



newcomers
EXPLORING NEW ENERGY COMMUNITIES

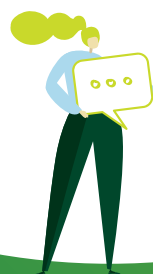


H A N D B O O K

Energy Literacy for **Energy** **Communities**



About this handbook



Purpose

Welcome to Energy Literacy for Energy Communities, a handbook created by the NEWCOMERS project. The handbook offers an introduction to some of the concepts and considerations relating to energy communities and their role in the energy system. It is written for community members and anyone else interested in joining the energy community movement.

The **NEWCOMERS project** (New clean energy communities in a changing European energy system) is a Horizon 2020 project, that delivers practical recommendations about how the European Union, as well as national and local governments, can support new clean energy communities to help them flourish and unfold their potential benefits for citizens and the Energy Union.

The **purpose of this handbook** is to:

- **Educate** energy community members about the physical, technical, infrastructural, social, economic, political, and other aspects of our energy systems;
- **Raise awareness** about the role of the energy community movement in local energy transitions;
- **Equip** energy community members with key knowledge to draw on in their efforts to establish, run, and improve their energy communities;
- **Give** other interested audiences **an overview** of the current and possible future roles of energy communities in the energy system.

How to read this handbook

By reading this handbook, you'll explore different aspects and viewpoints regarding energy generation and consumption, energy transitions more broadly, and the role energy communities play in this complex system.



Interested in more?

Read more about the Newcomers project and its activities [here](#).

Explore the world of energy and energy communities, hear from energy community members and get inspired [here](#).

Reading through the handbook will provide you with an overview of many aspects of energy systems in general and energy communities specifically. You can read the handbook from beginning till end, or refer to relevant chapters if and when needed.

Authors

This handbook was put together by the NEWCOMERS project and experts from its partner organisations, with additional help from external experts, with whom we collaborated during the project.

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Online version with updates available as OER (Open Educational Resources)

In line with the NEWCOMERS Open Education strategy, this handbook is available as an open online handbook that is regularly updated in collaboration with a multidisciplinary group of experts and other interested stakeholders:

<https://handbooknewcomers.pressbooks.com>

What is an energy community

The NEWCOMERS project understands energy communities as **any collaboration of citizens and other entities, such as municipalities, companies, energy providers, network operators, NGOs, etc., with the joint aim to contribute to energy system transformation by involving multiple actors in a participatory manner, and by aiming to create benefits for all involved parties** (and potentially for society at large).

Energy communities (EC) offer an opportunity to transform the energy system into a clean and democratic one. They come in various forms and sizes, from small local communities that are geographically bound (e.g. residents of an apartment building deciding to co-produce their own electricity) to bigger, even international organizations. Their focus on local generation and consumption, and active participation of its members, bring several benefits to energy systems and local communities, such as matching energy demand and production, adapting energy generation to locally available sources

and providing energy efficiency measures through collective processes and additional activities. Energy communities can additionally work as ambassadors for energy transitions and great sources of information and advice for peers and the public.

With the growth of renewable energy production and the pressing need to decarbonize energy systems, energy communities connect all those willing to actively participate in energy transitions and bring the change into the hands of citizens.



Our Energy

About the definition of energy communities



EU vision for 2030:

At least **55%** cut in greenhouse gas emissions (from 1990 levels)

At least **32%** share of renewable energy

At least **32.5%** improvement in energy efficiency

BENEFITS OF EMPOWERED COMMUNITIES

- Local and secure supply
- Democratisation of transition
- Self-sufficiency
- Affordable energy
- Job creation
- Sustainable transport
- Transition for people

About energy literacy and energy communities

To be good energy citizens and to actively participate in the energy transition, we need a **basic understanding of how energy systems work**, from the generation of energy and the sources available, to the consumption and the role that we, as citizens, can play in these complex systems.

In simple terms, we can define energy literacy as an **understanding of the nature and role of energy generally and in our lives**. It is also the ability to **apply this understanding to answer questions and solve problems**. The extent of knowledge we need in our day-to-day practices depends on how involved we are in energy systems. Energy communities in particular, with their active participation in different aspects of energy systems, can especially benefit from a better understanding of all energy-related topics.

A good understanding of energy systems and their relationships with the environment and societies can support the ongoing challenge to reduce greenhouse gas emissions (GHGs) and can help achieve the goals set at national and international levels to combat climate change. Within the European Union, the following goals have been set to reduce greenhouse gas emissions:

- 55% GHG emission reduction by 2030
- 32% share of renewable energy by 2030
- 32,5% improvement in energy efficiency by 2030

The ultimate goal of the European Union is to be climate neutral by 2050, which means that by the middle of the century the amount of GHGs emitted in the European Union must not exceed the amount of GHGs that can be absorbed by natural or technical processes.

To achieve these goals, **a fundamental transformation of the way we generate, distribute, and consume energy is needed**. Energy communities will make an important contribution to this energy system transformation, at the local level but also beyond. In this process, energy communities benefit from learning

about new technologies and new ways to organize and manage local energy systems. In this way, they can become great resources for energy system change themselves. In fact, **energy communities have proven to be great hubs for the diffusion of energy-related knowledge**, and to be active promoters of the clean energy movement, both within and outside their communities, for example when communicating to potential future community members, policymakers, media and wider society.

An energy-literate person:

- Can trace energy flows, from nature, through generation to usage and think in terms of energy systems;
- Understands how their actions and practices affect how much energy they consume;
- Can assess the credibility of information about energy;
- Can communicate about energy and energy use in meaningful ways;
- Is able to make informed energy use decisions based on an understanding of impacts and consequences;
- Recognizes the benefits of energy communities' projects and initiatives;
- Understands how individuals, communities and/or organizations can support the achievement of the energy transitions.

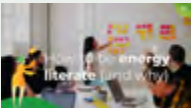


A precondition for energy communities to become knowledge hubs is that their members build up energy-related knowledge, or energy literacy. With this handbook, we would like to offer a useful resource to energy community members and interested citizens and stakeholders that would like to increase their level of energy literacy.



Our Energy

How to get energy literate



Key chapters



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1. Energy is a physical quantity

In an energy community, energy is handled in the following activities:

SUPPLY

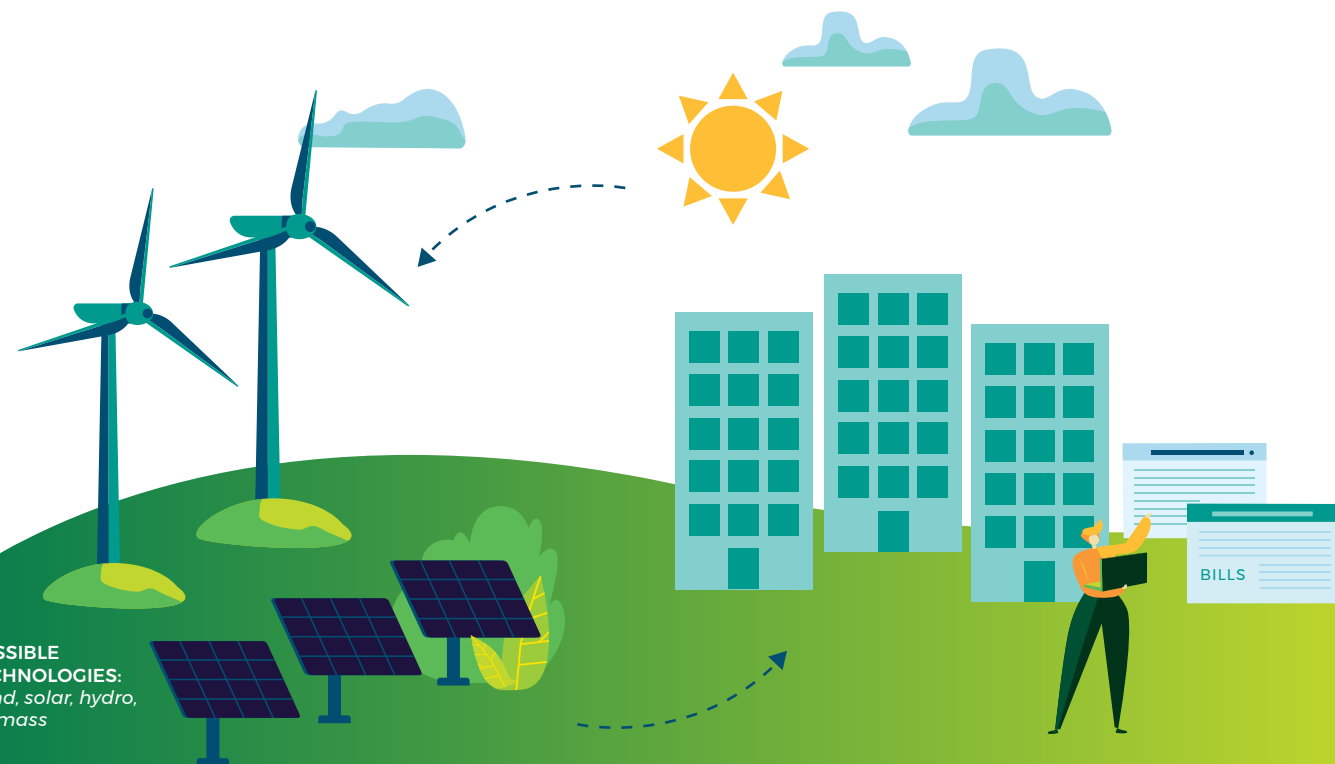
Energy communities can function as suppliers of energy, either selling their own produced energy or energy bought from smaller local generators

DISTRIBUTION

Energy communities can feed renewable energy into the distribution grid or can contribute to balancing the grid locally

HEATING

A lot of energy is used for heating buildings; therefore, energy communities can establish sustainable and efficient heating and cooling systems



MOBILITY

The transport sector is one of the largest energy users, and energy communities can help address sustainable mobility issues, including electric vehicles charging

STORAGE

Energy communities can also develop innovative solutions in the field of energy flexibility, storage and control

GENERATION

Energy communities can produce clean and sustainable energy, adapted to locally available sources and energy needs

Source: https://ec.europa.eu/clima/eu-action/climate-strategies-targets/2030-climate-energy-framework_en



Contributing expert:

Prof. Andrej Gubina,
University of Ljubljana

We are surrounded by different forms of energy. While energy takes up many meanings in our vocabulary, we can define it at its core as the ability to live and to move. We use it to walk, run, cycle and work. Our cars, buses, boats, and airplanes need energy to move. It is stored in our food, our bodies, the plants surrounding us, and the soil we walk on. It is the ability of a system to do work by exerting force on another system over some distance. In this process, the energy is transferred from one system to the other, while some energy is simply lost to the surroundings.

Energy comes in different forms

A lot of times we associate the word energy with electricity. While this is not wrong, we should keep in mind that electricity is not the only type of energy powering this world. In nature, we find many forms of energy, for example heat, light, motion, electrical energy, chemical energy, and gravitational energy. These forms fall into two main categories – potential or stored energy, and kinetic or working energy. All energy falls into one or the other, or sometimes even both at the same time. But their state is not fixed. In our day-to-day life, energy is converted from one form to another – motion energy in the water for example transforms to electrical energy in hydro plants, which then lights up the lights in our house.

We measure energy with many different units:

- joules,
- calories,
- ergs,
- kilowatt-hours and
- BTUs.

One type of energy can always be converted to another.

form to another – motion energy in the water for example transforms to electrical energy in hydro plants, which then lights up the lights in our house.

Do we create energy in the world?

Energy exists, it cannot be created or destroyed. The amount of energy in the universe is constant and it is finite. Therefore, when we produce energy in power plants, we do not make energy, just transform already existing energy from one type or form to another. Likewise, when we use energy, we do not destroy it, just pass it on to other subjects or change its form again.

Energy powers the Earth

Energy does much more than simply move us from one place to another. Our weather and climate are mostly driven by the energy from the sun. The water cycle, which stores many other types of energy here on Earth, is also driven by the sun and its energy. Energy flow through the earth powers all physical processes on it. It plays a pivotal role in inanimate nature as well as in all aspects of animate nature. The sun is the key source of energy for all organisms and their ecosystems. By giving plants, algae, and other producers the energy to make organic matter from carbon dioxide and water, they start the energy flow through ecosystems and their food webs, which we are all a part of.

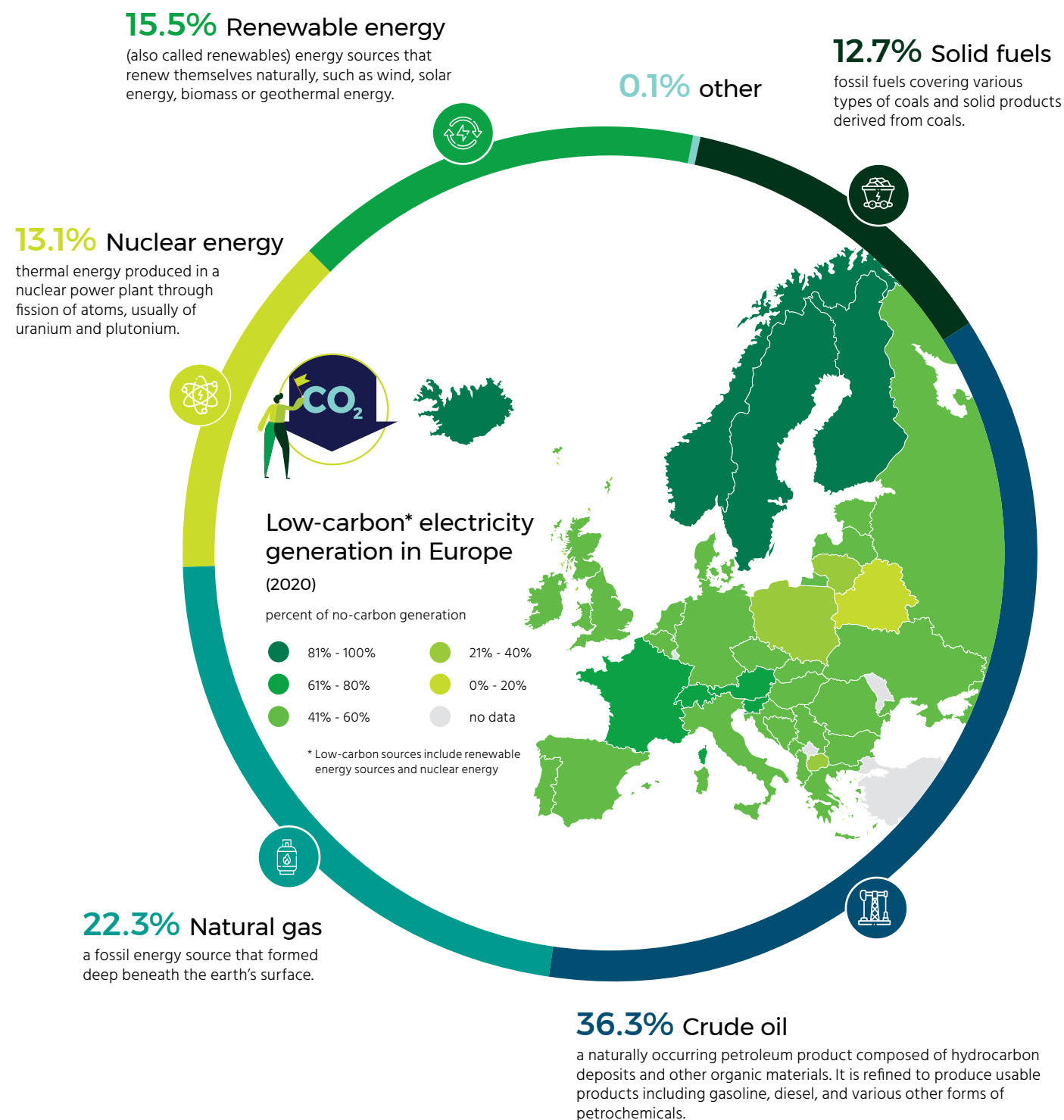
Food is a fuel that we and other organisms use to live. It is our main source of energy. However, we, as humanity, affect energy flows throughout all ecosystems even more drastically with other activities. We are constantly modifying Earth's energy balance due to population growth, technology development, and many other factors.



Interested in more?
Energy Literacy

2. What energy sources power Europe

Energy mix for the European Union (2019)



Source: <https://www.eia.gov/todayinenergy/detail.php?id=18071>



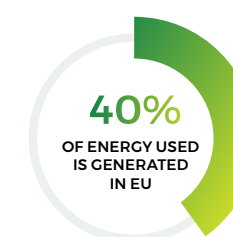
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European energy mix

To understand the energy system and the need for the energy transition, it is important to understand where the energy we use comes from.

When we think about energy sources, our mind usually wanders to the energy sources for electricity generation, such as coal, hydro, nuclear, and intermittent renewable sources, such as wind or the sun, but the biggest share of energy available in the European Union is petroleum products (36%). They are followed by another fossil fuel – natural gas (22%), together providing more than half of all energy used in Europe. Only then come renewable energy sources, with a 15% share which includes the biggest renewable source - hydro energy. Nuclear energy, another low-carbon energy source, has a share of a little over 13%. The last group of energy sources are solid fossil fuels, such as coal, coming in at 12.6%, with a decline expected in the following years. The transition from a carbon-heavy to a low-carbon energy system will leave a big gap to fill with low-carbon energy sources. Energy communities can play a big role in the growth of clean energy production.

Is Europe energy self-sufficient?



Countries in the EU produce around 40% of the energy they use, while the remaining 60% is being imported. Of course, the percentage varies from country to country, with many countries even exporting their energy surplus. EU imports are dominated by crude oil and petroleum products, with 63% of all imported energy coming from it, followed by natural gas with 26%. The biggest suppliers of these energy sources are Russia (crude oil, natural gas, and fossil fuels) and Norway (crude oil and natural gas).



Our Energy

**About energy sources
in Europe**



Energy transition – what does it mean?

The energy sector itself is responsible for over a quarter of all GHG emissions with just electricity production, not counting in the use of energy (e. g. heating and transport). The energy sector, however, is responsible for additional emissions in the transport, industry, and residential sectors. Due to the amount of emissions coming directly or indirectly from the energy sector (in total, over 75%), it is one of the key players in achieving environmental and sustainability goals. The energy transition is the roadmap towards a more sustainable energy system, transforming from a fossil fuel-based to a low-carbon energy mix. It is one of the most complex challenges we face in light of global warming, due to the large amounts of infrastructure involved, as well as the necessity for energy in day-to-day life. The dependency on energy means that the transformation must be smooth, assuring reliable and efficient energy at every stage. The European Commission set the goal for the reduction of GHG emissions at 55% by the year 2030 and net-zero by 2050.

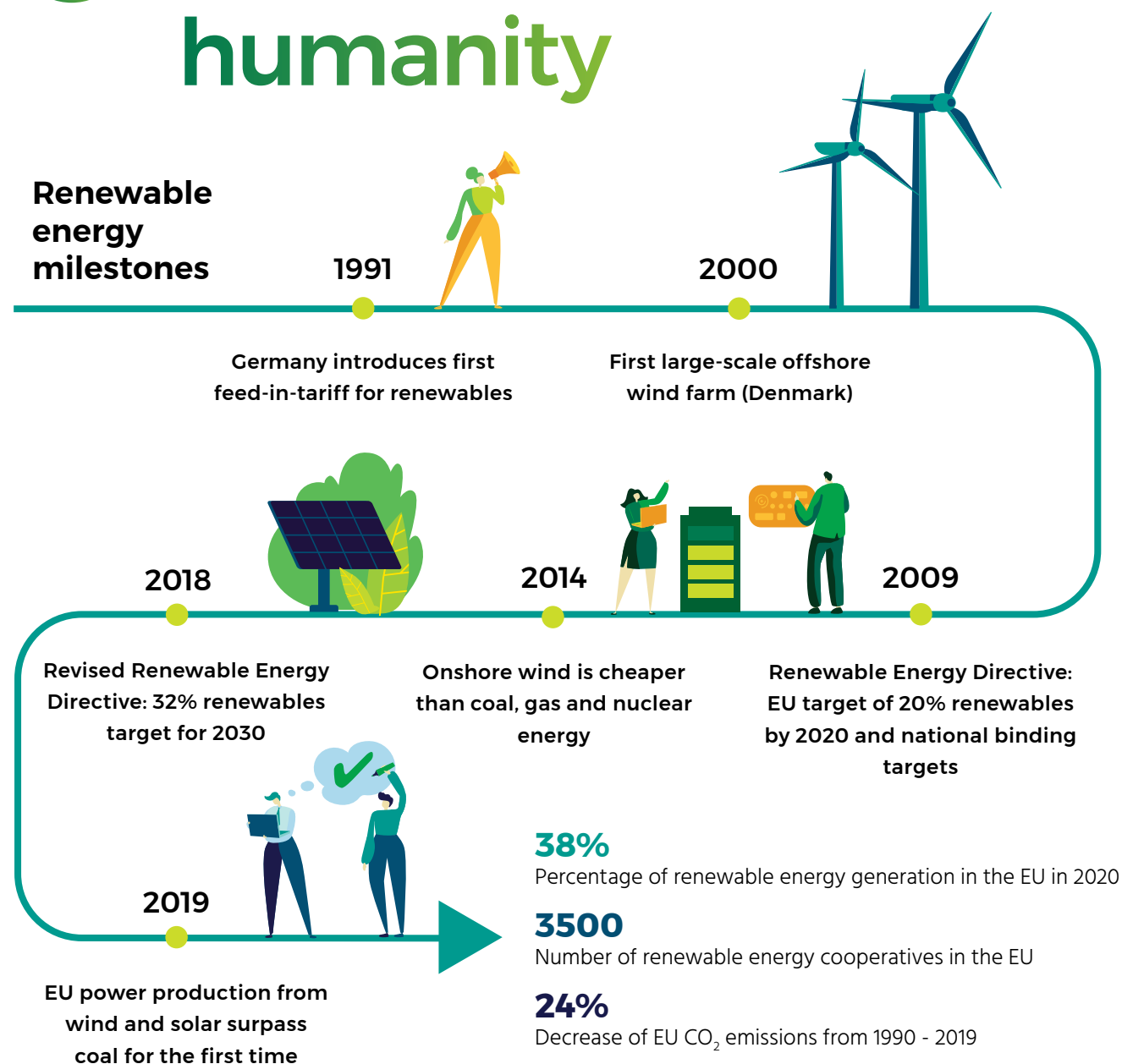
What does the future hold?

The next few decades will see an increasing share of low-carbon sources, in line with global efforts to mitigate climate change. The growth of renewable energy brings new opportunities for active citizen involvement and decentralization of energy systems. Energy communities can be great providers of energy generated from renewable sources and can actively participate in the energy transition with other activities, such as local energy distribution and energy storage.



Interested in more?
**Where does our energy
come from?**

3. Energy powers humanity



Contributions of energy communities to local energy transitions

Energy communities are integrated into local environments and communities. They share rooftops with local businesses and hospitals, collaborate with local schools and provide clean energy for the local users. With local energy generation, adapted use and other sustainable energy strategies, they can be key players in the energy transition. Contributions of energy communities:

- Collaboration with the public sector
- Powering the local community
- Educating about and promoting sustainable energy
- Fostering other sustainable behaviour



Source: European Commission



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Energy is essential for a normal and functional life in modern society. An energy-powered reality is the only reality we are familiar with. All energy-powered machines and appliances help us function in modern society as well as provide us with comfort and convenience in our day-to-day lives.

reduce the amount of energy used by society, without affecting the quality and comfort of our current way of life. In fact, responsible energy use can often even improve the quality of one's life, through reduced environmental risks, supporting healthier and more responsible lifestyle choices, increased economic and national security, and monetary savings.

Energy is everywhere

We use energy to store and prepare food, as well as to heat and cool our homes. Our education, our economy and our health systems are fully reliable on energy, as well as our transportation system and all our industry. Most of our entertainment is directly or indirectly connected to energy use, everything from cinemas and concerts to smaller activities, such as playing videogames or simply watching TV. Even our most used devices, our smartphones, where we listen to music, talk to our loved ones, surf the internet, take pictures, to name only a few, are energy-dependent. With the development of technology and electrification, the demand for energy in our society will only grow, with many more analogue items being transformed into digital alternatives.

The role of energy communities in the energy transition

Energy transition is the transformation of the energy system from a heavily fossil-based one to a low-carbon one. While it will require technological solutions at all scales, citizens will also play a big role. One reason for this is that systems based mainly on distributed renewable sources of generation (e.g. solar photovoltaics, wind, biomass) enable consumers to become prosumers, i.e. they can generate their own electricity, to use at home or to feed back into the grid. With further technological advances in energy storage systems (e.g. batteries, hydrogen) and energy management (e.g. demand response, blockchain), citizens will be able to access energy even in off-grid conditions. Energy communities provide a way for everyone to actively participate in developing a clean and sustainable energy system. They can provide low-carbon energy supply, new sustainable jobs, other sustainable benefits, such as community heating and car sharing, encouraging investments in clean energy, supporting local economies and raising awareness about energy issues and solutions. The growing number of community energy projects means energy systems, as well as the social norms and expectations, need to adapt to the new phenomenon. In countries such as the Netherlands, Denmark and Sweden, energy communities already exist in large numbers and are therefore a more established concept already. Elsewhere, particularly in Eastern and Southern Europe, the concept of 'energy communities' is still in early stages of development. With more and more countries developing regulations and policies supporting community energy projects, it is expected that the numbers of energy communities will grow in the future.

Let's talk about sustainable energy production and consumption

Nevertheless, access to cheap and reliable energy has had negative effects, too. The intense production of energy from fossil fuels has heavily impacted both society and even more noticeably, the environment, ever since the industrial revolution in the 1800s. In the past few decades, with the rise of global mean temperatures due to climate change, debates and concerns over energy production and its impact have grown. In response, the world has started to move away from emission-intensive energy sources to environmentally friendly, low-carbon options.

The social environment, as well as the access to and development of technology, can affect the way we produce and use energy. Technological or social change can



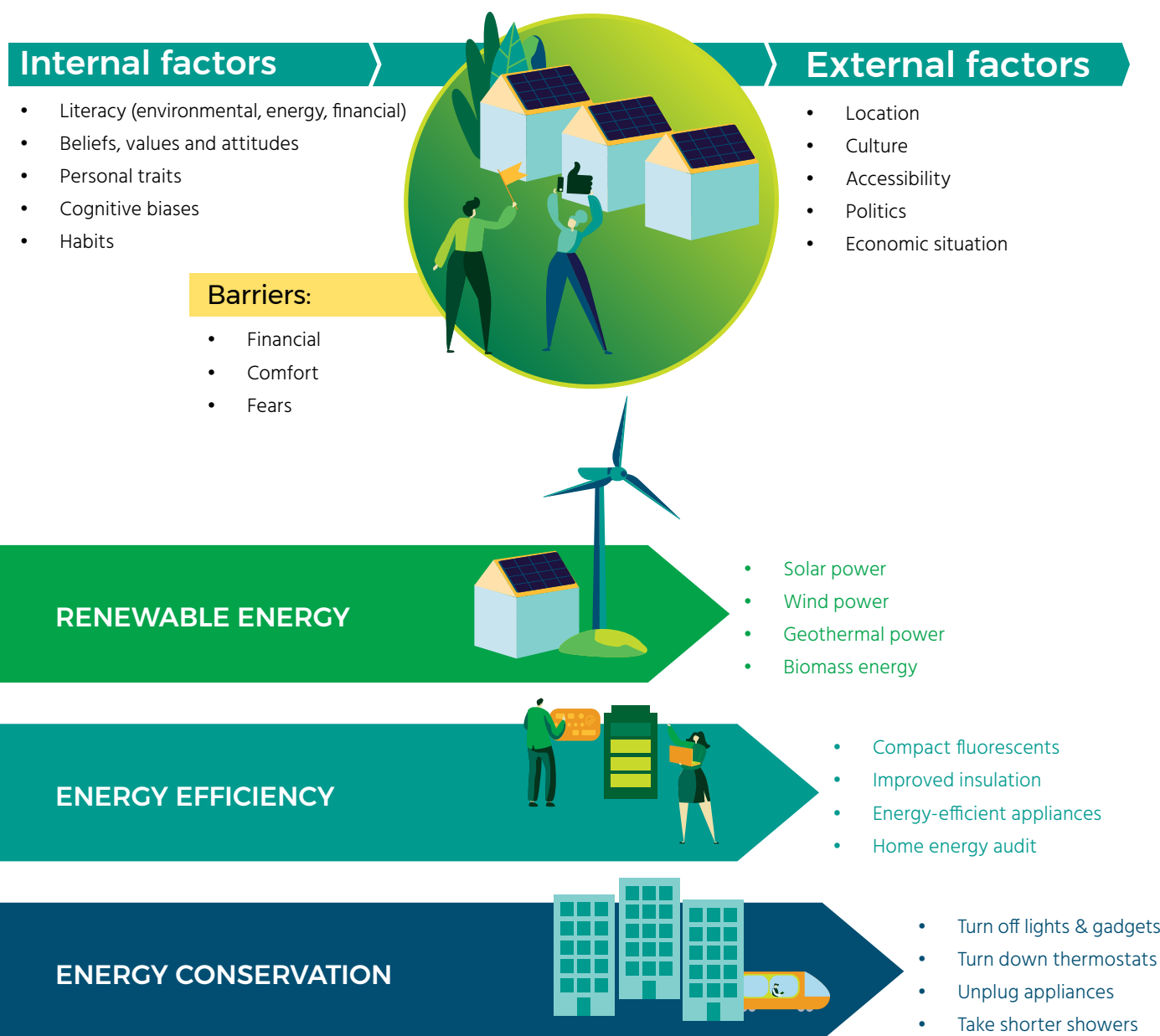
Our Energy

About accelerating the energy transition through innovation



Want to know more?
How to Save Energy at Home
Energy Policy Review

4. What influences energy decisions?



Activities, that indirectly affect energy consumption and production:

- Energy literacy
- Education
- Political participation
- Promotion of energy-efficient behaviour
- Joining an energy community

There are many ways to make the energy system greener, from **changing our everyday activities**, to **once-in-a-lifetime changes**. No matter how small or how big, **every step in the direction of sustainable energy use and generation counts**.

Source: https://www.researchgate.net/figure/Energy-saving-pyramid_fig1_329879530



Contributing experts:
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Dr. Stephan Sommer,
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The evolution of energy systems and the development of new energy technologies requires individuals and communities to make a variety of energy-related decisions every day, as household members, members of society, and citizens of the world. These decisions, in turn, influence the design of energy systems and affect all areas of life that are directly or indirectly related to energy production or use, such as use of energy at home (heating, cooling, cooking), transportation, public systems (healthcare, education), industry, etc.

As **individuals**, we make energy-related decisions mainly connected to our personal everyday lives, for example choosing to use a computer, or less frequent activities, such as choosing an electricity provider or buying a new refrigerator.

The decisions we make as **local communities** and **societies** have a larger and more visible impact, affecting energy demand and supply, but also resulting in new forms of energy production, storage, and consumption, through collective organization and effort.

Energy-related decisions are also made in **political environments**. These kinds of decisions encompass regulations, policies, and incentives but also the development of strategies to connect with other countries. In a nutshell, all these decisions have a bearing on energy production and consumption.

Matters are complicated by the fact that all these decisions are intertwined, one affecting and influencing the other, from national and international regulations affecting households and individuals to citizens' movements and local engagement affecting larger national and international systems. The growth of the bottom-up principle, also including energy communities, is well presented in the adaptation of EU regulations and policies to build a more citizen-led energy system.

Our society and energy dilemmas

As a society, we face several energy-related challenges and dilemmas that have a severe impact on the quality of our lives and existence, our economy, and the environment we live in.

How much effort and resources are we willing to invest into alternative energy sources? Can sufficient energy be distributed fairly, safely, and economically to all parts of the country? The answers to all these ques-

tions are dependent on the decisions we make about energy, which are dependent on the local economy, and political environment.

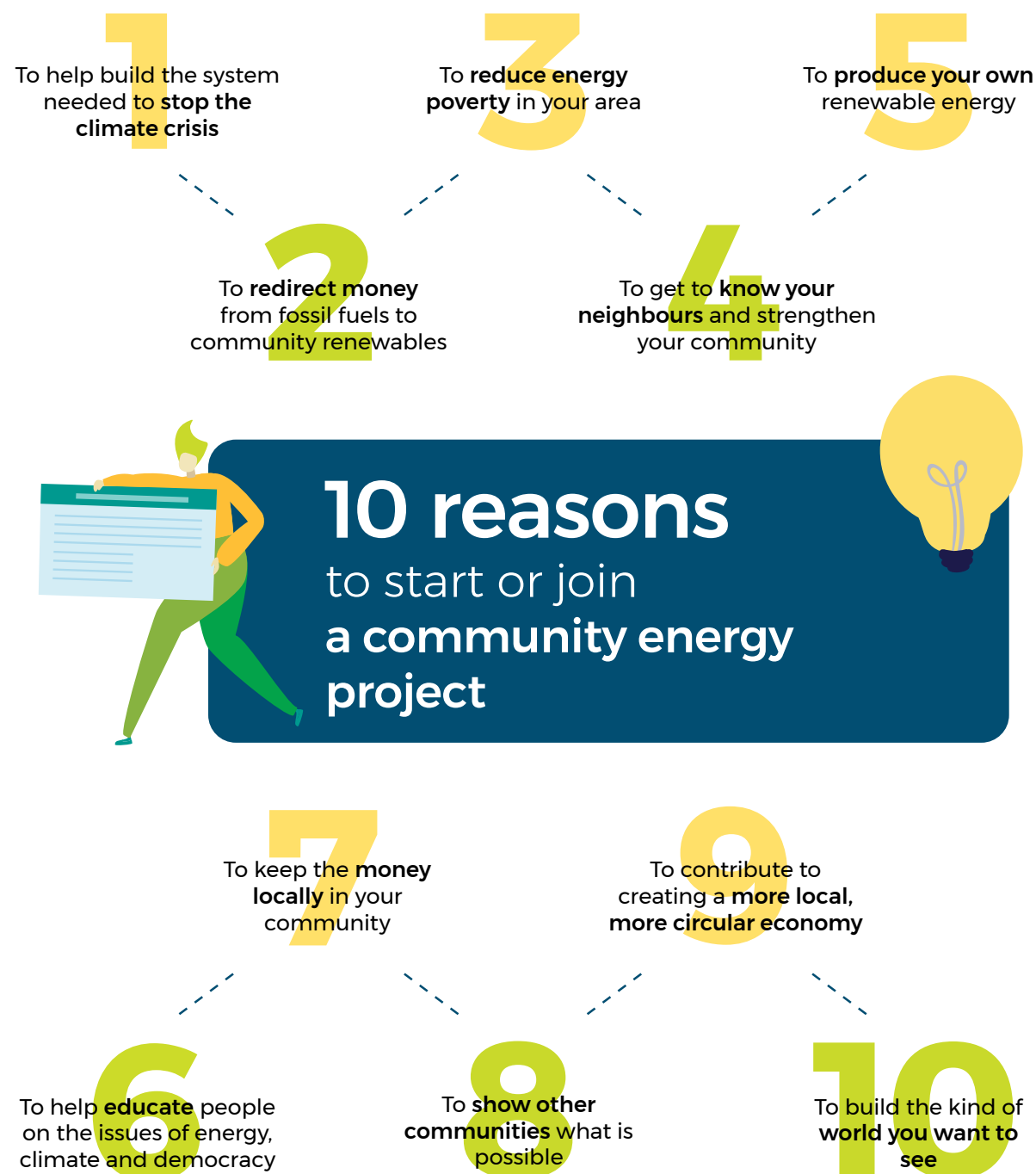
Energy decisions in households and communities

A household's energy decisions usually concern three main categories that differ in the financial resources they require – energy saving, energy efficiency, and energy production. The first category includes mostly behaviour, anything from turning off the lights when leaving a room, cycling instead of driving a car, shortening the lengths of our showers, and lowering the thermostat for a degree or two. The second category comprises activities that minimize our use of energy for achieving specific energy services, like heating our homes, or cooling our food. Examples for efficiency measures in the home are installing better insulation or buying more energy-efficient appliances. Finally, households can invest in their own energy production (e.g., a solar panels for electricity generation or solar heating) to produce energy themselves, either by themselves or by collaborating with others in a community. While these investments initially come with a bigger price tag, once implemented they require much less effort and time investment.

Those citizens and households that, besides consuming energy, also produce energy are called **prosumers**. Producing energy can either be achieved individually or in a community setting. While the reasons behind the decision to produce energy vary, many people join forces to produce, store or distribute energy not only for their own benefit but also for the general benefit of the society and environment. These individuals amplify their role in the energy system and are more actively involved in the energy transition through collaboration.

The level and type of a person's involvement in a more responsible energy behaviour is largely dependent on the environmental, financial, and political circumstances. In addition, there are several external barriers, such as an individual's lack of financial assets, lack of subsidies or loans to finance clean energy investments in their homes, or lack of access to certain technologies. Furthermore, there are many internal barriers such as our belief systems, attitudes, fears, cognitive biases and habits, that prevent people from making energy-related changes.

5. What motivates energy communities?



Source: <https://www.rescoop.eu/news-and-events/news/ten-reasons-to-start-or-join-a-community-energy-project>



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There are many forms of community energy: from community projects to non-profit organisations, from smaller communities to bigger established cooperatives, from neighbours buying solar PV together, to larger, even international communities, with thousands of members. Just like communities differ in shapes and sizes, so too differ the motivations to join them. Some researchers have concluded that what motivates energy community members most are financial benefits, while other research, including one investigation carried out by the NEWCOMERS project, suggests that environmental motives can play an equally significant role.

Regardless of what the most common motivating factors are, it is important to understand and acknowledge that people join communities for different reasons. Understanding the variety of possible motives can play a pivotal role in energy community promotion and recruitment of new members.

We can divide the motives for joining energy communities into five categories:

- Financial motives (including electricity cost reduction or investment opportunities)
- Environmental motives (lowering one's environmental footprint)
- Social motives (being part of a community, a movement addressing climate change)
- Technological motives (engaging with new technologies)
- Energy independence/security motives (independence from large power companies, contributing to energy security)

Many people decide whether to join an energy community based on these motives. Given the novelty of the energy community phenomenon, joining or establishing a community can involve a certain level of risk. An important factor in mitigating perceived risk for potential members is the concept of trust.

For a successful and long-lasting energy community, the members should trust in the competence and knowledge of the community leaders as well as other community members.

Trust plays a particularly important role in those communities that require active participation from their members. Thus, the community needs to build and grow relationships and keep the community members connected. Energy communities can improve their members' engagement through a range of activities, such as defining roles for members, community events, establishing community communication channels or developing side projects that stimulate community life (such as educational programmes for schools, community gardens, repair cafés, etc.).



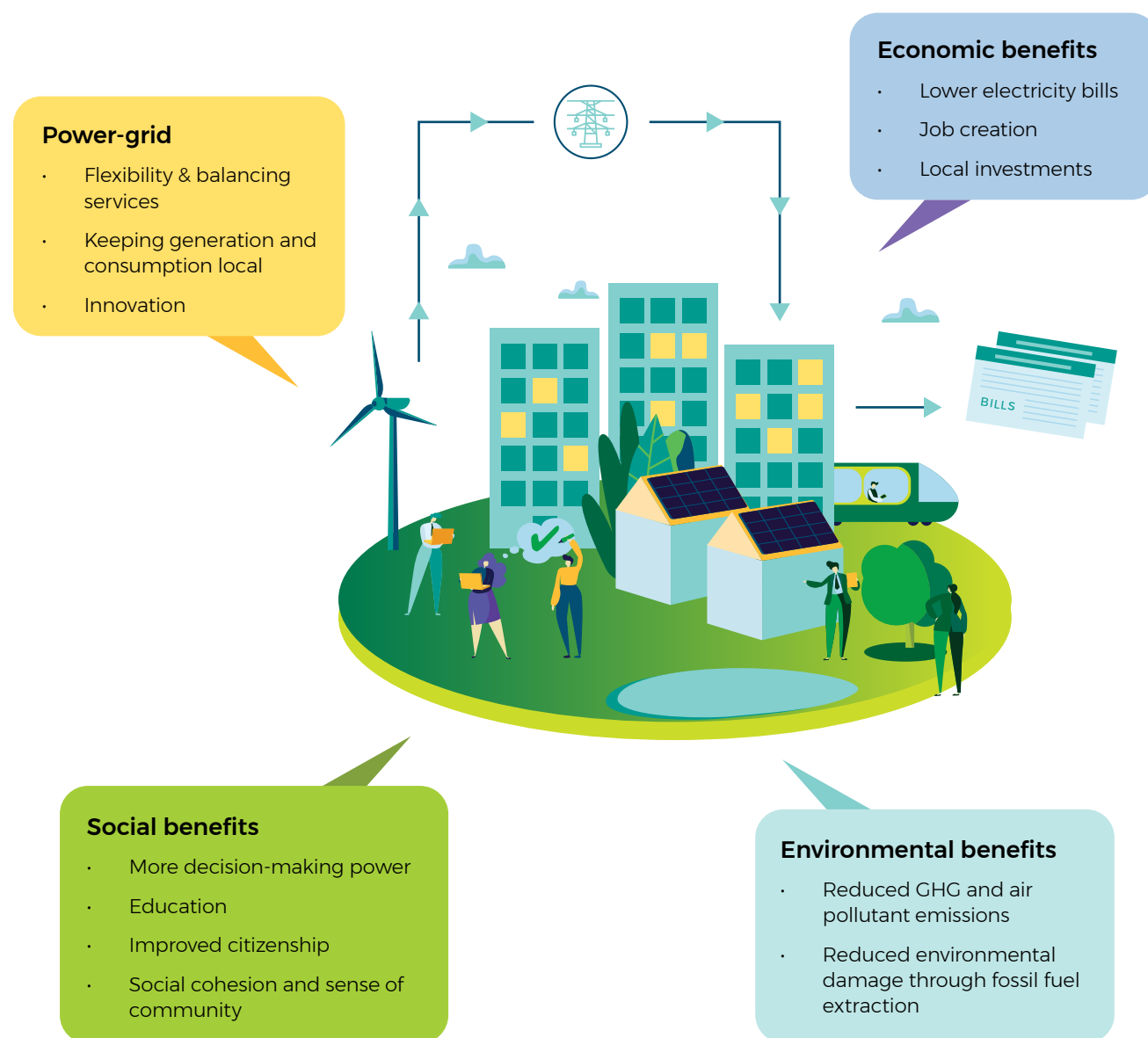
Our Energy

About motives for joining energy communities



Interested in more?
Potential of energy communities to increase energy literacy, attitudes, perceptions and support for the energy transition among members and the general public

6. What roles can energy communities play and what benefits do they bring?



Contributing expert:
Dr. Paula Hansen,
University of Oxford

Energy communities come in many shapes and sizes, and a multitude of potential benefits for society, the planet and energy systems. At the same time as energy communities, low-carbon energy is also growing, providing the basis for a clean energy transition. This transition is crucial to achieving the decarbonization goals agreed by governments nationally and internationally. Energy communities promote renewable energy production and can foster greater acceptance of new forms of energy production, storage, distribution, and consumption.

The challenge of decarbonizing energy systems is compounded by the electrification of transport, residential and commercial buildings (including space and water heating), cooking, as well as industrial processes. This is leading to a growing demand for electricity overall, in addition to the need for more clean energy. Countries thus face the challenge of replacing existing fossil fuels while simultaneously meeting growing demand, and ensuring energy security, reliability, and affordability. Energy communities can be part of the solution.

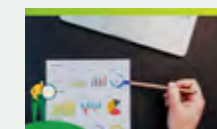
Energy communities have several benefits, on various levels. They have benefits for individuals and members of communities, local communities, and economies. These benefits may be environmental, economic, social or relate to the power system itself.

Environmental benefits

One of the most prominent benefits of energy communities is **that they focus on sustainable ways of producing and consuming energy**. To achieve the climate change goals set by the EU, countries need to transform their energy systems completely, replace their fossil fuels and adapt their systems to the inevitable growth of renewable energy production. It is predicted that **energy communities could account for over 17% of all wind power production and 21% of solar power production by 2030**, which makes them an important player in the energy transition.

Our Energy

About benefits and barriers of energy communities



Economic benefits

Economic benefits are one of the key factors that motivate people to join energy communities. By joining an energy community, members often save money on their electricity bills. In some communities, revenue streams may be created by selling off excess energy produced within the community. This can lead to positive outcomes for local communities if money earned is invested back into the local community. The development of renewable energy generation plants may also create jobs, attract new investment, or support local economic development in other ways.

Social benefits

While economic and environmental benefits of energy communities are often prioritized in decision-making, they can also have a range of social benefits. Energy communities empower local communities, giving them more autonomy and control over their environment. Energy communities may also improve energy literacy, for example by involving people in energy-related decision-making, introducing new technologies, or even organizing field visits for schools. Participation in energy communities also encourages people to actively participate in other aspects of energy citizenship, helping them have more influence on local decision-making processes or sharing their experience and knowledge with peers.

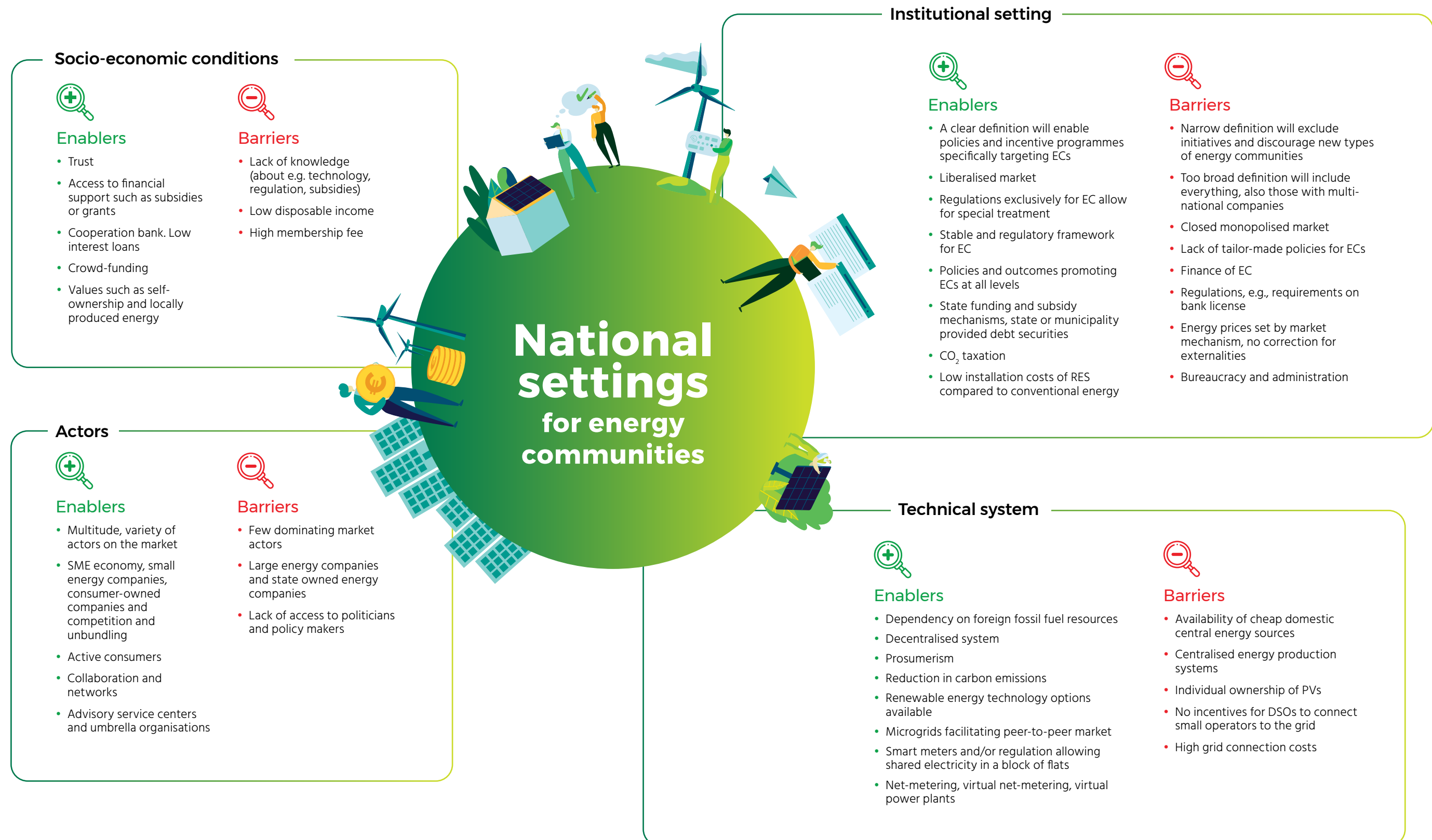
Energy system benefits

Energy communities also affect the energy system directly. One potential benefit is that they may improve local coordination of resources by better matching production and consumption. Energy communities can help the energy system become more flexible; and they offer the possibility to test and develop innovative new solutions. They also promote more local energy production which helps improve the security, reliability and resilience of energy networks.

7. Importance of national settings



Contributing expert:
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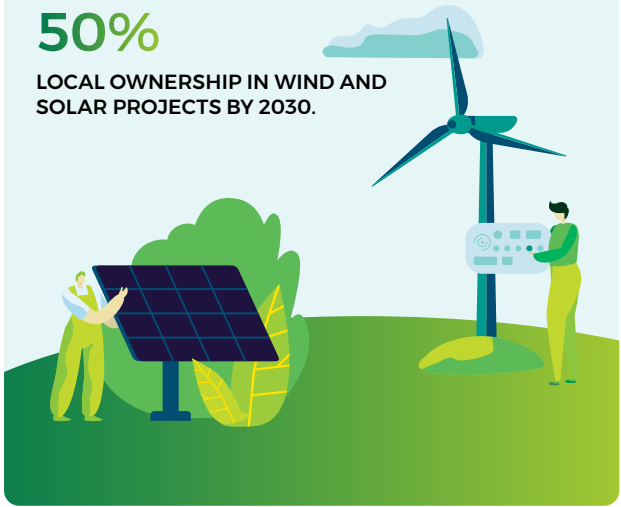
Over the last few years, the European Union has begun to explicitly recognise the potential of energy communities in energy system decentralisation by giving citizens the right to actively participate in the production, storage and distribution of energy. This has given energy communities a new role in the institutional settings of the European Union and its member states. It has helped them establish a role in the energy transition in the eyes of society and has given them the legal recognition needed to develop further.

Case study

The Netherlands, a country with over 500 registered energy communities, has the ambition to realise 50% local ownership in wind and solar projects by 2030 through the development of thirty regional energy strategies. The country has a policy instrument that aims to stimulate local ownership of renewable energy projects through its postal code area scheme (“postcoderoos”). These schemes are an example of a great energy community enabler.

500
REGISTERED ENERGY COMMUNITIES IN THE NETHERLANDS

50%
LOCAL OWNERSHIP IN WIND AND SOLAR PROJECTS BY 2030.



The inclusion of energy communities in new EU climate action strategies and policies promotes and enables their future development. However existing social and technical systems, developed for a more centralised energy system, often work against energy communities. The understanding of the environments that surround energy communities is crucial for helping them grow and establishing themselves in our day-to-day lives.

What are national settings?

Energy communities coexist with other, bigger systems in social, economic, political and technical conditions that are largely dependent on their wider as well as more narrow location. The NEWCOMERS project has defined these condition as national settings and has divided them into four categories: socio-economic conditions, technical systems, institutions and actors. Socio-economic conditions include aspects such as education, urbanization and households’ economy, as well as more social aspects, such as trust. Technical systems include external factors, such as the energy mix, emissions and the electricity grid. When talking about institutional settings, we look at policies and regulations that affect energy communities, both positively and negatively. And finally, actors are all institutions, individuals and organisations that play a role in energy community development.

Why do they matter?

National settings are the context in which energy communities emerge, exist and grow. They are the factors that enable their existence or make their establishment more difficult and set the conditions under which they operate. They affect the sizes, legal definitions and business models of energy communities, their financing and their role in national systems, how much energy they can produce, how and if they can sell it and so forth. An example of a barrier for energy communities are bureaucracy and administration costs, lack of knowledge, while enablers are different tax reductions and support schemes, or the availability of technology such as smart metering.

Best practices

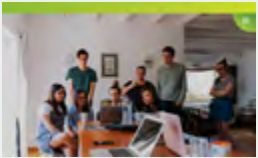
A one-fits-all recipe for energy communities does not exist, however there are still several good practices developed and applied around Europe, that have proven to be effective in supporting the development and growth of community energy.

Examples of good practices around Europe

| | | | |
|---|--|--|--|
| Net metering, virtual net metering and virtual power plants | <div>GER</div> <div>Subsidies for biofuels, the Cooperative Law, The act on Digitalization</div> | <div>IT</div> <div>There are support schemes for RE electricity, such as a favourable VAT regime (10% instead of 20%)</div> | <div>NL</div> <div>Develops regional energy strategies to realise 50% local ownership in wind and solar projects by 2030</div> |
| FiTs | | | |
| Umbrella organisations | <div>SE</div> <div>Tradable green certificate, subsidy local and regional infrastructure investments, tax reduction PV</div> | <div>UK</div> <div>Contracts for Difference and Urban and Rural community Fund. Wales and Scotland have targets for levels of community energy</div> | <div>NL</div> <div>Postal code area scheme aims to stimulate local ownership of renewable energy projects</div> |

Our Energy

About national settings for energy communities



Interested in more?
Energy communities in different national settings – barriers, enablers and best practices

8. Empowering energy communities: collaboration, co-learning, networking

Our Energy is an online platform for education, awareness-raising and networking, focusing on energy communities, energy transitions and related topics. It was developed by the Horizon 2020 NEWCOMERS project.

Our Energy's multimedia content is:

COMPACT

Viewing, listening & reading time around 10 to max. 15 minutes.

TAILORED

Easy search with several content filters. Advantage for registered users: recommended content tailored to your interests.

OPEN

Some content offered as Open Educational Resources: ready for your use, reuse, remix and other kind of adaptation.

FREE

All content is free of charge and open access. You don't have to register to access any of the platform's content.

REVIEWED

Content reviewed by leading subject matter experts.

FRESH

New content added regularly.

The four pillars of Our Energy:

EDUCATE me

Strengthening your knowledge about energy communities

ADVISE me

Advice about different aspects of energy communities

INSPIRE me

Ideas and experiences of other communities, experts, academics etc.

CONNECT me

A network of organisations, projects and institutions for energy communities

How can energy communities be empowered to effectively support low-carbon energy transitions? Among many factors, knowledge and skills play a central role. The NEWCOMERS project has identified information flows, both within and outside of ECs, as one of the crucial empowerment processes for community members. If ECs have access to relevant information about energy conservation and demand, economics, business models, policies and regulations etc., they are better able to 'scale-up' and support the energy transitions.



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Knowledge in energy communities

The NEWCOMERS research findings on energy communities show that ECs often develop so-called 'knowledge banks': these refer to specific knowledge and skills, related to ECs' practical operations and development that members acquire by being part of a community. First, the ECs share pieces of knowledge from these knowledge banks within the community. They may then also share between each other, if they collaborate with other ECs. In this way, their knowledge is eventually also 'diffused' to the outside.

External knowledge diffusion is extremely valuable for the energy transition. NEWCOMERS research has shown that most energy community members share the knowledge they have accumulated and created in the community with their close social circles. Some do this informally, while others become more formal ambassadors, in some communities even official promoters.

To help ECs with knowledge diffusion, the NEWCOMERS project has developed the Our Energy platform. The aim of the platform is to share knowledge and experience from energy communities and experts, as well as to establish a network of stakeholders – projects, communities, policy and decision-makers and experts, offering communities the possibility to share, collaborate, learn and network - therefore making the co-learning and knowledge sharing processes more accessible. The platform offers energy related educational, advisory and inspirational content and also features a database of experts, projects, organisations and communities. With this, the NEWCOMERS project aims to build a network of practitioners and experts, willing to share their knowledge and best practices and connect to jointly achieve a better future. To make this accessible to everyone, the NEWCOMERS project follows the principles of Open Education.

Another way to co-learn, connect, collaborate and network in a more structured and planned way are communities of practice.

What are Communities of Practice (CoP)?

A Community of Practice is a group of people who share a common concern, a set of problems, or an interest in a topic, and who come together to fulfill both individual and group goals. They often focus on sharing best practices and creating new knowledge to advance a domain of professional practice. Interaction on an ongoing basis is an important part of this.

While 'Community of Practice' is a broad concept, there are three characteristics every community of practice has. A shared domain or a topic of concern, which creates a common ground; a community, meaning they pursue their joint interest through shared activities; and practice, meaning that the community members are actual practitioners in this domain of interest.

The benefits of using CoP principles in energy communities

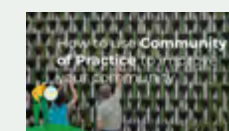
Communities of Practice have existed for a long time and have been building networks, skills and knowledge in many different areas. In fact, they occur everywhere - energy communities themselves can be Communities of Practice. Knowledge, skills and the transmission of knowledge are essential parts of energy communities. Applying CoP's principles can provide energy communities with an effective knowledge and skill sharing network among the members as well as with other stakeholders, such as policy makers, industry actors and other energy communities. Using these practices can help communities to:

- Spread best practices internally and externally
- Solve problems
- Develop skills needed for successful energy community management and upkeep
- Develop relationships between members
- Connect and network with stakeholders
- Recruit new members



Our Energy

How to use Community of Practice to improve your community



Interested in more?
Visit Our Energy!

Glossary



Renewable energy community

is a voluntary legal entity established at a local level for the purpose of execution of renewable energy projects with the primary purpose to provide environmental, economic or social community benefits.

Citizen energy community

is a voluntary legal entity established for the purpose of energy “generation, distribution, supply, consumption, aggregation, storage” with the primary purpose to provide environmental, economic or social community benefits.

<https://cityxchange.eu/knowledge-base/citizen-energy-community-cec/>

Clean energy community

is an association of actors engaged in energy system transformation for reduced environmental impact, through collective, participatory, and engaging processes and seeking collective outcomes. (Definition of NEWCOMERS project)

https://www.newcomersh2020.eu/upload/files/D2_1_newcomers_theoretical_framework_DEF.pdf

Community of Practice

is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals.

<https://www.communityofpractice.ca/background/what-is-a-community-of-practice/>

Energy literacy

is an understanding of the nature and role of energy in the world and daily lives accompanied by the ability to apply this understanding to answer questions and solve problems.

<https://www.energy.gov/eere/education/energy-literacy-essential-principles-energy-education>

Interested to get to know energy communities better? Explore handbooks and guides by projects and organisations from all around Europe e.g.:



This handbook is packed with instructions, practical tips and resources, to build a local, community-led renewable energy revolution in Europe.

Developed by: Rescoop, Friends of the Earth and Energy Cities
<https://www.rescoop.eu/news-and-events/news/brand-new-guidebook-on-how-to-set-up-an-energy-community>



This handbook is intended to inform and guide you on your journey to becoming a Sustainable Energy Community. It is focused on Ireland's policies and environment.

Developed by: SEAI
<https://www.seai.ie/publications/Sustainable%20Energy%20Communities%20Handbook.pdf>



The handbook introduces the concept of Energy Communities, explains how they may be established technically, legally and financially, and finally suggests an action plan for setting up an Energy Community.

Developed by: Energiforum Sydhavn - a partnership between the City of Copenhagen and Aalborg University Copenhagen - 2020
https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=2054



Online version with updates

This handbook is available as an open online handbook that is regularly updated in collaboration with a multidisciplinary group of stakeholders: newcomersh2020.eu



Project partners:



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