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## Potential for citizen-produced electricity in the EU

### Introduction

Half of all European Union citizens could be producing their own electricity by 2050, and meeting 45% of the EU's electricity demand. Our energy market is switching from fossil fuels and nuclear to renewable energy, but it's also shifting from a centralised market dominated by large utilities to one in which people produce their own energy and help to manage demand.

Without these "energy citizens", the transition to a 100% renewable energy system won't be possible. Yet, energy citizens face significant legal obstacles to making their own electricity.

Throughout the European Union there are explicit legal restrictions,

disproportionate administrative and planning procedures and punitive tariffs that prevent citizens from driving a renewable energy transition. With the right EU legal framework, energy citizens could flourish and deliver a significant share of Europe's renewable energy and provide important flexibility to the energy system through demand response.

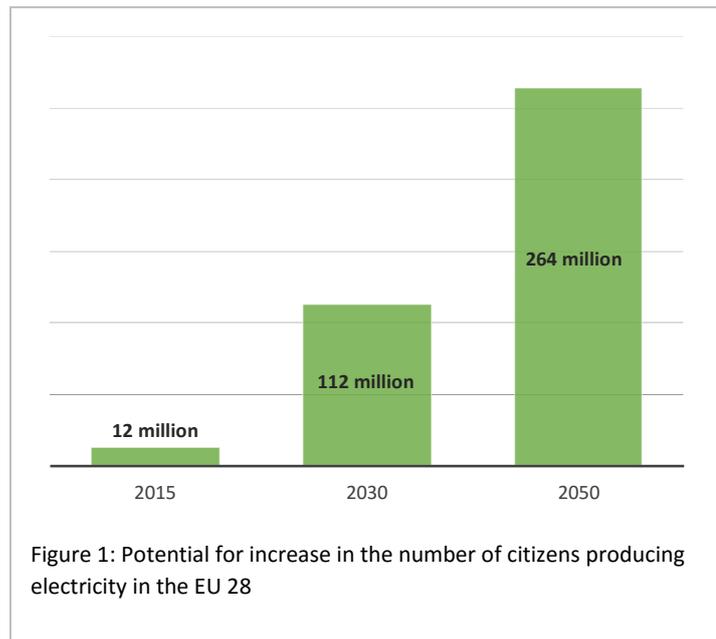
### Big utilities

Large-scale and industrial energy producers don't want these smaller players disrupting the electricity market. As a result, there has been pushback from a number of large electricity companies against this democratisation of the energy system.

### Calculating the potential

The available data on energy citizens is limited. To address this, Greenpeace, the European Renewable Energy Federation (EREF), Friends of the Earth Europe and REScoop.eu commissioned environmental research institute CE Delft to calculate the potential of energy citizens in Europe. [1]

The report [2] uses Greenpeace's 'Energy Revolution' scenario [3] that models a global energy system based entirely on renewable energy by 2050. It also draws on existing data on energy citizens in



European member states, as well as the current economic situation and attitudes towards renewable energy and climate change.

### Energy citizens power the transition to 100% renewables – the findings

The report estimates the number of energy citizens that exist today, as well as how many could exist by 2030 and by 2050, in individual member states and in the EU as a whole. This is the estimation of the potential number of energy citizens, providing the right legislation is in place.

It shows that **over 264 million European Union citizens, half of the population, could be producing**

**their own electricity by 2050.** These energy citizens could be producing 611 TWh of electricity by 2030 and 1,557 TWh by 2050. Therefore, **by 2030, energy citizens could be delivering 19% of the EU’s electricity demand, and 45% by 2050.** This is a significant contribution to achieving the EU’s 2030 renewable energy target and moving towards a 100% renewable energy system.

Sweden is predicted to lead the way in the proportion of citizens involved in electricity production – an estimated 79% of the population could be producing their own

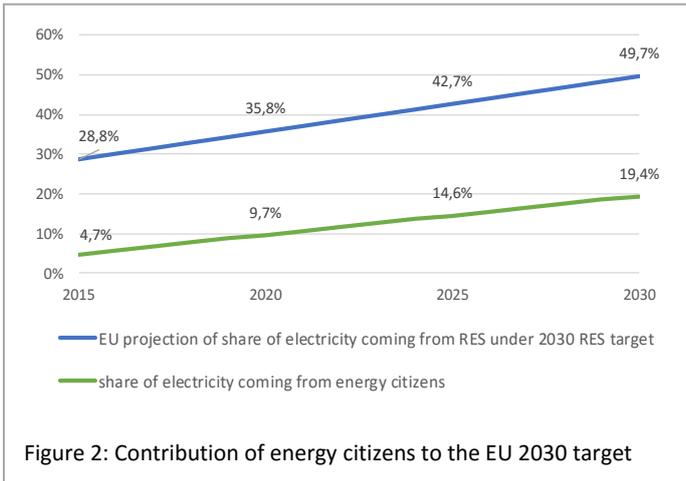


Figure 2: Contribution of energy citizens to the EU 2030 target

energy in 2050. Latvia has the most potential for generation capacity in citizens’ hands – energy citizens could be meeting an estimated 83% of the country’s electricity demand in 2050. The full breakdown by country is available in the study results and simplified spreadsheet. [4]

The report also shows **the potential of different types of energy citizens.** In 2050, collective projects and co-operatives could contribute 37% of the electricity produced by energy citizens, while micro- and small businesses could contribute 39%, households 23% and public entities 1%.

The report also looks at what energy citizens can contribute in demand response, by use of stationary batteries, electric vehicles and smart boilers that use energy when it’s plentiful, not when demand peaks. It shows that in 2050, **seven in ten European citizens could be engaged in demand response.** Energy citizens could unlock 1,494 GWh of electric storage by 2030 and 10,490 GWh by 2050. This storage would significantly reduce system peaks and ensure clean and affordable back-up capacity.

The results show that energy citizens are capable of delivering a large share of the renewable energy and demand-side flexibility needed to decarbonise Europe’s energy system.

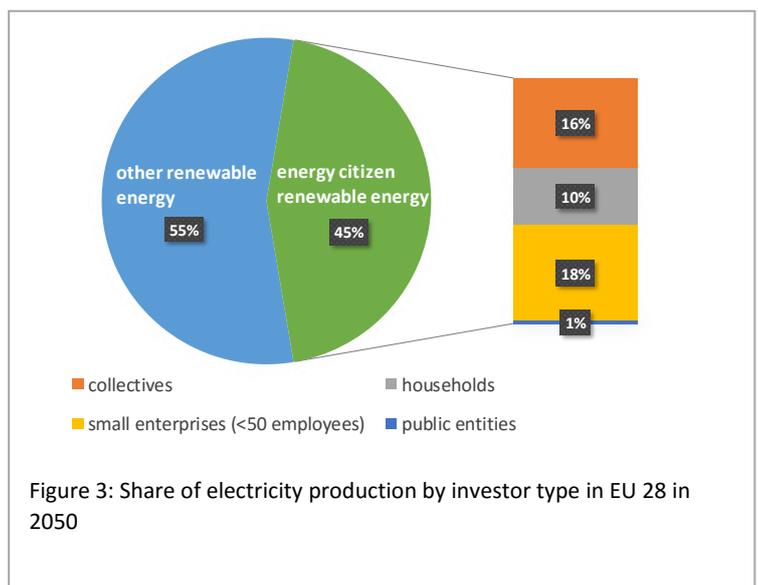


Figure 3: Share of electricity production by investor type in EU 28 in 2050

## Reaching this potential

The CE Delft report shows the potential for the growth in the number of energy citizens – presuming the right legislative environment exists to encourage that growth.

To reach this potential, the European Commission should create a framework to enshrine the right to self-produce, self-consume and receive fair payment for excess electricity fed into the grid, store energy and engage in demand-side management. EU legislation should protect, support and promote energy citizens as the core of the Energy Union. There are two major opportunities to do this in 2016, the reviews of the Renewable Energy Directive and the Market Design Initiative.

## References:

**[1]** For the purposes of the report, energy citizens are defined as individuals or households producing energy or managing their demand flexibly either individually or collectively. The definition also includes public entities such as cities and municipal buildings, schools, hospitals or government buildings as well as small businesses with fewer than 50 employees.

**[2]** CE Delft, 2016. The Potential for Energy Citizens in the European Union, available publicly from Monday 26 September at [bit.ly/energycitizenstudy](http://bit.ly/energycitizenstudy)

**[3]** Greenpeace, 2015. Energy [R]evolution 2015 World Energy Scenario:  
<http://www.greenpeace.org/international/Global/international/publications/climate/2015/Energy-Revolution-2015-Full.pdf>.

**[4]** Available at: [bit.ly/energycitizensbrief](http://bit.ly/energycitizensbrief)

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