

Energy communities: Understanding different energy sources.



What are alternative energy sources?

Alternative energy sources refer to renewable, non-fossil-based systems used for electricity, heating, and fuel. Common sources include:

- Photovoltaics (PVs): solar panels that convert sunlight into electricity.
- Wind turbines: harness kinetic wind energy, converted via turbines.
- Heat pumps: transfer heat from air, water, or ground for heating and cooling.
- Biogas: methane-rich gas produced from organic waste.

Pioneering the solar shift

Germany leads Europe in solar adoption - installing over 1 million new solar power systems in 2023 alone - thanks to strong policy incentives like VAT exemptions, tax breaks, and rebates for tiny balcony systems.



Photo credit: [Lutz Stalknecht](#) on Unsplash

Comparing energy sources

Solar PV

Benefits: Modular, scalable, low maintenance, cost-effective.

Challenges: Needs sunlight, space for installation.

Wind

Benefits: High energy yield, effective at scale.

Challenges: "Not in my backyard" opposition, noise/visual concerns, site-specific.

Heat Pumps

Benefits: Efficient heating, supports decarbonisation.

Challenges: High upfront costs, building compatibility.

Biogas

Benefits: Utilises waste, constant supply.

Challenges: Feedstock sourcing, odour, regulatory complexity.



Funded by
the European Union

This factsheet is part of the [Energy communities: Understanding different energy sources](#) case study produced by the [Every1 project](#), funded by the European Union's (EU) Horizon Programme for Research and Innovation (2021-2027), grant No. 101075596. Responsibility for this material's content lies solely with Every1 and does not necessarily reflect the opinion of the EU. The material is licensed [CC BY-SA 4.0](#), unless stated otherwise. Icons used (aside from the Every1 logo, funded by the EU logo and related images) are used according to Canva licensing terms: <https://www.canva.com/policies/content-license-agreement/>.

Understanding different energy sources.



Effective policy measures

Subsidies/Tax Credits

Financial incentives that lower the high upfront costs of renewable energy technologies, making participation in energy communities more accessible for households and local groups.

Feed-in Tariffs (FiTs)

Long-term contracts that guarantee a fixed price for electricity fed into the grid, helping citizens and energy communities achieve predictable returns on investment and reducing financial risk.

Did you know?



Energy communities can transform citizens into “prosumers” - people who both produce and consume energy - helping lower costs, boost acceptance of technologies like wind, and strengthen local energy independence.

Net Metering

Allows households or energy communities that generate renewable energy to offset their consumption by feeding excess electricity back to the grid, reducing overall energy bills and encouraging small-scale production.

Simplified Regulations

Streamlined administrative procedures and reduced bureaucracy for energy community registration and renewable energy system (RES) connection, enabling faster uptake and wider citizen participation.

Community Engagement Programs

Initiatives that build local awareness, trust, and acceptance of renewable projects, ensuring stronger buy-in and helping address public resistance (e.g., concerns about wind farms).

Grid Reform & Access Rules

Policies that ensure energy communities can connect their renewable projects to the grid fairly and efficiently.