

ESTIMATING FLEXIBILITY POTENTIAL IN ENERGY COMMUNITIES

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*From Single-Building Demand Response to Local Energy Communities – Flex 2.1
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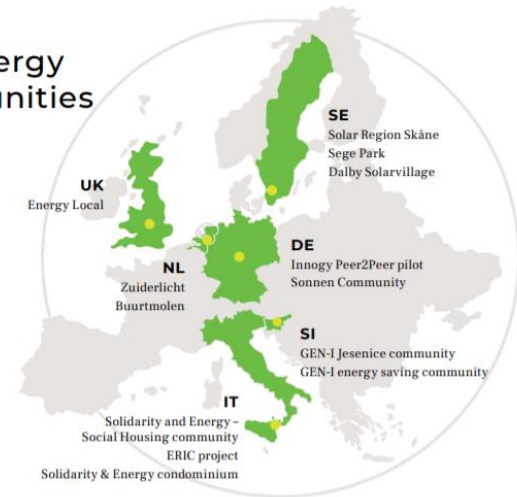
newcomers

EXPLORING NEW ENERGY COMMUNITIES

NEWCOMERS

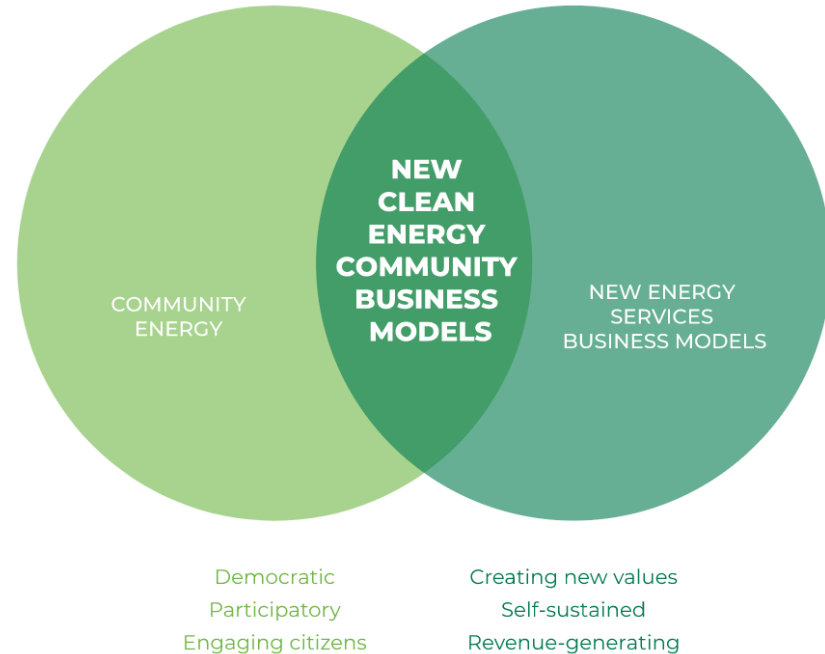
- explores and evaluates **new** clean energy **communities** in a changing **European energy system**.
- Ten **case study communities** represent social innovations along dimensions like
 - citizen engagement
 - value creation
 - learning

Our energy communities



Our case studies are “newcomers” as they are connected to these recent changes in energy markets:

- strong **involvement of companies and municipalities**
- use of innovative and smart technologies**
- creation of new values** for their members and/or society in general.
- case study communities focus primarily on generation (7 solar PV, 3 wind, 1 hydro) but some are attempting DR



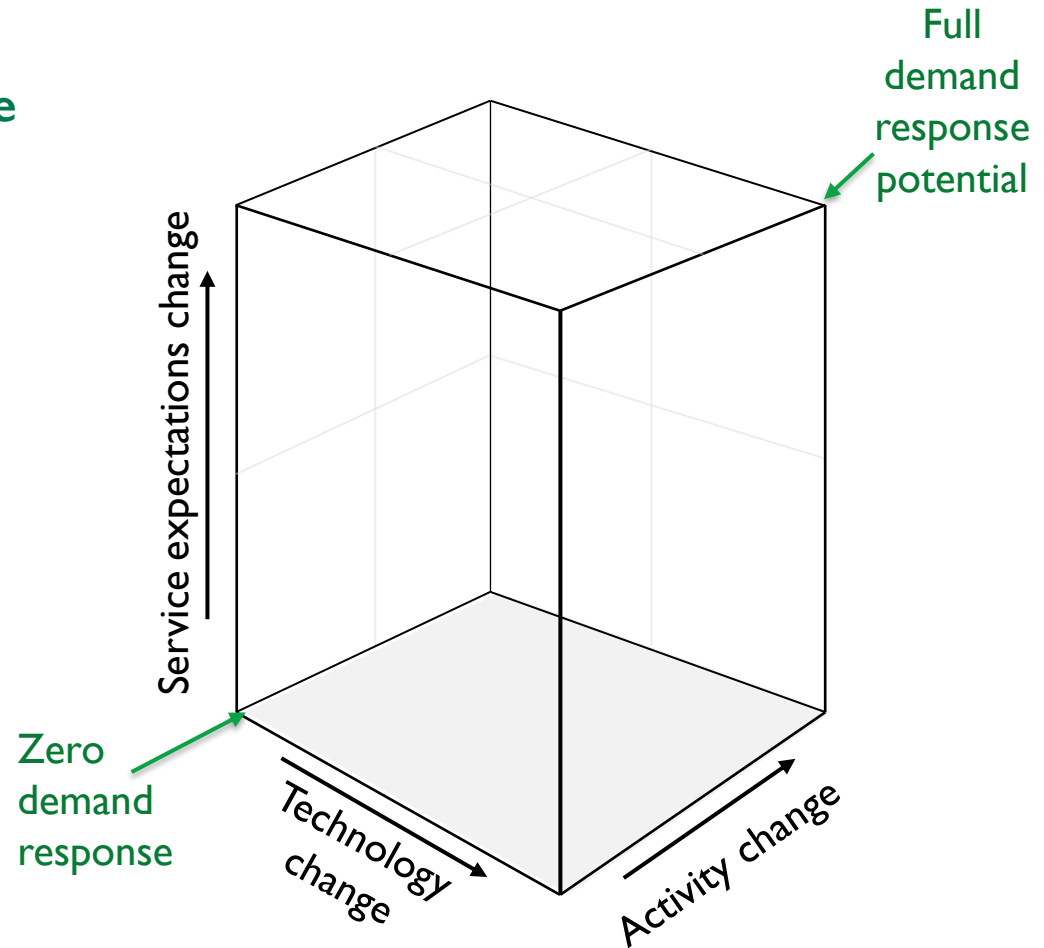
How does demand become more flexible? A conceptual model

Change is possible in 3 dimensions:

- energy service expectations, willingness to change
- technologies / assets
- activities, skills – ability to adopt new practices that will involve load-shifting (automated or manual)

Demand Response potential = total 'volume'

This model can apply at community level as well as for individual buildings / businesses / households.



Technical changes for DR in NEWCOMERS

- a) Deployment of household or (behind the meter) community renewable generation technologies (in 5 Newcomers). Deployment of storage (2 examples)
- b) Deployment of energy efficiency technologies e.g. LED lights; heat pumps – also available for short-term DR
- c) Smart meters inform network operators, assist with monitoring, feedback, education and advice, enable ToU tariffs

Activity change at community level in NEWCOMERS

- a) Trust-building between actors (all) – getting to know each other
- b) Energy monitoring, feedback and other info (beyond simple provision of consumption/generation data) (6)
- c) Education/information/advice provision (all 10 ECs)
 - i. internet + emails
 - ii. face-to-face communication (events, meetings, drop-in sessions, story-telling, AGMs) (7)
 - iii. traditional media (newspaper and neighbourhood newsletters etc) (most ECs)

Service expectation change in NEWCOMERS

All communities aim to create new service / value expectations from membership – contributing to transition is seen as valuable in itself, and so is a sense of community.

There are also attempts to alter specific expectations from energy services, e.g.

- i. Residents of an apartment block decide to opt for DLC of their heat pumps.
- ii. NEWCOMERS communities in two countries gain new value from local use of locally-generated electricity, with tariffs to reduce cost to users while supporting local generators.
- iii. One community's online portal compares household energy consumption to the community average to encourage interest and a competitive element.

Some interim findings

- People are motivated by a wish to *take part in transition and in communities*; not just about financial incentives
- Small-scale generation may *promote load-shifting*: e.g. when households are learning about distributed energy and want to use as much of their own generation as possible.
- Individuals *with a background in energy systems* often act as leaders, build trust between actors, spread knowledge and use their networks to advance projects. ('Middle actors')
- Business models typically involve an *alliance of actors*; any rewards from DR have to be divided between all.
- *Very hard to make a business case for local-scale demand response*; regulation and valuation are usually geared to grid-scale DR activity. *Regulatory and legislative context* can be essential for community DR, and its complexity is a challenge.



**For more information + project deliverables, see
<https://www.newcomersh2020.eu/>**

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