

None of us is as smart as all of us

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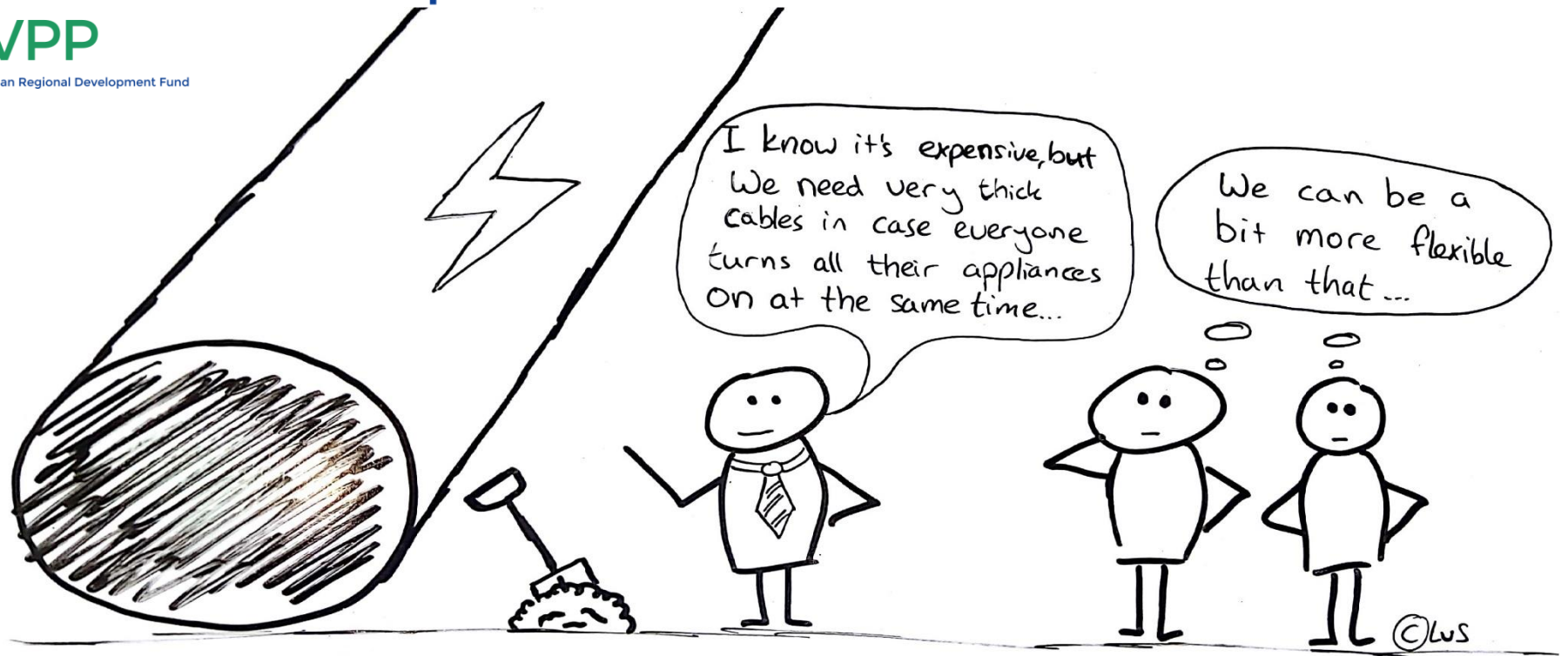
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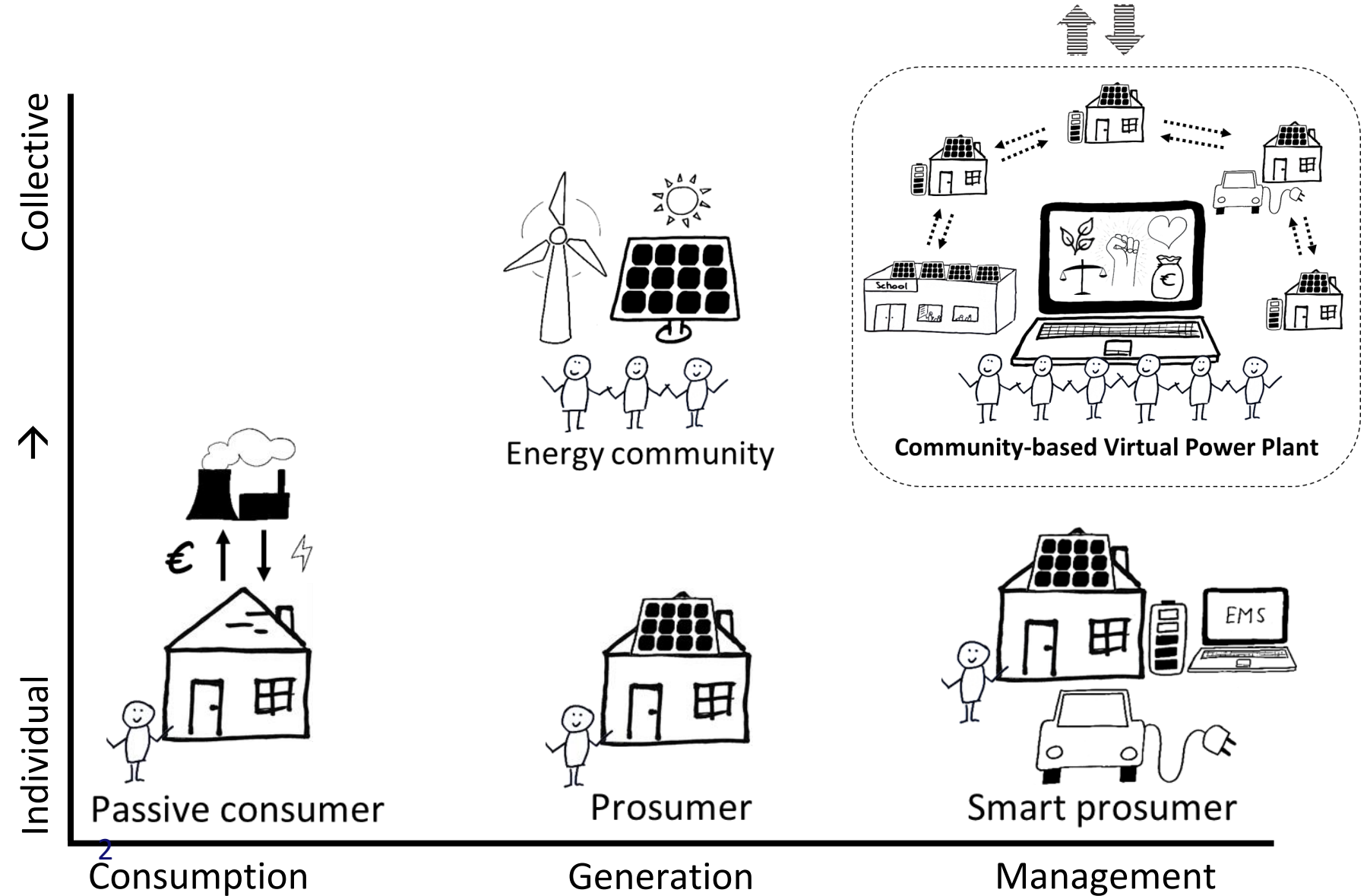
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‘None of us is as smart as all of us’: Replication of smart grid experiments by Flemish and Dutch energy communities

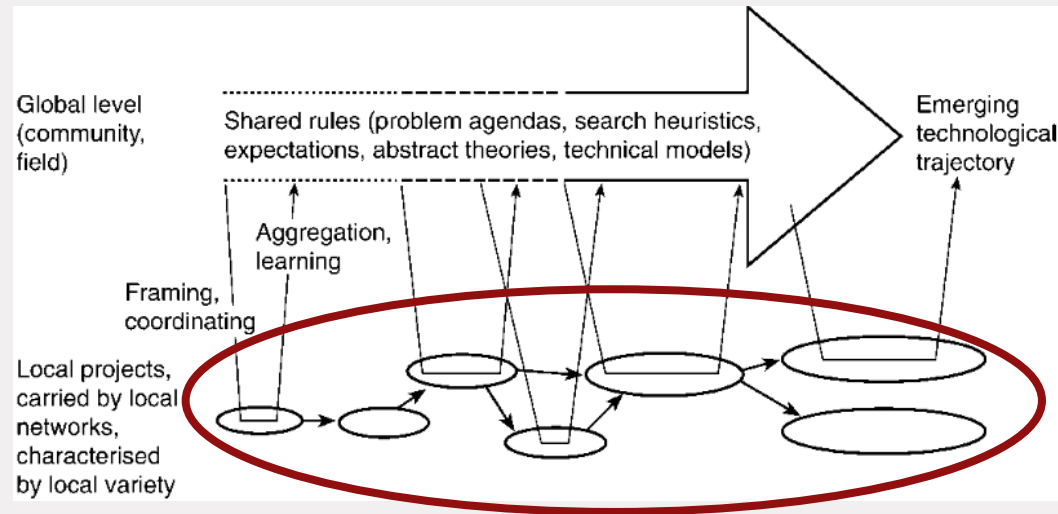
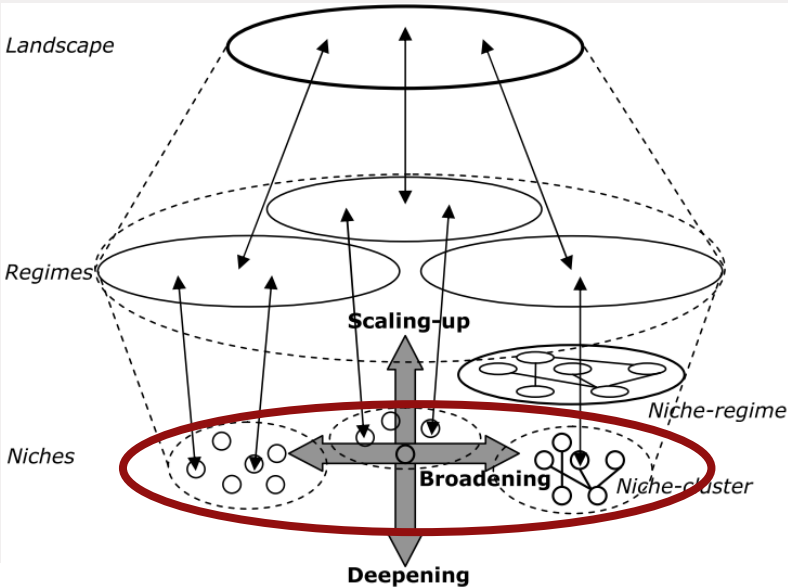
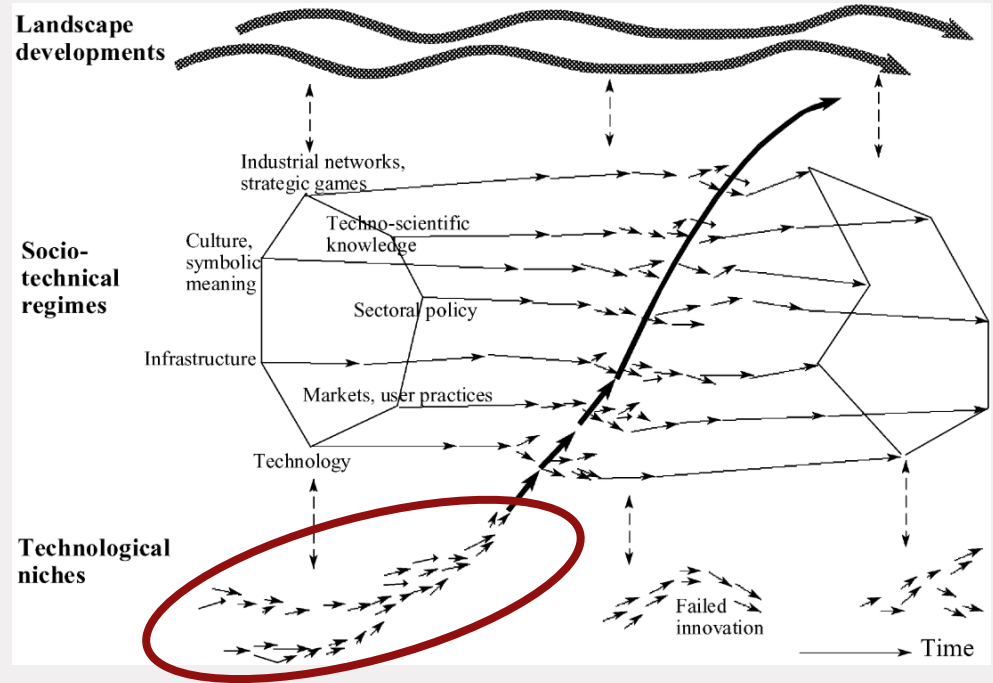
Luc van Summeren, PhD candidate (4th year)

Introducing Community-based Virtual Power Plant (cVPP)



Introduction

Replication key to upscaling
of socio-technical
experiments



Introduction

Replication of socio-technical experiments considered crucial for sustainability transitions, but in-depth understanding is missing.

Replication is...

- Understood one of the ways in which innovations diffuse
- Understood in relation to broader processes (e.g. niche development, upscaling)
- Studied from theoretical perspective, while often neglecting perspectives of practitioners

Research question:

What does replication of cVPP mean and how can it be achieved according to energy communities?

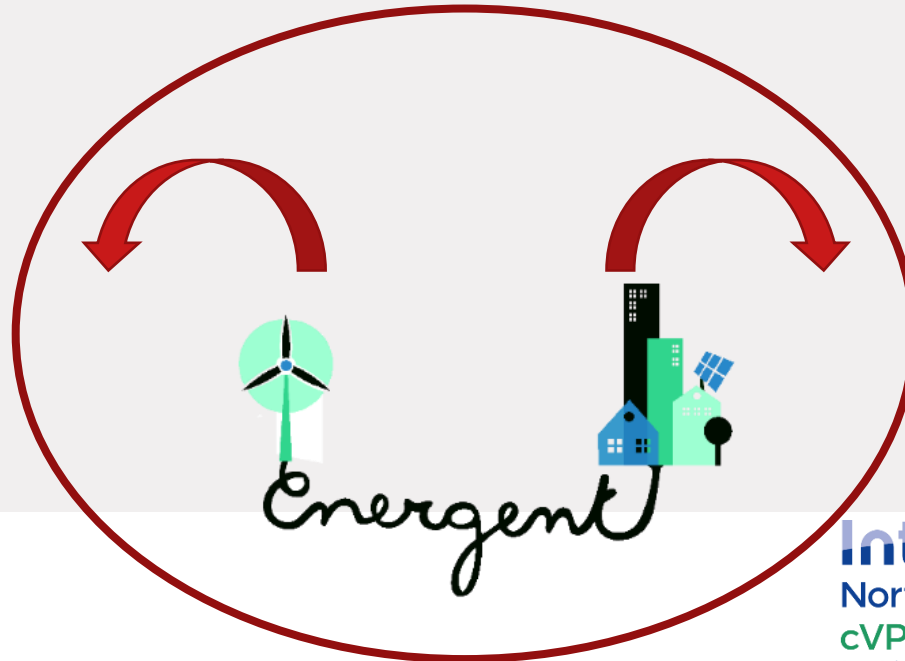
Methods



**COMMUNITY
POWER**
ELECTRICITY SUPPLIER



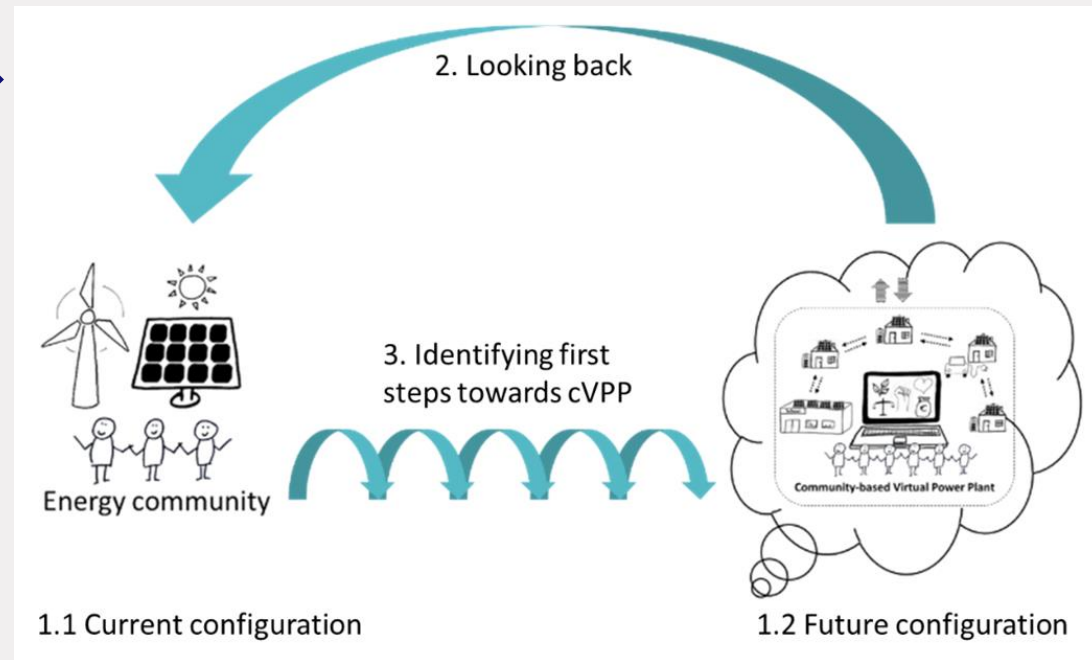
DE-centrale Loenen



Emergent

Methods

- Action research: we acted as intermediaries trying to support six Dutch and Flemish energy communities in replicating cVPP.
- Communities selected through competition: best idea for replicating cVPP.
- Interactive backcasting →
- Workshop between: January-May 2020
- Mostly online due to Covid-19



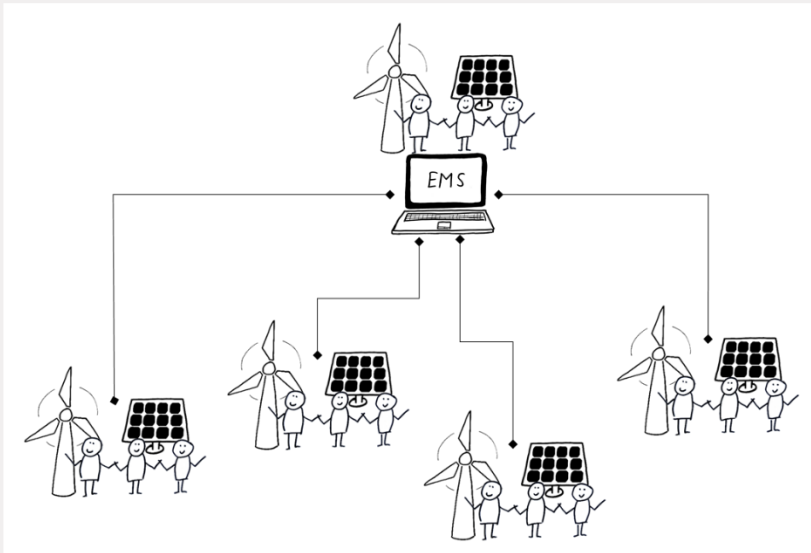
Results

Replication understood as a iterative and multi-dimensional process that involves:

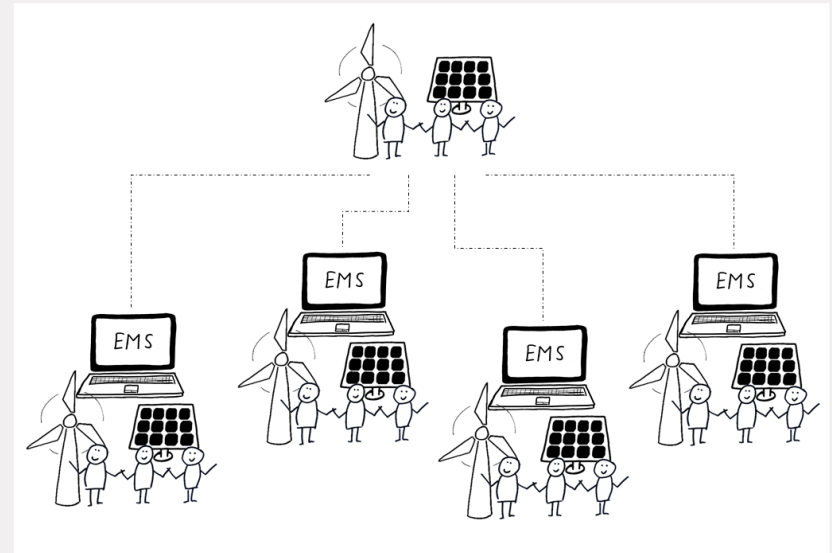
- Implementing technological building blocks
- Exploring the meaning of cVPP together with the community
- Building on or adding to existing energy projects
- Expanding resource base (incl. network, money, volunteers/time, knowledge)
- Professionalisation

Results

- Replication challenges related to complexity and uncertainties
- To deal with these challenges, the energy communities articulated two strategies of nesting to enable a pooling of resources (including shared use of the EMS):



Aggregation strategy



Facilitation strategy

Conclusions

- Replication as multidimensional and iterative process of local embedding
- Replication challenges: complexity, uncertainties
- Lack of resources hinders replication: strategies aimed at pooling resources (including EMS)
- Communities play role as niche- and user-intermediaries (Kivimaa et al., 2019)

Conclusions

- cVPP experiments provide platforms for niche development (e.g. learning, networking, articulation of expectations) (Schot and Geels 2008)
- ‘Pushed scaling’ (Wigboldus et al., 2016) needs to be complemented with efforts to create a more favourable institutional context for cVPP
 - Which requires: niche empowerment, institutional work, ...
 - cVPP could serve as a ‘boundary-object’ (Franco-torres, Rogers, and Ugarelli 2020)

Want to know more?

- 'The merits of becoming smart: How Flemish and Dutch energy communities mobilise digital technology to enhance their agency in the energy transition'
- 'Community energy meets smart grids: Reviewing goals, structure, and roles in Virtual Power Plants in Ireland, Belgium and the Netherlands'
- 'The impact of the institutional context on the potential contribution of new business models to democratising the energy system'
- 'A support tool for advisers and process moderators to support energy communities in developing a community-based virtual power plant'
- <https://www.nweurope.eu/projects/project-search/cvpp-community-based-virtual-power-plant/>