On business models & regulatory boundary conditions for hybrid networks

Dennis Cronbach
Fraunhofer IEE

Inger-Lise Svensson
RISE
Questions to answer

- What trends can be identified regarding new business strategies for hybrid energy grids?
- What obstacles can be identified for implementing sector coupling strategies?
- Regarding obstacles: What solution approaches exist?
- Are there parallels between different countries?

Tools to answer these questions

- Information about projects, contributed by Annex partners
- Studies on the topic

Known problems

- Partner contributions cover only a small amount of EU countries
- Additional literature research is biased via pay walls and the research focus of the own institute
- Topic could fill an annex on its own
Trends & drivers

- Technical
  - Balance of production and demand
  - Energy transition

- Economical
  - Balance of production and demand (market price)
  - Easier participation of new stakeholders
  - Modern tax distribution
  - Better business opportunities

New markets / stakeholders
- Vabisys
- Ecogrid
- Fit4Power2Heat
- Winds of Change

Regulatory simplifications
- FED
- Orpheus
- Energylab Nordhavn
- Innonex
Business Models

IRENA business model trends

- aggregators
- Peer-2-Peer
- Communities
- Market Design
- Ecogrid

Ecogrid
Business Models

IRENA business model trends

- aggregators
- Peer-2-Peer
- Communities
- Market Design

Ecogrid
Orpheus
Business Models

IRENA business model trends

- aggregators
- Peer-2-Peer
- Communities
- Market Design

- Ecogrid
- Orpheus
- Fit4Power2heat
Business Models

IRENA business model trends

- aggregators
  - Ecogrid
  - Orpheus
  - Fit4Power2heat
- Peer-2-Peer
  - Energylab Nordhavn
- Communities
  - Energylab Nordhavn
- Market Design
  - Ecogrid
Business Models

IRENA business model trends

- aggregators
  - Ecogrid
  - Orpheus
  - Fit4Power2heat
- Peer-2-Peer
  - Energylab Nordhavn
- Communities
  - Energylab Nordhavn
  - Winds of Change
- Market Design
  - Ecogrid
Business Models

IRENA business model trends

- aggregators
  - Ecogrid
  - Orpheus
  - Fit4Power2heat

- Peer-2-Peer
  - Energylab Nordhavn

- Communities
  - Energylab Nordhavn
  - Winds of Change

- Market Design
  - Ecogrid
  - FED
Business Models

IRENA business model trends

- aggregators
  - Ecogrid
  - Orpheus
  - Fit4Power2heat
- Peer-2-Peer
  - Energylab Nordhavn
- Communities
  - Energylab Nordhavn
  - Winds of Change
- Market Design
  - Ecogrid
  - FED
  - Vabisys
Motivation on energy communities

• Two directives published by the European Union introduce citizens as actors in the energy markets

• Single persons can produce, store and sell energy

• Energy communities have a large potential: Up to 50% of electricity might be produced in communities in 2050.

• Different legal statuses are possible

• May help to reduce obstacles in some countries
  • Fees for roof PV plants in Spain (sun tax)
  • Reduced grid charges for local communities possible

• Not all countries have implemented the national framework yet (Germany)
# Two types of communities

<table>
<thead>
<tr>
<th>Renewable Energy</th>
<th>Citizen Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No big companies allowed</td>
<td>Everyone can participate</td>
</tr>
<tr>
<td>RE can be shared among participants</td>
<td>Only electricity</td>
</tr>
<tr>
<td>All forms of energy are addressed</td>
<td>Not necessarily local</td>
</tr>
<tr>
<td>Local community</td>
<td></td>
</tr>
<tr>
<td>Non-profit organization</td>
<td></td>
</tr>
</tbody>
</table>

Taken from [6]
Example

• A wind park was built in Belgium, which belongs to the local communities (60%) and an already existing energy cooperative. All authorities were united in an energy community.

• Citizens may purchase shares of the community
  • Payment of dividend
  • Participation in decisions

• Communities invest profit in further sustainable projects

• A good example for the reduction of resistances

• Similar projects in Germany without community participation are delayed

Figure from [7]
Literature

- [2] DTU; Dansk Energi; IBM et al.: Ecogrid 2.0 – Main Results and Findings, 2019