

Interactive session

Alpine Microgrid Model

Alpine Microgrid Model



Driving forces for microgrids and collective energy actions in the Alps: [Select x2](#)

1. Growing electricity needs & transition to e-mobility
2. Local RES production & network integration
3. Growing demand from civil society for local collective energy action
4. Support from local municipalities to communities
5. Corporate sustainability goals
6. Need for more resilient energy systems in valleys
7. Enabling policies (e.g. EC directives and their transposition into laws)
8. Others

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Definition: Select x1 you'd like to revise or emphasize

- A. Grids or interconnected combinations of grids with clearly defined local boundaries for the exchange and distribution of AC electricity, DC electricity, heat, cold, gases (e. g. hydrogen, methane), liquids (e. g. mixtures of higher hydrocarbons such as kerosine) and potentially including interconnecting devices, such as electric converters, electric transformers, heat pumps, combined heat and power plants fuelled by grid-bound energy carriers
- B. Which connect several devices generating, using or storing usable energy or energy carriers;
- C. In which controllable devices (generation units, flexible loads and storages) can be controlled as a single entity whereby these controllable devices might comprise all or part of all generation units, flexible loads and storages in this territory;
- D. Which might be able to be operated temporarily or constantly disconnected from the respective upstream grids
- E. In which the connected devices are operated by (legal) persons acting as producers, consumers, prosumers and optionally storage operators on the same territory whereby these (legal) persons might comprise all or a part of all producers, consumers, prosumers and storage operators in this territory;
- F. and which are organised by a single entity which might be (1) a local Energy Community complying partially or fully with the definition of Citizens Energy Communities or Renewable Energy Communities or (2) an organisation such as a (municipal) electric utility which involves customers actively in the organisation of the Microgrid.

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Benefits : Select x3 key ones

1. Better **exploit local renewable energy sources** in a sustainable way
2. Improve local **energy self-sufficiency**
3. Support the introduction of **local collective energy actions** (RES production, collective self-consumption,..) and the **concept of energy community**
4. Reduce global **energy costs for end-users**
5. Improve the **resilience of electricity networks** in the case of emergencies and outages.
6. Reduce **electric losses** and infrastructure costs
7. Introduce new services to the grid (ancillary services, flexibility services)
8. Provides effective energy management solutions for **compounds owned by single owners** (hospital, campus, industrial parks, malls, office buildings,..)

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Hints: Open discussions

1. Thorough review of evolving legislative & regulatory framework when planning your project (energy communities, self-consumption,..)
2. Apply good governance principles when setting up your collective action (transparency, participation, accountability, effectiveness, coherence)
3. Engage public authorities early in the process (support, authorizations)
4. No one fits all approach when designing your microgrid project
 1. Technical solutions suited to your collective energy action (several HW/SW technologies available using different protocols and standards)
 - Operation in islanded mode is very challenging and not simple (to guarantee constant frequency and voltage)
 - High operation and maintenance costs of the installation
 - Various technical solutions will require external expertise in planning and operation phases