.wea.lv/en

13 / 100 characters

Country Latvia

NUTS1 code Latvija

NUTS2 code Latvija

NUTS3 code Rīga

Partner ID:

Organisation ID type Unified registration number (Vienotais reģistrācijas numurs)

Organisation ID 07260800253

VAT Number Format LV + 11 digits

VAT Number N/A ☑

0 / 50 characters

PIC n/a

3 / 9 characters

Partner type:

Legal status	b) Private	
Type of partner	NGO	Non-governmental organisations, such as Greenpeace, WWF, etc.
Sector (NACE)	94.12 - Activities of professional membership organisations	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Financial data	**Reference period**	01/01/2021 –	31/12/2021
	Staff headcount [in annual work units (AWU)]		8.0
	Employees [in AWU]		1.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		1.0
	Owner-managers [in AWU]		1.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		5.0
	Annual turnover [in EUR]		69,000.00
	Annual balance sheet total [in EUR]		0.00
	Operating profit [in EUR]		0.00

Role of the partner organisation in this project:

LVEA's work contributes to Latvia's transition to a sustainable energy system and contributes to the country's economic growth, actively promoting wind power as the answer to today's energy challenges, providing substantial environmental and economic benefits. LWEA works towards raising public awareness and understanding of renewable energy sources, in particular wind energy, as well as works in close cooperation with the governmental institutions towards establishing an enabling and inclusive regulatory framework for renewable energy.

The role of the partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

642 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 14

LP/PP	Project Partner		
Partner Status	Active		
	Active from 22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Eesti Elektritööstuse Liit MTÜ
	30 / 250 characters
Organisation in English	Union of Electricity Industries of Estonia
	43 / 250 characters
Department in original language	n/a
	4 / 250 characters
Department in English	n/a
	4 / 250 characters

Partner location and website:

Address	Lelle street 22 (15 / 250 characters)	**Country**	Estonia
Postal Code	11318 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tallinn (7 / 250 characters)	**NUTS2 code**	Eesti
Website	www.elektriliit.ee (18 / 100 characters)	**NUTS3 code**	Põhja-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	80209352
VAT Number Format	EE + 9 digits
VAT Number	N/A ☑ (0 / 50 characters)
PIC	905028625 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	NGO	Non-governmental organisations, such as Greenpeace, WWF, etc.
Sector (NACE)	94.12 - Activities of professional membership organisations	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

ETL connects most of the companies within the Estonian electricity industry (ABB, Eesti Energia, Elektrilevi, Enefit, Connecto, Estonian Cell). ETL is a member of the European Union of Electricity Industry (EURELECTRIC) and is focusing on the development and competitiveness of the electricity industry, promoting low-carbon electricity. They have practiced in various national and international projects.

Within this call, the task of ETL is to contribute to the development of a Roadmap/guidelines and dissemination within its network. The project team will evaluate the procedure for required steps in terms of technical and economic restrictions by developing potential solutions suitable for the industry.

The role of the partner in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

812 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ◉ No

2.3 Associated Organisation Details - AO 1

Associated organisation name and type:

Organisation in original language: Danmarks Tekniske Universitet (33 / 250 characters)

Organisation in English: Technical University of Denmark (32 / 250 characters)

Department in original language: Institut for Vinenergi (22 / 250 characters)

Department in English: Department of Wind Energy (25 / 250 characters)

Legal status: a) Public

Type of associated organisation: Higher education and research instituti — University faculty, college, research institution, RTD facility, research cluster, etc.

Associated organisation location and website:

Address: Frederiksborgvej 399 (20 / 250 characters)

Country: Denmark

Postal Code: 4000 (4 / 250 characters)

Town: Roskilde (8 / 250 characters)

Website: www.dtu.dk/english (19 / 100 characters)

Role of the associated organisation in this project:

The associated organization will participate in all work packages and provide support through online meetings/consultations, joining discussions/workshops, etc. related to wind power system integration.

The role of the associated organization in this project is participation in subtasks 1.1-1.5, 2.1-2.4, and 3.1-3.4.

319 / 1,000 characters

3. Relevance

3.1 Context and challenge

The Baltic Sea countries (focus on Latvia, Lithuania, and Estonia) as a part of the EU area have to follow the established energy policies and regulations targeting sustainable both energy production and consumption. The EU members must develop national-level strategies and follow their regulations by proposing solutions/measures in terms of a decrease in greenhouse gas emissions, an increase in the share of renewable energy sources, and an increase in energy efficiency savings. Therefore, the Baltic Sea countries will achieve a low-carbon economy the same time accumulating self-reserving energy leading to a decrease in the energy import dependence and an increase in the security of energy supplies. Especially this becomes relevant in light of the current political situation revealing the existing and potential concerns in the energy secure supply as well as indicating the Baltic Sea countries as a prioritized region. The Baltic power system desynchronization with Russian EPS and planned synchronization with continental Europe will increase the need for frequency and balancing reserves including concerns related to stopping the operation of uncompetitive thermal power plants. To decrease the risk of electricity supply shortages in the near and long-term future potential solutions must be proposed.

To meet the “sustainable and green” policies by minimizing the diversification of energy sources, suppliers, and routes, it is important to consider the possible EPS development scenarios, identify and perform activities within the plan of actions for the Baltic region EPS targeting its sustainable, resilient, safe, secure functioning.

The important contribution of the project consists of model development for the evaluation of Baltic region EPS adequacy, which quantitatively shows the cons and pros of possible development scenarios for economic, regulatory, and infrastructural decision-makers as well as decisions on the problem of the EPS safety and security.

1,990 / 2,000 characters

3.2 Transnational value of the project

The project proposes a cooperation platform involving the authorities and stakeholders from five countries of the Baltic Sea region. This cooperation aims to develop a simulation model for solving applied problems of analyzing and planning energy power system modes considering new renewable energy objects shortly and long-term. The metaheuristic optimization algorithms will be utilized targeting an examination of the unified EPS of Latvia, Lithuania, and Estonia.

Progressive cooperation between the consortium member countries will solve the above-mentioned tasks obtaining a transition to sustainable and green energy. The achievement assumes intensive research activities including a common interest share of communication and operation functions supported by the industry. All involved scientific institutions have top competence and experience in their specific areas of power engineering, ranging from power system analysis, power system operation and monitoring, power system stability and control, modeling and control to local power system economics. Thus, the consortium will have the necessary capacity and workforce to achieve collectively the targeted output. The project will develop innovative and useful models/tools.

The collaborative work assumes a very close dialog with Baltic region power companies and authorities throughout the “Go2Green Baltic” vision due to the following reasons:
- The cooperation with the power industry ensures that the RTD topics are addressed in a relevant and practicable way, where the project participants have updated information and knowledge on major operational challenges faced by the power industry.
- The fast and accurate response from the power industry on preliminary study results as well as presented and performed work guarantees first access to the obtained results for all involved parties.
- The support from the power industry in obtaining data/models/other relevant information will be a great mutual benefit.

1,984 / 2,000 characters

3.3 Target groups

Target group	Sector and geographical coverage	Its role and needs
Higher education and research instituti	An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden) 220 / 500 characters	This target group has already high-level expertise in: - The operation and control of power systems with a great share of renewable in the competitive electricity market. - Modeling and dynamic simulation of large-scale power systems including models based on the available measurements. - The fields of project coordination, wide-area monitoring, and complex data processing. The required software/online tools could be highlighted as potential needs, and data support. 471 / 1,000 characters

Target group	Sector and geographical coverage	Its role and needs
Large enterprise	An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia) 183 / 500 characters	This target group will have direct input on the project realization since it has a strong technical background and wide practical experience within specified project objectives and tasks. It ensures services on the development, construction, operation, and feasibility analysis of the Baltic region networks and their related monitoring, providing excellent expertise in: - Transmission and distribution network modeling and spatial planning. - Development and integration of a variety of computation models/tools/software including consideration of the software interoperability and fast operation. - Consideration of the potential optimization capabilities using appropriate methods via fast computations. - Supply, installation, and management of various energy carriers. - Development of various economic models to support the accumulation of financial savings. - Secure utilization of technical and financial data via customization functions and services as well as expertise and insight. 993 / 1,000 characters
NGO	An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia) 171 / 500 characters	This target group will have an impact on the dissemination of the project obtained results and a common share of the development of the potential EPS development scenarios. The involved companies represent the interests of industry and engineering power professionals, advising the governmental institutions on major and minor socio-economic issues based on request or their initiative as well as organizing various events for raising the professional competence of engineers in specified majors. The joint members have experience in the field of electrical power systems, and participated in various projects focused on power system stability and renewable energy resources. According to obtained results, the company will verify specific tasks, regarding EPS operational reliability (adequacy and safety) assessment. 824 / 1,000 characters
National public authority	An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia) 93 / 500 characters	The company has experience in the field of electrical power systems, participated in various projects focused on power system stability and renewable energy resources. According to obtained results, the company will verify specific tasks, regarding EPS operational reliability (adequacy and safety) assessment. 316 / 1,000 characters

3.4 Project objective

Your project objective should contribute to:

Energy transition

The objective of the project is to develop a sustainable solution for a multi-purpose optimization task for the planning of operation modes of such a unified system, which will require the identifying and evaluation of decarbonization pathways via optimal implementation of the suggested measures while ensuring efficiency, adequacy, resiliency, and operational reliability of the system, as well as the need to reduce the level of energy dependence and maximize the flexibility and adaptability of the energy power system (EPS). Moreover, the proposed approach could be used to establish an optimal schedule for the network power flow, assess storage requirements (capacity and investment), set up measures for energy savings, and develop guidelines on the energy landscape spatial planning considering the upcoming long-term changes of the energy balance.

Special attention will be paid to solving the issues of technologically and economically optimal and flexible management of large volumes of stochastic RES generation and maintaining the necessary level of EPS reliability. A proposal of AI potential solutions/implementations will be one of the project parts focusing on their useful integration in the Baltic region countries' transmission and distribution systems.

1,276 / 2,000 characters

3.5 Project's contribution to the EU Strategy for the Baltic Sea Region

Please indicate whether your project contributes to the implementation of the Action Plan of the EU Strategy for the Baltic Sea Region (EUSBSR).

(•) Yes ( ) No

Please select which Policy Area of the EUSBSR your project contributes to most.

PA Energy

Please list the action of this Policy Area that your project contributes to and explain how.

A flexible approach to solving this problem considers the following actions:

1. Specify and evaluate the boundary conditions including extraordinary modes, for instance, the island mode of operation of the unified energy power system (EPS), integration of potential wind parks, prosumers involvement, and others.

2. Determine various limitations related to the transmission capacity.

3. Model long-term electricity generation development scenarios, including solar, on-shore, and off-shore wind development in the Baltic region.

4. Model long-term electricity demand development scenarios in the Baltic region, including electrification scenarios in transport, heating, hydrogen production, and others.

5. Analyze the performance of the power system in different scenarios, including power balance composition, supply-demand adequacy, power system inertia, and other indicators.

885 / 1,500 characters

If applicable, please describe which other Policy Areas of the EUSBSR your project contributes to and how.

PA Secure:

1. Analysis of Baltic region energy secure supply for different grid development scenarios.

PA Safe:

1. Identify both the availability and accessibility of the energy resources in the examined region including the potential of RES.

2. Study of the relationship between the reduction of probable damage to consumers and the cost of additional fuel consumption to maintain the necessary reserve of power in the power system.

439 / 1,500 characters

3.6 Other political and strategic background of the project

Strategic documents

The Go2Green Baltic project contributes to achieving ambitious goals of the Green Deal - clean energy transition.

European Commission Communication: The European Green Deal [COM(2019) 640 final].

197 / 500 characters

The Go2Green Baltic project model contributes to Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal electricity market, i.e., a tool for one of six regional coordination centers, specifically for the Baltic states RCC (EE, LV, LT).

https://eur-lex.europa.eu/eli/reg/2019/943/oj
https://elering.ee/en/regional-system-operation-methodologies

392 / 500 characters

The Go2Green Baltic project contributes to national long-term strategies realization, for instance, "Strategy of Latvia for the Achievement of Climate Neutrality by 2050", "Resolution of the Riigikogu
General Principles of Climate Policy until 2050"

https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-long-term-strategies_en#strategies

426 / 500 characters

3.7 Seed money support

Please indicate whether your project is based on a seed money project implemented in the Interreg Baltic Sea Region Programme 2014-2020.

( ) Yes (•) No

3.8 Other projects: use of results and planned cooperation

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
Self-Monitoring for Innovation (SeMI): Meta-framework for group-based self-monitoring 85 / 200 characters	KK-stiftelsen (The Swedish Knowledge Foundation) 48 / 200 characters	A common feature shared by many modern industrial systems, enabled by IoT, is access to large and ubiquitous streams of data describing their operation. One way to take advantage of this and automatically detect faults and deviations is to identify groups of peers, or similar systems, and evaluate how well each individual fits the rest of the pack. This approach is based on the “wisdom of the crowd”, i.e., the assumption that by understanding the similarities and differences in the operation of groups of systems, one can detect malfunctioning individuals, considering the fact that automatically derived solutions must interact with domain experts in various ways. The results of the project will be applied for the Development of a mathematical model for evaluating EPS operation scenarios (WP1) and for Cost-benefit analysis for Baltic region scenarios (WP2). 869 / 1,000 characters
Optimised Residential Battery Energy Storage Systems (ORBES) 60 / 200 characters	EEA Financial Mechanism Baltic Research Programme (2020-2023) 61 / 200 characters	The project is focused on the area of small-scale residential battery storage, which currently lack flexible energy management systems that can enable their effective coordination and optimal utilization of their potential. The project aims to address this problem from multiple levels: electronic components, power electronic interfaces and system-wide energy management algorithms. By performing comprehensive analysis and optimization of the battery energy storage systems at various levels, it possible utilize the most accurate data and deliver high-quality results. The models for forecasting of the electricity demand and supply in the Baltic Sea region from renewable energy sources will allow to create and investigate the energy management profiles that will reveal operating profiles for battery energy storage systems and can be used at the initial stage of forming models of the energy system within the framework of this project (WP2). 950 / 1,000 characters

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
Interconnecting the Baltic Sea Countries Via Shore Energy Hubs (BaltHub) 72 / 200 characters	Baltic-Nordic Energy Research Programme (2021-2022) 52 / 200 characters	Such energy hubs have large amounts of offshore wind power connected far in the sea where wind speeds are high. The hubs can also be used to interconnect the onshore energy systems of the Baltic Sea countries, allowing an efficient flow of energy and a more resilient interconnected energy system. In addition to providing clean energy to cover current electricity consumption, the offshore energy hubs can provide for the expected increase in electricity demand towards 2050 due to sector coupling. Major drivers for the increased electricity demand are electrification of heat demand and the transport sector. In addition to electric vehicles, hydrogen production for ships, aviation and heavy vehicles using electrolyzers adds to future electricity consumption. An option is to produce hydrogen directly at the offshore hubs or to place the electrolyzers onshore. Both options are considered in the project (WP1-WP2). 922 / 1,000 characters
Technical Support for Risk Assessment of Power Transmission Network - LOT 1: Expertise from the Perspective of Electricity System of Gas-Electricity Network for Reference System: Republic of Lithuania 200 / 200 characters	European Comission 18 / 200 characters	The project aims to identify the risks of Power Transmission networks from the perspective of the Electricity System of the Gas-Electricity Network for Reference System. Its results can be useful in the development of various unified EPS scenarios when assessing the risks of the EPS reliability of the electric power system and capabilities of power balance reserves (WP1). 375 / 1,000 characters
Identification of energy storage technologies and determination of optimal technical parameters of energy storage system for operation of Lithuanian electricity energy system 174 / 200 characters	EPSO-G 6 / 200 characters	The project aims to identify energy storage technologies and determine the optimal technical parameters of energy storage systems for the operation of the Lithuanian electricity system before and after the synchronization of the Baltic electricity system with the Continental European Networks, which is directly related to the solution of one of the main tasks of the project (WP1-WP2). 387 / 1,000 characters

3.10 Horizontal principles

Horizontal principles	Projects's direct impact
Sustainable development	positive
Non-discrimination including accessibility	positive
Equality between men and women	neutral

4. Management

Allocated budget 10%

4.1 Project management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the project management as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the project management, e.g. external entity supporting the lead partner in the management of the project, advisory board, steering committee, any other relevant working groups, etc.

For strategic project management project partners will form a project Steering Committee, representing all partner countries, with the main functions of analyzing data and controlling whether the status of project activities and financing lead to reaching project objectives, controlling risks for reaching project objectives, and initiating and approving project changes before their submission to the Joint Program Secretariat.

430 / 500 characters

4.2 Project financial management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the financial management and control as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the financial management, e.g. external entity supporting the lead partner, positions planned for financial management, involvement of special financial experts (e.g. for public procurement), etc.

The lead partner administrative manager will handle project financial management. Each project partner will assign a financial manager that will manage the budget and planned expenses according to the project budget and schedule. The project financial manager may be a separate staff member or this function may be provided by the administrative manager.

354 / 500 characters

4.3 Input to Programme communication

☑ **Please confirm that you are aware of the obligatory inputs to Programme communication that must be submitted along the pre-defined progress reports, as described in the Programme Manual.**

If relevant, please describe other important aspects of project communication that you plan to introduce, e.g. a communication plan, opening and closing events, social media channel(s) etc.

The project will comply with the program's publicity and visibility requirements. The lead partner's communications department will guide the project communication. A communication plan will be developed during the first semester of the project, indicating communication channels and messages, including video and photo content, for each group of stakeholders in each partner country of the project. All project stakeholders will be involved and informed on the project path and results.

488 / 500 characters

4.4 Cooperation criteria

Please select the cooperation criteria that apply to your project. In your project you need to apply at least three cooperation criteria. Joint development and joint implementation are the obligatory ones you need to fulfill in your project.

Cooperation criteria	
Joint Development	☑
Joint Implementation	☑
Joint Staffing	☑
Joint Financing	☑

5. Work Plan

	Number	Work Package Name
	1	WP1 Preparing solutions

Number	Group of Activity Name
1.1	Setting up the requirements for EPS modeling
1.2	Development of a mathematical model for evaluating EPS operation scenarios
1.3	Assessment of the reliability of the EPS
1.4	Evaluation of balancing power reserves requirements
1.5	Assessment of the grid modelling results

	Number	Work Package Name
	2	WP2 Piloting and evaluating solutions

Number	Group of Activity Name
2.1	Evolution of Baltic regional market
2.2	Baltic regional market RES scenarios and its design
2.3	Cost benefit analysis (CBA)
2.4	Preparing final market outlook report

	Number	Work Package Name
	3	WP3 Transferring solutions

Number	Group of Activity Name
3.1	External results dissemination by publications
3.2	External results dissemination by webinars
3.3	Demonstration brochure presenting all innovative solutions proposed in the project
3.4	Roadmap for Power System by 2030-2050

Work plan overview

Period:	1	2	3	4	5	6	Leader
WP.1: WP1 Preparing solutions							**PP1**
A.1.1: Setting up the requirements for EPS modeling							PP1
D.1.1: Boundary conditions of network scenarios		D	D				
A.1.2: Development of a mathematical model for evaluating EPS operation scenarios							PP4
D.1.2: AI-based optimization tool			D	D			
A.1.3: Assessment of the reliability of the EPS							PP1
D.1.3: Operational reliability analysis			D	D			
A.1.4: Evaluation of balancing power reserves requirements							PP2
D.1.4: Model for balancing reserves estimation			D	D			
A.1.5: Assessment of the grid modelling results							PP3
D.1.5: Proof of concepts of EPS models (report V.0.1)				D			
WP.2: WP2 Piloting and evaluating solutions							**PP2**
A.2.1: Evolution of Baltic regional market							PP3
D.2.1: Advanced Baltic regional load profile				D	D		
A.2.2: Baltic regional market RES scenarios and its design							PP2
D.2.2: Interim RES scenario modelling and outlook report (report V.0.2)				D	D		
A.2.3: Cost benefit analysis (CBA)							PP4
D.2.3: Cost benefit analysis for Baltic region scenarios				D	D		
A.2.4: Preparing final market outlook report							PP3
D.2.4: Baltic regional electricity market outlook for 2030-2050 (report V.1)					D	D	
WP.3: WP3 Transferring solutions							**PP3**
A.3.1: External results dissemination by publications							PP1
O.3.1: Publications		O	O	O	O	O	
A.3.2: External results dissemination by webinars							PP1
O.3.2: Webinars	O	O	O	O	O	O	
A.3.3: Demonstration brochure presenting all innovative solutions proposed in the project							PP3
O.3.3: Demonstration brochure						O	
A.3.4: Roadmap for Power System by 2030-2050							PP2
O.3.4: Interactive tool					O	O	

Outputs and deliverables overview

Code	Title	Description	Contribution to the output	Output/ deliverable contains an investment
D 1.1	Boundary conditions of network scenarios	The deliverable obtains the formulation of the sustainable scenarios of the unified EPS of the Baltic region in light of decarbonization and energy efficiency policy by 2030-2050. It will include the following: 1. Analysis of technical specifics of Baltic region transmission and distribution network. 2. Formulation and evaluation of the boundary conditions of network scenarios considering normal and extraordinary operating modes of the unified power system. 3. Proposal of potential realistic scenarios for the development of EPS models in the long term. The development of sustainable scenarios of the unified EPS of the Baltic States should take into account not only the current configuration of the electrical networks of national EPS including intersystem connections but also consider the potential emergence of new planned connections, generation power units, and demand-side changes in the long-term. The development scenarios will take into account the principle of decomposition, which makes it possible to consider the detail and accuracy of any restrictions in terms of power flow capacities to ensure a balance of power supply and demand. The modeling phase will require the inclusion of all the existing and potential transnational electrical connections of the planned unified EPS between the countries of Latvia, Estonia, and Lithuania. The assessment of changing characteristics of the adequacy of system generation at different levels of RES penetration and its coordination with large-scale energy storage (the effect of increasing the maximum charging time on increasing the adequacy of the system) will be carried out on the example of several parametric studies (winter, summer, night, day) of the Baltic EPS model. The potential of parametric research results will be analyzed to solve several strategic planning tasks considering the reliability of the power system with the predominance of generation from RES (parametric modeling of RES time series, HPP, demand).	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 1.2	AI-based optimization tool	A tool that can be used by any project partner (and, in the future, anyone interested in the simulation model for solving applied problems of analyzing and planning energy power system modes in the long-term) to evaluate alternative solutions and to optimize the task of planning the operation modes of a unified Baltic power system. It includes the identifying and evaluating of decarbonization pathways via optimal implementation of the suggested measures while ensuring efficiency, adequacy, resiliency, and operational reliability of the system, as well as the need to reduce the level of energy dependence and maximize the flexibility and adaptability of the energy power system (EPS). Moreover, the tool will be able to establish an optimal schedule for the network power flow, assess storage requirements (capacity and investment), set up measures for energy savings, and develop guidelines on the energy landscape spatial planning considering the upcoming long-term changes in the energy balance. The tool will be particularly calibrated (data, algorithms, meta-heuristics, and more) for the unified EPS of Latvia, Lithuania, and Estonia; however, the core principles will apply to other power networks as well.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 1.3	Operational reliability analysis	The deliverable obtains the assessment of the controllability of the unified power system as a method of analyzing its operational reliability (adequacy and safety) in the context of an energy transition, redistribution of existing reserves, and solving the problem of regulating energy power flows using DC links. The transnational network by 2030-2050 will be evaluated in terms of analysis of the operational reliability of the power system, taking into account the prediction of changes in consumption and generation considering its various development scenarios. The practical significance of the expected results will consist in the development of application programs to determine the technical resources of renewable energy sources, energy technical parameters, and composition of planned installations for the conversion of renewable energy sources, as well as in the development of practical recommendations for the optimal placement of such energy supply systems. It will bring the research results to practical use highlining significant importance for the reliable and safe functioning of the unified EPS of the Baltic Sea region.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 1.4	Model for balancing reserves estimation	A model which will allow estimating of optimal set and sizing of active power reserves will be developed. This model will be suitable for estimating reserve capacities in a power system with a big share of RES under the condition of unified EPS of the Baltic region. Parameters of the model will be optimized based on Baltic power system characteristics. The importance of the proposed model and its evaluation results will be utilized in the input of the development of application programs for realistic determination and technical operation possibility of the established network development scenarios projected by 2030-2050.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	

D 1.5	Proof of concepts of EPS models (report V.0.1)	Validate and test the developed model under local and regional conditions (cross-border importance). Sectoral agencies/service providers will provide support via consultations/meetings and required data to the higher education institutions to proceed with testing and validation for the designed model. Improvement actions will be taken to finalize an accurate and feasible system model. AI Regression models will be trained on training data set using k-fold Cross-Validation technique and then validated on validation data set which will be created by experts from Industry of all Baltic countries to represent the particularities of overall Baltic power system behavior. The applicability of the model will be determined by the accuracies of both, Cross-Validation on the training dataset and Validation on the validation dataset. To evaluate the accuracy, standard metrics, such as R-squared, mean absolute error, mean absolute percentage error, mean square error, mean bias error, etc., will be used. Apart from typical regression models, the advantages of Generative Adversarial Networks applications will be used to generate possible scenarios for Monte Carlo simulations. Each Monte Carlo simulation will contain Genetic Algorithms to solve complex market and technical optimization problems and will be validated on historical data.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 2.1	Advanced Baltic regional load profile	There are numerous forecasts and predictions, but no certainty, of how dependent on electricity the future generation really is. To be able to be CO2 neutral and to focus mostly on renewables, the essence of electricity will be inevitable. Future energy generation and consumption will be more weather dependent and it will be supported by energy storage, demand side management, and energy market mechanisms and thus different from today's traditional load profile. By using energyPro software, we can visualize what this transition from fossil fuel transport and district heat means and what will be the gradually increasing impact of it. Several scenarios for the whole Baltic region and different countries will be made and they will be supported by the roadmap for electrification. There will be scenarios that envisage load profile changes taking into account the speed and level of transition mentioned. Deliverable will be input for Plexos models and will give feedback also to WP1 tasks, as the load profile will have a direct impact also to power system behavior.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 2.2	Interim RES scenario modelling and outlook report (report V.0.2)	The market scenario analysis main results will be described in the interim market outlook report, where the impact of renewables expansion to the Baltics power/electricity prices, congestion, and congestion revenue on the future Baltic load-frequency control (LFC) area borders, the costs, and revenues of the Baltic power plants will be assessed. The report will be supplemented with missing market capabilities and untapped opportunities that would allow higher renewable energy penetration. The market design changes to enable various conditional revenue streams will be outlined. Recommendations would be given to achieve the targets of the key renewable energy scenarios on reducing the negative and increasing the positive impact of the market design and rules including "stop/continue" with support schemes.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 2.3	Cost benefit analysis for Baltic region scenarios	Deliverable from this activity will be the summary and insights obtained from the models developed through analysis and modelling of the scenarios. Key learning will further be extracted to contribute to the "Baltic regional electricity market outlook for 2030-2050" report. These results will allow all actors to better understand the state of development of energy systems and to make decisions related to the future. Simulations-based optimal composition of EPS generating capacities and energy storage systems, for example, is key to assessing the operational reliability of the electric power system. It is critical to understand the costs required to achieve the target performance and the expected benefits from these investments. Enterprises will consult and provide feedback on the best way of expressing these insights, based on the data necessary to create appropriate models. Lessons learned will come from companies that allow using their infrastructure to test and determine the power system characteristics.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
D 2.4	Baltic regional electricity market outlook for 2030-2050 (report V.1)	The following project information will be communicated and delivered to the relevant audience. First, the vision i.e. objectives, strategic relevance, and key facts will be a substantial part of the deliverable. Secondly, the clear messages and expectations from stakeholders will follow and these will be accompanied by results from models developed within this WP. Country-specific and regional experiences will illustrate the impact of the project and will give a human dimension that can catalyze end-users acceptance. Deliverable will state the scalable carbon-efficient models and the financial and economic impact of the scenarios. Go2Green Baltic dissemination coverage with this report will influence mostly the consortium area through partners' contacts, with a special focus on Latvia, Lithuania, Estonia, Denmark, and Sweden.	O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools	
O 3.1	Publications	To achieve the best possible external dissemination and use, it is proposed to popularize the research results by participating in scientific conferences (at least five) and publishing in reputable open access journals (at least five). On the whole, the content of published papers /reports should cover all the main ideas (innovations) developed within the framework of the project.		

O 3.2	Webinars	Information dissemination activities in order to find all additional opportunities for external dissemination of project results and intensive use of them includes the following activities: are offered an organization of dissemination workshops and webinars on Go2Green Baltic activities, which will be open to the main stakeholders as TSO and DSO, NGO communities, manufacturers political decision makers (National public authorities), and other target groups, in order to present and discuss the findings of the project. The Go2Green Baltics project webinars targeted various target groups (e.g., energy industry, academia, policy-and decision-makers, NGOs) will lead to better discussions on energy security scenarios until 2050. Each online seminar is dedicated to unique topics of WP1 or WP2 (e.g., A1.1 Setting up the requirements for Energy Power System (EPS) modeling; A1.2 Development of a mathematical model for evaluating various EPS operation scenarios/solutions; A1.3 Assessment of the controllability of the EPS; A2.2 Baltic regional market RES scenario modeling and analysis. A2.3 Analysis of Baltic regional market design and mechanisms development; A2.4 Cost benefit analysis; Baltic regional electricity market outlook for 2030-2050). The first interactive online seminar will introduce the Go2Green Baltic project and bring together all actors, including policymakers. We ask feedback from the participants to improve the quality. A summary of the online seminar and materials, including presentations, will be presented via project website and social media accounts.		
O 3.3	Demonstration brochure	The brochure is targeted at all key actors in the energy sectors in participating countries, including policymakers. Also, the demonstration brochure consists of a summary of all Go2Green Baltic project results, future scenarios, and the direction of energy transition and energy security by 2030-2050. TalTech will draft a comprehensive and measurable communication strategy to promote and develop the planned activities, including the preparation of a demonstration brochure.		
O 3.4	Interactive tool	An online platform for a sustainable unified Baltic power system in 2030-2050 as an online assessment tool for project results demonstration will be developed. The interactive roadmap will facilitate the analysis and interpretation of the results obtained in WP1 and WP2 and will highlight the interrelationship between the actions of different target groups to achieve their CO2 minimization goals as well as green energy transition. It will allow different target groups to analyze the benefits of one measure or another, and provide feedback to decision-makers on the attitude of different target groups towards the measures under consideration to ensure the transition towards a zero-carbon electricity system. An online tool/platform will become the partnership environment between higher education and research institution, large enterprises, non-governmental organizations, and national public authorities and will create conditions for their informative and motivated involvement in roadmap improvement and decision-making.		

Work package 1

5.1 WP1 Preparing solutions

5.2 Aim of the work package

The aim of this work package is to prepare solutions to help address the identified challenge. You can either develop entirely new solutions or adapt existing solutions to the needs of your target groups. Prepare your solutions in a way that you can pilot them in Work Package 2. Consider how you involve your target groups in preparation of the solutions.
Organise your activities in up to five groups of activities to present the actions you plan to implement. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 1 - Riga Technical University

Work package leader 2 PP 2 - Kaunas University of Technology

5.4 Work package budget

Work package budget 25%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden) 220 / 500 characters	The higher education institutions will propose and develop the concept of an optimal model taking into account impacts and considerations of the theoretical basics and potential realization of the power network model. In cooperation with the large enterprises, the list of scenarios under common interest will be formulated and optimization tasks will be established considering defined restrictions and systems requirements in terms of efficiency, adequacy, resiliency, flexibility, and reliability of the system. 517 / 1,000 characters
2	Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia) 183 / 500 characters	The public authorities and large enterprises will provide action plans for the energy strategy 2050 highlighting the technical requirements of the optimal planning of the unified system operation modes including the integration of renewable energy sources. In cooperation with the higher education institutions, the list of scenarios under common interest will be formulated and optimization tasks will be established considering defined restrictions and systems requirements in terms of efficiency, adequacy, resiliency, flexibility, and reliability of the system. 565 / 1,000 characters
3	NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia) 171 / 500 characters	The large enterprises, public authorities, higher education institutions, and NGOs will communicate validation results under established scenarios focusing on and targeting actions related to their interest. For instance, public authorities will confirm and suggest recommendations for the roadmap development and coordination plans. Large enterprises will be involved in the development of the regulations/guidelines. NGO will share experience in terms of the guidelines/regulation adaptation on both local and regional levels raising awareness among citizens of the Baltic region. Moreover, NGOs will communicate the main results and project output to educate professionals and monitor any existing issues, and evaluate potential risks. 739 / 1,000 characters
4	National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia) 93 / 500 characters	Sectoral agencies/service providers will provide support via consultations/meetings and required data to the higher education institutions to proceed with testing and validation for the designed model. Improvement actions will be taken to finalize an accurate and feasible system model. 286 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
1.1	**Setting up the requirements for EPS modeling**
1.2	**Development of a mathematical model for evaluating EPS operation scenarios**
1.3	**Assessment of the reliability of the EPS**
1.4	**Evaluation of balancing power reserves requirements**
1.5	**Assessment of the grid modelling results**

WP 1 Group of activities 1.1

5.6.1 Group of activities leader

Group of activities leader PP 1 - Riga Technical University

A 1.1

5.6.2 Title of the group of activities

Setting up the requirements for EPS modeling

44 / 100 characters

5.6.3 Description of the group of activities

This activity aims to create requirements of the generalized model tackling the future development of the unified Baltic EPS (Latvia, Lithuania, Estonia) under uncertainty of generation from the RES and load fluctuations to ensure its power balance conditions. A consideration of the Baltic energy future vision within the EU regulations will serve as a guide for the requirements formulation involving input from all consortium representatives. The public authorities and large enterprises will provide action plans for the energy strategy 2030-2050 highlighting the technical requirements of the optimal planning of the unified system operation modes including the integration of renewables. In cooperation with the higher education institutions, the list of grid development scenarios under common interest will be formulated and optimization tasks will be established considering defined restrictions and systems requirements in terms of efficiency, adequacy, resiliency, flexibility, and reliability of the power system.

The formulation of the requirements for the EPS modeling will include the following steps:
1. Network decomposition for identification and analysis of the individual characteristics and interactions of the national EPSs.
2. Layout of the new and existing RES objects for forecasting the fluctuating renewable generation.
3. Use of transmission network long-term plans for determination and allocation of new transitional interconnects.
4. Use of distribution network long-term plans for identification of the large RES installations under new and existing internal connections.
5. Closure of the disadvantageous thermal power plans and the possibility of constructing nuclear power plants for the realization of the decarbonization plans and risk analysis.
6. Layout of installations of new storage systems and synchronous compensator for analysis and support of existing and potential energy reserves and balancing options.

The following solutions will be presented:
1. Determination of boundary conditions of network scenarios and uncertain factors of influence.
2. Assessment and selection of required factors and parameters of influence.
3. Uncertainty and sensitivity analysis of operating modes of the power system.

Planned scenarios will be considered in all next subtasks:
1. WP 1.2-1.5. to create a unified EPS mathematical model (use of artificial intelligence methods along with a multi-level Monte Carlo system capable of combining results from the hierarchy of simulators effectively and accurately) as well as assess its controllability/balancing reserves;
2. WP 2.1 -2.4 to evaluate the performance of the power system in conditions of uncertainty, accurately plan its operating modes via optimization of power supply and demand, modeling and assess grid development scenarios including integration of RES under regional market realistic conditions in the long-term;
3. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

2,989 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☑

D 1.1

Title of the deliverable

Boundary conditions of network scenarios

41 / 100 characters

Description of the deliverable

The deliverable obtains the formulation of the sustainable scenarios of the unified EPS of the Baltic region in light of decarbonization and energy efficiency policy by 2030-2050.

It will include the following:
1. Analysis of technical specifics of Baltic region transmission and distribution network.
2. Formulation and evaluation of the boundary conditions of network scenarios considering normal and extraordinary operating modes of the unified power system.
3. Proposal of potential realistic scenarios for the development of EPS models in the long term.

The development of sustainable scenarios of the unified EPS of the Baltic States should take into account not only the current configuration of the electrical networks of national EPS including intersystem connections but also consider the potential emergence of new planned connections, generation power units, and demand-side changes in the long-term. The development scenarios will take into account the principle of decomposition, which makes it possible to consider the detail and accuracy of any restrictions in terms of power flow capacities to ensure a balance of power supply and demand. The modeling phase will require the inclusion of all the existing and potential transnational electrical connections of the planned unified EPS between the countries of Latvia, Estonia, and Lithuania.

The assessment of changing characteristics of the adequacy of system generation at different levels of RES penetration and its coordination with large-scale energy storage (the effect of increasing the maximum charging time on increasing the adequacy of the system) will be carried out on the example of several parametric studies (winter, summer, night, day) of the Baltic EPS model. The potential of parametric research results will be analyzed to solve several strategic planning tasks considering the reliability of the power system with the predominance of generation from RES (parametric modeling of RES time series, HPP, demand).

1,997 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

94 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.1: Setting up the requirements for EPS modeling						
D.1.1: Boundary conditions of network scenarios						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.2

5.6.1 Group of activities leader

Group of activities leader PP 4 - Halmstad University

A 1.2

5.6.2 Title of the group of activities

Development of a mathematical model for evaluating EPS operation scenarios

74 / 100 characters

5.6.3 Description of the group of activities

This activity aims to propose and iteratively develop, based on evaluation feedback from all the partners, the mathematical optimization model. The model will cover both the intended unified system to be obtained in 2050, and also existing Latvian, Lithuanian, and Estonian individual networks. The latter will allow evaluation fidelity of the model concerning the realistic network development scenarios, without having to wait for the integration to be finalized. Since both the unified and individual models will be based on the same principles and technologies, they are expected to achieve similar performance.

The model will be based on Machine Learning and meta-heuristic algorithms, more specifically Genetic Algorithms. Modeling such a complex system is a challenging task, especially given the number of uncertainties associated with the planning and operation of a unified network. Based on the scenarios developed in Activity 1.1 and the existing data concerning current Latvian, Lithuanian, and Estonian power networks, several competing Machine Learning models (using Random Forest, SVM, and Deep Learning algorithms, among others) will be created and compared. The one with the highest predictive power will be used as an input to Genetic Algorithm optimization, where different planning alternatives will be evaluated (using counter-factual reasoning). The key aspect of the work will be based on recent trends in eXplainable Artificial Intelligence (XAI), since the output of the optimization and machine learning must be interpretable to domain experts.

The higher education institutions in cooperation with the public authorities, large enterprises, and NGOs will propose and develop the concept and build a suitable network model to evaluate different planned scenarios and operation strategies/decisions. They will take into account theoretical considerations and expected impacts, to compare potential realizations of the power network.

The mathematical optimization model will be utilized in all next subtasks:
1. WP 1.3-1.5. to assess EPS controllability/balancing reserves and evaluate proof of concepts models;
2. WP 2.1-2.4 to evaluate the performance of the power system under realistic grid development scenarios and regional market conditions;
3. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

2,342 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.2

Title of the deliverable

AI-based optimization tool

26 / 100 characters

Description of the deliverable

A tool that can be used by any project partner (and, in the future, anyone interested in the simulation model for solving applied problems of analyzing and planning energy power system modes in the long-term) to evaluate alternative solutions and to optimize the task of planning the operation modes of a unified Baltic power system. It includes the identifying and evaluating of decarbonization pathways via optimal implementation of the suggested measures while ensuring efficiency, adequacy, resiliency, and operational reliability of the system, as well as the need to reduce the level of energy dependence and maximize the flexibility and adaptability of the energy power system (EPS).

Moreover, the tool will be able to establish an optimal schedule for the network power flow, assess storage requirements (capacity and investment), set up measures for energy savings, and develop guidelines on the energy landscape spatial planning considering the upcoming long-term changes in the energy balance.

The tool will be particularly calibrated (data, algorithms, meta-heuristics, and more) for the unified EPS of Latvia, Lithuania, and Estonia; however, the core principles will apply to other power networks as well.

1,221 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

93 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.2: Development of a mathematical model for evaluating EPS operation scenarios						
D.1.2: AI-based optimization tool						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.3

5.6.1 Group of activities leader

Group of activities leader PP 1 - Riga Technical University

A 1.3

5.6.2 Title of the group of activities

Assessment of the reliability of the EPS

40 / 100 characters

5.6.3 Description of the group of activities

This activity aims to evaluate the reliability of planned unified EPS in the Baltic region considering valid IEC Standards appropriate for the EPS technologies to ensure safe and sustainable energy supplies under consideration of electricity generation from distributed RES. The public authorities and NGOs will consult regarding the existing network reliability restrictions. The large enterprises will recommend the applied standards and consult regarding their needs as operators at both the national and international levels in the perspective of the unified system operation based on their industrial experience. The higher education institutions will adapt the received information and follow the provided recommendations to formulate and prioritize the reliability requirements and consider them for controllability analysis of the developed scenarios of the EPS model.
The following solution steps will be realized:
1. Formulation and prioritization of the controllability requirements based on the obtained feedback from public and industrial sectors.
2. Analysis of the EPS behavior and modeling of various mode control methods to ensure operational reliability and safety in both normal and emergency modes.
3. The bugs identification will be carried out by implementing artificial intelligence methods for monitoring the EPS operating modes in real-time. The approach is based on the recognition of dangerous modes considering a pre-defined sample of various modes, which is used for training artificial intelligence.

For each of the network scenarios proposed in A 1.1., the factor of the need to ensure the reliability of the EPS and power supply systems of consumers, redundancy or duplication of power supply of the latter, assessment of damages of a power outage for consumers, losses associated with emergency repairs, as well as the costs of improving reliability should be taken into account.

The issue of ensuring the stability of functioning under various (internal and external) disturbances can lead to the cascade development of an accident. It is directly related to the issue of ensuring survivability, i.e. maintaining the operability of production after the manifestation of disturbances leading to large-scale consequences commensurate with natural disasters or intentional actions.

The assessment of the controllability of the EPS will be utilized in all next subtasks:
1. WP 1.4-1.5. to assess EPS balancing reserves and evaluate proof of concepts models;
2. WP 2.1-2.4 to evaluate the performance of the power system under realistic grid development scenarios and regional market conditions;
3. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

2,698 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☑

D 1.3

Title of the deliverable

Operational reliability analysis

32 / 100 characters

Description of the deliverable

The deliverable obtains the assessment of the controllability of the unified power system as a method of analyzing its operational reliability (adequacy and safety) in the context of an energy transition, redistribution of existing reserves, and solving the problem of regulating energy power flows using DC links. The transnational network by 2030-2050 will be evaluated in terms of analysis of the operational reliability of the power system, taking into account the prediction of changes in consumption and generation considering its various development scenarios.

The practical significance of the expected results will consist in the development of application programs to determine the technical resources of renewable energy sources, energy technical parameters, and composition of planned installations for the conversion of renewable energy sources, as well as in the development of practical recommendations for the optimal placement of such energy supply systems. It will bring the research results to practical use highlining significant importance for the reliable and safe functioning of the unified EPS of the Baltic Sea region.

1,144 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

93 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.3: Assessment of the reliability of the EPS						
D.1.3: Operational reliability analysis						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

WP 1 Group of activities 1.4

5.6.1 Group of activities leader

Group of activities leader PP 2 - Kaunas University of Technology

A 1.4

5.6.2 Title of the group of activities

Evaluation of balancing power reserves requirements

51 / 100 characters

5.6.3 Description of the group of activities

This activity aims to formulate requirements and assess the balancing power reserves for the potential network development scenarios by 2030-2050 when the unified Baltic power system will be established.
Considering the need for minimization of carbon dioxide emissions and the increase of renewable energy generation connected to the unified EPS of Baltic States will require the optimal planning of its operation modes (using metaheuristic optimization algorithms to increase the reliability of forecasting the generation of solar and wind power plants, the operation of hydroelectric power plants as well as consumption forecasting).

To evaluate the balancing power reserves the following steps are performed:
1. The analysis of rotational inertia of the system.
2. The analysis of existing and potential network topology.
3. The evaluation of the stability of the power system based on a network topology with a big share of RES and inertia behavior.

The main constrain of optimal capacities allocation will be active load-frequency control (LFC) demand and available reserve capacity. The required characteristics of active power reserves will be estimated based on the structure of generation and consumption. For this purpose, statistical and probabilistic analysis of forecasting uncertainties and the stochastic generation nature of RES will be performed based on historical data. Secondly, the required LFC reserve size shall be estimated for the Baltic LFC block. Optimal sizing and composition of different energy storage systems (battery energy storage systems, hydroelectric pumped storage power plants as well as a demand-side response) will be estimated to ensure balancing services of the Baltic power system.

The public authorities and NGOs will consult regarding the existing network power balancing requirements and restrictions. The large enterprises will consult about preferable and recommended priority classification of power balance at both the national and international levels based on long-term forecasts and projected expectations under a unified system operation. The higher education institutions will consider the industrial needs for requirements formulation of balancing power reserves and prioritize them, perform an analysis of the developed scenarios of the EPS model.

Results of this activity will be considered in all next subtasks:
1. WP 1.5. to assess the proof of concepts models;
2. WP 2.1-2.4 to evaluate the performance of the power system under realistic grid development scenarios and regional market conditions;
3. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

2,636 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.4

Title of the deliverable

Model for balancing reserves estimation

39 / 100 characters

Description of the deliverable

A model which will allow estimating of optimal set and sizing of active power reserves will be developed. This model will be suitable for estimating reserve capacities in a power system with a big share of RES under the condition of unified EPS of the Baltic region. Parameters of the model will be optimized based on Baltic power system characteristics.

The importance of the proposed model and its evaluation results will be utilized in the input of the development of application programs for realistic determination and technical operation possibility of the established network development scenarios projected by 2030-2050.

629 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

93 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.4: Evaluation of balancing power reserves requirements						
D.1.4: Model for balancing reserves estimation						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.5

5.6.1 Group of activities leader

Group of activities leader PP 3 - Tallinn University of Technology

A 1.5

5.6.2 Title of the group of activities

Assessment of the grid modelling results

40 / 100 characters

5.6.3 Description of the group of activities

Assumptions and scenarios that will be identified according to Activity 1.1, will be used to test the developed model in Activity 1.2. The model will be compared with the software widely used in practice for power system operation and planning for EPS of Latvia, Estonia, and Lithuania. Technical constraints (e.g. bottlenecks, overloads, voltage levels, frequency response characteristics) identified with the developed model will be compared to Siemens PSS/E software or other similar software. The results of power system adequacy will be compared to BID and/or Plexus or analogous software.

The public authorities and NGOs will provide consultative support, and large enterprises will be involved in this model creation and validation.

Results of this activity will be considered in all next subtasks:
1. WP 2.1-2.4 to evaluate the performance of the power system under realistic grid development scenarios and regional market conditions;
2. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

1,010 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☑

D 1.5

Title of the deliverable

Proof of concepts of EPS models (report V.0.1)

46 / 100 characters

Description of the deliverable

Validate and test the developed model under local and regional conditions (cross-border importance). Sectoral agencies/service providers will provide support via consultations/meetings and required data to the higher education institutions to proceed with testing and validation for the designed model. Improvement actions will be taken to finalize an accurate and feasible system model.

AI Regression models will be trained on training data set using k-fold Cross-Validation technique and then validated on validation data set which will be created by experts from Industry of all Baltic countries to represent the particularities of overall Baltic power system behavior. The applicability of the model will be determined by the accuracies of both, Cross-Validation on the training dataset and Validation on the validation dataset. To evaluate the accuracy, standard metrics, such as R-squared, mean absolute error, mean absolute percentage error, mean square error, mean bias error, etc., will be used. Apart from typical regression models, the advantages of Generative Adversarial Networks applications will be used to generate possible scenarios for Monte Carlo simulations. Each Monte Carlo simulation will contain Genetic Algorithms to solve complex market and technical optimization problems and will be validated on historical data.

1,341 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

93 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.5: Assessment of the grid modelling results						
D.1.5: Proof of concepts of EPS models (report V.0.1)						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

Work package 2

5.1 WP2 Piloting and evaluating solutions

5.2 Aim of the work package

The aim of this work package is to pilot, evaluate and adjust solutions. Plan one or several pilots to validate the usefulness of the solutions prepared in Work Package 1. Start Work Package 2 early enough to have time to pilot, evaluate and adjust solutions, together with your target groups. By the end of this work package implementation the solutions should be ready to be transferred to your target groups in Work Package 3.
The piloted and adjusted solution should be presented in one project output.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 2 - Kaunas University of Technology

Work package leader 2 PP 3 - Tallinn University of Technology

5.4 Work package budget

Work package budget 30%

5.4.1 Number of pilots

Number of pilots 6

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden) 220 / 500 characters	Higher education and research institutions will perform simulations and analysis to determine EPS balancing measures and their size, to create the optimal composition of EPS generating capacities and energy storage systems, to evaluate the feasibility of optimized EPS taking into account physical characteristics and economic criteria. The competencies of higher education institutions will be used to solve this complex task. 427 / 1,000 characters
2	Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia) 183 / 500 characters	Enterprises will consult and provide the necessary data to create an optimal set of generating and balancing capacities, assessing the operational reliability of the electric power system, analyzing energy market conditions and making the CBA. Companies will allow to use their infrastructure to test and determine the power system characteristics. 348 / 1,000 characters
3	NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia) 171 / 500 characters	Knowledge will be provided to better understand the state of development of energy systems and to make decisions related to the development of energy storage and DSR in order to achieve decarbonisation goals. 208 / 1,000 characters
4	National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia) 93 / 500 characters	The initiative to participate in the deployment of various ancillary services, such as DSR, required for the smooth development of RES will be encouraged. 154 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
2.1	**Evolution of Baltic regional market**
2.2	**Baltic regional market RES scenarios and its design**
2.3	**Cost benefit analysis (CBA)**
2.4	**Preparing final market outlook report**

WP 2 Group of activities 2.1

5.6.1 Group of activities leader

Group of activities leader PP 3 - Tallinn University of Technology

A 2.1

5.6.2 Title of the group of activities

Evolution of Baltic regional market

36 / 100 characters

5.6.3 Description of the group of activities

The electricity consumption of future power networks will be different from today's patterns. Electrification of the heating and transport sector will have an impact on the electricity consumption load curve. By adding energy storage, we will see patterns that need a different approach from energy and power markets. With the use of modelling software energyPRO, the impact of electrification within the Baltic region can be modelled. For that purpose hourly electricity demand is modeled from electric vehicles and heat pumps based on driving patterns and the heat load of buildings. Results from this model, specifically new load curves will be later used for long-term investment planning for the whole Baltic market area, which will be constructed within Plexos / or an alternative model in WP2.2. In Plexos software energy system model is built up, which includes data for the whole Nordpool market area. Inputs for the model are electricity and heat demand, load curves, existing production and transmission capacities, investment costs, operation and maintenance costs, fuel prices, CO2 prices, etc. As Baltic TSOs use Plexos software, the preference is to use similar software packages also from the research side for more accurate and known software. On the other hand, alternative software is available, and new, evolved market conditions will be made available for users who would like to use new AI or their software tool to analyze and model power networks. It would be also useful for researchers and PhD students and industry representatives.

All partners will be involved. The public authorities and NGOs will provide consultative support, and large enterprises will be involved in this model creation and validation.

The result of this activity will be utilized in all next subtasks:
1. WP 2.2-2.4 to Interim RES scenario modelling and cost-benefit analysis for Baltic region scenarios;
2. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

1,974 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.1

Title of the deliverable

Advanced Baltic regional load profile

38 / 100 characters

Description of the deliverable

There are numerous forecasts and predictions, but no certainty, of how dependent on electricity the future generation really is. To be able to be CO2 neutral and to focus mostly on renewables, the essence of electricity will be inevitable. Future energy generation and consumption will be more weather dependent and it will be supported by energy storage, demand side management, and energy market mechanisms and thus different from today's traditional load profile. By using energyPro software, we can visualize what this transition from fossil fuel transport and district heat means and what will be the gradually increasing impact of it. Several scenarios for the whole Baltic region and different countries will be made and they will be supported by the roadmap for electrification. There will be scenarios that envisage load profile changes taking into account the speed and level of transition mentioned. Deliverable will be input for Plexos models and will give feedback also to WP1 tasks, as the load profile will have a direct impact also to power system behavior.

1,074 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

94 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.1: Evolution of Baltic regional market						
D.2.1: Advanced Baltic regional load profile						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.2

5.6.1 Group of activities leader

Group of activities leader PP 2 - Kaunas University of Technology

A 2.2

5.6.2 Title of the group of activities

Baltic regional market RES scenarios and its design

51 / 100 characters

5.6.3 Description of the group of activities

Different Baltic regional market renewable energy scenarios will be prepared and modeled to analyze the viable RES integration options in securing the Baltic clean energy future. From the modeling general, market-based restrictions will emerge, such as the number of annual hours with RES curtailment, the total amount of curtailed energy, day-ahead price levels, and transmission congestion. The key scenarios are chosen to investigate Baltic market development more closely. The investigated scenarios will be chosen as a result of consulting with Baltic TSOs regarding the probability of realization and the established model results from the core (BAU) scenario runs. The key scenarios are tested with an offshore grid infrastructure allowing for significantly increased import/export transmission flows on the borders of the Baltic power system. Furthermore, based on the key scenarios, the prospective RES curtailment mitigation measures detected by the grid analysis work package (WP1.2-1.4) will be investigated.

There are and will be substantial market design limitations that do not allow to fully achieve the targets of the most likely scenarios. Therefore, the scenario results are supplemented with precise market prerequisites. The analysis includes the current and foreseen changes in Nordic-Baltic market design conditions and rules. Market measures, solutions, trends, and other geopolitical forecasts will be addressed to ensure the competitive markets, capturing the full value of flexibility in the market design.

All partners will be involved. The public authorities and NGOs will provide consultative support, and large enterprises will be involved in this model creation and validation.

The result of this activity will be utilized in all next subtasks:
1. WP 2.3-2.4 to cost-benefit analysis for Baltic region scenarios and final report preparation;
2. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

1,942 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.2

Title of the deliverable

Interim RES scenario modelling and outlook report (report V.0.2)

64 / 100 characters

Description of the deliverable

The market scenario analysis main results will be described in the interim market outlook report, where the impact of renewables expansion to the Baltics power/electricity prices, congestion, and congestion revenue on the future Baltic load-frequency control (LFC) area borders, the costs, and revenues of the Baltic power plants will be assessed. The report will be supplemented with missing market capabilities and untapped opportunities that would allow higher renewable energy penetration. The market design changes to enable various conditional revenue streams will be outlined. Recommendations would be given to achieve the targets of the key renewable energy scenarios on reducing the negative and increasing the positive impact of the market design and rules including "stop/continue" with support schemes.

814 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

94 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.2: Baltic regional market RES scenarios and its design						
D.2.2: Interim RES scenario modelling and outlook report (report V.0.2)						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.3

5.6.1 Group of activities leader

Group of activities leader PP 4 - Halmstad University

A 2.3

5.6.2 Title of the group of activities

Cost benefit analysis (CBA)

27 / 100 characters

5.6.3 Description of the group of activities

The purpose of the CBA analysis is to provide additional supporting analysis to describe, compare, decide upon, and verify the feasibility (technical, business, societal, sustainable) of possible renewable energy integration scenarios. Due to the large unpredictability associated with future situations and developments, it is important to provide decision-makers and planners with a tool that allows exploring "what-if" scenarios.

The approach to be used will be built upon identifying the benefits of the calculated scenarios from WP2.2, as well as the associated costs, and subtracting the costs from benefits. When completed, a cost-benefit analysis will yield concrete results that can be used to develop reasonable conclusions around the feasibility and/or advisability of the various renewable increase scenarios. Easy to use interface of the tool will allow rapid prototyping and quick analysis of various alternatives, promoting experimentation and fact-based decision making. The solution will include novel Explainable AI (XAI) algorithms, making sure that the output and results of the analysis are easily interpretable by different experts, through individualized explanations.

The results will be evaluated by different actors from several target groups, to make sure they provide useful insights and support them in their planning and operation. Academic partners will be able to benchmark and assess their proposed solutions and quickly understand their consequences, in a transnational setting. Enterprises will strengthen services on the development, construction, operation, and feasibility analysis of the Baltic region networks and their related monitoring. NGOs and public authorities will benefit from data- and fact-based advice on socio-economic issues and consequences of different decisions, as well as the costs for various social initiatives. It will also raise the professional competence of engineers in multiple fields.

The main goal of the CBA is to provide sufficient information for the agile decision-making process when looking for the optimal approach as the renewable energy share increases. These changes will require much quicker reaction times to changing circumstances and unforeseen developments, something that needs AI-based support tools. Ultimately, it will aid the Baltics to keep up with their part in The Green Deal.

All partners will be involved. The public authorities and NGOs will provide consultative support, and large enterprises will be involved in this model creation and validation.

The result of this activity will be utilized in all next subtasks:
1. WP 2.4 to final report preparing;
2. WP 3.1-3.4 to transferring solutions, received in WP1 and WP2.

2,720 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.3

Title of the deliverable

Cost benefit analysis for Baltic region scenarios

49 / 100 characters

Description of the deliverable

Deliverable from this activity will be the summary and insights obtained from the models developed through analysis and modelling of the scenarios. Key learning will further be extracted to contribute to the "Baltic regional electricity market outlook for 2030-2050" report.

These results will allow all actors to better understand the state of development of energy systems and to make decisions related to the future. Simulations-based optimal composition of EPS generating capacities and energy storage systems, for example, is key to assessing the operational reliability of the electric power system. It is critical to understand the costs required to achieve the target performance and the expected benefits from these investments. Enterprises will consult and provide feedback on the best way of expressing these insights, based on the data necessary to create appropriate models. Lessons learned will come from companies that allow using their infrastructure to test and determine the power system characteristics.

1,023 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

93 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.3: Cost benefit analysis (CBA)						
D.2.3: Cost benefit analysis for Baltic region scenarios						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

WP 2 Group of activities 2.4

5.6.1 Group of activities leader

Group of activities leader PP 3 - Tallinn University of Technology

A 2.4

5.6.2 Title of the group of activities

Preparing final market outlook report

39 / 100 characters

5.6.3 Description of the group of activities

Market outlook will be an important deliverable to stakeholders outside the project partnership to ensure that project outputs can be fully exploited and be used most effectively, i.e. the scaling-up of the demonstrated Go2Green solutions is facilitated. We believe that knowledge gained through the project, and more generally the information generated by the project, is made available to all interested organizations. Through this and other reports, specifically within brochure made in WP3, these deliverables will be elements of excellence of the project that can be reused and replicated in other projects, becoming a reference point triggering further developments in the field and beyond. Report and therefore project itself reaches decision-makers to contribute to improving future policies, which is particularly important given the nature of the Go2Green project. The benefits that project outcomes will bring to society (environment, services, employment, entrepreneurship, economy) are well pointed out.

1,017 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable

☑

D 2.4

Title of the deliverable

Baltic regional electricity market outlook for 2030-2050 (report V.1)

69 / 100 characters

Description of the deliverable

The following project information will be communicated and delivered to the relevant audience. First, the vision i.e. objectives, strategic relevance, and key facts will be a substantial part of the deliverable. Secondly, the clear messages and expectations from stakeholders will follow and these will be accompanied by results from models developed within this WP. Country-specific and regional experiences will illustrate the impact of the project and will give a human dimension that can catalyze end-users acceptance. Deliverable will state the scalable carbon-efficient models and the financial and economic impact of the scenarios. Go2Green Baltic dissemination coverage with this report will influence mostly the consortium area through partners' contacts, with a special focus on Latvia, Lithuania, Estonia, Denmark, and Sweden.

838 / 2,000 characters

Which output does this deliverable contribute to?

O.3.1: Publications; O.3.2: Webinars; O.3.3: Demonstration brochure; O.3.4: Interactive tools

94 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.4: Preparing final market outlook report						
D.2.4: Baltic regional electricity market outlook for 2030-2050 (report V.1)						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

Work package 3

5.1 WP3 Transferring solutions

5.2 Aim of the work package

In Work Package 3, communicate and transfer the ready solutions to your target groups. Plan at least one year for this work package to transfer your solutions to the target groups, considering their respective needs. Select suitable activities to encourage your target groups to use the solutions in their daily work.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 3 - Tallinn University of Technology

Work package leader 2 PP 1 - Riga Technical University

5.4 Work package budget

Work package budget 35%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden) 220 / 500 characters	To reach and communicate with stakeholders, the following communication channels will be used: the project website, the project partners' websites, social media (Facebook/Meta, Twitter, LinkedIn, public relations, and dissemination events (webinars, workshops, conferences), and publications. The project website will contain up-to-date information about the project and its progress, including project events, pictures, videos, online materials (webinar presentations, demonstration brochures, roadmaps, energy policy briefings) - all materials showing the project progress and results. We will use the project's communication channels and already-existing connections with academia, industry, NGO partners, policy-makers, and the community to keep them informed and engaged with all project activities via well-planned strategic communication. We expand our network by participating in various well-planned events within the project . 939 / 1,000 characters
2	Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia) 183 / 500 characters	Participation in the next activities as a consultant: 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 6. Conduct a survey. 627 / 1,000 characters
3	NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia) 171 / 500 characters	Participation in the next activities as a consultant: 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 6. Conduct a survey. 627 / 1,000 characters

	Target group	How do you plan to reach out to and engage the target group?
4	National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia) 93 / 500 characters	Participation in the next activities as a consultant: 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 6. Conduct a survey. 623 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
3.1	**External results dissemination by publications**
3.2	**External results dissemination by webinars**
3.3	**Demonstration brochure presenting all innovative solutions proposed in the project**
3.4	**Roadmap for Power System by 2030-2050**

WP 3 Group of activities 3.1

5.6.1 Group of activities leader

Group of activities leader PP 1 - Riga Technical University

A 3.1

5.6.2 Title of the group of activities

External results dissemination by publications

46 / 100 characters

5.6.3 Description of the group of activities

Bringing the results of the project to the attention of the public ensures that the results of the project will contribute to the harmonization of approaches to planning and sustainable development of the energy system of the Baltic region. Go2Green Baltic partners will present their results at local and international conferences/symposiums and publish in the local/international press/newspapers to make them accessible to both experts and public opinion. Such activity will provide an opportunity to reach a large number of people around the world, in addition to the target stakeholders, and receive their unbiased feedback on the results obtained. Some of the most important and relevant events to pay attention to include the publications preparing for submitting to IEEE, Elsevier, MDPI open access journals with impact factors no less than three, indexed in Scopus/WOS databases as well as participation in IEEE, CEEGE, and similar conferences. To publish results obtained within the project authors have to announce it to all partners. This includes a complete reference to the paper: i.e. title, contents, journal, conference, etc. Authors are obliged to make the paper available to any partner on demand.

All partners will be involved. RTU, KTU, Taltech, HU, and AST will be responsible for the publication preparation (at least two from every side).

The result of this activity is the first output for project result popularization.

1,449 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 3.1

Title of the output

Publications

12 / 100 characters

Description of the output

To achieve the best possible external dissemination and use, it is proposed to popularize the research results by participating in scientific conferences (at least five) and publishing in reputable open access journals (at least five). On the whole, the content of published papers /reports should cover all the main ideas (innovations) developed within the framework of the project.

383 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden)	Dissemination and use of the project results in diverse expert workgroups inside the organization for the optimal planning of EPS development scenarios. 152 / 1,000 characters
Target group 2 Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia)	Dissemination and use of the project results in diverse expert workgroups inside the organization for the optimal planning of EPS development scenarios. 152 / 1,000 characters
Target group 3 NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia)	Dissemination and use of the project results in diverse expert workgroups inside the organization for the optimal planning of EPS development scenarios. 152 / 1,000 characters
Target group 4 National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia)	Dissemination and use of the project results in diverse expert workgroups inside the organization for the optimal planning of EPS development scenarios. 152 / 1,000 characters

Durability of the output

The leading organization of the project together with leaders of WP3 are responsible for scientific management and quality assurance by maintaining regular contacts between consortium members and WP/subtask managers to track scientific developments in various work packages providing financial support for papers preparation and publication fees covering.

356 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.1: External results dissemination by publications						
O.3.1: Publications						

5.6.7 This deliverable/output contains productive or infrastructure investment

WP 3 Group of activities 3.2

5.6.1 Group of activities leader

Group of activities leader PP 1 - Riga Technical University

A 3.2

5.6.2 Title of the group of activities

External results dissemination by webinars

42 / 100 characters

5.6.3 Description of the group of activities

Organize the public or/and specialized webinars. The themes of the webinars will be aimed toward problems related to the problem decision of energy safety and security of Baltic countries power energy system functioning considering intensive integration of renewable energy sources. The results of analytical, experimental or numerical studies, received in frames of the project will be provided to wide range of specialists and will help in the abovementioned problems solving. Preparation of a report summarizing the dissemination activities including summaries of presentations in external events and providing it to the targeted stakeholders.

We will organize within the project at least 6 webinars/physical meetings, including kick off meeting/ closing events for consortium members, on average 1 per 6 months with an approximate length of 1-2,5 hours or more, attracting at least 30 participants. We will use Zoom, Teams or similar platform to enable smooth technical conduction and interactive engagement of the stakeholders. The main aim of the webinars is to raise awareness of the project aims, introduce the team and increase the awareness and competencies of stakeholders (e.g., energy policy-and decision-makers, NGOs, academia, industry) and Small and Medium sized Enterprise (SMEs) competencies on optimal schedule for the network power flow, assessment of the storage requirements, measures for energy savings, and development of guidelines on the energy landscape spatial planning taking account the upcoming long-term changes of the energy balance. These webinars will lead to a better capacity to shape energy policies, sustainable energy models, and strategies until 2050 and foster innovation. The webinars help build mutual trust, develop skills and competencies, and contribute to working out the project outputs defined in WP1 and WP2.

The Go2Green Baltics project webinars targeted to various target groups will lead to better discussions on energy security scenarios and contribute to well-informed policymaking practices having a direct impact on the energy sector in the Baltic region. It aims to foster the development of a methodology for the energy stock carbon neutrality and the formulation of the needed policies regarding the environmental objectives in the Baltic states.

All partners will be involved.

The result of this activity is the second output for project result popularization.

2,431 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 3.2

Title of the output

Webinars

8 / 100 characters

Description of the output

Information dissemination activities in order to find all additional opportunities for external dissemination of project results and intensive use of them includes the following activities: are offered an organization of dissemination workshops and webinars on Go2Green Baltic activities, which will be open to the main stakeholders as TSO and DSO, NGO communities, manufacturers political decision makers (National public authorities), and other target groups, in order to present and discuss the findings of the project.

The Go2Green Baltics project webinars targeted various target groups (e.g., energy industry, academia, policy-and decision-makers, NGOs) will lead to better discussions on energy security scenarios until 2050. Each online seminar is dedicated to unique topics of WP1 or WP2 (e.g., A1.1 Setting up the requirements for Energy Power System (EPS) modeling; A1.2 Development of a mathematical model for evaluating various EPS operation scenarios/solutions; A1.3 Assessment of the controllability of the EPS; A2.2 Baltic regional market RES scenario modeling and analysis. A2.3 Analysis of Baltic regional market design and mechanisms development; A2.4 Cost benefit analysis; Baltic regional electricity market outlook for 2030-2050). The first interactive online seminar will introduce the Go2Green Baltic project and bring together all actors, including policymakers. We ask feedback from the participants to improve the quality. A summary of the online seminar and materials, including presentations, will be presented via project website and social media accounts.

1,588 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden)	Organization of the public or/and specialized webinars. 57 / 1,000 characters
Target group 2 Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia)	Participation as a consultant in the public or/and specialized webinars organization. 85 / 1,000 characters
Target group 3 NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia)	Participation as a consultant in the public or/and specialized webinars organization. 85 / 1,000 characters
Target group 4 National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia)	Participation as a consultant in the public or/and specialized webinars organization. 85 / 1,000 characters

Durability of the output

Several (at least 6) one-day webinars specifically targeted to various stakeholders.

84 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.2: External results dissemination by webinars						
O.3.2: Webinars						

5.6.7 This deliverable/output contains productive or infrastructure investment

WP 3 Group of activities 3.3

5.6.1 Group of activities leader

Group of activities leader PP 3 - Tallinn University of Technology

A 3.3

5.6.2 Title of the group of activities

Demonstration brochure presenting all innovative solutions proposed in the project

82 / 100 characters

5.6.3 Description of the group of activities

Develop guidelines on the energy landscape spatial planning considering the energy balance changes evaluating the impact of both shares of the renewable energy and its' storage capabilities. The large enterprises, public authorities, higher education institutions, and NGOs will communicate validation results under established scenarios focusing on and targeting actions related to their interest. For instance, public authorities will confirm and suggest recommendations for the roadmap development and coordination plans. Large enterprises will be involved in the development of the regulations/guidelines. NGO will share experience in terms of the guidelines/regulation adaptation on both local and regional levels raising awareness among citizens of the Baltic region. Moreover, NGOs will communicate the main results and project output to educate professionals and monitor any existing issues, and evaluate potential risks.

Activity A3.3 (demonstration brochure) goal is to make the Go2Green Baltic project results achieved in WP1 and WP2 visible to a wide audience (e.g., the energy sector, policy-and decision-makers) and disseminate the results to the whole value chain as wide as possible. It helps all actors be aware of the current and future challenges of energy transition and the achievement of energy security in the Baltics. This will be accomplished with the dissemination of the Go2Green Baltic scientific results achieved within the project's lifespan in WP1 and WP2 via a comprehensive online Demonstration Brochure presenting all innovative solutions created in the project. The online brochure gives an overview of fruitful collaboration and communication with all actors (e.g., academia, industry, policy, and decision-makers) regarding the project aims and the problems we were dealing with our partners. The primary objectives of the demonstration brochure are to disseminate the Go2Green WP1 and WP2 results and findings to all key actors in the field and integrate their feedback into the specification, design, development, and evaluation work.

All partners will be involved.

The result of this activity is the third output for project result popularization.

2,195 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 3.3

Title of the output

Demonstration brochure

22 / 100 characters

Description of the output

The brochure is targeted at all key actors in the energy sectors in participating countries, including policymakers. Also, the demonstration brochure consists of a summary of all Go2Green Baltic project results, future scenarios, and the direction of energy transition and energy security by 2030-2050. TalTech will draft a comprehensive and measurable communication strategy to promote and develop the planned activities, including the preparation of a demonstration brochure.

479 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?	

Target groups	How will this target group apply the output in its daily work?
Target group 1 Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden)	Consortium partners have a strong reputation in research. It ensures broad access to the higher education/research community. The brochure presents the scientific and technological results of the project - along with published Go2Green Baltic project research papers, technical demonstrations at conferences, and webinars, it giving higher education and scientific institutions insight into the novel solutions to achieve energy independence. 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open-access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 996 / 1,000 characters
Target group 2 Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia)	Consortium partners have a mutual connection with large enterprises in the energy sector. The demonstration brochure gives the target group the novel solutions leading to improved capacity to exploit these solutions; and shape the energy industry and policies with better knowledge, skills, and competencies. The industry involvement leads to a higher quality of the Go2 Green outputs. 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open-access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 936 / 1,000 characters
Target group 3 NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia)	Improved competencies and knowledge of NGOs acting in the energy sector via demonstration brochures and other project outputs will lead to a better capacity to take on board new innovative solutions and create a supportive environment for NGOs on a political level. The improved knowledge and timely involvement of NGOs in Go2Green Baltic outputs will contribute to a higher quality of other project outputs (e.g., demonstration brochure). 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open-access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 992 / 1,000 characters
Target group 4 National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia)	The more energy policy actors (incl. national public authorities) will be involved in the learning, knowledge sharing, and novel solutions preparation and demonstration process of the project, the more efficient will become policy development, financing, and implementation of innovative solutions. The Go2Green demonstration brochure gives an overview of innovative solutions (WP1, WP2), giving future directions in the energy sector. 1. Popularize the investigation results via participation in scientific conferences and publishing in a high-ranking open-access journal (A3.1). 2. Organize the public or/and specialized webinars (A3.2). 3. Prepare the demonstration brochure (A3.3). 4. Develop the Roadmap/guidelines of the proposed optimization model (A3.4). 5. Develop a new app/platform for a sustainable unified Baltic power system in 2050 as an online assessment tool for project results demonstration (mapping potential scenarios, predicting models of reserves, etc.) (A3.4). 987 / 1,000 characters

Durability of the output

To ensure mass adoption of the project results, we will establish strong links with the regional and local grid holders, governments, and other relevant stakeholders. Go2Green consortium will reach out related to associations and established networks (e.g., industrial) and policymakers. TalTech is responsible for the drafting of the online brochure. All project partners will contribute to the writing of the respective chapters of the brochure.

450 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.3: Demonstration brochure presenting all innovative solutions proposed in the project						
O.3.3: Demonstration brochure						

5.6.7 This deliverable/output contains productive or infrastructure investment

WP 3 Group of activities 3.4

5.6.1 Group of activities leader

Group of activities leader PP 2 - Kaunas University of Technology

A 3.4

5.6.2 Title of the group of activities

Roadmap for Power System by 2030-2050

37 / 100 characters

5.6.3 Description of the group of activities

Using the results of the activities carried out, a roadmap relevant to the aims and contribution of higher education and research institution, large enterprises, non-governmental organizations, a national public authority will be drawn up, reflecting the challenges of achieving the decarbonization goals by 2030-2050 and providing a list of measures to achieve these goals. Based on the results of the scenarios developed in WP1 and WP2, the aims and contributions relevant to each target group will be highlighted for each of the scenarios. The roadmap will take into account the insights provided by higher education and research institution, large enterprises, non-governmental organizations, and national public authorities on possible measures to meet the CO2 minimization targets and green energy transition. The roadmap will reflect the proposed technical, market, and regulatory approaches to a smooth transition to an environmentally-friendly electricity system. The roadmap will be implemented in the form of an interactive tool/platform.

The interactive tool/platform will enable comprehensive understanding and sharing of the project results between higher education and research institutions, large enterprises, non-governmental organizations, and national public authorities, and allow better recognition of the impact of suggested solutions. Also, it will allow acquiring the feedback of the target groups which will be useful for the stakeholders and become a partnership platform between different target groups.

The most important goal of the development of the interactive tool/platform is to build the environment that creates the conditions for higher education and research institution, large enterprises, non-governmental organizations, national public authorities to get a clear understanding of proposed technical solutions and power systems operation particularities and restrictions, Baltic regional marked RES scenarios and regional market design, and importance of the regulation. A clear understanding of roadmap contents will allow all the target groups to make motivated decisions and provide valuable feedback that will be exceptional information for the decision-makers and a source of information for the upgrade of the roadmap. The exceptional value of the roadmap-based interactive tool/platform is to become the environment that encourages the partnership between higher education and research institution, large enterprises, non-governmental organizations, national public authority, their motivated and informative involvement in roadmap improvement and building of sustainable, resilient, reliable, and secure Baltic region electric power system.

All partners will be involved.

The result of this activity is the fourth output for project result popularization.

2,811 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable

O 3.4

Title of the output

Interactive tool

17 / 100 characters

Description of the output

An online platform for a sustainable unified Baltic power system in 2030-2050 as an online assessment tool for project results demonstration will be developed. The interactive roadmap will facilitate the analysis and interpretation of the results obtained in WP1 and WP2 and will highlight the interrelationship between the actions of different target groups to achieve their CO2 minimization goals as well as green energy transition. It will allow different target groups to analyze the benefits of one measure or another, and provide feedback to decision-makers on the attitude of different target groups towards the measures under consideration to ensure the transition towards a zero-carbon electricity system. An online tool/platform will become the partnership environment between higher education and research institution, large enterprises, non-governmental organizations, and national public authorities and will create conditions for their informative and motivated involvement in roadmap improvement and decision-making.

1,031 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 Higher education and research institution An economic sector: R&D and Energy. A field of responsibility: Project management, model creation, verification, and development of feasible scenarios and action plans. (Latvia, Lithuania, Estonia, Denmark, and Sweden)	The roadmap will identify key research areas that will contribute to the development of measures, technologies and methodologies to ensure the adequacy, resilience, flexibility and reliability of systems with high share of RES. It is planned to pay a lot of attention to Artificial Intelligence, BigData analysis, and the application of ICT. As a result of these measures, higher education and research institutions will be encouraged to improve their study programs, to engage students and the society in future energy systems and to become involved in their development, and to provide the necessary competencies to future specialists. 637 / 1,000 characters
Target group 2 Large enterprise An economic sector: Industry and Energy. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania, and Estonia)	The possible technical measures and the stages of their implementation in order to ensure the stable, secure, reliable and resilient operation of EPS with high share of RES will be proposed. Emphasis will be placed on energy storage systems and their characteristics, analysis of network modes to increase power transfer capacity and characteristics of active power imbalance control measures required for investment in network infrastructure and imbalance control measures (energy storage, DSR, etc.). 502 / 1,000 characters
Target group 3 NGO An economic sector: Industry. A field of responsibility: Consultations, data support, support in the event / public activity organization. (Latvia, Lithuania and Estonia)	The roadmap will provide insights into what investments and technical solutions need to be promoted to achieve the decarbonisation goals by 2050. The results of the modelling and analysis carried out will not only identify the measures and actions required, but also explain the impact of each measure. 302 / 1,000 characters
Target group 4 National public authority An economic sector: Public. A field of responsibility: Consultations, data support. (Latvia)	The results of the analysis and modelling will lead to an action plan consisting of a series of measures to create an environment that enables public authorities and associations to make informed decisions and engage in a CO2 reduction program and to apply innovative energy efficiency technologies, promoting the integration of RES and contributing to the flexibility and security of the system. 396 / 1,000 characters

Durability of the output

The resulting roadmap will be presented at public events such as conferences, discussions with different target groups to demonstrate its benefits, and feedback. The interactive application and the roadmap will be able to be updated according to the needs of different target groups and changes in the most plausible scenarios for the development of the electricity system.

373 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.4: Roadmap for Power System by 2030-2050						
O.3.4: Interactive tool						

5.6.7 This deliverable/output contains productive or infrastructure investment

6. Indicators

Indicators

Output indicators

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
RCO 84 – Pilot actions developed jointly and implemented in projects	6	N/A	N/A
RCO 116 – Jointly developed solutions	4	O.3.1: Publications	Academic writing and publishing are a means for universities to give back acquired knowledge in a specific field of study to wider audiences. Compared to webinars and reports, it contains the comparison of details and methods other scientists have used. Therefore, the quality and novelty of the project are validated and are accepted also by other research in the corresponding area. It is envisaged that participating universities will be responsible for publishing and other project participants will contribute to the manuscripts to broaden their coverage and relevance. (575 / 1,000 characters)
		O.3.2: Webinars	Compared to academic writing and publishing, the webinars will be used as a tool, where prompt Q&A sessions can be followed to the presentation of results. It is the way, where to listen to partners, stakeholders, and formulize public opinion and adjust and rephrase the objective and methods. If global conditions allow, the seminars will be both physical and online/hybrid events. Participants will range from tens of persons to up to a hundred persons. The webinars will be made both in local languages for regional audiences and in English for all participants from all partner countries. (593 / 1,000 characters)

Result indicators

Result indicator	Total target value in number	Please explain how organisations in the target groups within or outside the partnership will take up or upscale each solution.
RCR 104 - Solutions taken up or up-scaled by organisations	4	Determining the maximum possible amount of power generation from renewable energy sources that can be installed in the Baltic Power Energy System, taking into account the available reserve capacities, national goals, market mechanisms and the possible development of other generation technologies and other promising technologies (storage, etc.) in the Baltic Energy system is of great interest to all target groups, either involved or not involved in the project. The results of the analysis can be taken into account and used in planning scenarios for the development of the unified EPS of Latvia, Lithuania and Estonia for the future up to 2030-2050. (653 / 2,000 characters)

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
		O.3.3: Demonstration brochure	Based on the project's communication agenda the demonstration brochure will aim to be the most important deliverable of the project. It will be based on the creation of the visual identity and brand framework of the project. It will be based on reports, publications, and online seminar materials and will be made available as an online document in English and be partially translated into each national language. 413 / 1,000 characters
		O.3.4: Interactive tool	The interactive tool will enable comprehensive understanding and share of the project results to all target groups, and allow better recognition of the impact of suggested solutions. Also, it will allow acquiring the feedback of the target groups which will be useful for the stakeholders and become a partnership platform between different target groups. 356 / 1,000 characters

Output indicators | **Result indicators**

Output indicator	Total target value in number
RCO 87 - Organisations cooperating across borders	15

Result indicator	Total target value in number	Please describe what types of organisations are planned to actively participate in the project. Explain how this participation will increase their institutional capacity. These types of organisations should be in line with the target groups you have defined for your project.	
PSR 1 - Organisations with increased institutional capacity due to their participation in cooperation activities across borders	25	Project partners and associated organisations	Large enterprises, government agencies and NGOs will present action plans in accordance with the energy strategy 2030-2050, which will specify the technical requirements for optimal planning of the modes of operation of the unified system, including the integration of renewable energy sources. As a result, scenarios will be formulated in cooperation with higher educational institutions, optimization tasks will be defined taking into account certain limitations and requirements for systems in terms of efficiency, adequacy, fault tolerance, flexibility and reliability of the system, models will be created and verified. 624 / 1,500 characters
		Other organisations	Concerns about power energy system security and affordability of electricity, together with the need to solve priority tasks for the development of environmentally friendly types of energy, is a key point for different target groups to be interested in the results of the project. Through communication with potential stakeholders (Business support organizations, Education/training centers and schools, European Economic Interest Grouping (EEIG), European Grouping of Territorial Cooperation (EGTC), Higher education and research institutions, international governmental organizations, Large enterprises, Local public authorities, National public authorities, Non-governmental organizations (NGO), Regional public authorities, Sectoral agencies and Small and medium enterprises of all Baltic Sea region), it is intended to popularize the ideas and results of the project, which will create conditions for their informative and motivating participation in improving the roadmap and decision-making both during the project and after its completion. 1,047 / 1,500 characters

7. Budget

7.0 Preparation costs

Preparation Costs

Would you like to apply for reimbursement of the preparation costs?	Yes

Other EU support of preparatory cost

Did you receive any other EU funds specifically designated to the development of this project application?	No

7.1 Breakdown of planned project expenditure per cost category & per partner

No. & role	Partner name	Partner status	CAT0 - Preparation costs	CAT1 - Staff	CAT2 - Office & administration
1 - LP	Riga Technical University	Active 22/09/2022	7,000.00	645,000.00	96,750.00
2 - PP	Kaunas University of Technology	Active 22/09/2022	5,000.00	589,500.00	88,425.00
3 - PP	Tallinn University of Technology	Active 22/09/2022	7,000.00	640,115.00	96,017.25
4 - PP	Halmstad University	Active 22/09/2022	5,000.00	505,000.00	75,750.00
5 - PP	JSC "Augstsprieguma tīkls"	Active 22/09/2022	0.00	100,000.00	15,000.00
6 - PP	AB Litgrid	Active 22/09/2022	0.00	50,000.00	7,500.00
7 - PP	Elering AS	Active 22/09/2022	0.00	50,000.00	7,500.00
8 - PP	JSC "Sadales tīkls"	Active 22/09/2022	0.00	50,000.00	7,500.00
9 - PP	AB Ignitis Group	Active 22/09/2022	0.00	30,000.00	4,500.00
10 - PP	Ministry of Economics of the Republic of Latvia	Active 22/09/2022	0.00	60,000.00	9,000.00
11 - PP	The Assocation of Power Engineers and Energy Constructors	Active 22/09/2022	0.00	20,000.00	3,000.00
12 - PP	Estonian Society for Electrical Power Engineering	Active 22/09/2022	0.00	20,000.00	3,000.00
13 - PP	Latvian Wind Energy Association	Active 22/09/2022	0.00	20,000.00	3,000.00
14 - PP	Union of Electricity Industries of Estonia	Active 22/09/2022	0.00	20,000.00	3,000.00
Total			24,000.00	2,799,615.00	419,942.25

No. & role	Partner name	CAT3 - Travel & accommodation	CAT4 - External expertise & services	CAT5 - Equipment	Total partner budget
1 - LP	Riga Technical University	96,750.00	7,000.00	135,000.00	987,500.00
2 - PP	Kaunas University of Tec	88,425.00	7,500.00	90,000.00	868,850.00
3 - PP	Tallinn University of Tech	96,017.25	0.00	47,000.00	886,149.50
4 - PP	Halmstad University	75,750.00	0.00	0.00	661,500.00
5 - PP	JSC "Augstsprieguma tī	15,000.00	0.00	0.00	130,000.00
6 - PP	AB Litgrid	7,500.00	0.00	0.00	65,000.00
7 - PP	Elering AS	7,500.00	0.00	0.00	65,000.00
8 - PP	JSC "Sadales tīkls"	7,500.00	0.00	0.00	65,000.00
9 - PP	AB Ignitis Group	4,500.00	0.00	0.00	39,000.00
10 - PP	Ministry of Economics of	9,000.00	0.00	0.00	78,000.00
11 - PP	The Assocation of Power	3,000.00	0.00	0.00	26,000.00
12 - PP	Estonian Society for Elec	3,000.00	0.00	0.00	26,000.00
13 - PP	Latvian Wind Energy Ass	3,000.00	0.00	0.00	26,000.00
14 - PP	Union of Electricity Indust	3,000.00	0.00	0.00	26,000.00
Total		419,942.25	14,500.00	272,000.00	3,949,999.50

7.1.1 External expertise and services

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
1. Riga Technical U	Specialist support	CAT4-PP1-E-0	Design services 15 / 100 characters	No	1.1 1.2 1.3 3.1 3.2 3.3 3.4	7,000.00	
2. Kaunas Universit	National control	CAT4-PP2-F-0	First level controller 22 / 100 characters	No	N/A	7,500.00	
	Total					14,500.00	

7.1.2 Equipment

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
2. Kaunas Universit	IT hardware and soft	CAT5-PP2-B-0	License for DlgSilent PowerFactor software 42 / 100 characters	No	1.3	20,000.00	
1. Riga Technical U	IT hardware and soft	CAT5-PP1-B-0	Laptop Procesor:11th Gen Intel or AMD Ryzen 9; RAM(at least):32 GB; SSD(at least):1TB or analogue. 99 / 100 characters	No	1.1 1.2 1.3 3.1 3.2 3.3 3.4	15,000.00	
1. Riga Technical U	IT hardware and soft	CAT5-PP1-B-0	License for Plexos software or analogue. 42 / 100 characters	No	1.1 1.2 1.3 1.4 1.5 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4	120,000.00	
3. Tallinn Universitv	IT hardware and soft	CAT5-PP3-B-0	License for Plexos and energyPRO software. 43 / 100 characters	No	1.1 1.2 1.3 3.1 3.2 3.3 3.4	47,000.00	
2. Kaunas Universit	IT hardware and soft	CAT5-PP2-B-0	License for Plexos software. 29 / 100 characters	No	1.1 1.2 1.3 3.1 3.2 3.3 3.4	70,000.00	
	Total					272,000.00	

7.1.3 Infrastructure and works

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
Please select	Please select	CAT6-PP--01	0 / 100 characters	Please select		0.00	
	Total					0.00	

7.2 Planned project budget per funding source & per partner

No. & role	Partner name	Partner status	Country	Funding source	Co-financing rate [in %]	Total [in EUR]	Programme co-financing [in EUR]	Own contribution [in EUR]	State aid instrument
1-LP	Riga Technical University	Active 22/09/2022	LV	ERDF	80.00 %	987,500.00	790,000.00	197,500.00	For each partner, the State aid relevance and applied aid measure are defined in the **State aid section**
2-PP	Kaunas University of Technology	Active 22/09/2022	LT	ERDF	80.00 %	868,850.00	695,080.00	173,770.00	
3-PP	Tallinn University of Technology	Active 22/09/2022	EE	ERDF	80.00 %	886,149.50	708,919.60	177,229.90	
4-PP	Halmstad University	Active 22/09/2022	SE	ERDF	80.00 %	661,500.00	529,200.00	132,300.00	
5-PP	JSC "Augstsprieguma tīkls"	Active 22/09/2022	LV	ERDF	80.00 %	130,000.00	104,000.00	26,000.00	
6-PP	AB Litgrid	Active 22/09/2022	LT	ERDF	80.00 %	65,000.00	52,000.00	13,000.00	
7-PP	Elering AS	Active 22/09/2022	EE	ERDF	80.00 %	65,000.00	52,000.00	13,000.00	
8-PP	JSC "Sadales tīkls"	Active 22/09/2022	LV	ERDF	80.00 %	65,000.00	52,000.00	13,000.00	
9-PP	AB Ignitis Group	Active 22/09/2022	LT	ERDF	80.00 %	39,000.00	31,200.00	7,800.00	
10-PP	Ministry of Economics of the Republic of Latvia	Active 22/09/2022	LV	ERDF	80.00 %	78,000.00	62,400.00	15,600.00	
11-PP	The Assocation of Power Engineers and Energy Constructors	Active 22/09/2022	LV	ERDF	80.00 %	26,000.00	20,800.00	5,200.00	
12-PP	Estonian Society for Electrical Power Engineering	Active 22/09/2022	EE	ERDF	80.00 %	26,000.00	20,800.00	5,200.00	
13-PP	Latvian Wind Energy Association	Active 22/09/2022	LV	ERDF	80.00 %	26,000.00	20,800.00	5,200.00	
14-PP	Union of Electricity Industries of Estonia	Active 22/09/2022	EE	ERDF	80.00 %	26,000.00	20,800.00	5,200.00	
Total ERDF						3,949,999.50	3,159,999.60	789,999.90	
Total						3,949,999.50	3,159,999.60	789,999.90	

7.3 Spending plan per reporting period

	EU partners (ERDF)		Total	
	Total	Programme co-financing	Total	Programme co-financing
Preparation costs	24,000.00	19,200.00	24,000.00	19,200.00
Period 1	555,000.00	444,000.00	555,000.00	444,000.00
Period 2	560,000.00	448,000.00	560,000.00	448,000.00
Period 3	650,000.00	520,000.00	650,000.00	520,000.00
Period 4	650,000.00	520,000.00	650,000.00	520,000.00
Period 5	750,000.00	600,000.00	750,000.00	600,000.00
Period 6	760,999.50	608,799.60	760,999.50	608,799.60
Total	3,949,999.50	3,159,999.60	3,949,999.50	3,159,999.60