



## Local energy communities: enhancing collective investments and profitability of distributed energy resources

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### Summary

Local energy communities (LEC) are at the core of the so-called just energy transition, where all social groups are brought along in the pivot to a net-zero future. This paper focuses on the deployment of integrated local energy systems (LES) through collective investment actions that follow the principles of transactive energy and energy sharing with communal and cooperative characteristics. More specifically, the different collective schemes that can be established at the local level are initially reviewed, whilst the techno-economic analysis puts emphasis on the LES that can be formed by the combination of solar PV and energy storage systems (ESS). We quantitatively assess the economies of scale and the synergetic operational benefits that LEC can bring to its members by utilising optimisation models that are able to simulate different horizons as required for investment appraisal and to capture various revenue streams.

### Highlights

- LEC drive the just energy transition through collective investment in integrated LES.
- The study reviews collective schemes and analyzes LES combining solar PV and ESS.
- Optimisation models assess economies of scale, operational benefits, and revenue streams for LEC members.



The TradeRES project will develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system. The market design will be tested in a sophisticated simulation environment in which real-world characteristics such as actors' limited foresight into the future and risk aversion are included.



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