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Making energy sharing work: barriers and opportunities from piloting energy communities in four Baltic Sea countries

Keywords: energy sharing, energy communities, electricity market design, collective self-consumption

Abstract

Energy sharing enables the collective production and self-consumption of renewable electricity and is a central activity for many energy community projects. In its virtual form, energy sharing takes place through the public grid and is organized through accounting and billing arrangements rather than the physical transfer of electricity. At the EU level, energy sharing is explicitly recognized as part of electricity market design, while the need for more standardized approaches has recently been emphasized in the Citizens Energy Package.

In countries with emerging energy community frameworks, including Estonia, Finland, Latvia, and Sweden, policy formation and implementation have followed different routes. However, several common issues can be observed: the decisive role of established market actors such as distribution system operators and suppliers, the functionality of energy data platforms, and the effects of broader changes in electricity markets and renewable energy integration. Although each country has enabled or proposed a specific form of energy sharing, further adjustments are needed to align national frameworks and practices with EU guidance.

The study draws on four start-up packages prepared within the Interreg project StartSun: Start-ups for Solar Energy Communities. These packages document national experiences, procedural steps, practical instructions for scaling solar community projects, and lessons learned while planning, modelling, or implementing energy community pilots.

Based on an analysis of barriers encountered during piloting, we identify three policy opportunities. First, system-wide benefits of energy sharing should be defined, formalized, and adequately rewarded in specific grid and market contexts. Second, public resources should support the harmonization of digital infrastructures operated by market actors before financing individual projects. Third, the cooperative and social capacities of energy communities should be strengthened for demand-side activities and broader value creation, rather than channeled into technological competition with established market actors.

Energy sharing remains an important site for negotiating how solar integration proceeds across systems and scales – and for building the institutional arrangements that make it affordable and durable.