Earth, Wind and Solar Energy

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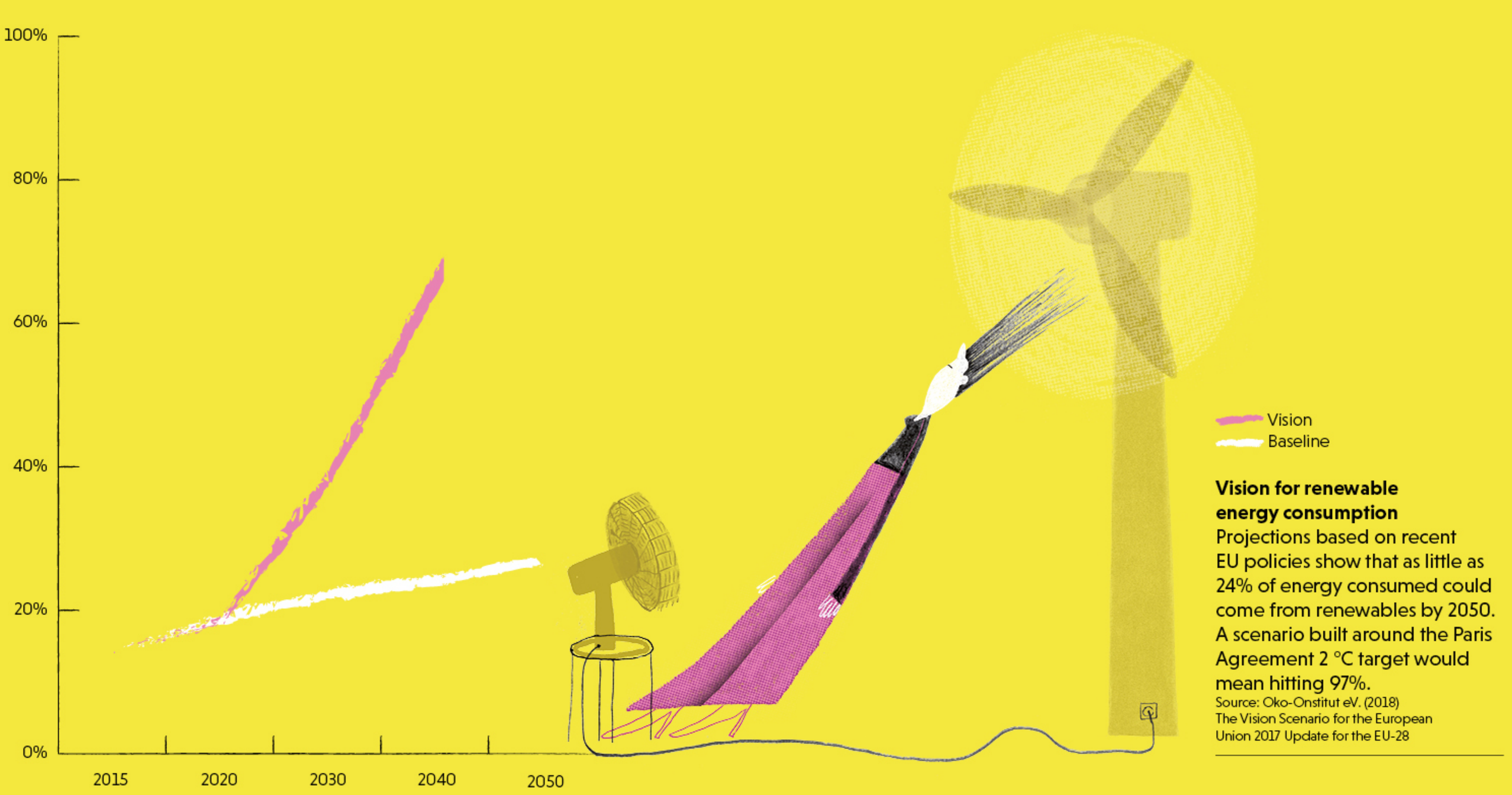
Renewable energy is the energy of the future – plentiful and ubiquitous. Technological advances and economies of scale are bringing down prices, whereas fossil and nuclear are increasingly uncompetitive. Here, the Green European Journal presents in numbers how energy systems will evolve over the decades to come, while Daniel Scholten traces the new geopolitical faultlines set to supersede those of the fossil age.

The Shifting Geopolitics of Renewable Energy

By 2049, Europe will be roughly halfway through its energy transition. Renewable energy will no longer merely polish the rough edges of global competition for oil and gas, it will shape the new energy game. While the transformation is generally set to be positive, energy geopolitics are here to stay.

On the upside, renewable energy will cure many of the ills related to fossil fuels. Renewables diversify the energy mix, strengthen security of supply for today's importers, lower energy prices, reduce CO2 emissions and air pollution, decentralise and democratise energy generation, and create new industrial possibilities. Most importantly, renewables take the sting out of the energy trade. As countries source more of their needs domestically due to renewables' abundant nature, they will turn into 'prosumer' countries. Trade will occur increasingly because countries want it to (when imports are cheaper), not because they depend on it.

On the downside, distribution will become more complex. As most renewables are turned directly into electricity, long-distance losses and stringent managerial conditions challenge reliable service provision. The transport of fossil fuels across the globe in a straight line from production to consumption will be replaced by a combination of local microgrids, national networks, and continental supergrids, involving bidirectional flows and new actors besides power companies and utilities. Adding fuel to the fire is



Vision for renewable energy consumption

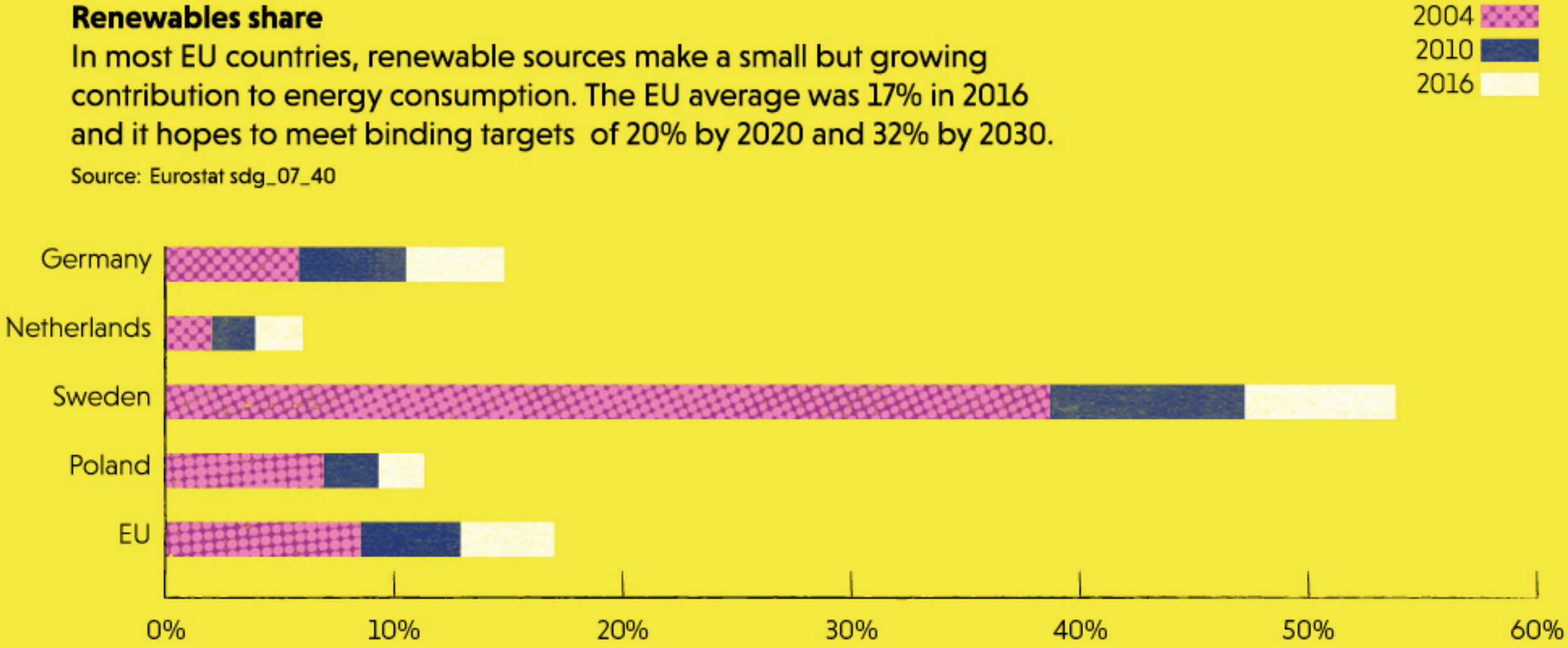
Projections based on recent EU policies show that as little as 24% of energy consumed could come from renewables by 2050. A scenario built around the Paris Agreement 2 °C target would mean hitting 97%.

Source: Oko-Onstitut eV. (2018) The Vision Scenario for the European Union 2017 Update for the EU-28

Renewables share

In most EU countries, renewable sources make a small but growing contribution to energy consumption. The EU average was 17% in 2016 and it hopes to meet binding targets of 20% by 2020 and 32% by 2030.

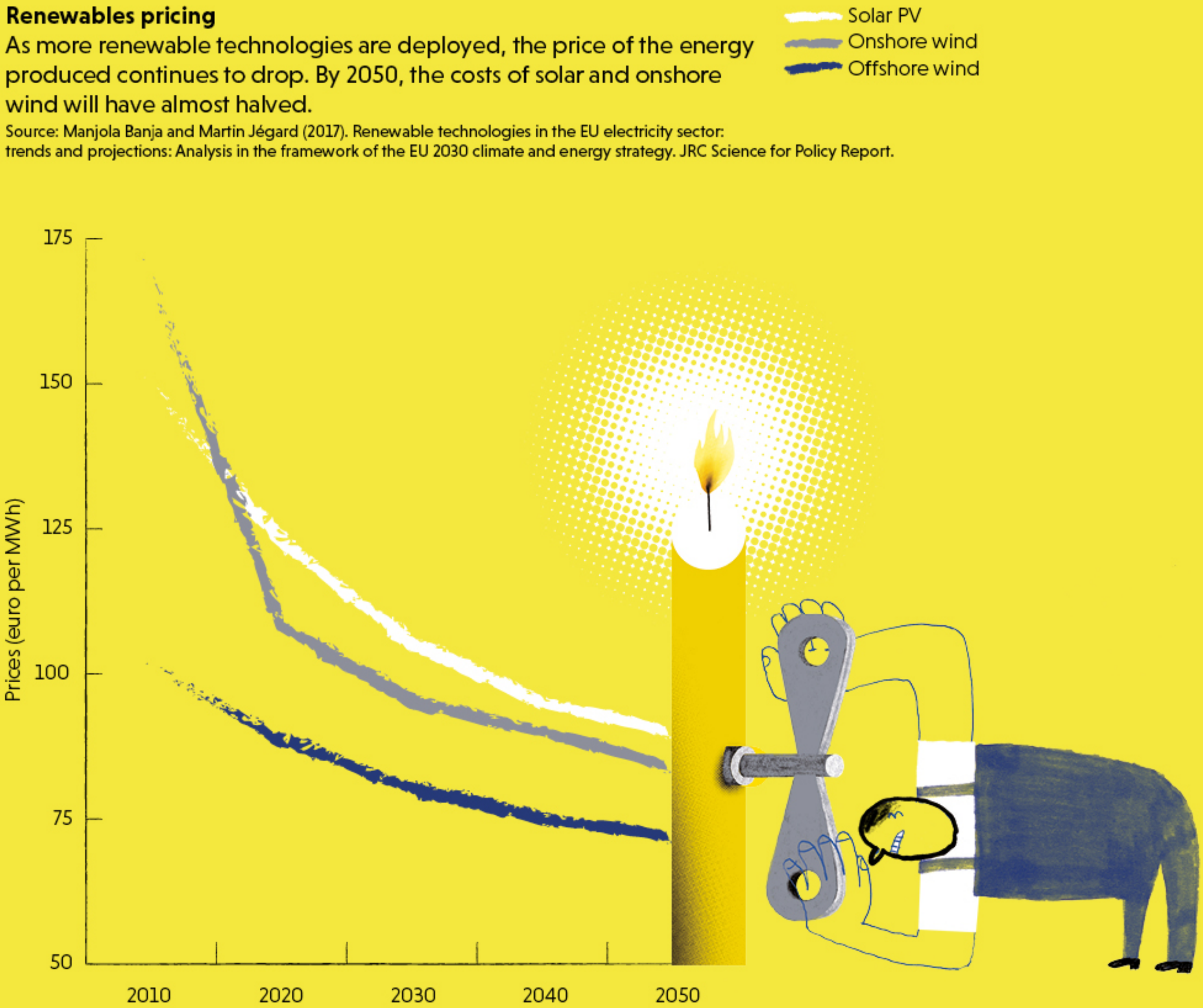
Source: Eurostat sdg_07_40



Renewables pricing

As more renewable technologies are deployed, the price of the energy produced continues to drop. By 2050, the costs of solar and onshore wind will have almost halved.

Source: Manjola Banja and Martin Jégard (2017). Renewable technologies in the EU electricity sector: trends and projections: Analysis in the framework of the EU 2030 climate and energy strategy. JRC Science for Policy Report.



Citizens' energy

From community-owned wind farms to solar panels on your roof, renewable technologies have the potential to distribute production away from the big players. With permissive policies in place, the number of 'energy citizens' in the EU could leap from 12 million in 2015 to 264 million by 2050.

Source: CE Delft (2016).
The potential of energy citizens
in the European Union