



Carbon driven energy equilibrium at the municipal scale (Energy Equilibrium)

Hamburg | May 25, 2023 Dagnija Blumberga

interreg-baltic.eu/project/energy-equilibrium





Challenge of renewable energy and role of energy storage

REPowerEU: 45% share of RES by 2030

→ Expected major expansion of installed renewable energy capacities

Energy storage providing critical energy shifting and fast-response flexibility services

→ to compensate for volatile nature of RES



Image source:

https://css.umich.edu/publications/factsheets/ener gy/us-grid-energy-storage-factsheet



Growing demand for energy storage

Need for high deployment of storage

→ 6 times larger than currently installed levels





Energy Equilibrium

Role of municipalities

Co-funded by Baitic Sea Region Co-funded by the European Union

- Municipalities are responsible for local infrastructure development, including energy-related infrastructure.
- Local public authorities are key enablers for energy transition in the region.

Municipality as an energy consumer Municipality as an energy producer and supplier

Four major functions of municipalities

Municipality as a regulator and investor in the local energy sector Municipality as a motivator for more efficient energy generation and consumption and for protection of the environment

Source: The Regional Environmental Center for Central and Eastern Europe (REC). «Local Action Planning Towards Energy Security and Sustainability.»

Problem description and project context

- Variability and non-controllability of seasonally generated RES
- Daily fluctuations

Development of sufficient energy storage infrastructure

- Local public authorities encounter numerous challenges and uncertainties
- Lack of knowledge and on-site capacity

Development of a tool to support decision making





Transform RES supply potential in municipalities into reality





Energy Equilibrium

The goal of the project

This project aims to develop an Energy Equilibrium Platform – an interactive and easily applicable tool to support municipalities and energy suppliers in decisionmaking related to the development of efficient action plans to accelerate local RES utilization in the region.



Energy Equilibrium Platform





Identify optimal RES storage development strategy and impact on flexibility



Determine key factors affecting energy equilibrium in the region



Develop policy mechanisms and action plans to enhance local RES



Anticipate risks and avoid making expensive mistakes

Energy Equilibrium Platform



Start page All sectors Residential Public Industry Tertiary Energy Efficiency Obligation Scheme Energy production Taxes General parameters Run simulation Reset values CUMULATIVE SAVINGS IN ALL SECTORS Energy efficiency policy in public sector ? Financial sur 0.69 Vann Cumulative savings - Cumulative targe Available support, EUR 23.6 Innact of information dissemination activities COSTS IN PUBLIC SECTOR Starting year of funding 2.023k FORY ENERGY AND CLIMAT ACTION PLANS Mandatory energy and climate action plan ? Support intensity in public 2027 2016 2019 3075 2026 sector.% support year total costs ? Comulative costs, EUR 3.96M Cumulative support, EUR 3.5M Strengthening norms Starting year of norm strengthening 2.023k CUMULATIVE SAVINGS IN PUBLIC SECTOR Factors impacting EE diffusion in public sector 5 10 Frequency of norm strengthening, years Energy consumption 10 kWhim2/year 2025 2026 2027 2028 2029 2018 2019 2020 2021 2022 2024



Baltic Sea Region

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Transnational value of the project

- Diversity of energy systems
- Differences in spatial planning, territorial potential, available natural resources, seasonal factors, environmental permitting legislation, and political and administrative factors

- Knowledge exchange events
- Group model building activities
- Role game
- Regional stakeholder groups in each country
- Seminars
- Webinars
- Workshops
- Discussions
- Trainings
- Informative materials and guidelines





Partnership

12 core partners and 3 associated partners from 6 different countries:

- Latvia
- Lithuania
- Finland
- Sweden
- Poland
- Germany

4 different fields of activity:

- 8 municipalities
- 1 public infrastructure provider
- 3 energy agencies and clusters
- 3 technical research institutions

Sweden Sustainable Business Hub Tomelilla municipality

Germany ZEBAU GmbH



Energy Equilibrium

Finland Thermopolis Oy

> Latvia Riga Technical University

Gulbene Municipality Gulbene Energy Service Tukums Municipality

Lithuania Lithuanian Energy Institute

Poland

Institute of Fluid-Flow Machinery Polish Academy of Sciences Mikołajki Pomorskie Commune Wejherowo municipality















Local public authorities

Infrastructure and public service providers

Sectoral agencies

Regional public authorities

Renewable energy associations



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Project work plan and timeframe





WP1 activities and deliverables





Deliverables

Outlook on multidimensional KPIs of a carbon neutral energy system in municipalities

Outcomes and insights from role game and open discussion event

Prototype of Energy Equilibrium platform

Improvement Energy Equilibrium platform based on group model building sessions

Validated prototype of Energy Equilibrium platform and notes from the platform validation tests 14

Deliverables and output SOLUTIONS 2.1 Evaluation report on Energy Equilibrium platform pilot in Pilot and evaluate Energy Equilibrium platform the BSR municipalities in the BSR municipalities 2.2 Adjust the Energy Equilibrium platform and **Energy Equilibrium platform** make it publicly available 2.3 Organize knowledge-exchange event on renewable energy transition strategies in BSR Outcomes and insights from knowledge exchange event municipalities 2.4 Roadmap for renewable energy transition in BSR Develop a roadmap for renewable energy municipalities transition in BSR municipalities

WP2 activities, deliverables, and outputs

WP2. PILOTING AND EVALUATING



Interreg Co-funded by the European Union

WP3 activities and deliverables





Deliverables

Developed training material to be presented in workshops

Information dissemination materials (2 webinars, 2 seminars, local seminars, 2 popular science articles, 1 podcast, social media announcements)

Scientific dissemination materials (2 scientific papers, 1 conference, 2 guest lectures)

Six Region Stakeholder Groups (one in each partner country -Latvia, Lithuania, Poland, Germany, Sweden, Finland)

Project main outputs & deliverables





Energy Equilibrium platform

Roadmap for renewable energy transition in BSR municipalities







Project website: https://interreg-baltic.eu/project/energyequilibrium/

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