

# “Flexible Solutions for the low voltage grid of tomorrow” - FLEXNET

---

## Synthesis

The energy landscape in Flanders has been marked in recent decades by the emergence of decentralized energy sources. The variable and more and more expected flexible use of electricity from solar and wind energy will have to result in an increased electricity use from renewable sources in the future. The search for a good on-site balance between taxes, decentralized sources and energy buffers is essential for an optimal energy management in both the private and industrial sectors. The technological possibilities for ultimately increasing the self-sufficiency and self-consumption of energy are sufficient, so that this follow-up project can focus on complementary optimizations and design regulations that are not limited to individual increase in self-consumption and provision. Optimal coordination of yield and consumption with the help of all kinds of energy buffers also provides end users with an increase in flexibility, which can be used on various scales to reduce the payback period of storage and help further roll out renewable energy.

## Goals

The increasing congestion problems in the distribution network due to the variable nature of RES is the challenge of the EELAB-Lemcko research group to achieve the optimum integration, utilization and maximum flexibility of renewable energy sources. We want a balance between yield and consumption by better controlling the interoperability of different systems by aiming for maximum flexibility.

Optimizing and further expanding the combination of existing technologies reduces the payback time for renewable energy investments. Optimization of RES and HESS can then be viewed on an individual level (for example SME, home or office) as well as cumulatively (for example apartments, shopping complex or new construction sites) whereby individual versus local optimizations (shared profit) are tested.

The results are emulated and checked against actual cases that will be worked out and validated. All these findings are bundled in a roadmap that must serve as a guideline for maximum flexibility. The quantification of the optimal storage capacity in function of the renewable source and the consumption profile in the form of hybrid storage (HESS) is the challenge of the future and is the core of this project proposal. To disseminate the project results, workshops and seminars will be organized, in collaboration with the professional federations, which disseminate the acquired technology knowledge.

## Target group

The target group of this project is not only the residential end users, but also residential entities, the tertiary sector the SME fabric. In addition to the broad target group, all technology distributors are of course strongly involved, as are the distribution network manager and the energy regulator. Technology distributors, installers and study services form a large group of stakeholders to participate in this project. Also new technological players equivalent to aggregators, but for low-voltage consumers, can open a new market segment here and also stimulate the increase in renewable energy.