

# **Exploratory study on the future potential of the 2030 citizen energy movement**

## **Local energy ownership**

Researcher: Anne Marieke Schwencke, AS I-SEARCH, research

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## SUMMARY

The last decade has seen the emergence of a vibrant social movement of entrepreneurial, *collectively organised*, citizens, who are collectively working on making the energy supply in their residential environment more sustainable, usually in a local energy cooperative.

Representatives from energy cooperatives were actively involved in developing the draft National Climate Agreement. They were party to the Electricity Platform and were represented by partners on the Built Environment Platform. Agreements on citizen participation, the pursuit of 50% local ownership of onshore renewable electricity and the community-based approach to the transition to sustainable heat are particularly important to energy cooperatives.

The role of the energy cooperatives and their potential contribution to achieving the climate and energy targets by 2030 constitute the focus of this *Exploratory study on the future potential of the 2030 citizen energy movement*. The research specifically examined the contribution of citizen cooperatives to onshore renewable electricity (35 TWh by 2030) and collective heating systems.

The following future outlook for 2030 emerged from this exploratory study:

### **Growth in the number of cooperatives and members**

- The public survey conducted by Motivaction (2017) shows that two-thirds of the Dutch population are in favour of the collective production of sustainable energy in the residential environment and that 30% are willing to participate in an energy cooperative, or in a wind energy collective or wind farm, while another 30% 'may be' willing to do so.
- In recent years, the number of energy cooperatives has increased by around 50 per year. In 2018, there were almost 500 energy cooperatives with an estimated 70,000 members. In principle, the continued growth to 1,000-1,500 cooperatives with a total of 500,000 to potentially 1.5 million members by 2030 is conceivable, in view of the latent support for local energy initiatives.

### **Onshore renewable electricity**

- To cover the electricity consumption of all households in the Netherlands in 2018 (27 TWh per year), 8 GW of onshore wind is required. In principle, citizens will be able to take responsibility for 5 GW of onshore wind (16 TWh per year) and 5 GWp of onshore solar energy (4 TWh per year). This will produce a total of 20 TWh of renewable electricity per year, representing 57% of the target of 35 TWh per year.
- This requires a total capital contribution from citizens of 1.2 billion euros for wind energy and 1 billion euros for large-scale solar energy, totalling 2.2 billion euros (20% contribution from own funds). This is fundable if 860,000 households are willing to invest 2,500 euros each in solar and wind energy, or 11% of all households.
- In addition, there is considerable potential for small-scale cooperative solar-panelled roofs: 3,000 *community* solar-panelled roofs (0.5 GWp), in which an estimated 210,000 households, or 3% of all households can participate.
- Onshore wind energy generates considerable revenues for a local community. In a scenario with 5 GW of wind (16 TWh per year), this is an amount in the region of 180 million euros per year.

Depending on the financing model selected, 70% can be made available as a return for local investors and 30% for a local environment fund, or new projects in the locality (including risk premium). The margins on solar-panelled roofs and solar farms are lower because the subsidies are based on lower development risks and fewer preparation and development costs.

- Viewed on a national scale, all households combined have sufficient own funds to fund this, in the form of savings and investments. This is a different story for individual households. The possibilities per region and per municipality will also differ, given the differences in population density, the financial resources of households and their motivation for financial participation.
- In theory, the cooperative wind and solar energy potential can be financed from the 'basic production and delivery costs' of households' electricity bill: an average household pays around 3,000 euros for the basic production and delivery costs of electricity over a 15-year period (excluding VAT, energy tax and the sustainable energy surcharge).
- Is 50% local ownership feasible? The answer partly depends on the national scenario for 2030 and the distribution between onshore wind and solar energy. If 100% of the target is achieved with onshore wind energy (11 GW), the citizen cooperatives can contribute almost 50%, with 5GW. If the 35 TWh annual target is achieved with 5 GW of wind energy and 22 GWp of solar energy (the full national solar energy potential), in this scenario with 5 GWp of solar energy the citizen cooperatives will contribute 25% of the share of solar energy, and 100% of the share of wind energy.

#### **Built environment: transition to sustainable heat**

- The considerable potential for collective heat networks, potentially for 50% of all homes by 2050, also offers opportunities for local ownership of *community* heating systems, particularly the small-scale heating networks (up to around 2,000 connections).
- In the Netherlands the development of collective *community* heating systems owned by residents is still in its infancy. However, citizens are increasingly organising themselves collectively to explore natural gas alternatives for their community.
- Cooperative ownership is quite common in Denmark: 340 of the 430 heat networks in total are owned by residents' cooperatives (36% of heat production). The other larger networks are owned by municipalities (60% of production) and economic operators (4% of production). In total, 64% of all Danish households are connected to a heat network. The Danish government supports local ownership with a favourable financing scheme and laws and regulations, including a non-profit target for local heating companies and an obligation to connect.
- The investments required for collective heating systems are higher than for electricity, but this also applies to the current costs of natural gas heating. Dutch households currently spend around 14,400 euros on heating over a 15-year period (excluding VAT, energy tax and the sustainable energy surcharge).
- The implementation of a community heating system requires a concerted effort by multiple players during the planning phase over a two to three-year period.

### **Conditions for further growth: it will not happen by itself**

It is conceivable that the cooperative movement has considerable growth potential. Fulfilling that potential will not happen by itself. A substantial scaling up and the professionalisation of the cooperative movement are called for.

An important basic condition for further growth is the action perspective for citizens: people must *be able to* contribute to the energy transition. This means that viable renewable energy projects must be *feasible*. This imposes requirements on the incentive schemes as well as on access to the electricity grid and the availability of locations and land holdings. Finding qualified manpower in a tight labour market presents an additional challenge. In principle, this applies to all developers.

On top of that, as new entrants, citizen cooperatives will need to go the extra mile to secure, strengthen and consolidate a position. This calls for the professionalisation of the cooperative sector (with salaried manpower), a robust support structure, and supporting laws and regulations that create and strengthen a position for citizens.

Public authorities play a key role in strengthening the position of local players, among other things, by including social preconditions in the assessment frameworks for environmental plans, plans for the transition to sustainable heat and tendering procedures (for projects, land allocation, energy procurement and suchlike). The agreement on the 'pursuit of 50% local ownership' in the draft National Climate Agreement marks an important step in this process.