Innovation Toolbox

Bothnia Green Energy

Interreg Aurora

Co-funded by the European Union

The Innovation Process - Overview

The innovation process, developed in the Interreg Aurora Bothnia Green Energy (BGE) project, was based on the evaluation of four pilots. Its goal was to stimulate sustainable innovation by identifying needs, developing knowledge, and connecting energy companies, SMEs, public actors, and academia—fostering ideas, collaboration, and follow-up beyond the project.

The process followed a five-step framework:

1. Identify needs and ideas – through workshops, interviews, or stakeholder mapping.

2. Prioritize – cluster and select ideas based on relevance and feasibility.

3. Analyze & Matchmake – connect need owners with potential solution providers.

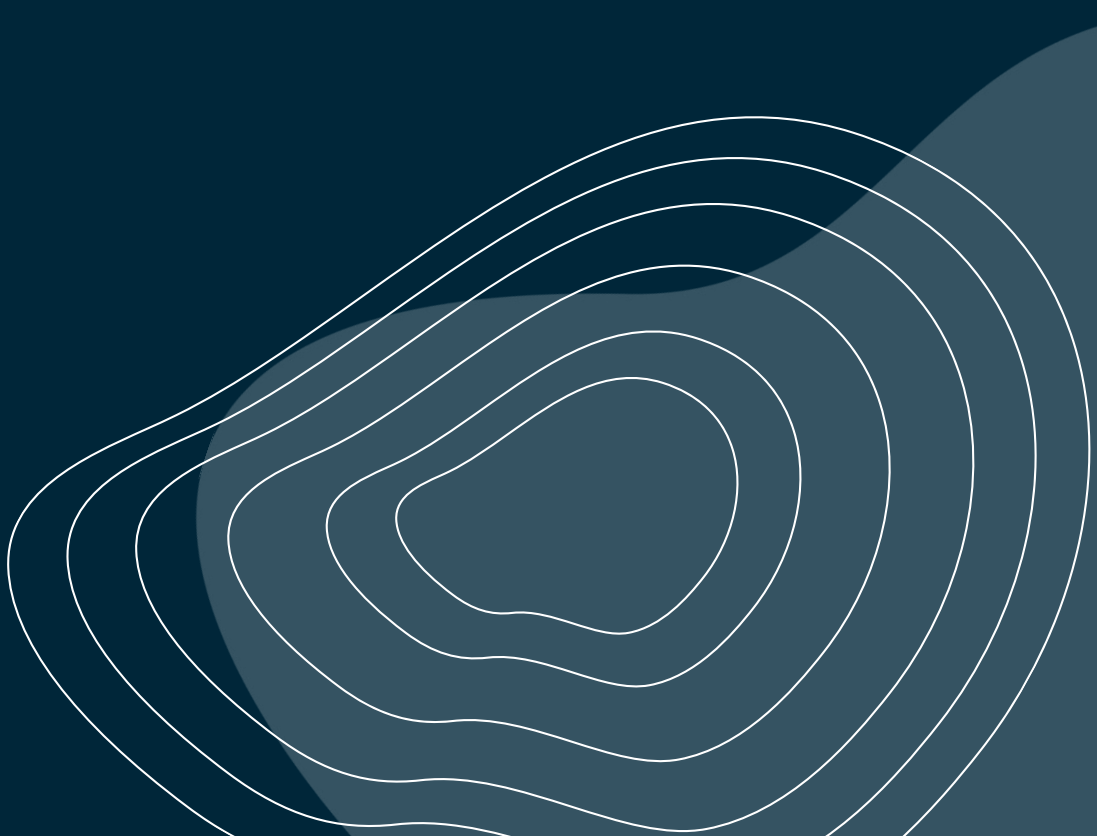
4. Conceptualize – develop concepts, feasibility studies, and business logic.

5. Handover – clarify responsibility for continued i mplementation after the project.

Key Insights

The pilots applied the framework in a dynamic, non-linear way that suited real-world conditions. Initial needs from energy companies were sometimes unclear, priorities shifted, and staff changes affected continuity. Over time, the focus shifted from strictly following the model to achieving progress and tangible results. Consequently, the final step evolved from “implementation” to handover, recognizing that long-term responsibility could not rest with the project itself.

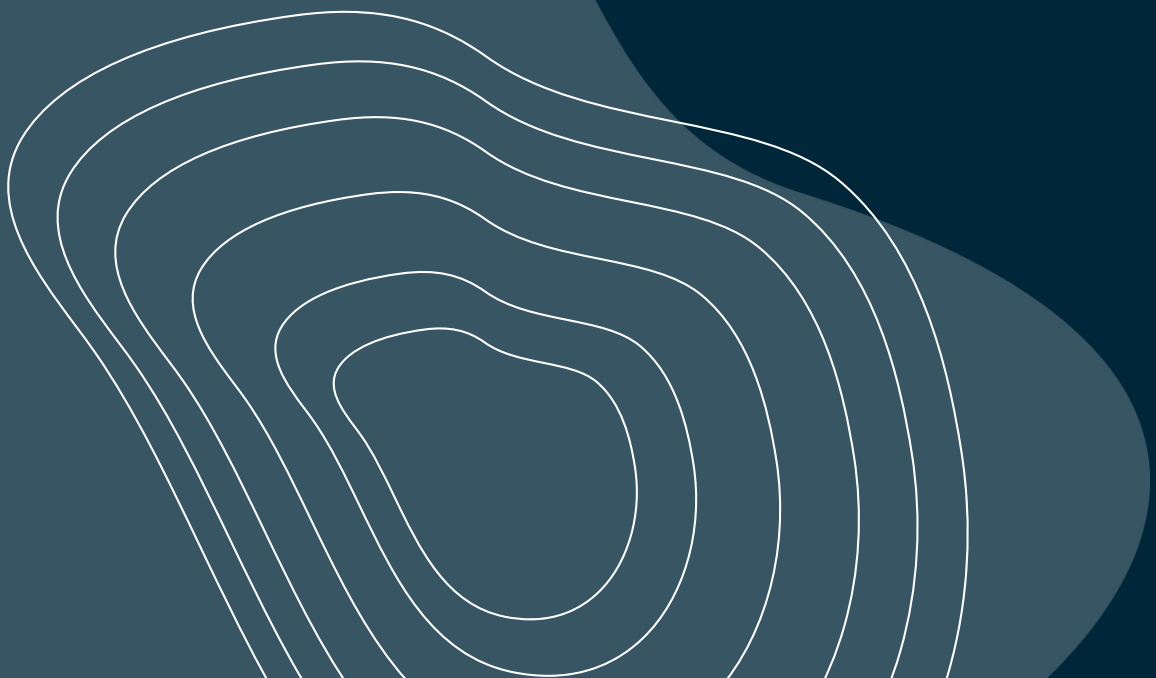
Across the pilots, insights, tools, challenges, and lessons learned were continuously documented and discussed, notably through shared reflection sessions and a common documentation structure. Overall, the process proved flexible and learning-oriented, while also highlighting the need for clearer decision-making, stakeholder commitment, and defined ownership.



Innovation Pilots

The Bothnia Green Energy project has included work with four innovation pilots: Excess Heat, Power to Talent, Energy Solutions in Construction and Real Estate, and DC-Network. The activities have been planned and coordinated by teams consisting of all project partners.

1. Excess Heat
2. Energy Innovation in Building & Real Estate
3. DC Network (Direct Current)
4. Power to Talent



Excess Heat

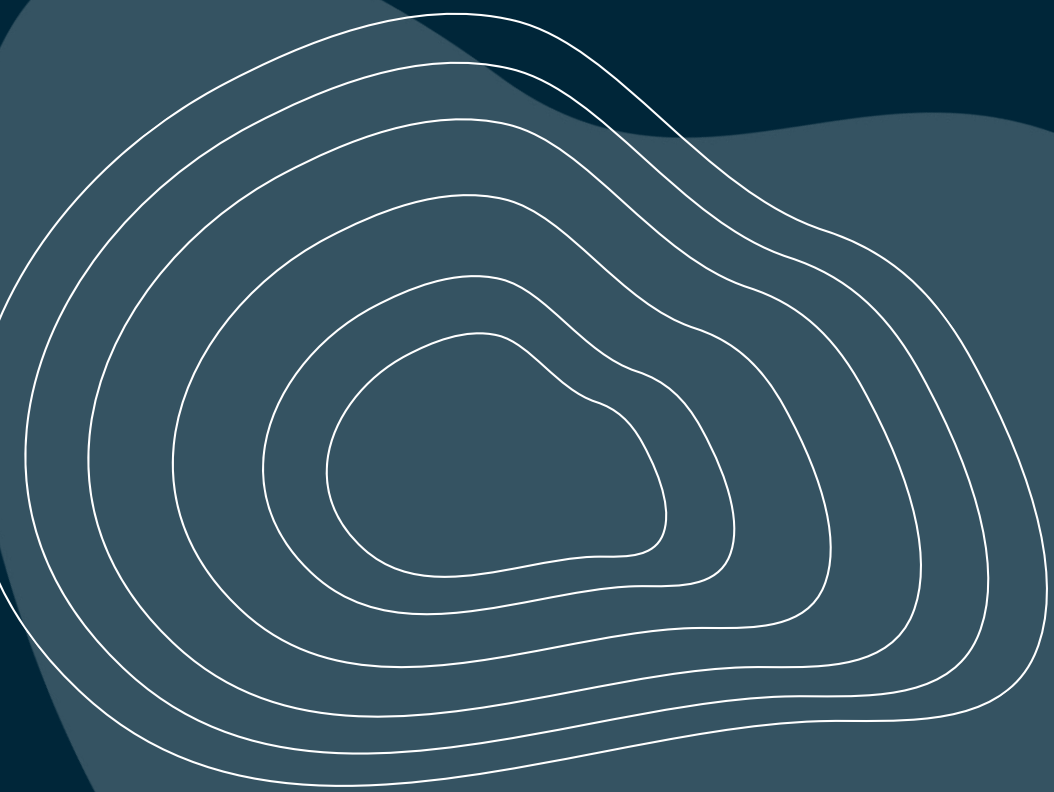
This pilot focused on cross-border collaboration and knowledge transfer related to excess heat solutions. Activities included mapping the excess heat landscape in Sweden and Finland, organizing a multidisciplinary hackathon (Braincade), and arranging a series of thematic webinars covering technical, business, and systemic perspectives on excess heat utilization.

Results

- Ten webinars were organized, involving 2–4 speakers per session and attracting around 400 participants in total.
- Webinar recordings, a compiled document, and a searchable spreadsheet of solutions and companies together form an Excess Heat Toolbox.
- The materials are hosted on the project website and will remain accessible after project completion.
- The pilot increased awareness, strengthened cross-border networks, and stimulated interest in excess heat applications.

Lessons learned - Excess Heat

- Excess heat solutions require a systemic approach; there is no single transferable solution.
- Outcomes depend on temperature levels, system design, financing, and local conditions.
- Ownership is critical: promising ideas (e.g. a regional heatmap app) did not progress due to lack of a responsible organization.
- The innovation framework needed clearer guiding questions to support reflection and handover.



Energy Innovation in Building & Real Estate

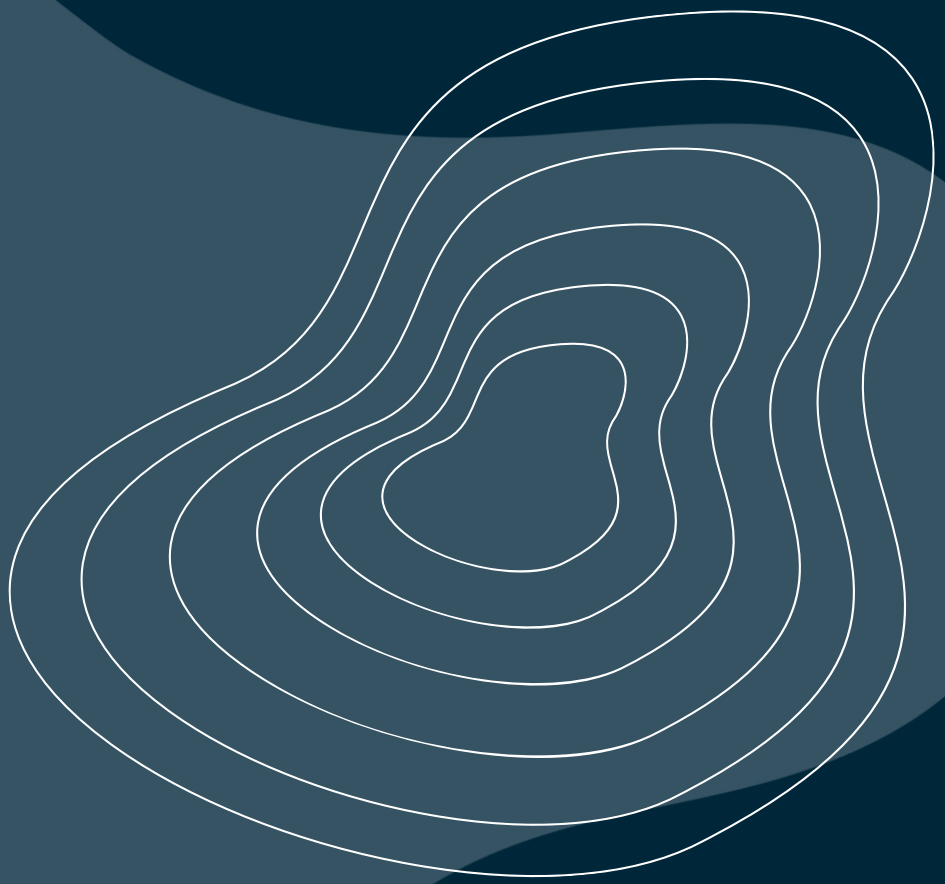
This pilot addressed energy efficiency needs in the construction and real estate sector. Needs were identified through workshops and interviews with property owners in Sweden and Finland. The Ignite Sweden matchmaking method was used to connect property owners with startups and SMEs offering relevant solutions.

Results

- A large matchmaking event in Umeå gathered 46 participants and resulted in 70 meetings.
- Several follow-up dialogues were initiated between property owners and solution providers.
- Umeå Municipality and Uminova Innovation received the “Ignite Ecosystem Collaborator 2024” award.
- Some collaborations continued beyond the project, with at least one case still active.

Lessons learned - Energy Innovation in Building & Real Estate

- Starting from the needs of property owners is crucial.
- Clear deliverables and early commitment from need owners improve matchmaking outcomes.
- Property owners need better support in assessing innovations and solution providers.
- Continuous follow-up is essential to maintain momentum and enable implementation.
- Clarifying responsibility after matchmaking supports long-term impact.



DC Network (Direct Current)

The DC network pilot explored the feasibility and business potential of direct current electricity networks, aiming to reduce energy losses caused by AC/DC conversions. The work included stakeholder meetings, study visits, feasibility studies, and techno-economic analysis conducted by an external consultant.

Results

- Five initial concepts were identified; two were developed into full feasibility studies.
- A report, calculation spreadsheet, and communication video were produced and made publicly available.
- Case studies included a multi-storey car park in Umeå, Sweden and an industrial charging site in Jakobstad, Finland.
- The pilot strengthened cross-border and cross-sector collaboration.

Lessons learned - DC Network

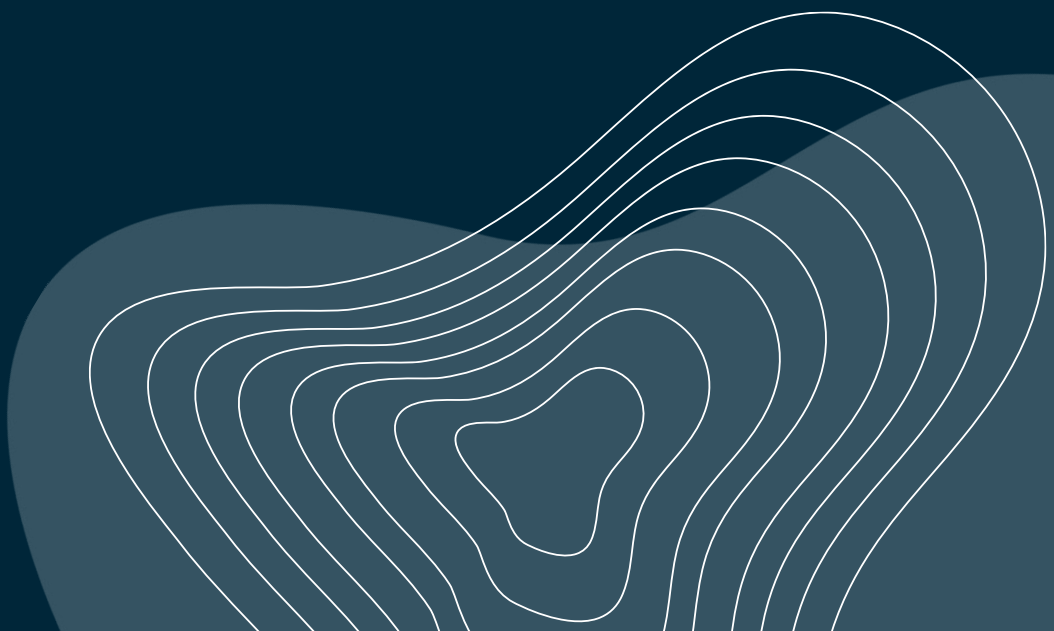
- Early and concrete involvement of energy companies is essential.
- A transparent and systematic prioritization process increases engagement.
- Clear agreements on roles, expectations, and innovation rights would have improved efficiency.
- Market immaturity and company bankruptcies posed challenges.
- Understanding and acceptance of DC networks take time, but knowledge and interest increased through the pilot.

Power to Talent

This pilot focused on attracting and retaining skilled professionals in the energy sector by strengthening cross-border HR collaboration. Activities included webinars, in-person meetings, experience sharing, and job shadowing between six Swedish and Finnish energy companies.

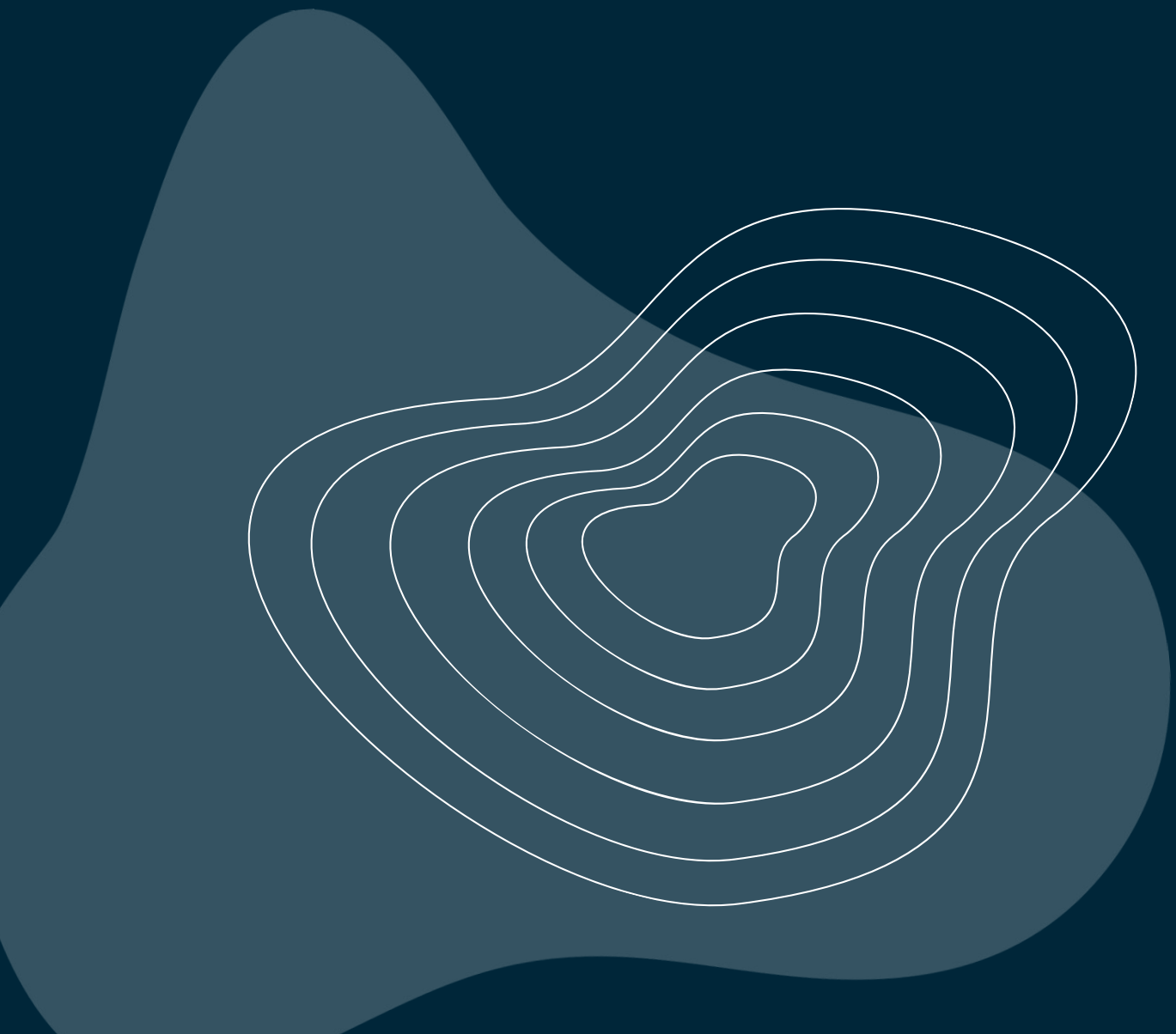
Results

- Five webinars and two in-person meetings were held.
- Job shadowing led to concrete learning outcomes, including inspiration for new investments and improved HR practices.
- A Talent Attraction Toolbox was developed, containing presentations and knowledge-sharing materials.
- A long-term HR collaboration network was established.



Lessons learned - Power to Talent

- Job-shadowing is a powerful method for learning and inspiration.
- Differences in company size and structure affect how easily practices can be transferred.
- Limited time requires careful planning of meeting content.
- The pilot benefited more from experience exchange than from producing immediate tangible outputs.
- Stronger engagement from company leadership and clearer long-term objectives could have increased impact.



Conclusion

The innovation process and pilots together increased knowledge, strengthened networks, and produced practical tools that extend beyond the project's lifetime. While the framework needed some adaptation, the pilots showed that flexible, need-driven innovation —combined with a clear handover of responsibility— can effectively support sustainable energy transitions across borders.

For more information, visit:
www.kvarken.org/projects/bothnia-green-energy

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