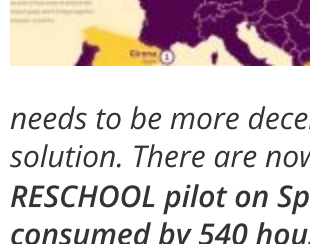


EU now has 9,000+ “energy communities”: smart, decentralised, flexible generation and consumption

November 13, 2023 by Luca Arfini



The goal of the EU’s “Clean Energy for all Europeans package” (CEP), adopted in 2019, is to improve the functioning and design of Europe’s energy markets and systems. Luca Arfini, writing for ESCI, explains how, as part of the CEP, new market actors called “active customers/consumers and citizens” and “energy communities” are being established. As variable renewable generation grows, the whole system needs to be more decentralised, smarter and flexible, and energy communities are part of the solution. There are now over nine thousand operational in the EU. Arfini looks at the EU-funded RESCHOOL pilot on Sporenburg island in Amsterdam, generating energy at the local level and rescued by 540 households. One notable benefit is that, as excess large-scale generation forces prices low – threatening business models – the community prices are stable. Demand and supply are being matched in a way that the big grid operators cannot always manage, says Arfini.

A recent Eurobarometer survey showed that EU citizens overwhelmingly expect more investments and commitment from the European authorities to the energy transition in the future. According to the data, over 80% of the respondents want more investments in renewable energies. 82% also believe that boosting energy efficiency in buildings, transportation, and goods can reduce our dependence on energy sources from outside the EU.

This survey also comes at a time in which the **contribution of citizen-led initiatives and projects to the energy transition in Europe is at an all-time high**, highlighting the active commitment of EU citizens to securing a sustainable future for the next generations.

Nine thousand operational energy communities in the EU

However, given that **77% of the EU greenhouse gas emissions come from the energy sector**, it becomes evident that prioritising the energy transition is not only a matter of rhetoric but a crucial necessity that demands concrete actions, as demonstrated by the nine thousand operational energy communities within the EU actively contributing to climate change mitigation.

“[An energy community is] not a company. It’s not a government-based entity. It’s a collective of citizens with some self-rule and tries to deliver energy services to its members and participants,” explains Jasper Klapwijk, an energy community expert based in Amsterdam. Energy communities can function as unified entities, gain equitable access to all relevant energy markets, and ultimately help move towards a more decarbonised economy.

The Netherlands is **one of the countries in Europe** with the highest number of energy communities—nearly 700 in total. These initiatives align well with the Dutch historical tradition, founded on **collective water and land management, shared welfare systems, cooperatives, and social services**. In this context, **energy communities represent a natural modern progression rooted in the same ethos**.

The first local examples of energy communities emerged in the country around the late 1980s. At the time, the participants usually owned wind turbines jointly and promoted sustainable living. Subsequently, **the liberalisation of the energy market in 2004 increased opportunities for local initiatives, accelerating their growth in the 2010s**.

“The initial energy cooperatives began by acquiring or building **local windmills**, but over time, they expanded their scope to include a wider range of energy sources, from **solar to heating**. Their primary goal was to **place more means of production in the hands of citizen collectives** to provide energy as a service to the community,” explains Klapwijk.

In other words, an energy community is a legal entity in the energy market with a primary objective of benefiting its residents in terms of the environment, economy, or society rather than pursuing profits.

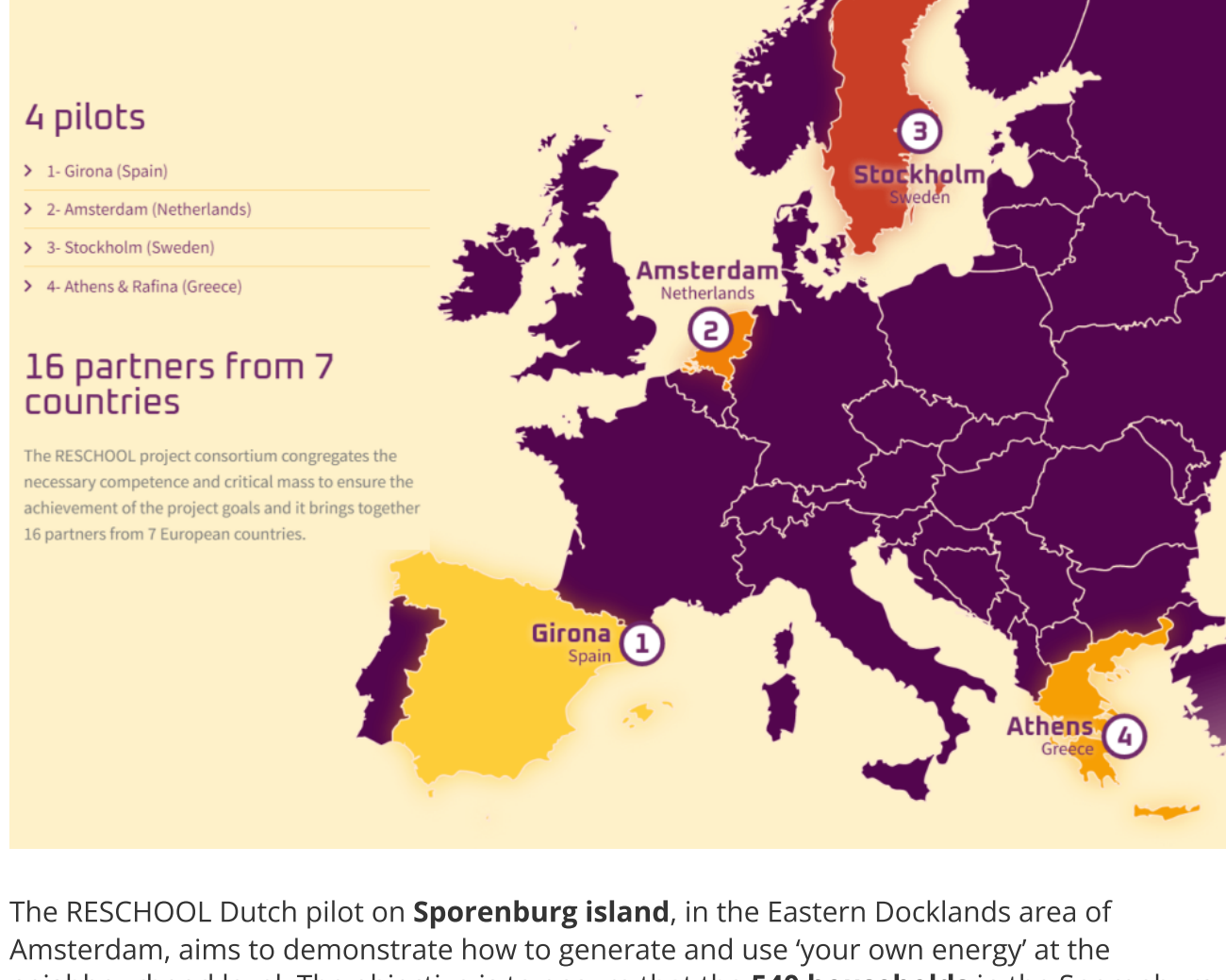
EU’s “Clean Energy for all Europeans package”

These initiatives are regulated in the Netherlands by the **Energy Act 2022**, which replaced the Gas and Electricity Act 1998 with a modern and updated market regulation framework. These changes were made in response to the **new EU-level rules introduced through the “Clean Energy for all Europeans package”**.

“The government’s recognition of energy communities is a powerful means for citizen collectives to establish their presence,” says Klapwijk. “We see that the networks they create attract more members to these communities and mobilise people for the energy transition. **The Dutch government’s commitment to supporting energy communities is extremely helpful to this cause.**”

EU-funded community participation: RESCHOOL

Klapwijk himself provides real-world examples of what he and his colleagues are trying to achieve. He’s currently an active advisor in the EU-funded project **RESCHOOL**, an initiative that **unites 16 partners across 7 European countries to promote communities’ active participation in the energy markets**.



The RESCHOOL Dutch pilot on **Sporenburg island**, in the Eastern Docklands area of Amsterdam, aims to demonstrate how to generate and use your own energy at the neighbourhood level. The objective is to ensure that the **540 households** in the Sporenburg neighbourhood who are receiving their electricity through the transformer house produce and use their energy as much as possible without investing excessively in copper.

“Through this cooperation, **I use my neighbour’s solar production to charge my electric vehicle**. He receives a small incentive because he doesn’t feed excess electricity into the grid. In turn, I pay a bit less because I consume the energy when it’s generated,” says Hugo Niesing, the site manager of the RESCHOOL Amsterdam pilot. **“This benefits our finances, infrastructure, renewable energy growth, and the entire energy community.”**



Volatile electricity market prices

“The major problem,” Niesing explains, “is the current volatile electricity market.” Energy contracts often feature hourly fluctuating prices, with a growing reliance on wind and solar energy generation. While this arrangement is acceptable, it reveals a **fundamental challenge: the electricity grid’s capacity to accommodate all the North Sea-based wind-generated electricity** within its network is constrained by a physical limit. This restriction results in **scenarios where the ‘market’ energy price remains notably low, unlike the ‘community-generated’ electricity, which maintains a stable but higher price point**.

“In Amsterdam,” Niesing adds, “we face the challenge of reinforcing about a thousand of these transformer houses before 2030. Here, **flexibility is highly needed because the grid operator simply cannot realise this**. The costs are very high, but the main problem is Amsterdam’s lack of personnel, materials, time, and space.”

As Jasper Klapwijk concludes, “What the energy community does and needs to do is make the means of production—the capacity of energy production—in the neighbourhood available for the people who live there. On the other hand, they have to **convince people on Sporenburg to change their behaviour to use the energy when it is available from the solar source.**”

High upfront investments + technical and regulatory knowledge

In short, energy cooperatives offer numerous benefits to their local communities, including enhanced social cohesion, technical innovation, progress in the energy transition, relief from local grid congestion, and reduced energy costs. However, they also face obstacles to their establishment, including the need for high upfront investments and sound technical and regulatory knowledge.

The Netherlands has committed to achieving the **EU’s emissions reduction by 2030** and climate neutrality by 2050. If the work of Klapwijk and Niesing is successful, **energy communities like the one in Amsterdam may set a new standard to assist the Netherlands and the rest of the EU in staying on course with their climate objectives**.

Luca Arfini is a science journalist writing for the **European Science Communication Institute (ESCI)**

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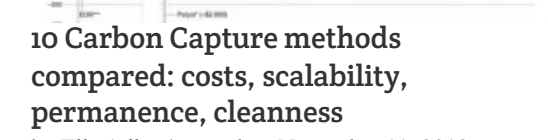
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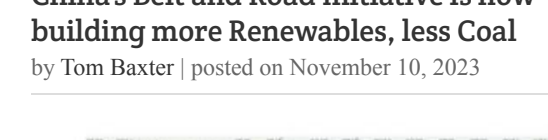
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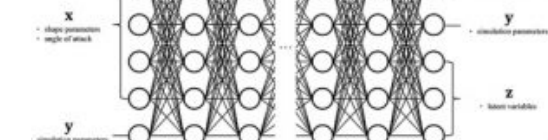
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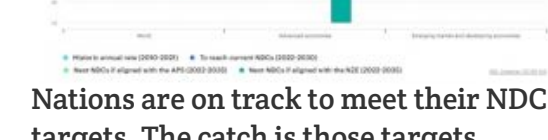
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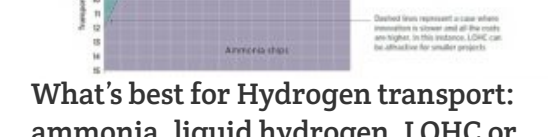
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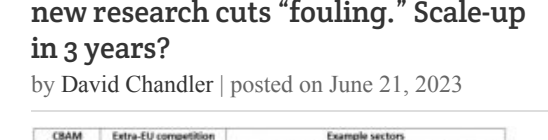
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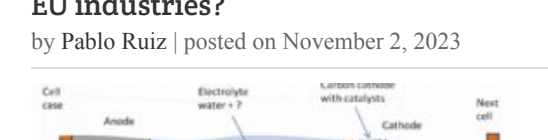
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