

Clean Energy Package must support prosumers

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Opinion

The message is clear: fuel cell micro-cogeneration is market-ready, argues Hans Korteweg.



3500 households and businesses across Europe are already using fuel cell micro-cogeneration | *Photo credit: Fotolia*

The message from European manufacturers and users of the latest smart home energy solution is clear: fuel cell micro-cogeneration is market-ready.

Already, 3500 households and businesses across Europe are using fuel cell micro-cogeneration for their heating, hot water and electricity supply. Each unit is enabling active energy 'prosumers' (producers-consumers) that can sell excess electricity back to the grid, creating a decentralised energy system with a reduced carbon footprint – and lower energy bills.

Micro-cogeneration can provide significant value for consumers as well as the energy system as a whole. It can, for example, generate electricity in the coldest winter weeks, when the wind isn't

blowing or the sun isn't shining, but when consumers still need electricity for their heat pumps or electric cars, thus relieving stress from the grids.

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Two flagship EU co-funded projects, ene.field, and its successor project, PACE, aim to establish Europe among the global leaders in fuel cell micro-cogeneration.

Over one thousand units were installed in European homes and businesses as part of ene.field and more than 90 per cent of the surveyed trial participants are pleased with the environmental performance, comfort and warmth, reliability and running costs of their unit.

Joining forces in PACE, European manufacturers will scale up production, and lower unit costs by 30-40 per cent. The example of Japan's Ene-farm programme shows how fast fuel cell micro-cogeneration can scale up: achieving cost reductions of 60 per cent over six years, Japan has installed 219,000 units to date, and is aiming for 5.3 million units by 2030.

In Germany, fuel cell micro-cogeneration has gained high level political recognition as it is considered one of the technologies to help deliver the country's low-carbon energy transition. The Government's market introduction grant scheme, KfW433, has already received more than 1500 applications since it was launched in August 2016.

Industry is also forging business partnerships with utilities to expand the market for fuel cell micro-cogeneration, and there's a growing community of interested installers and building professionals.

Higher market penetration could bring multiple benefits for Europe's future decentralised energy system, according to a recent report from Imperial College London.

"With the right policy framework in place, fuel cell micro-cogeneration has the potential to deliver 32 million tonnes of CO2 emission reductions in 2030, while reducing infrastructure and operational cost for the energy system by more than € 6000 (gross) for each kilowatt-electric of installed capacity until 2050"

With the right policy framework in place, fuel cell micro-cogeneration has the potential to deliver 32 million tonnes of CO2 emission reductions in 2030, while reducing infrastructure and operational cost for the energy system by more than € 6000 (gross) for each kilowatt-electric of installed capacity until

2050.

These benefits are equivalent to taking 5.3 million cars off the road and reducing Europe's projected grid reinforcement cost by up to 28 per cent in 2030

But at European level, policy should better reflect the benefits of this home energy solution. Although many attributes of fuel cell micro-cogeneration are emphasised in Europe's climate and energy goals - energy efficiency, renewable energy, decarbonisation, consumer empowerment, job creation and innovation - existing policies tend to address heat and power separately, and fail to consider benefits to the whole energy system.

For example, in the current Clean Energy package negotiations, Article 7 in the Energy Efficiency Directive requires energy companies to achieve yearly energy savings of 1.5 per cent of annual sales to final consumers. However, because it focuses narrowly on reducing energy sales to end consumers, the system benefits of micro-cogeneration remain ignored.

Similarly, the European energy labelling for heating appliances introduced in 2015, focuses uniquely on the heating efficiency, not fully accounting for the efficiency gains associated with the electricity produced by micro-cogeneration units.

It is important that energy savings can be compared across all parts of the economy and sectors, from supply to demand. Yet, primary energy factor for electricity, currently under discussion as part of the Energy Efficiency Directive, grossly underestimates the losses in the electricity system, especially when considering a winter mix.

This can result in attributing less value to efficient electricity produced on site with micro-cogeneration, thus preventing this technology from reducing stress on the grids at times of low renewable generation and high electricity demand.

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In addition, although European policy is nominally supportive of 'prosumers', electricity self-production and self-consumption are often penalised through disproportionately high grid connection and grid use charges compared to real grid use and by not taking into account the grid infrastructure savings generated by these technologies.

Policymakers must empower the prosumer by ensuring that the Electricity Market Design facilitates the connection of cogeneration to the grid, continues to provide priority of dispatch and removes administrative barriers to electricity self-production and -consumption.

The Clean Energy Package is a unique opportunity for European citizens to play an active role in the energy transition, and benefit from innovative technologies like fuel cell micro-cogeneration.

Major European manufacturers, supported at European level by the Fuel Cell and Hydrogen Joint Undertaking, and key European national governments, are committed to establishing fuel cell micro-cogeneration as a standard technology.

With the right policy measures in place, the Clean Energy Package can directly empower citizens to

produce, consume and sell energy, breaking the silos between energy conversion, transmission, distribution and consumption - and enable a just energy transition.

About the author

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