The energy transition to energy democracy

Power to the people

Final results oriented report of the REScoop 20-20-20 Intelligent Energy Europe project

RESCOOP 20-20-20

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This publication is written by Dirk Vansintjan, board member of the Belgian REScoop Ecopower and acting president of REScoop.eu.

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Dirk Vansintjan

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Contents

Common Goods [1]

Common goods are defined in economics as goods which are rivalrous and non-excludable. Thus, they constitute one of the four main types of the most common typology of goods based on the criteria:

- whether the consumption of a good by one person precludes its consumption by another person (rivalrousness)
- whether or not one must pay for a good in order to use it (excludability)

A classic example of a common good are fish stocks in international waters; no one is excluded from fishing, but as people withdraw fish without limits being imposed, the stocks for later fishermen are potentially depleted. To describe situations in which people withdraw resources to secure short-term gains without regard for the long-term consequences, the term tragedy of the commons was coined. For example, overfishing leads to a reduction of overall fish stocks which eventually results in diminishing yields to be withdrawn periodically.

Common goods which take the form of a renewable resource, such as fish stocks, grazing land, etc., are sustainable in two cases:

- As long as demand for the goods withdrawn from the common good does not exceed a certain level, future yields are not diminished and the common good as such is being preserved.
- If access to the common good is regulated at the community level by restricting exploitation to community members and by imposing limits to the quantity of goods being withdrawn from the common good, the tragedy of the commons may be avoided. Common goods which are sustained thanks to an institutional arrangement of this kind are referred to as common-pool resources.

Sometimes, common goods and club goods are subsumed under the broader term of public goods. However, common goods should not be confused with a different type of public goods: social goods, which are defined as goods that could be delivered as private goods, but are delivered instead by the government for various reasons (usually social policy). This second definition of public goods does not refer to the characteristics of the goods (such as rivalrousness and excludability), but rather to the type of their provision.

	Excludable	Non-excludable
Rivalrous	**Private goods** food, clothing, cars, personal electronics	**Common goods** (Common-pool resources) fish stocks, timber, coal
Non-rivalrous	**Club goods** **ci**nemas, private parks, satellite television	**Public goods** free-to-air television, air, national defense

Preface

There are more than 2,400 renewable energy cooperatives (REScoops) in Europe at the beginning of 2015. Hundreds of thousands of Europeans are united in REScoops to jointly invest in the energy transition from fossil and nuclear fuels to renewable energy and energy efficiency. There are many more Europeans at home who are also committed to realising this goal in their daily lives. They are investing in insulation, solar water heaters, in photovoltaic panels (PV panels).

What is a REScoop? A REScoop, or *Renewable Energy Sources Cooperative*, is a renewable energy cooperative. They can have the legal status of a cooperative society, but can also be any other type of company or association of citizens. REScoops are initiatives of citizens who invest in their own production, distribution and/or supply of renewable energy, according to the principles of the International Co-operative Alliance (ICA)[2]. The REScoop Charter translates these general principles into the daily realisation of numerous best practices in municipalities, provinces and regions of Europe.[3]

Twelve partners from eight countries worked together in the framework of the European Union's Intelligent Energy Europe programme. Between March 2012 and April 2015 they realised REScoop 20-20-20, a project that highlighted the initiatives citizens are taking at local level, how they are overcoming obstacles, how they organise themselves, how they finance their projects… and how in all of this they demonstrate a remarkable ability to adapt to financial and legal obstacles and impediments.

This publication contains a strong story. It was written at the local level, by highly motivated citizens committed to current and future generations. This story is a source of inspiration for many others in recapturing and developing a *common good*: renewable energy sources, energy transition and the democratisation of the energy market.

Dirk Vansintjan, President REScoop.eu, March 26, 2015

All over Europe, citizens unite to invest in the energy transition. Founding meeting of REScoop EnerGent, 2013 (BE). (Bart Lasuy, EnerGent)

Introduction

First we will place the role played in the energy sector by citizens and their RES-coops in a historical perspective, and point out the decisive contribution made by advances in energy and information technology.

Then we will discuss the liberalisation of the European energy market and how a convergence of crises is affecting this process, and finally we will address the energy transition to a decentralised, renewable, efficient and democratic – or cooperative – energy model, and how the big energy companies are lobbying strongly to prevent this from happening.

This publication is not a compilation of all that was realised during the REScoop 20-20-20 Intelligent Energy Europe project. That would require a much larger work. Moreover, on REScoop.eu's website, all this is freely available: many inspiring examples, facts and figures, guidelines to start a REScoop... [4]

It is also not an overview of all local citizens' initiatives nor even of all the best practices we encountered. What it does do is place the spotlight on a number of leading REScoops: how they deal fairly with the common good that renewable energies are, and how they give substance to the principles of the ICA, the International Co-operative Alliance.

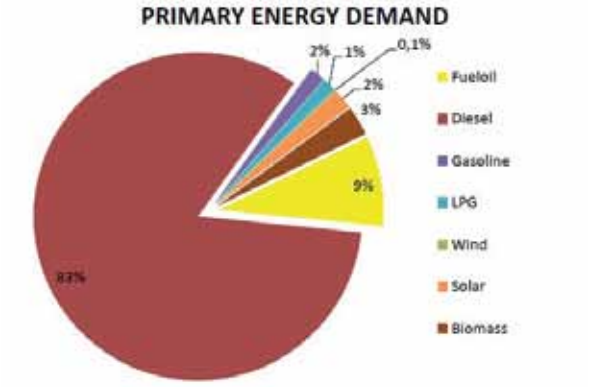
Finally, we address a number of recommendations to public authorities at local and European level, but especially to all citizens of Europe: how they can democratise the energy market.

Tanker bringing fuel to the island of Sifnos to generate electricity and heat. Most European citizens and municipalities don't see the ships arriving with oil. Yet there as well, money flows out of the local economy, out of the country to acquire fossil fuels. (Sifnos Island Cooperative).

What Sifnos and Güssing teach us

Sifnos

The Greek Island of Sifnos (Cyclades) has a surface area of 74 km2 and is home to some 2,500 permanent residents. This number rises to 15,000 in the summer, thanks to (mainly Greek) tourists.
The island is about 6 hours by boat from Piraeus, the port city south of Athens. It is not connected to the mainland for electricity, gas or oil. Everything that cannot be supplied, grown or made on the island itself is transported by sea, via ship or ferry. Since the construction of the first thermal power station in 1925, Sifnos has been dependent on imported diesel for electricity. Thus it also is directly or indirectly dependent on imported oil for heating homes in the winter and for cooling in summer.



Sifnos primary energy demand distriubtion to the different energy carriers. Source: Sifnos Island Sustainable Energy Action Plan[5].

The cost of these imported fossil fuels was approximately 5.6 million euro/year in 2013: more than 2,240 euro/year/permanent resident. Most residents of Sifnos are not aware of this because they pay only a small proportion of these high costs. The same tariffs are used for electricity throughout Greece. In other words: the residents of the mainland –

who are poorer on average – sponsor the islanders. Nevertheless, the sun shines long and hard on Sifnos. And a strong wind blows constantly in its mountains. Yet the inhabitants of this island, even in 2015, are still almost entirely dependent on fossil fuels. Which seems incredible given the huge sum of money – up to 5.6 million euro/year – that leaves the island and especially Greece for the purchase of the needed oil and gas.

Most European municipalities bear a strong resemblance to Sifnos

At first glance, most municipalities in Europe appear not to have much in common with Sifnos. But this is an illusion. We on the mainland don't see the ships arriving with oil: the energy is supplied via cables and pipelines. Yet here as well, money also flows out of the local economy, out of the country: to Gazprom in Russia, to the Norwegian State and to the oil sheiks in the Middle East.
This is the problem being tackled by REScoops. By making maximum use of local renewable energy sources and leaving the investments to local people, much money stays local that otherwise would be lost. This translates into a resurgent local economy and increased employment.
Imagine that 5.6 million euro/year would not disappear from Greece for Sifnos, or even better: that this would no longer be the case for each municipality in Europe… The impact would be enormous: financing the energy transition towards local and sustainable energy would no longer be an issue. For Sifnos, for example, this transition requires an investment of 18 million euro: not even 4 times the actual annual energy cost…[6]

Sifnos Island
Green Energy
Cooperative
www.sifnosislandcoop.gr

The plans are ready, financing is feasible: why then is nothing happening? The answer to this question is simple: it does not fit the plans of the existing large energy companies and the web of politicians, suppliers, employees… associated with them.
Which is why REScoop.eu is supporting the local 'Sifnos Island Cooperative' in taking the energy transition on Sifnos into the hands of its citizens.
This is not a utopia. As is proven by the municipality of Güssing in Austria.

Islanders taking their future into their own hands.

Güssing

A growing number of municipalities across Europe are already showing what the energy transition can do. European citizens are making it happen, often in REScoops, at local level, and usually in close cooperation with local authorities. Because for us, renewable energy sources – sun, wind, water – are 'common goods': they belong to everyone and their use should benefit local citizens and communities. Güssing in Austria is gradually becoming a world famous example of this.

In the municipality of Güssing in Austria, a consistent commitment to renewable energy provided a boost to the local economy. The exodus of young people from the region was reversed[7]. Arnold Schwarzenegger, film powerhouse and former governor of California, said of it: 'The whole world should become Güssing.'

Güssing: a commitment to renewable energy provided a boost to the local economy. (With the consent of greg.tv/Christoph Czernin GÜSSING RENEWABLE ENERGY GmbH. 2014)

Laurie Guevara-Stone of the Rocky Mountain Institute (USA) wrote an interesting article on Güssing on the 8th of October 2013, reprinted on the next pages with the author's permission [8].

Bringing Economic Growth to a Dying Town

A small town in Austria that had no significant industry or trade business is now thriving thanks to local renewable resources.

Güssing (population: 4,000) sits in eastern Austria. In 1988 the region (population: 27,000) was one of the poorest districts in the country. It relied on agriculture, there was no transportation infrastructure, unemployment was high, and 70 percent of those who did have work were commuting to Vienna, 100 miles away. The town, where two-thirds of the working population was out of work and young people were moving away, was referred to as a dying town. Due to a lack of connections to the railway network and to the Austrian Autobahn (freeway) system, energy costs were extremely high. At the time the town of Güssing was said to be hardly able to afford its $8.1 million annual fossil fuel bill.

Several of the town leaders realized that $8 million dollars going to pay for fuel oil (mostly for heating) and other fossil fuels (such as coal for electricity) from outside the region could stay in the local economy if they could produce their own energy. However, they realized if they wanted to be energy self sufficient the first step was reducing energy use. In 1990, the town implemented an energy efficiency program, retrofitting all public buildings with new insulation and replacing all streetlights with energy-efficient bulbs, reducing energy expenditure in buildings in the town center by almost 50 percent.

With greatly improved efficiency, the town then adopted a policy calling for the complete elimination of the use of fossil fuels in all public buildings, in an attempt to keep more money in the local economy.

Heating with local resources

There is not a lot of wind in Güssing, but biomass is abundant—the town is surrounded by 133 hectares (328 acres) of forest. Some local residents, realizing that wood in the forest was decomposing and not being used, started to run a district heating station for six homes. With the success of that project, more small district heating systems were built. The mayor, who was looking for a way to revitalize the town, took notice. In 1996, the heating system was expanded to the whole town and was also generating electricity, all from renewable raw materials gathered from within a five-kilometer radius through sustainable forestry practices.

Then, in 2001, with the help of the federal government, Güssing installed a biomass gasification plant, that runs off of wood chips from wood thinned from the forest and waste wood from a wooden flooring company. This was the first utility-scale power plant of its kind in the world. The plant uses steam to separate

Güssing: the most innovative municipality in Austria in 2004, and winner of the Energy Globe Award 2005. (www.guessing.co.at)

carbon and hydrogen, then recombines the molecules to make a form of natural gas which fuels the city's power plant. It produces on average 2 megawatts of electricity and 4.5 megawatts of heat, more than enough energy for the town's needs, while only consuming one-third of the biomass that grows every year. The town also has a plant that converts rapeseed to biodiesel, which is carried by all the fueling stations in the district.

Becoming a model community

In 2007 the New York Times reported Güssing was the first community in the European Union to cut carbon emissions by more than 90 percent, helping it attract a steady stream of scientists, politicians, and eco-tourists. One year later, Güssing built a research institute focusing on thermal and biological gasification and production of second-generation fuels. That same year a solar manufacturer started producing PV modules in Güssing, producing 850 megawatts of modules a year and employing 140 people. Several other photovoltaic and solar thermal companies have relocated to Güssing, installing new demonstration facilities in the district.

The little town has become a net energy producer—generating more energy from renewables than it uses. Altogether, there are more than 30 power plants using renewable energy technologies within 10 kilometers of the village. Now the goal is to take the lessons from the small town of Güssing and make the entire 27,000-person district an energy-self-sufficient net producer.

Currently around 400 people come to Güssing each week to visit the numerous demonstration plants. Even Austria's favorite celebrity, former California governor, and renewable energy advocate Arnold Schwarzenegger visited Güssing in 2012. 'Güssing has become a green island,' he said when he spoke at the Güssing renewable energy demonstration plant. 'You have built your own district heating [system]. You are generating your own electricity. You are operating a biomass power plant, produce synthetic natural gas from wood and develop new fuels at the research lab. I have seen all of this with my own eyes. Everyone should follow your example. The whole world should become Güssing.'

The town now has 60 new companies, 1,500 new jobs, and annual revenues of $17 million due to energy sales, all resulting from the growth of the renewable energy sector. The downtown has been rebuilt and young people picture themselves staying there in the future. And other areas are following Gussing's lead. More than 15 regions in Austria are now energy independent with regard to electricity, heating, and/or transportation. The town of Güssing has shown that not only is a high-renewables future possible, but also economically advantageous.

Schwarzenegger must agree, because when he left he said, 'I'll be back.'

The role of ordinary citizens until the rise and growth of nuclear energy

From active wood gatherer to passive electricity consumer

Until the start of industrialisation at the end of the 18th century, the people of Europe had to rely largely on biomass – on wood – for their energy at home. Wood was used to cook, to bake, to heat. It was gathered or felled in hedgerows and forests: forests that often were common, that belonged to all. As the population swelled and urbanisation progressed in the wake of industrialisation, the active role of most citizens in providing energy was reduced to that of passive consumer: first of wood, later of coal, gas, oil, and ultimately also of electricity. When electricity achieved its breakthrough at the end of the 19th century and beginning of the 20th century, it was mainly used for lighting. In Spain they still speak of 'luz' (light) when talking about electricity.
Its generation took place locally, close to the consumer. There was as yet no grid to move electricity long distances. Often electricity production was started in existing hydropower plants or in companies with a steam engine. In Rotselaar (BE), for example, public lighting was developed from 1907 using the old water-mill (75 kW), now owned by the REScoop Ecopower.

The watermill in Rotselaar (BE) provided electricity for public lighting from 1907. The mill is now owned by the REScoop Ecopower. (Ecopower)

In the beginning, water mills were found to be better suited to generating electricity than traditional windmills. Traditional windmills could not be left operating unattended, and wind is much more volatile than the flow of a watercourse. Only when it became possible to monitor and control energy production in the 1980s due to advances in information technology, did it also become possible to use wind for electricity production.

Decentralised experiments, late 19th century[vtx]

Few people in the western world now realise that they have an extra power source available in their household, workshop or factory: tap water. Just before the arrival of electricity at the end of the nineteenth century, water motors were widely used in Europe and America.

These miniature water turbines were connected to the tap and could power any machine that is now driven by electricity, like sewing machines, ventilators, and eventually even dynamo's,…

A big problem was these water engines consumed precious drinking water. In a few decades these water engines were history.

A late nineteenth-century water motor with one side of the casing removed. (www.oldpelton.net)

In the City of Antwerp (Belgium) for example, a true hydraulic network, in addition to the drinking water network, was developed starting in 1880: steam engines were used to place water under pressure and drive locks, harbour cranes, bridges, gates… as well as hydropower turbines for electricity generation. While producing electricity in this way was not a great success and disappeared after a few years, it is a good example of how decentralised experiments were carried out at the beginning.

From decentralised production and distribution to distribution of centrally generated electricity

In the beginning, the production and distribution of electricity were decentralised and small in scale. However, as the technology progressed, demand for electricity increased, and more and more applications were developed. This led to economies of scale, rationalisation and the centralisation of production. Below follows a sketch of this evolution, illustrated with examples.

Starting in 1900, the production and distribution of electricity developed quickly throughout Europe. In general we can say that the initiative primarily came from private investors in the more populated cities, and that – later – the less populated parts of Europe, the rural areas, were completed by public and cooperative players. In other words: capital was invested where it was profitable. Where this was not evident, local authorities and civic cooperatives themselves had to bring the new energy medium to the citizens. Which is what happened in the German-speaking mountain villages of South Tyrol/Italy.

Example: E-Werk Prad, Prato allo Stelvio/Prad am Stilfserjoch (Italy)

E-Werk Prad Genossenschaft is a REScoop in the municipality of Prato allo Stelvio or Prad am Stilfserjoch near Bolzano (Bozen) in the north of Italy. The electricity cooperative was founded in 1926. It started with a hydropower plant and developed into a cooperative with a diverse energy mix for the production of electricity and heat. Recently it began an innovative smart grid project to obtain an even better balance between energy production and consumption. The fact that most consumers are also members makes it easier for the REScoop to organise the demand side, giving the project an extra and improved dimension. It demonstrates that REScoops are ideal organisations to manage smart grid projects. And its members are very happy about the price of their energy.
E-Werk Prad is an old cooperative with a long history. This history demonstrates the resilience of the REScoop model and gives good insight into how REScoops can develop beyond their original production methods into more diverse forms of production and distribution that fit their members' needs.

A history of resilience
After the First World War, the region of South Tyrol was annexed by Italy. The region, including the town of Prad, was suffering from a severely depressed eco-

nomy. There was no money in the municipality to build a power distribution network and no interest on the part of private companies to connect the mountain village to the grid. In 1926, five 'brave men' from Prad decided to take matters into their own hands. They started the cooperative and collected enough money to secure a loan from the Raiffeisen Co-operative Bank to build their first hydropower plant.

For many years the REScoop merely survived. Several setbacks such as the theft of electricity due to the lack of meters and the financial instability after World War II nearly brought them to bankruptcy. However, the members always managed to bring in enough equity to continue and sustain the REScoop and its electricity production. The REScoop stabilised and slowly expanded with three more hydro plants. The REScoop's production has expanded extensively in recent years. It has added four biomass modules that produce electricity and heat, built two wind turbines and installed photovoltaic modules on the roofs of its members.

Proud grandson relates how his grandfather started the local REScoop. (Ecopower)

Figures

E-Werk Prad produces and distributes electricity and heat for around 1,200 members in the rural areas of Prad in South Tyrol. The REScoop produces electricity from hydropower, wind power, solar power and biomass. The REScoop owns a district heating network that transports the heat from the biomass installation. The REScoop has created a nearly perfect energy mix, which they now are trying to optimise with a smart grid.

Hydropower installation Prad. This REScoop controls the whole chain, from production to consumption. (Ecopower)

The REScoop produced more than 27 million kWh of electricity in 2010. Four hydroelectric power plants (3.6 MW) produce 17 million kWh of electricity. With four biogas modules producing electricity, the REScoop has an installed power of 1.5 MW. The biogas plant uses sewage and manure (13 thousand tonnes from 55 farms), and waste from fruit farming (1,500 tonnes) produces about 3 million kWh of primary energy, which is converted into 0.9 million kWh of electricity and 1.7 million kWh of thermal energy. Two wind turbines (1.2 and 1.5 MW) produce 4 million kWh of electricity. 80 photovoltaic power plants (4.9 MW installed power) produce 5.4 million kWh of electricity (about 1,600 kWh per person). Thermal production (14.7 million kWh) comes from two wood-chip boilers, a pellet boiler, four cogeneration modules (1.4MW, biogas and vegetable oils) and two heat pumps (0.4 MW, radiant heat). The local network's electricity consumption in 2010 was 11.9 million kWh, 85% of which is attributable to shareholders of the cooperative.

The supply of electricity from PV panels via third parties has grown enormously, pushing the distribution networks of the REScoop to their limits. In addition to the production mentioned above, many of the consumers of the REScoop have started to produce their electricity themselves. The extra production of solar power can create an imbalance: energy production and energy demand do not always coincide. The relative increase of photovoltaic power in the electric energy mix results in large load fluctuations, which increasingly are responsible for a deterioration in power quality.

Example: Public power company: ETIZ in Izegem (BE) From decentralised production and distribution to the distribution of central production (1899 – 1966)[9]

- 29 July 1899: Decision in principle by Izegem city council to 'illuminate the city with electricity'.
- 22 September 1901: inauguration of power plant with two 55-m^2 steam boilers and two 60-hp steam engines, driving two 40-kW generators. With reserve battery and accumulator power of 455 Ah. The two steam engines produced DC for street lighting in the city centre: for 15 houses and one motor.
- 1907: Installation of an additional 25-hp engine.
- 1911: Installation of new 250-hp steam engine.
- 1921: Installation of a new 1000-hp steam engine and two 150-m^2 steam boilers at 12 bar.
- 1923: Alternating current was produced using an alternator. The AC was used for the suburbs.
- 1927: Installation of a new 1,500-hp steam engine with a 150-m^2 boiler at 12 bar.
- 1936: Installation of a new 1,650-hp steam engine. The current steam engine (listed monument) is the largest preserved steam engine in Belgium. These steam engines generated electricity for the industry and houses of Izegem.
- The generator produces direct current for the oldest part of the city.
- The alternator produces alternating current for the suburbs.
- 1950: High voltage electricity was purchased, and the local power plant was used during peak periods.
- 1955: Used as a back-up power plant.
- 1966: The plant was finally shut down and only centrally generated power was distributed.

To address these problems, the REScoop is pursuing a combination of energy storage and intelligent load management (smart grid). Various forms of energy storage are being combined and a control network has been built. The system includes energy storage flywheels for short-term load balancing, a pumped storage power plant, biogas storage, and accumulators in electric vehicles.

The new control network, which is already in place, consists of decentralised controllers connected to a central control system. Control algorithms ensure that peak loads are minimised and avoided. Congestion management keeps the energy flows optimised throughout the day.

Important to the smart grid project is the fact that the REScoop has included the demand side in the project. With the production side already controlled by the REScoop, greater integration required inclusion of the consumer side, i.e. their own members. Here the strength of the REScoop becomes clear. REScoops often control the entire chain, from production to consumption, which makes them ideal organisations to manage smart grid projects. Not only do they supply energy to their consumers, their consumers are co-owner of the REScoop. This gives them a direct incentive to optimise the functioning of their REScoop.

Increases in scale between WWI and WWII

Small local initiatives became systematically larger or merged as the demand for electricity increased. Other applications were developed in addition to lighting: driving machines with electric motors, radios, irons…

Energy technology progressed, and the systems became larger and more efficient. A change was made from direct current to alternating current, from steam engines to steam turbines… Many public and cooperative initiators followed these increases in scale up to a point. Some continued to exist as producer and supplier. Others gradually limited themselves to the role of supplier of electricity that was generated centrally, often by private companies. Still others merged into larger public, private or mixed companies.

After WW II, many new electric appliances appear in average households. Electric cooking was actively promoted.
Electricity cabin with inscription 'Cook Electric' , Aarschot (BE). (Ecopower)

After WWII: Centralisation, monopolisation and nationalisation

Things progressed quickly after World War II. Each municipality, each company now had electricity. Electricity production was crucial to each country's economy. Monopolies were formed in many countries of Europe to ensure the supply of energy: especially public monopolies such as those found throughout (communist) Eastern Europe and in much of France (EDF/GDF), Italy (ENEL), Spain, Portugal, the Netherlands, Greece, Denmark, Sweden…, but also private quasi-monopolies such as those in Belgium (Electrabel) and Germany (EON, RWE…).

Increases in scale resulted in significant efficiency gains. Power plants became very large: they ran on coal and lignite. The first nuclear power plants were built at the end of the 1950s and the early 1960s. The entire electricity transport and distribution network was developed around these very large production units. Small public and cooperative players were able to survive only in rural and remote areas, often based on their own production using hydropower. Or they limited themselves to the role of distributor of purchased gas and electricity that was centrally generated.

The entire network was developed to fit very large production units, such as nuclear power plants. (Torsade de Pointes[10])

European unification and liberalisation of the energy market

The unification of Europe after World War II mainly revolved around the unification of the economy, of the market. It began in 1951 with coal and steel (ECSC) and the EURATOM Treaty on cooperation on nuclear energy was concluded already in 1957.
In the 1960s and 1970s it was widely accepted that nuclear energy was the energy source of the future, and that it would provide us with energy virtually free of charge. Some countries such as France, Belgium, the UK and Germany bet heavily on the technology. Nuclear power plants are examples par excellence of large-scale production: the eight Belgian nuclear power plants for example were concentrated on two sites, and produce more than half of the country's electricity.
The problems and costs were shifted to future scientists and generations. These concerned the demolition of obsolete plants, and the processing and storage of radioactive waste… Moreover, the plants are almost always never insured against accidents. Thus, the electricity these old installations provide is not free, but it is quite cheap, not calculating the costs for future generations.
Nevertheless, in European industrial circles the idea grew that liberalisation of the energy market by breaking up (government) monopolies would lead to greater competition and lower prices. This was imposed politically in the European Union, and since the late 1990s has been implemented in EC directives (see box on next page).

For most countries in the European Union, this meant that state monopolies were forced to split their operations (unbundling of vertically integrated energy companies), which resulted in partial or full privatisation in a number of countries.

Perhaps the beginning of 2015 is still too early to assess whether the objectives of the European Commission in drawing up the regulations around liberalisation were met? In any case, it appears that most large public and private players are not doing well under liberalisation. At the end of 2013, the large public and private players, united in the so-called Magritte Group[11], gathered in Brussels to voice their complaints in an attempt to retain their old positions. This was packaged as an initiative to secure the energy future of Europe.

Liberalisation of the electricity and gas markets [12]

During the 1990s, when most of the national electricity and natural gas markets were still monopolised, the European Union and the Member States decided to open these markets to competition gradually. In particular, the European Union decided to

- distinguish clearly between competitive parts of the industry (e.g. supply to customers) and non-competitive parts (e.g. operation of the networks);
- oblige the operators of the non-competitive parts of the industry (e.g. the networks and other infrastructure) to allow third parties to have access to the infrastructure;
- free up the supply side of the market (e.g. remove barriers preventing alternative suppliers from importing or producing energy);
- gradually remove any restrictions on customers from changing their supplier;
- introduce independent regulators to monitor the sector.

The first liberalisation directives were adopted in 1996 (electricity) and 1998 (gas) and had to be transposed into Member States' legal systems by 1998 (electricity) and 2000 (gas). The second liberalisation directives were adopted in 2003 and were to be transposed into national law by Member States by 2004, with some provisions entering into force only in 2007 (EU legislation applicable to the electricity and gas markets).

The question remains whether the private consumer, the citizen, is better off thanks to liberalisation. How did the smaller players – small public or cooperative producers, distribution companies and suppliers – experience liberalisation?

But first we must treat two other important factors, in addition to liberalisation, that influenced the energy sector in the 1990s: a convergence of crises, and an energy transition that was unleashed by better and cheaper technology.

Convergence of crises throws a spanner in the works

In recent years, we have been faced with a convergence of diverse crises that have had an impact on our energy supply:

- A nuclear energy crisis
- A fossil fuel crisis
- An economic crisis
- A crisis among the big energy companies
- A crisis in society and politics
- A geopolitical crisis.

Nuclear energy in crisis

Opponents of nuclear power in the 1970s and 1980s saw their worst predictions come true in a series of serious incidents and accidents involving nuclear power plants. The names Three Mile Island (USA, 1979), but especially Chernobyl (UA, 1986) and Fukushima (JA, 2011) are forever connected to the end of the widespread belief that nuclear energy would be the future of our energy supply.

Fukushima: forever connected to the end of the widespread belief that nuclear energy would be the future. (Screenshot TV-broadcast about Fukushima)

In addition, it has now also been revealed:

- that nuclear installations are uninsurable and therefore uninsured;
- that the decommissioning costs for old, closed nuclear power plants have been seriously underestimated and that the money that was set aside for this is not available because it was invested in other installations;
- that the construction of new power plants takes a very long time and costs much more than estimated; the construction of the new nuclear power plant (1,600 MW) in Finnish Okliluoto is seven years behind schedule and the estimated price has risen from 3.2 billion to 8.5 billion euro[13];
- that nuclear energy is not profitable without heavy state support of operations (e.g. Hinkley Point C in the UK).

Several EU Member States such as Germany and Belgium have decided to gradually phase out nuclear power, and several large companies such as Siemens are also stopping their nuclear energy activities. Others, such as the semi-state-owned enterprise AREVA (FR), are running severe deficits. The construction of new nuclear power plants worldwide has therefore largely been postponed.

Nuclear reactors 'under construction' by nation, 15 September 2014. (IAEA-PRIS, others, compiled by MSC)[14]

Country	Units	MWe(net)	Construction Start	Grid Connection	Units Delayed
China	27	26,756	2008-2013	2014-2018	20
Russia	9	7,237	1983-2009	2014-2019	9
India	6	3.907	2002-2011	2014-2016	2
South Korea	5	6,320	2008-2013	2014-2018	4
USA	5	5,633	1972-2013	2015-2019	5
Belarus	2	2,218	2013-2014	2019-2020	?
Pakistan	2	630	2011	2016-2017	2
Slovakia	2	880	1985	2014-2015	2
UAE	2	2,690	2012-2013	2017-2018	?
Ukraine	2	1,900	1986-1987	2015-2016	2
Argentina	1	25	2014	2018	?
Brazil	1	1,245	2010	2018	1
Finland	1	1,600	2005	2018	1
France	1	1,600	2007	2016	1
Total	**66**	**62,677**	**1972-2014**	**2014-2020**	**49**

Fossil fuels in crisis

Fossil fuel reserves are limited; the peak production of many oil wells and gas fields has already been reached. Moreover, extracting oil and gas is becoming increasingly more expensive and more polluting: just think of fracking where with the use of chemicals, gas and oil is extracted. This is also taking place at more difficult and especially environmentally sensitive locations such as the North Pole. What's more, this market is very volatile. Oil prices collapsed in late 2014 – early 2015 because OPEC decided not to cut production despite lower demand. Because of this, fracking and oil drilling in the Arctic immediately came under severe pressure and were put on hold.

There is a consensus among scientists – ignoring for the moment a few negationists and a narrow majority of the US Senate – that we should leave as much of the fossil fuels in the ground as possible and halt the increase in CO_2, if we hope to keep the increase in the earth's temperature to less than 2° C and avoid catastrophic climate change. This is a crisis without precedent and one that compels us to change course drastically. Therefore, the COP21 UN Climate Change Conference in Paris scheduled for late 2015 will need to produce more than empty statements.

The economy in crisis

When the Berlin Wall fell in the 1980s and communist regimes disappeared in Eastern Europe and Russia a bit later, it was assumed that capitalism would become the only economic system and that a golden age of the free market would dawn. Even social democratic parties borrowed recipes and terminology from neoliberalism. It seemed to have become the only doctrine, proclaimed by economists who were given the status of high priests. Economics became an exact science. The free market indeed seemed to operate according to a new law of nature: neoliberalism, for which 'There is No Alternative' (TINA[15]). In the UK under Thatcher, government enterprises were privatised, and trade unions, mutuals and cooperatives were suppressed, as was the cultural and social sector.

Examples of bubbles and purported bubbles[16]

- Tipper and See-Saw Time (1621)
- Tulip mania (top 1637)
- South Sea Company (1720)
- Mississippi Company (1720)
- Railway Mania (1840s)
- Encilhamento ('Mounting') (1886–1892)
- Florida speculative building bubble (1926)
- Roaring Twenties stock-market bubble (c. 1922–1929)
- Poseidon bubble (1970)
- Japanese asset price bubble (1980s)
- 1997 Asian financial crisis (1997)
- The Dot-com bubble (1995-2000)
- Uranium bubble of 2007
- Rhodium bubble of 2008 (increase from $500/oz to $9000/oz in July 2008, then down to $1000/oz in January 2009)
- Bitcoin bubble of 2013. (Went from a price of about 1000$/BTC in late 2013 to less than 300$/BTC in early 2015)

Real estate bubbles:

- Australian first home buyer (FHB) property bubble (as of 2009)
- Indian property bubble (as of 2005)
- British property bubble (as of 2006)
- Irish property bubble (as of 2006)
- United States housing bubble (as of 2007)
- (The former Florida swampland real estate bubble)
- Spanish property bubble (as of 2006)
- China stock and property bubble (as of 2007)
- Romanian property bubble (as of 2008)

A Satire of Tulip Mania by Jan Brueghel the Younger (ca. 1640)[17] *depicts speculators as brainless monkeys in contemporary upper-class dress.*
In a commentary on the economic folly, one monkey urinates on the previously valuable plants, others appear in debtor's court and one is carried to the grave.

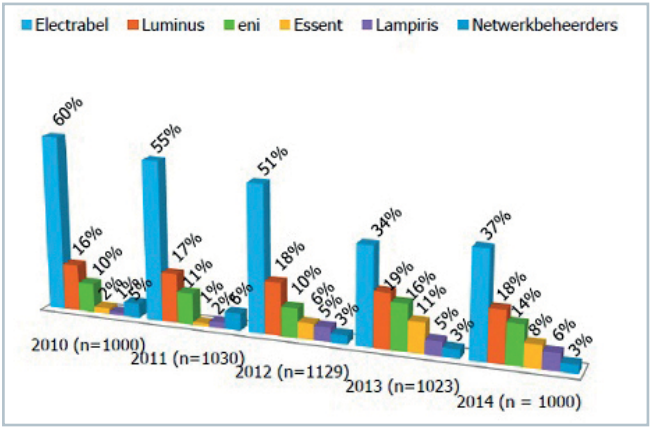
Since the fall of the Berlin Wall however, crises followed in quick succession that now are often described as 'bubbles' peculiar to capitalism. The real estate bubble in the USA from 2007 caused a chain reaction throughout the world, and in 2008 led to a banking crisis, particularly in Europe and the USA, and to a severe economic crisis that continues to this day in Europe.

Occupy Wall Street during the banking crisis... one of the many financial crises peculiar to capitalism. (Posted in Occupy Wall Street Wiki by Brandon Rhea [18])

'Casino capitalism' was denounced by a growing number of movements such as Occupy Wall Street (USA) and the Indignados (ES). The financial crisis that followed was severe. Banks and insurers perished or were rescued by governments. Europe's economy deteriorated, and governments took drastic economic and financial measures. A number of EU countries almost failed (Ireland, Greece, Spain and Portugal) and had to be supported in return for taking draconian measures that mainly hit wage earners, the unemployed and the elderly. The so-called 'Troika' of representatives of the European Commission, the European Central Bank (ECB) and the International Monetary Fund (IMF) conducted negotiations with Member States in the eurozone that had not kept their debt within the limits set by European directives. During these negotiations, the Troika offered emergency financial support in exchange for cuts in spending, privatisation of public enterprises and reductions in the budget deficit.
Bubbles are not a new phenomenon, but seem to be an integral part of speculation under capitalism, from the tulip bubble in the 17th century to the bitcoin bubble of 2013.

Big energy companies in crisis

In recent years, the large energy companies have been facing declining energy prices, a loss of market share and consequently shrinking profits. Liberalisation of the energy market meant the emergence of competition for the large energy companies, at least where this indeed took place. The market share of the former monopoly Electrabel (GDF/Suez), electricity supplier in the Flemish Region in Belgium, for example, decreased from 60% to 37% in 5 years' time, though half of it was taken by other former oligopolies of other countries.

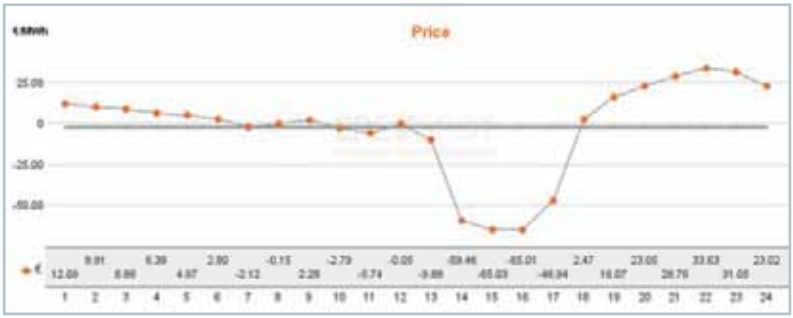


Evolution market share of the different electricity suppliers in the Flemish Region in Belgium. Percentages reflect number of electricity users [19]. (www.vreg.be)

The economic situation of the large energy companies has been weak since the 2008 crisis. Citizens and businesses are consuming less energy. The prices on the wholesale market have almost halved. Citizens and businesses are also generating more and more energy themselves using renewable energy sources: the energy transition is happening.

On a sunny and windy day during the weekend in Germany, the Netherlands and Belgium, the price of electricity is sometimes zero or, exceptionally, negative. As a result, large companies pay less because of the low price on the wholesale market. Citizens and SMEs (small and medium-sized enterprises) do not benefit from this lower energy price because costs for the transition are added to their price via taxes and distribution cost.

The large electricity companies saw that their profits were shrinking: something had to be done…



On May 11th 2014, power prices were negative for several hours in Germany. Citizens and SMEs do not benefit from this lower energy price. Large energy intensive companies do [20]*. (EPEX)*

Society and politics in crisis

The economic crisis brought about a crisis in society, mainly in the south of Europe. Large groups of people lost their jobs, saw their unemployment benefits or pensions fall dramatically, and families were put out of their homes if they were unable to pay the rent or make their loan payments. Many ended up in poverty. Highly skilled young people went in search of a future elsewhere in Europe or beyond. The credibility of *'politics, neoliberalism, economists, unbridled capitalism and... the European Union'* is increasingly being called into question. Politicians in the EU Member States point to the EU as the root of all evil, and Eurosceptic parties on the right as well as the left have found fertile ground here. This already became evident in the European elections in countries like Spain and Greece, but also in Germany, Belgium, France, the UK…

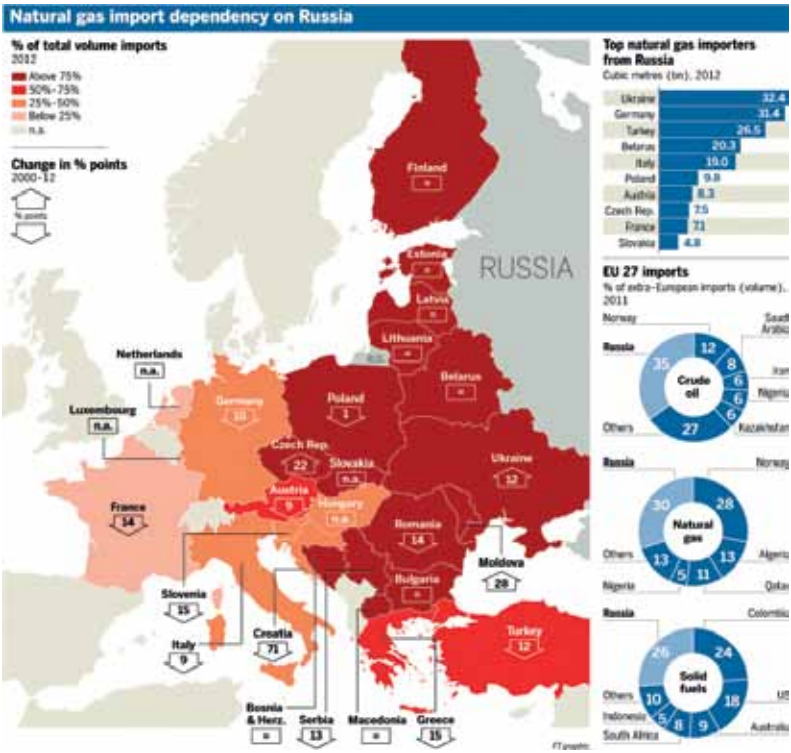
On 25 January 2015, the Greek people sent a clear message to the Troika and the other countries of the EU: 'this can't go on'. The leftist alliance SYRIZA became the largest party by far, and formed a government together with a right-wing Eurosceptic party.

The question is whether Europe is not only entering an energy transition, but also a transition of the entire economy, of the whole of society and politics. At best, a transition to a cooperative economy, a cooperative society and participatory politics.

Geopolitics in crisis

It is increasingly clear that certain conflicts in the world, such as the wars in Iraq, actually revolve round raw materials, and often energy. In 2014, the armed conflict in Ukraine clearly revealed that Europe is too dependent on energy imports from Russia. In a country such as Belgium, the import of energy costs as much as 1,500 to 2,000 euro/person/year, depending on the calculation. To make our energy supplies more secure, we in Europe urgently need to reduce our dependence on oil, gas, coal and uranium at an accelerated pace: another reason why we now must invest heavily in renewable energy and energy efficiency. This benefits our energy security and our balance of payments. The money now leaving our economy would then largely remain local and strengthen the local economy.

European depencency on Russian gas. Europe needs to invest heavily in renewable energy and energy efficiency. (Financial Times – OEDC, Eurostat [21])



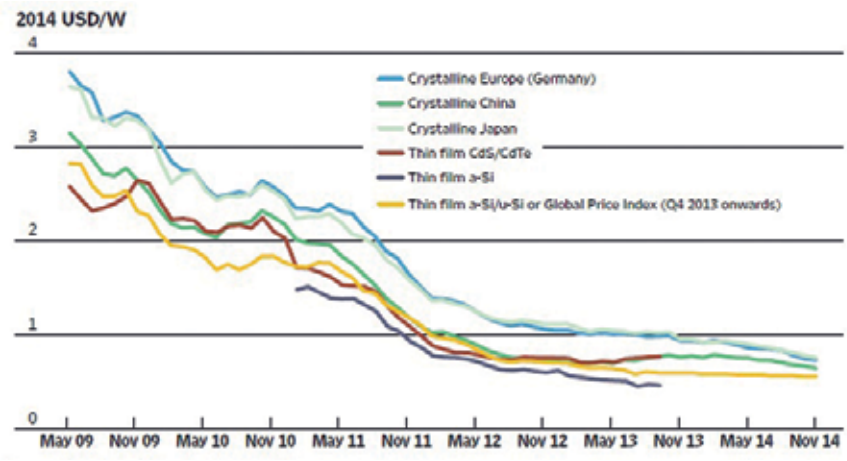
The technology is improving, is becoming cheaper and is unleashing an energy transition

Around the turn of the millennium it became clear that advances in information and energy technologies, and the decline in prices of renewable energy installations, had launched an energy transition. In this transition, a few countries such as Denmark and Germany are leading the way. They have set up support mechanisms that encouraged especially citizens and citizen cooperative groups to invest in energy production (feed-in tariffs or FiTs).

Price of PV panels is falling spectacularly

The mass use of solar panels by citizens and businesses in Germany and a number of other countries led to a rapid decline in the cost of PV panels, with global consequences. The price of PV panels has dropped from almost US$ 4/W in 2009 to less than US$ 1/W at the end of 2014.

The price of PV panels has spectacularly dropped, due to the mass use by citizens and businesses. Average monthly solar PV module prices by technology and manufacturing country sold in Europe, 2009 to 2014 [22]. (IRENA, 2014)



Self-consumption

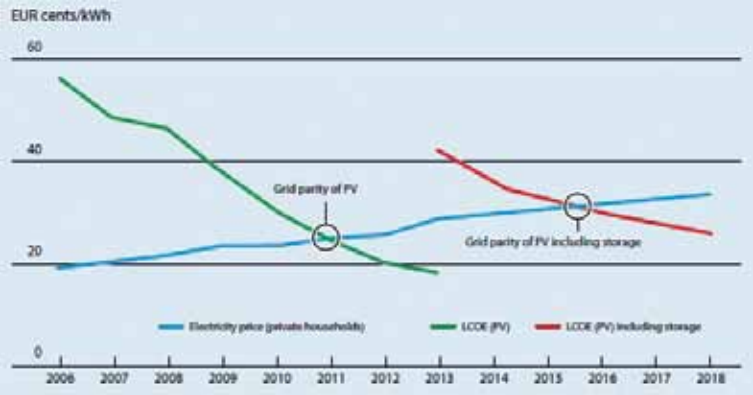
In some countries, it is already more advantageous to use the generated solar power locally rather than put it on the grid. See box – from the same IRENA-report.

Declining feed-in tariff rates (FiTs) and battery costs [23]

As FiTs for residential solar PV systems are reduced, there will be a growing number of countries where the FiT is significantly below the retail electricity price. For instance, in Germany, new systems installed at the end of 2014 will receive an approximate FiT value of between EUR 0.12 and EUR 0.15/kWh, depending on their size (Bundesnetzagentur, 2014), while retail tariffs are around EUR 0.30/kWh. The value of self-consumption has therefore increased significantly, as the value of the electricity saved is now twice that of the revenue received from the FiT.

When combined with the falling costs of lithium-ion (li-ion) battery systems, which offer better performance than lead-acid batteries, the economics of self-consumption will potentially become very favourable. Recent analysis suggests that by 2016 these factors will work together to result in PV-storage parity in Germany, assuming a 5 kWh battery pack and a starting point of EUR 2 300/kWh in 2013 for li-ion battery packs, with costs declining over time. This analysis excludes any subsidies, so any government support for PV storage systems would bring forward the point of competitiveness. This coming PV-storage parity will further increase the pressure on existing power generation utilities. Although it will not make sense for consumers to become totally self-sufficient, they will have an incentive to increase the level of self-consumption and market growth could potentially decouple from financial support levels and become self-sustaining.

Grid parity of PV-storage in Germany. (EUPD Research/BDEW 2013)



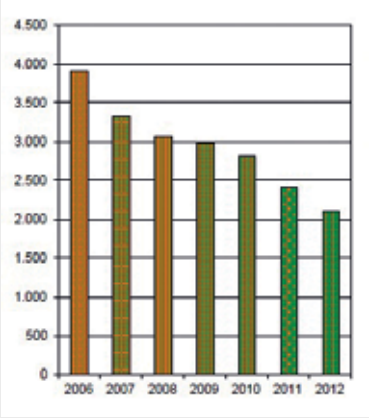
Energy transition unleashed

Due to these two factors – decreasing prices and increasing self-consumption – the energy transition was set into motion.

This energy transition leads us:

- from energy production based on fossil and nuclear fuels to an energy supply based on renewable energy sources,
- from a system where energy is generated centrally, and with the majority of the energy being lost in cooling water and cooling towers, to a more efficient system where energy is generated:
  - at the location where it is consumed;
  - in only the amounts that are needed;
  - at the right time:

  in other words: energy is generated locally, close to the consumer, as close as the roof of the private consumer.
- from a top-down system in the hands of a few large energy companies to an 'internet' of millions of 'prosumers', consumers that also produce, for example with photovoltaic panels.



Ecopower cooperative members reduced their consumption from the grid by 46% in 8 years' time (Flanders/ Belgium) [24].

About 40% of them invested in their own photovoltaic panels.
If all Europeans were to do the same, the business model of the large energy companies would collapse like a house of cards.

This is a unique opportunity for citizens. Now that energy production is coming closer to home and becoming affordable, they face a choice that really belongs to them in the first place. After all, in the end, the energy transition is being paid for largely by citizens:

- As consumers: the costs of energy transition are mainly being charged to domestic consumers due to a fear of jeopardising the competitiveness of companies
- As taxpayers: governments use tax money to support companies investing in the energy transition
- As savers at banks: to finance their projects, all investors borrow the savings of citizens from banks.

Citizens now have a choice: either passively undergo the energy transition, or unite and actively take this transition into their own hands. And governments at all levels can support this sustainable choice with policies, information and appropriate measures. RESCoops are ideal tools for citizens to take control of the energy transition so that the new energy system is democratic, or in other words, cooperative.

Acclaim for cooperatives

Secretary General of the United Nations Ban Ki Moon: 'cooperatives truly do build a better world'. [25]

On 7 July 2012, co-operative businesses around the world celebrated the International Day of Co-operatives. Mr. Ban Ki Moon, Secretary General of the United Nations, sent a strong message to governments around the world, encouraging them to create greater awareness and to pursue policies for strengthening co-operatives everywhere. [26]

'Co-operatives empower their members and strengthen communities' said Ban Ki Moon. 'They are better tuned to local needs and better positioned to serve as engines of local growth. By pooling resources, they improve access to information, finance and technology. Their underlying values of self-help, equality and solidarity offer a compass in challenging economic times.'

'By contributing to human dignity and global solidarity – concluded Ban Ki Moon – co-operatives truly do build a better world'. [27]

Citizens and communities pull together in times of crisis

In times of crisis, people pull together. After all, you can accomplish more as a group than alone. Looking back over the past century, we see numerous examples of people working together in difficult circumstances or in response to a crisis, also for providing energy.

The rise of energy cooperatives in rural and remote areas from 1900-1940

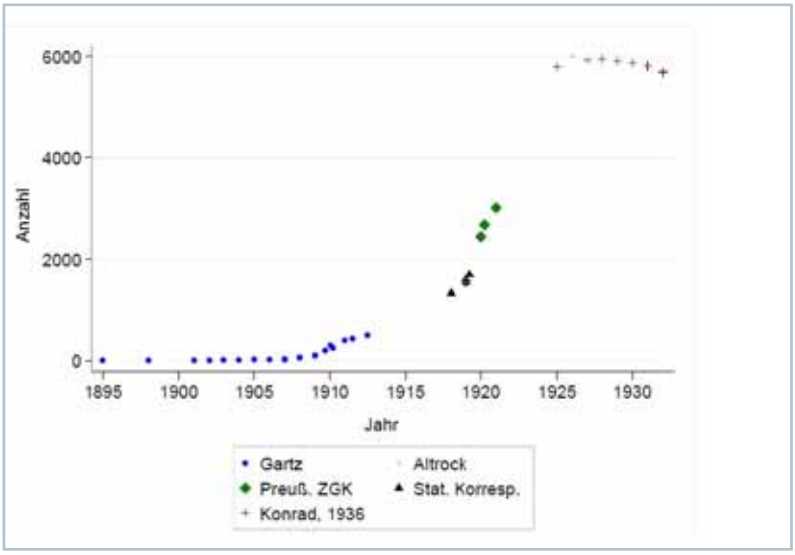
We have already described how rural and remote areas with large distances between scarce residents and businesses could not count on the interest of private investors: there was no profit to be made. The same also occurred in the United States. In Europe, World War I destroyed not only the dreams of millions of people, but also much infrastructure.

The world economy declined substantially from 1929, and private investors were scarce or very cautious. In the first decades of the 20th century, we see local governments or cooperatives of citizens filling in the electricity supply gaps throughout Europe. Also in Germany.

Wave of electricity cooperatives in Germany after WWI

Interestingly, Germany not only experienced a wave of hundreds of new energy cooperatives in the past decade, but already in the first decades of the 20th century there was a veritable tidal wave of 'electricity cooperatives'.

One of the surviving German electricity cooperatives is EGR: Elektrizitätsgenossenschaft Röthenbach. Founded in 1918 and still active. (www.eg-roethenbach.de)



Between 1895 and 1932 no less than 6.000 electricity cooperatives were created in Germany. For many reasons, only about 50 are still in existence. [28]

A thorough study from 2012 [28] shows that between 1895 and 1932, no less than 6.000 electricity cooperatives were created in Germany. They were mostly operators of their own electricity grid in rural areas. Note that the growth occurred mainly in the difficult years after the end of World War I: 1918-1925.

Their number has steadily decreased since 1930 to around 50 today. According to this study, this is due primarily to the following:

- Intensive concentration under pressure from the Nazi regime in the 1930s;
- Forced stoppages;
- Change of legal status;
- Dissolution because of diseconomies of scale, particularly financing problems
- Nationalisation in the GDR and Poland after World War II;
- Concentration in the Federal Republic of Germany after World War II;
- Liberalisation of the energy market and increased bureaucracy due to legislation on renewable energy and distribution networks.

The rise of wind cooperatives after the 1973 oil crisis

The 1973 oil crisis was caused by a decision of the Arab oil-producing countries in OPEC to raise prices by 70%, scale back production each month by 5%, and boycott the sale of oil to a number of Western countries that had supported Israel in the Yom Kippur War.

This made it painfully clear to the people of Europe how dependent they had become on oil imports. Car-free Sundays and schools without heating left a deep impression on several generations. From then on, alternatives and diversification were sought. Renewable energy became a political issue and an area of scientific research.

But citizens too went to work. Enthusiastic do it yourself builders constructed their first wind turbines in the Netherlands, Belgium, Germany, Denmark… Associations of self-builders were established such as the Energofielen[29] in Belgium and the Windmolengroep in Amsterdam.

From these first initiatives emerged the first wind cooperatives in the 1980s in Denmark and later in the Netherlands and Germany: citizens working together to install and operate ever-larger wind turbines. And professional manufacturers of wind turbine technology followed.

The most impressive example of what citizens could do together was given by the Danes. In the Danish town of Ulfborg, on grounds belonging to the Tvind school centre, from 29 May 1975 more than 400 people worked together for 3 years to build the (then) largest wind turbine in the world: Tvindkraft. This wind turbine is still running today and continues to attract visitors.

Tvind was so groundbreaking that the full story deserves a place here.

Tvind windmill still functioning in 2012. (Ecopower)

The story of Tvindkraft [30]

'The first sod was cut for the windmill by 400 people at Tvind 29. May 1975. They were students and teachers from the schools that were in Tvind that year. '
'It is us you can see in the pictures. With labour, sweat, laughter and growing comradeship we haul, push, pant, pour and win in the struggle to raise the mill and ourselves. The mill from gravel, cement, water and iron, from thought, debate, quarrels and resounding unity. '
'We continued building until the end, until the beginning. The blades have started to go round, the production of electricity increases with every month while neighbours gather and ask questions and get answers. And tea.'

Tvindkraft windmill

Teachers at the schools in Tvind decided in late 1974 to build the great wind turbine Tvindkraft (Tvind Power in English) to produce the energy needed by the schools in Tvind, at the same time as the Swedish Nuclear Power Plant Barsebäck was about to commence production of electricity. Tvindkraft started to produce electricity in 1978 and was the world's biggest wind turbine with a 53 m concrete tower and 3 wing blades of 27 m length each for a number of years. Tvindkraft continues to produce electricity as planned, while Barsebäck has been closed down.

'The first sod was cut for the windmill by 400 people at Tvind 29. May 1975. They were students and teachers from the schools that were in Tvind that year.' (Tvindkraft)

Hundreds of people cooperated to carry out the wing. The entire windmill was built by teachers at the schools in Tvind, with different people from all over the country and from abroad. (Tvindkraft)

The world has since seen an explosion in the number of really big wind turbines in many countries. The Windmill Team was the group of people who built the windmill. It consisted of some teachers from the schools at Tvind together with different people from all over the country and from abroad, who had come to build the windmill. They all worked under the same conditions. They did not receive a salary, but board and lodging and pocket money. Some of the students joined in from time to time.

An efficient symbol

The building of Tvindkraft served from the outset several purposes:

- to produce the energy needed for the schools in Tvind;
- to be a very solid argument in the popular debate at the time for and against introduction of nuclear power;
- to show the strength and the power of people who have come together to work together to build Tvindkraft – the power of self-reliance;
- to show that the power from the wind in the long perspective will be rather cheap, because the wind cannot be monopolised.

Tvindkraft has since supplied the energy needed for the schools in Tvind. The building of Tvindkraft inspired and gave rise to a growing wind mill industry in Denmark. The then headquarters of Vestas Wind Systems was located only 25 km away. Tvindkraft receives a lot of attention and a lot of guests from Denmark and from abroad for being the first among the really big wind turbines, especially during its building and in the first years of its operation. In December 2008, Tvindkraft as part of the schools in Tvind was awarded a European Prize, the Solar Prize, as a recognition of the pioneering effort of the decision to build, as well as actually building, the windmill in the 1970s. Tvindkraft received the award in the category Education. The German organisation Eurosolar awarded the prize and the following is quoted from Eurosolars motivation for the award: 'During the years of the oil crisis in the 1970s... the Danish schools in Tvind set out to build a 2 MW wind turbine in the year 1975. Students and volunteers from numerous countries came to Tvind in order to help the teachers and the students mount the 'Tvindkraft' (Tvind power) turbine... Only because of the innovative and the courageous work at the schools in Tvind was it possible to build the 'Tvindkraft' turbine. Congratulations to the schools in Tvind. Winner of the European Solar Prize 2008'.

The rise of energy cooperatives after the Chernobyl nuclear disaster in 1986

The nuclear disaster in Chernobyl (Ukraine) served as a wakeup call for many citizens and caused them to act. This new wave of citizen initiatives sometimes led to the creation of REScoops, like Ecopower (1991, Belgium) and EWS (1991, Germany).

The story of ElektrizitätsWerke Schonau

German Netzkauf EWS eG (ElektrizitatsWerke Schonau, EWS) was established as a GbR in 1991 and transformed to a cooperative in 2009. As of 2015, they have 2000 members and their REScoop invests in all renewably energy sources. This story starts with their attempts to buy the local grid.

When ElektrizitätsWerke Schonau (EWS) decided to buy the grid in 1991, the energy market was not yet liberalised and financial support systems were absent. EWS purchased the grid in order to reorganise it according to sound ecological principles. To transform the grid and energy production, EWS encouraged citizens to install renewable energy production units by facilitating their connection to the grid and by paying special feed-in tariffs. Presently the energy produced by citizens is exported to the grid and the citizens are compensated via the German Renewable Energy Act (EEG). EWS proves that by taking the grid and the sale of energy into your own hands, you can change the business model to suit the needs of members. It also demonstrates the resilience of REScoops and their strength: social power, the power of volunteers contributing their expertise for free.

Grid operator not interested in energy saving campaign

In 1987, 'Parents for a nuclear-free future' began organising energy saving contests. 'The idea was to show that we can do without nuclear power by saving it 'away'.' They asked grid operator KWR, which had the contracts to run the grid from 1974 through 1994, for support. KWR was not interested: their policy was to sell electricity, not to save it. The group realised that operating the Schönau grid based on ecological principles would be impossible with KWR.
In 1990, four years before the permission contract was to end, KWR offered the Schönau town council a new permission contract that would extend to 2014: KWR would pay 25,000 DM to Schönau to sign the contract, with a total contract value of 100,000 DM.

In an effort to prevent a new contract with the grid company, the citizens' initiative founded Netzkauf Schönau GbR to compete with KWR. 282 citizens of Schönau made a counteroffer to the town council of 100,000 DM to not sign the contract. Despite the offer, the council extended the contract with KWR. In July 1991, the citizens' initiative called for a referendum to rescind the decision: the referendum took place on 27 October 1991 and the citizen's initiative won with 55% of the votes.

The citizens' initiative had bought itself four years' time for 100,000 DM, four years they would need to develop a company capable of operating the grid. Fortunately, the German media picked up on the activities of the 'electricity rebels' in the rural Black Forest. After winning the first referendum, many energy experts from throughout Germany contacted the citizen's initiative to offer their help. By 1994 all the necessary documents had been prepared and Elektrizitätswerke Schönau GmbH (EWS) was founded, with the new company being granted permission to take over the grid just four days before the deadline.

But now opponents in the town to the new arrangement called for a second referendum, to be held in March 1996. A very intensive campaign was conducted during the four weeks prior to the referendum date. Local industry warned the

Thanks to the Störfall (disturbance) campaign, two million DM was donated in 6 weeks. Eventually, EWS was able to buy the local grid. (EWS)

inhabitants of Schönau of unaffordable energy costs; the members of the citizens' initiative made home visits to every inhabitant. Schönau was divided into opponents and proponents. On 10 March 1996 more than 80% of all citizens of Schönau voted, and EWS again won the second referendum with 52.5% of the votes.

Support from all over Germany

While EWS was now authorised to operate the Schönau electricity grid, the grid itself was still owned by KWR. According to German law, KWR had to sell the grid to EWS. The price of the grid was estimated at approximately 4 Million DM, a price EWS could afford. However, KWR asked 8.7 Million DM, which presented EWS with two problems. 'We knew the price was excessive, but going to court to determine the right price would take years, which we could not survive as a group.' So they decided to pay the price under the reservation of pending court proceedings. They still needed around about 4.7 Million DM extra to buy the grid, money that could not be brought in as shares due to the economic viability it had to guarantee as a grid operator. The additional money could only be brought in as donations.

EWS wrote to the 50 largest marketing agencies in Germany and requested a free donation campaign. 15 agencies were interested. The chosen agency created the 'Störfall' campaign for EWS. Störfall refers to a technical incident or disturbance that creates a failure or change in the normal operation of a technical system. In relation to nuclear energy, a Störfall is sequence of incidents. When a Störfall takes place, the nuclear plant must be shut down for safety reasons. The campaign showed a picture of the members of EWS saying 'Ich bin ein Störfall', or 'I am a disturbance.'

Thanks to this campaign, support was received from throughout Germany, and after 6 weeks, the first two million DM had been donated. 'KWR then became worried, since it knew about the impending court proceedings and that their price wasn't realistic.' KWR offered the grid for 5.7 million DM, and EWS accepted. On 1 July 1997 it took over the Schönau electricity grid. EWS still went to court in 1998, and in 2004 the court ruled that the Schönau electricity grid was worth 3.7 million DM.

EWS continued to expand after this initial success, and is now also the proud owner of the gas network in Schönau and Wembach. In the following years, grids in eight neighbouring villages were also bought.

At the middle of 2014, EWS was providing electricity that they buy on the European markets to about 150,000 households. They currently own various installations that produce about 1% of the energy they provide.

A business model that fits demand

The EWS story demonstrates that by taking matters in their own hands, RES-coops can develop new business models that suit the needs of their members and the ideals of their organisation. The EWS pioneers wished to focus on saving energy and the production of renewable energy. In the 1990s, energy producers were strongly dependent on grid operators. There was no German Renewable Energy Act (EEG) with its fundamental aspects of a guarantee of bringing the energy to the grid and a guaranteed feed-in tariff. Before liberalisation in 1998, grid operators could refuse to accept energy into their grid; and if they were willing to take the energy, they could dictate the price. There was no security for the kind of investments EWS had to make.

'So this was one of our major aims: as the grid operator for Schönau, we wanted to make it possible for every citizen to produce energy. And we wished to cover the investments made by citizens by paying guaranteed feed-in tariffs. The two main aspects of the EEG mentioned above (which came only in 2000) had already been realised in Schönau in 1998.'

Another reason to purchase the grid was the tariff arrangement. Previously, the more people consumed, the lower the price. To deal with this problem, EWS changed the tariff structure for their consumers. There would be no monthly cost, but high prices per kWh. This gave consumers a financial incentive to save energy.

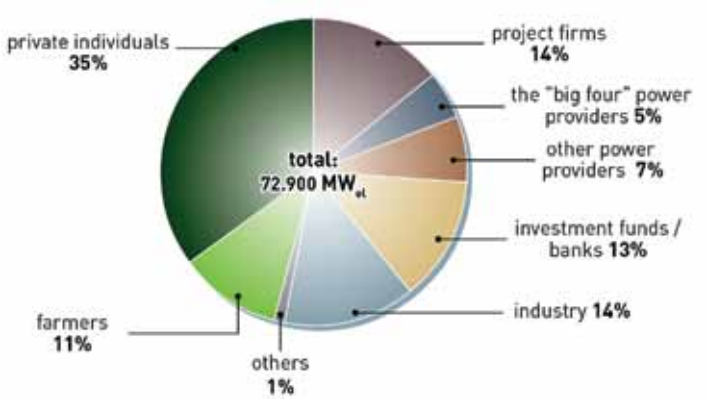
Bureaucracy and regulations

The biggest hurdles EWS had to clear were bureaucracy and regulations. As a local citizens' initiative, it was not yet aware of the necessary regulations. Thanks to the help of many volunteers from throughout Germany, it persevered. While this was a success at the time, 'the EU and the German government are now moving in the opposite direction. There are more than 900 grid operators in Germany, including some very small ones like EWS. The EU has been asking Germany for years to minimise the number of grid operators in its energy market. Which is why the German regulatory agency, the Bundesnetzagentur, has been increasingly expanding the bureaucracy required by grid operators.' Many small grid operators have been forced to give up because they were financially unable to fulfil these requirements. 'Bureaucracy is the major enemy of small grid operators, and at the moment this hurdle is only becoming bigger.'

The energy cooperative boom and the energy transition from 2000 to the present

A number of EU Member States supported the deployment of renewable energy in such a way that most of the investments came from citizens and citizen groups. This is especially the case in countries such as Denmark and Germany, with more than half of such projects being financed in this way.

Die Energiewende, the German Energy Transition



Renewables in the hands of the people. Ownership distribution of installed renewable energy capacity for power production 2012, Germany. (Renewable Energies Agency [31])

In Germany, the Feed in Tariff encouraged citizens, farmers and community power initiatives such as REScoops to invest in the energy transition. By the end of 2012, 46% of the total installed renewable energy capacity, was in the hands of citizens, farmers included. Only 5% was owned by the 'big four' power companies.

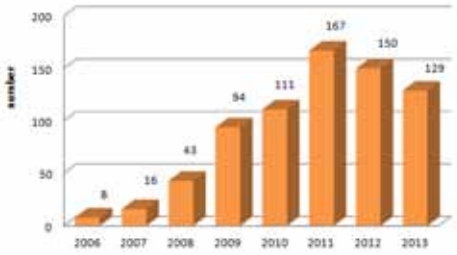
Each year DGRV, the German Cooperative and Raiffeisen Confederation, conducts a survey on energy cooperatives in Germany. The resulting report gives us clear insight into the significance of, the growth in, and the uncertainty now being caused by a changing government policy. On the next pages, we are publishing a part of the report with the approval of DGRV.

DGRV report [32]

In 2014, for the third successive year, DGRV conducted a study of energy cooperatives based on a questionnaire. Here are the most important findings.
718 new energy cooperatives were set up within member associations of the DGRV since 2006. 216 of these coops took part in the survey. All of these were founded between 2006 and 2013. Older energy cooperatives were not examined in the survey.

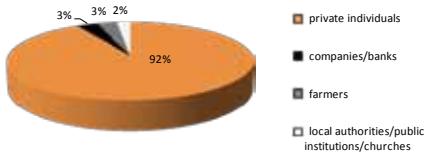
Decreased growth of energy cooperatives in Germany

Foundation of energy cooperatives since 2006



In 2012, 129 energy cooperatives were set up within member associations of the DGRV. Although this is still a significant number, high levels of uncertainty and restraint have been detected among founders and representatives of energy cooperatives in recent months due to the uncertain legal framework. The DGRV estimates that investments of around 300 million euro were postponed in 2014. The number of new energy cooperatives reflects this uncertainty. Since a peak in 2011 with 167 newly established cooperatives, the numbers have been declining. In the first quarter of 2014, only 17 new energy cooperatives were founded, a decrease of nearly 50% compared to the first quarter of 2013.

Membership structure of energy cooperatives in Germany



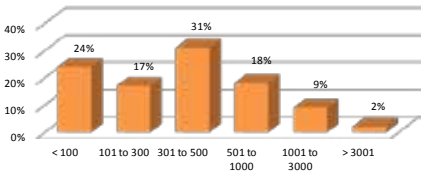
The structure of energy cooperatives is quite stable compared to previous years. On average, new energy cooperatives have 43 members. The number of founding members varies between 5 and 427. Membership tends to grow quickly after a cooperative has been set up. At the time the survey was conducted, average membership had grown almost fivefold to 198. Around 60% of cooperatives have between 50 and 200 members; only 16% have fewer than 50 members. Most energy cooperatives are owned by citizens: more than 90% of the cooperative members are private individuals.

Participation of members in German energy cooperatives

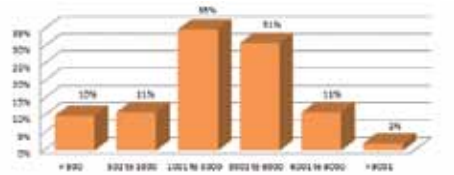
Cooperatives enable people of relatively modest means who may not own a roof of their own to take part in the energy transition. Shares in some cooperatives can be bought for less than 100 euro. The average minimum shareholding in an energy cooperative is 738 euro.

Nearly three-fourths of the cooperatives enable members to participate with shares of less than 500 euro. On average, individual members have a shareholding of 3,298 euro. The average shareholding in two thirds of the cooperatives is between 1,000 and 6,000 euro.

Distribution of minimum shares per member
(in euro)



Distribution of actual shares per member
(in euro)

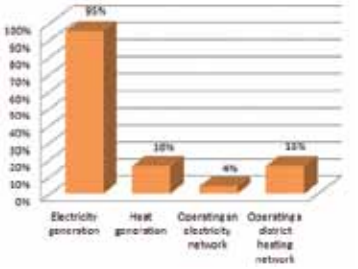


Business activities of energy cooperatives in Germany

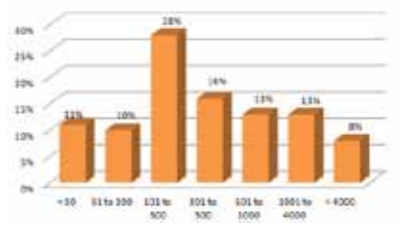
Most energy cooperatives are in the business of generating electricity from renewable resources, particularly from photovoltaic systems. 16% of the cooperatives produce energy for heating from renewable energy sources (biomass) that is used to supply households from a cooperative-run heating network.

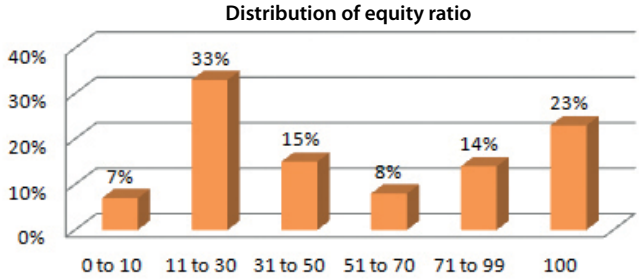
On average, cooperatives have an installed capacity of 1,034 kWp. This capacity is distributed across 7 plants on average, which means that each plant has an average installed capacity of around 150 kWp.

What business activity does your cooperative engage in?
(multiple answers possible)



Distribution of installed capacity
(in kWp)





Economic data

Energy cooperatives have an average seed capital of just under 686,000 euro. At the time the survey was conducted, cooperatives had invested on average just under 1.9 million euro in renewable energies. Energy cooperatives have a comparatively high average proportion of equity: 54%. Almost one in four co-operatives invests with no debt capital at all. 64% of the outside capital borrowed comes from cooperative banks.

Energy coops generate an annual turnover of around 337,000 euro on average. One out of two cooperatives paid out a dividend last year. These dividends averaged 4.26%.

Over 145,000 people in Germany have already invested around 470 million euro of equity in energy cooperatives. In total, cooperatives have already invested around 1.35 billion euro in renewable energies.

Cooperatives produce 830,000 MWh of electricity, enough to supply approximately 230,000 average households. Based purely on the figures, this means that new energy cooperatives already produce significantly more electricity than is required to supply the households of all their members.

Total figures (projections)

718 renewable energy cooperatieves founded after 2006 with...

- around 145.000 members, of which 130.000 private individuals
- member shareholdings: around 470 Mio. euro
- investments in renewable energies: around 1,35 billion euros
- installed capacities: around 706.000 kwp
- electricity generation around 830.000 MWh

These figures only refer to cooperativefounded after 2006.

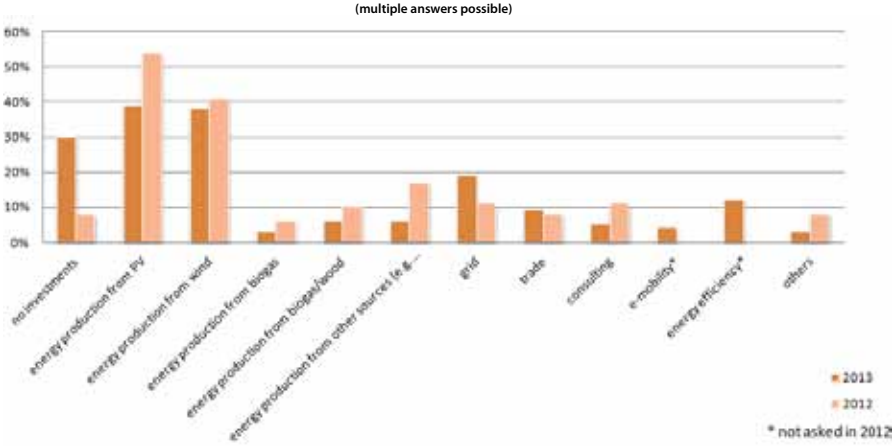
Outlook for the future of German energy cooperatives

Solar and wind power remain the most important future fields of activity for energy cooperatives. 39% of energy cooperatives plan to make investments in PV systems during the next 12 months, and 38% intend to begin producing wind power. But, mainly in the PV sector, a clear decline from 53% to 39% is noticeable compared to the previous year. In contrast, the number of coops that plan no further investments increased from 8% to 30%.

The harmful consequences of the unstable legal framework are already visible here. The survey shows an increase in the heating networks sector. 18% of the coops plan investments in this domain (previous year: 11%). Since 2006, approximately 120 heating network cooperatives have been set up in Germany, more than 70 of them in the last three years.

In what areas does your cooperative plan to make investments/ undertake additional activities in the next 12 months?

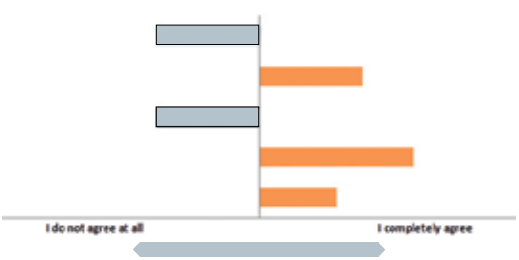
(multiple answers possible)



Legal conditions

Energy coops were also asked to evaluate the legal framework that is currently under discussion with regard to their own prospects of success. They considered it very important that the private energy use of coop members be exempted from

How do you judge the legal the legal conditions that are currently in discussion with regard to the success of your cooperative?



General expansion targets for renewable energy should be capped to a maximum

Direct marketing should only be mandatory for big plants (>1,6 MW)

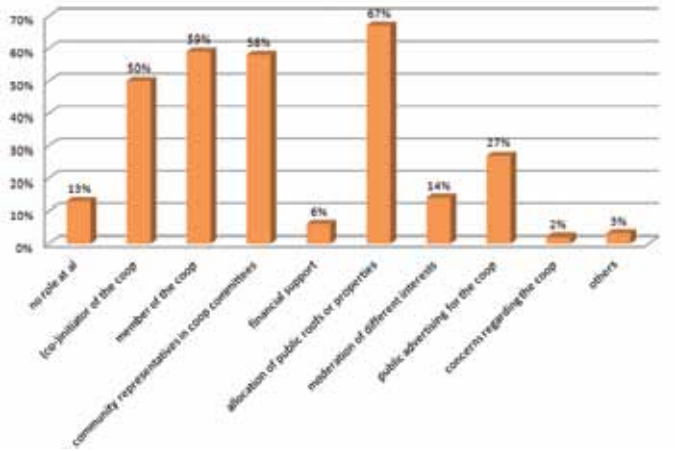
New RES projects should be generally awarded through public tendering procedures

Private energy use of cooperative members should be excepted from EEG apportionment

Civic involvement should be mandatory in all future renewable energy projects

the EEG apportionment. Proposals for limiting the general expansion targets for renewable energies and implementation of public tendering procedures for all new energy projects were rejected. The new EEG (energy injection legislation) implements regulations that are contrary to the ideals of energy coops.

What role does the municipality play in your cooperative?



Cooperation with municipalities in Germany

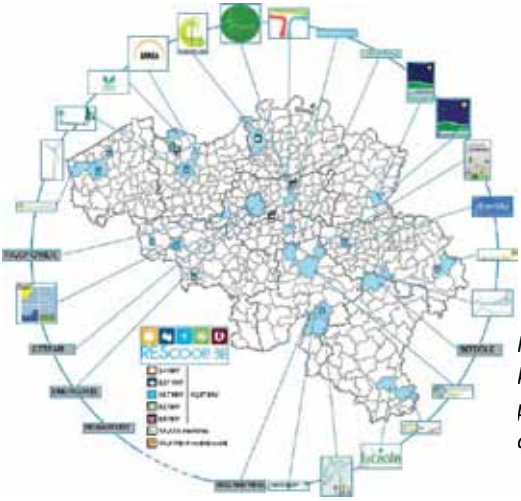
The survey underlines the important role municipalities play in working together with the energy coops. More than two out of three cooperatives use public rooftops or properties, and the municipality is a coop member and/or actively engaged in the cooperative committees in nearly 60% of energy coops. One out of two cooperatives was initiated by the local municipality. The municipality plays no role at all in only 13% of the energy coops.

Citizen cooperatives work together to share knowledge

In recent years we have seen more and more REScoops working together. Recognition is growing that citizens have every interest in ensuring that their energy cooperatives work together at European level. This is partly due to the REScoop 20-20-20 project and contact with members of the European Parliament, the European Commission, and especially officials from DG Energy, After all, directives and guidelines are written, amended and sent to the Member States from 'Brussels'. Waiting for the Member States to implement these directives or guidelines appeared not to be the best approach.

Therefore REScoop.eu, the federation of groups and citizen cooperatives for renewable energy in Europe, was formally founded at the end of 2013 by members of the REScoop 20-20-20 consortium. The federation aims to continue to use, adapt and offer to all citizens of Europe that which the REScoop 20-20-20 Intelligent Energy Europe project developed and built up. Our aim is to efficiently invest the European funds received for this project in a way that best meets future needs.

At the same time REScoop.eu is also seeing similar efforts at the level of the Member States and regions. Federations are also taking shape in Belgium, the Netherlands, Scotland, England, Germany, Spain… to promote the REScoop model at the level of the Member States.



REScoop federations are taking shape all over Europe to promote the REScoop model at state level. (REScoop.be)

Big energy responds

Thanks to the liberalisation, citizens can take a large part of the renewable energy market. This energy transition in the hands of the citizens is a serious threat to the large energy companies, which precisely due to the liberalisation of the energy market had hoped to play a greater role, i.e. make greater profits. It is understandable that they are making every effort to retain their market position. How are they doing this?

By spreading and strengthening myths about renewable energy

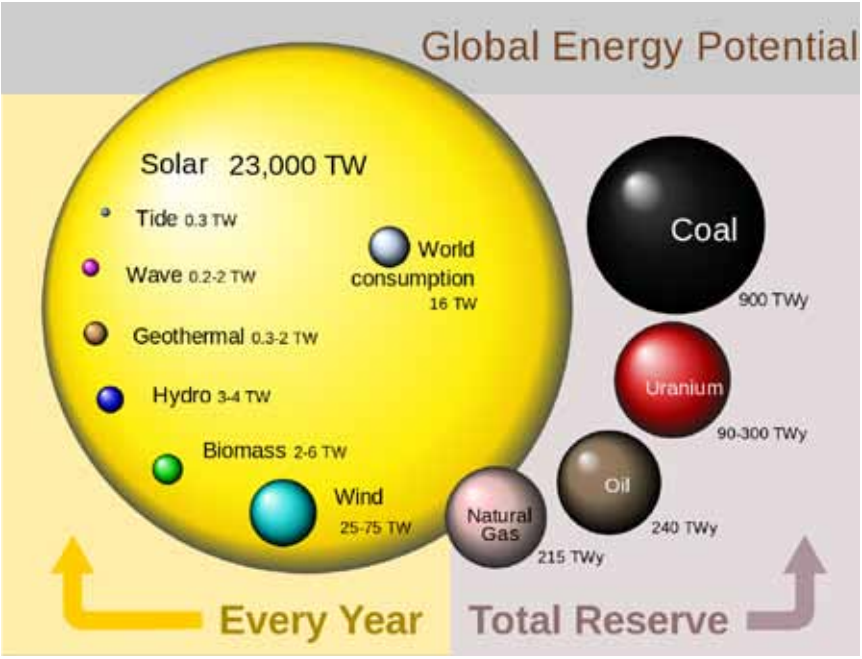
Opponents of the energy transition from fossil/nuclear to renewables spread and strengthen myths about renewable energy. Unfortunately they are widely taken up now in certain media, in the general public and among politicians. Organisations such as Greenpeace [33], REN 21 [34], WWF [35], and even EDP Renewables [36], the renewable branch of the Portuguese energy company, are responding with detailed brochures, campaigns and even seminars at international events that debunk these myths. We only mention a few of them and refer to the websites of these organisations for details.

- There is not enough

However, the total yearly energy use of the earth's 7 billion people is only a fraction of what the sun yearly provides us (see illustration) . And what should really worry us: the reserves of fossil and nuclear fuels are limited compared to our consumption.

- It is too expensive

In several countries electricity production from renewables is already cheaper than from gas, coal and nuclear. A new EDF nuclear power plant to be built at Hinkley point in the UK will need production support throughout its whole lifetime to reach £92.50 per megawatt-hour (MWh) (linked to inflation) while the UK wholesale electricity price in 2013 was about £48 per MWh. Energy coming from fuel-free renewable sources such as the sun, wind and water power is not too expensive. On the contrary, even today it is already putting pressure on the stock values of traditional energy companies [37].



The yearly world consumption is but a small part of what the sun provides us with. The reserves of fossil energy sources should really worry us. (Perez et al.[38])

- It is too unreliable

By using the different renewable energy sources and combining their production in a smart way we can come to a reliable and even more resilient energy system. In advanced countries like Germany and Denmark this myth has been debunked.

In Germany the Kombikraftwerk-project [39] (combined power plant project) has proven – based on existing power stations – that a 100% renewable energy supply is possible and that the energy supply can be kept in balance [40].

In Denmark the Sustainable Energy Planning Group from Aalborg, demonstrates in a video what a 100% sustainable energy supply might look like. [41]

By more of the same

The existing big energy companies have every interest in seeing to it that the energy generation of the future remains large scale and capital intensive. They therefore present us with large-scale solutions: nuclear power stations of a type yet to be invented, nuclear fusion, thorium breeder reactors that would also would deal the nuclear waste from the past, CCS (Carbon Capture Storage, capturing and storing CO_2 underground) at new coal-fired power plants, fracking and oil exploration in the polar regions, and even large solar thermal power plants, huge offshore wind farms…

By rigorous lobbying

'The Magritte group' (large energy companies) lobby the EU Member States, the European Parliament and the European Commission of the European Union. For example, to limit the feed-in tariffs to small projects via state-aid guidelines... and a bit later to themselves request and be granted an exception for a new nuclear power station at Hinkley Point in the UK.

The Magritte group consists of the large energy companies to conserve their position that is threatened by the energy transition to energy democracy. (www.gdfsuez.com [42])

By setting up 'participative' formulas

Under pressure from the demands of citizens, local authorities and the growing number of REScoops, project developers of wind farms and even the large energy companies are also setting up diverse participation formulas. These range from investment bonds to energy cooperatives that are legally indistinguishable from REScoops – but that do not adapt to cooperative principles.

All of these participation formulas have one thing in common: citizens are given no control of the production of their energy. The best they can hope for is a minimal participation in the projects, although renewable energy is a common good.

'Investing together in windmills in our area'. Cogreen is a cooperative which is not in citizens' hands. Cogreen gives loans to daughter companies of Electrabel. The shareholders have no control about Electrabel's investment policy.
(Screenshot www.electrabel.com/nl/cogreen [43])

REScoop recommendations to policy makers and citizens in Europe

After the energy experts and politicians, now big energy companies cannot say enough about the 'energy transition' that citizens, local governments, cooperatives and other new companies have been concretely working on for two decades. Transition means moving from one form to another. However, opinions can differ significantly concerning exactly where we are headed. Usually it concerns new ways of supplying energy that, in addition to being reliable and affordable, also have the following characteristics:

- Reduced energy consumption through efficiency and conservation;
- Less CO_2 emissions by switching from fossil fuels to renewable energy;
- Improved power grid efficiency by converting it to a smart grid where information flows in both directions, by demand response, and by the decentralised production of electricity and biogas;
- Increased grid flexibility so that large amounts of variable renewable energy can be absorbed.

But these are rather technical characteristics of the energy supply of the future. When we reflect on what REScoops do and what the REScoop 20-20-20 Intelligent Energy Europe project brought to light, we arrive at the following specific recommendations about the characteristics of our energy supply of the future:

- Keep the common goods in the hands of citizens;
- Keep production in the hands of citizens;
- Keep the transmission and distribution networks in the hands of citizens;
- Spread the REScoop movement across Europe.

Westmill Co-op built the first onshore wind farm in the south-east of England and is 100% community owned. (www.westmill.coop)

Keep the common goods in the hands of citizens

Wind, solar, hydro, biomass and geothermal energy are natural resources. They in fact belong to no one and are in principle available to all. They are common goods. From the perspective of social justice, more attention therefore must be paid to the way in which decentralised renewable energy sources are managed. In a world where energy is scarce, these sources of energy will mean income for the operators. Citizens and users therefore have every interest in keeping this local energy production in their own hands as much as possible. Governments too have every interest in anchoring decentralised renewable energy with the users as much as possible so that the added value of the production also benefits society. This is especially true for wind energy, an energy source that extends over a larger area, but ultimately is exploited on a small site. The benefit of this exploitation should extend to the widest possible group of people. Thus, the exploitation of wind energy should not simply be privatised, but also allocated on the basis of socio-economic criteria.

Example: Wind claim by the Belgian REScoops

REScoop.be believes that wind energy is a common good par excellence, and that it should benefit the entire community and not just individuals. After all, the wind blows for everyone! Within REScoop.be, starting civic initiatives are given the opportunity to organise and grow according to the ICA principles. In a symbolic action, in 2010 REScoop.be claimed the wind over the whole of Belgium as a good to be used for all inhabitants. REScoops in fact must operate within the current market, where entire areas are speculatively put under contract, landowners and leaseholders are played off against one another, and this bidding process concerning building rights fees results in ever higher prices. Such practices make the consultation model championed by REScoops impossible.
Moreover, the wind rush – which comes down to the privatisation of a common good according to the principle 'first come, first served' – undermines support for many renewable energy projects.
In reaction to this, REScoops resolutely opt for 100% co-ownership, open to all citizens, co-decision making rights and a share in the profits, and where possible, delivery of the produced energy to their members.
REScoop.be is asking the government to put an end to the wind rush by developing a wind concession, a right granted to exploit wind in a specific area. REScoops, due to the fact that they aspire to a social objective and involve as

many people as possible in this, appear to be the right candidates for exploiting such concessions. The introduction of a wind concession or a wind right, however, is faced with many practical concerns based on a liberal interpretation of private property rights. However, these obstacles could be overcome by introducing a wind decree.

In 2010, REScoop.be claimed the wind as a common good. (BeauVent)

Keep production in the hands of citizens

The energy transition requires a change in attitude on the part of the population. They must learn to accept that energy production will again take place closer to home and thus be visible.
It is important precisely for this reason that local residents become more involved in the planning and exploitation of renewable energy. In this, direct participation represents an advantage compared to purely financial participation. With direct participation, the shareholder is also the user of the services being invested in, and decisions are taken democratically according to the 'one person, one vote' principle. The focus will then return to the value provided to the user. The wind turbine is no longer seen as a financial investment that must yield a return for a limited group of shareholders, but as a system that delivers renewable energy to as many citizens as possible.

Crucial in the energy transition is that its financing is possible if we use local renewable energy sources and stop as much as possible the flow of money leaving our village, our city, our region, our country and Europe to purchase oil, natural gas, coal and uranium.

Example: The City of Eeklo (BE) and the REScoop Ecopower

In 1999, the city of Eeklo developed a vision around local wind power and an urban wind plan. These identified locations where wind turbines could be installed and locations that were off limits. The starting point was the desired spatial planning, taking into account the location of public lands. The wind is a common good and, according to the vision of the city of Eeklo, must generate as much local added value as possible.

Money stays local and energy dependence is reduced

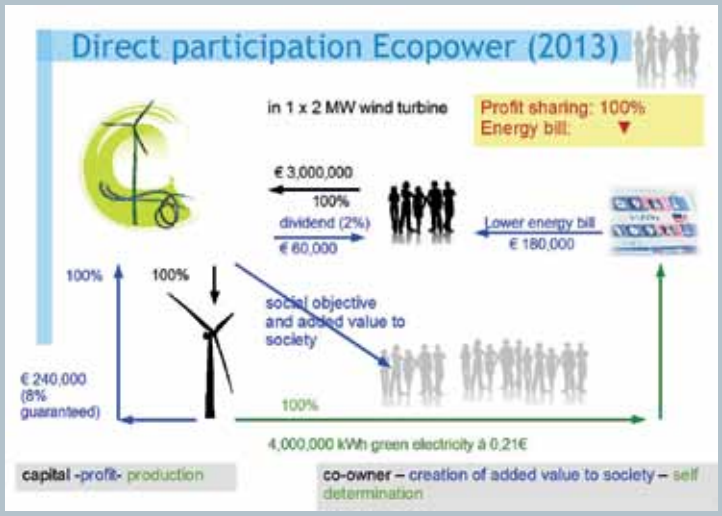
Therefore Eeklo decided to set an example and allocate the potential sites on public land using specific awarding criteria that encouraged local added value: a fixed amount as fee for building rights, as much direct citizen participation as possible, open communication with the population, and as many additional activities as possible related to renewable energy and energy efficiency. The REScoop Ecopower came out on top in the tender procedure with their offer of 100% direct citizen participation.

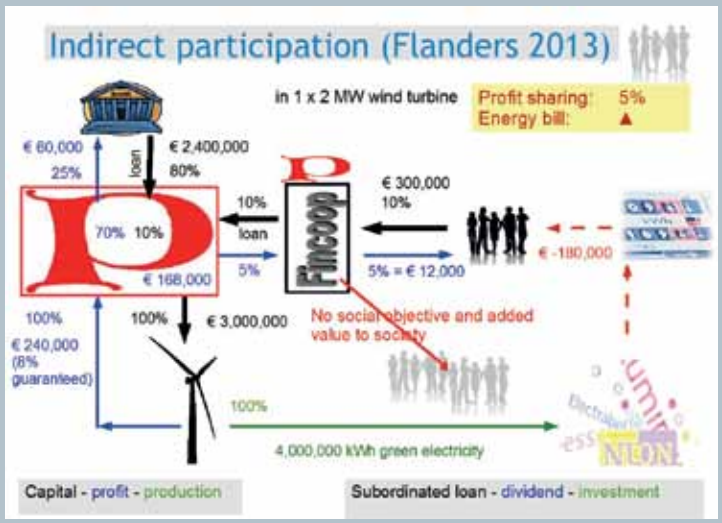
The partnership of the city of Eeklo with the REScoop Ecopower resulted not only in the construction of five wind turbines (in two tenders) on the territory, supplying electrical power to 6,000 families (¾ of the population) but also in numerous other benefits:

- A building rights fee for use of the City's grounds: up to 25,000 euro/year/turbine for the most recent wind turbines
- An employee posted at the municipal offices in Eeklo (an engineer on the Ecopower payroll)
- An awning with charging stations for electric bicycles on a renovated village square using third party financing
- Photovoltaic panels on various public buildings such as the youth centre and social campus, using third party financing
- Cogeneration plant running vegetable oil with a local heating network to warm the municipal offices and thrift shop Kringwinkel Meetjesland
- A mobile filter press for harvesting the rapeseed oil of regional farmers for use in the local CHP with district heating
- Heat recovery on the ventilation of the municipal offices using third party financing
- Guidance in the development of a future new municipal sports complex with swimming pool for sustainability and CO_2 neutrality
- Guidance in providing sustainable energy to a new hospital complex

Cooperatives and municipalities are natural partners, since they share the same stakeholders: the citizens. REScoop Ecopower (BE) provided an awning for Eeklo with charging stations for electric bicycles on a renovated village square using third party financing. (Ecopower)

- Feasibility study on the use of residual heat obtained from the household waste incinerator in a district heating network
- 'Sun at School' campaign: an offer to all schools in the territory for tailored PV systems via third party financing, including an educational component
- Energy guide available: energy route with tour of renewable energy technologies on the territory (sun, wind, biomass)
- Citizen participation: Ecopower fully opens up its projects to direct citizen participation, with the cooperative member being co-owner of the installations as well as a user of the energy produced. This ensures local anchoring, community involvement and a strengthening of local support for renewable energy and energy efficiency.
- Ecopower's added value to cooperative members:
  - as a shareholder, full transparancy in the cooperative's policies and an average dividend of 5% since 2001;
  - as a user of electricity, an excellent service and a fair price, i.e. at cost: the cooperative considers electricity a service to its members, not as a means of gaining profit. [vi]


Direct participation Ecopower (2013)
in 1 x 2 MW wind turbine
Profit sharing: 100%
Energy bill: ▼
€ 3,000,000
100%
dividend (2%)
€ 60,000
Lower energy bill
€ 180,000
100%
100%
social objective
and added value to
society
€ 240,000
(8%
guaranteed)
100%
4,000,000 kWh green electricity à 0,21€
capital -profit- production
co-owner – creation of added value to society – self determination


Indirect participation (Flanders 2013)
in 1 x 2 MW wind turbine
Profit sharing: 5%
Energy bill: ▲
€ 60,000
25%
loan
€ 2,400,000
80%
70% 10%
€ 168,000
10%
loan
5%
Fincoop
€ 300,000
10%
5% = € 12,000
€ -180,000
100%
100%
€ 3,000,000
No social objective and added value to society
€ 240,000
(8%
guaranteed)
100%
4,000,000 kWh green electricity
Capital - profit - production
Subordinated loan - dividend - investment

Creating value through direct participation

In Flanders, wind energy development is supported with renewable energy certificates. Their value is calculated so that a wind project yields a financial return of 8%. If the construction of a wind turbine requires an investment of 3 million euro, this yields an annual profit of € 240,000.

With a REScoop such as Ecopower, part of this profit goes to new investments and part to the cooperative members via a dividend and via the energy bill. The first can be seen on the cooperative's financial statements, the second in the energy bill of cooperative members. The latter can be derived using the price calculator and the official statistics of Flemish electricity and gas regulator VREG. Cooperative members are co-owner of the installations, over which they exercise democratic control up to membership in the board of directors. In exchange for their financial contribution, they receive a tangible fixed asset and a user right. This limits the risk attached to their contribution.

With a commercial developer, all the profits go to the developer. Sometimes they allow limited financial participation. This usually is no more than 10% of the capital in the form of a subordinated loan at 4% interest. Profit distribution is inequitable: 12,000 euro in crumbs for cooperative members, with the developer (and the bank) receiving 228,000 euro. Such cooperative members grant the developer a subordinated loan and are not co-owners. They have no democratic control in the board of directors, and for their contribution, they receive not assets but rather a subordinated loan. Therefore there is a greater risk attached to their contribution.

6,000 families literally have taken their energy supply into their own hands via the Eeklo energy projects of the REScoop Ecopower: these families own the installations and decide themselves on the price of electricity used. This is energy independence based on local renewable energy sources. This is a local anchoring of renewable energy, local community involvement and local support of the community.

Keep the transmission and distribution networks in the hands of citizens

A stricter model for the energy market

To effectively achieve the stated objectives of the liberalisation of the energy market, it would be better for governments to curtail the energy and derived markets and provide them with a better framework, rather than further liberalising them. The government will need to act more strictly as a regulator of the tasks assigned to the market at European level such as the production and supply of electricity and gas. They also need to create more space for business forms such as REScoops that democratise energy production. It is not recommended that governments themselves (directly or indirectly) invest in commercial energy production. After all, public producers also have every reason to sell their electricity on the market at the highest possible prices, while environmental objectives and good service to citizens and businesses should be the government's focus. When governments, even if it concerns different agencies, set themselves up as judge and jury, the danger of conflicts of interest is real. This can undermine the confidence of citizens in government.

However, it is strategically important that the transmission and distribution of electricity and gas not be put in private hands. The network after all is a monopoly activity that should serve users without any form of discrimination and at actual cost. Moreover, energy transition requires heavy investments to modernise the electricity grid. Therefore, management of the grid is a task that can be left to public companies, provided they are democratically controlled by consumers. The network could also be directly managed under ownership of the citizens and users themselves. For example, citizens in several German cities, such as Schönau (see above), have themselves taken the initiative to assume such ownership in order to prevent exploitation by a large and sometimes foreign energy company.

Spread the REScoop movement across Europe

The cooperative form of organising business is well suited to uniting people around renewable energy. By this we mean REScoops, renewable energy cooperatives. In a REScoop, the members aim to invest in projects that offer an answer to the climate and energy crisis and at the same time they wish to consume the green energy generated by their projects at a fair price. Thus, the production facilities remain the property of the users. Supplying electricity then becomes a service for which no additional profit needs to be made. The members expect only a moderate financial gain on their investment. The added value of the production remains entirely within the cooperative and is invested in new projects for which the cooperative decides. This may include cooperation with social organisations to reach disadvantaged groups and to structurally address energy poverty.

REScoops are a response to the failure of the energy market, which is incapable of dealing properly with the climate problem and is unable to offer a transparent price to small consumers. Thus, it is important that energy cooperatives maintain their autonomy and their independence from the market. This is of strategic importance in the long term, when fossil fuels become scarce and more expensive, and the depreciated renewable energy facilities are able to produce energy at a low cost.

Strawberry model for growth of the REScoop movement

The model of how we as citizens can use REScoops to control our energy future is not one of competition, but of cooperation.

Cooperatives can spread like strawberries, helping each other [44].

A single strawberry plant cannot cover an entire field, but give it and its runners some time, and the field will be full. The European Federation REScoop.eu aims to promote the spread and growth of the REScoop model through the exchange of experience, giving advice, defending its interests at the European institutions and developing services that help the local REScoops move forward.

What now?

In the coming years, the European Federation will build on the results of the REScoop 20-20-20 project and other European projects in which the federation or its members are involved.

On 25 February 2015 the European Commission issued the Energy Union package, in which we can read this promising sentence.
'Most importantly, our vision is of an Energy Union with citizens at its core, where citizens take ownership of the energy transition, benefit from new technologies to reduce their bills, participate actively in the market, and where vulnerable consumers are protected.'

REScoop.eu, among many other organizations, strongly supports the vision of the Commission's Energy Union Package: to have citizens at the core of the energy transition.

Indeed, millions of EU citizens already produce their own energy or are involved in *Community Power Initiatives* (CPIs), such as REScoops. It is clear that involving citizens is the only way to make the energy transition succeed. This means we must move from a centralized, oligopolistic energy system to one that is decentralised and above all democratically controlled and operated.

Yet we see that the action points under the five dimensions of the Energy Union mainly refer to the current conventional market players.

For a stronger citizen focus, we need an Energy Union:

- Where every citizen is encouraged and enabled to consume and produce their own energy with renewable energy sources either individually or together with others in CPIs, such as REScoops (production and supply);
- Where citizens and their CPIs are encouraged to own and exploit local energy infrastructure (distribution and transport), which as natural monopolies are best user-owned;
- Where citizens are encouraged to go beyond their own energy needs to also care for their local community (social cohesion, rural development), in particular vulnerable neighbours;
- Where rules on priority grid access for renewables are properly implemented and enforced;

- Where a clear and stable legislative framework reduces project complexity, cost and risk;
- Where the internal energy market ensures a level playing field for new business models such as cooperatives or municipalities and protects against abuse of power by incumbents;
- Where citizens get their energy at a transparent and fair price, with no hidden (social) costs or risks secretly passed on to future generations;
- Based on solidarity and trust among all stakeholders including citizens, companies, Member States, local governments and EU Institutions. For this we need transparency, minimal but essential regulation, effective governance, and fair opportunities for participation and control.

Based on these eight points, we ask for a new deal between Europe and its citizens, not just in the Energy Union vision, but also in its strategy and actions. It is up to us, citizens co-operating in REScoops, to propose elements for this strategy and actions.

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Project results for you to use

Several useful documents and tools have been developed during the REScoop 20-20-20 project. You can find them on www.rescoop.eu.

European REScoop charter

The charter defines our shared ethical values and vision for the future. It is meant as a set of non-exclusive principles that could guide future REScoops in their development.

Best practises report

One objective of the REScoop 20-20-20 project was to accompany new REScoop pilot projects through mentoring from the European REScoop Best Practices. The report analyses 30 European best practises based on 10 best practises criteria such as involvement of stakeholders, grid connection, energy saving, length of time in the authorisation process…

Report on financial barriers for REScoops and the existing solutions

This report concentrates on the obstacles facing the financing of the different phases of a REScoop project. It argues that the availability of funds is not the main problem. In a slightly provocative statement, the report asserts that the main barriers to financing REScoop projects are not primarily financial in nature. Many non-financial factors (image, technical capacity, and the regulatory traps) indeed affect the financing of projects and combine to prevent or delay the growth of the cooperative model.

Handbook on investment schemes for REScoop projects

Based on the report on financial barriers and the existing solutions for REScoop projects, we have prepared a new Handbook on investment schemes for REScoops. The first part of the Handbook focuses on the existing investment schemes and how to pick one for any starting REScoop project. The second section of the Handbook is dedicated to the description of practical cases of REScoop investment schemes, among our identified best practices. The third and final section of the handbook depicts new investment schemes that are either very punctually used or not yet set up to finance REScoops. It briefly

explores a few leads, discussed and imagined in a collaborative way among the partners of the REScoop 20-20-20 project as a direct answer to today's barriers to set up new REScoops in Europe. The Handbook on investment schemes for REScoops is available in English, French and German.

Toolbox

Launching REScoops can be a difficult endeavor but there is a lot of accumulated knowledge already in Europe. The goal of the REScoop 20-20-20 Toolbox is to gather some relevant documents, guides, reports, models, etc. in all languages to clarify aspects related to the energy transition in general and to the setting up of a REScoop in your community. Country-specific information on how to set up and run a REScoop can be found on our website.

Guide to engage and manage stakeholders in RES projects

Direct participation is key to foster social acceptance for RES project and to make the energy transition a success. The guide describes various ways on how to engage and manage different stakeholders in the development of renewable energy projects.

Report on the existing business models

Throughout the REScoop 20-20-20 project we identified 2,400 European REScoops. They come in different sizes, are involved in various activities and have organised their business model in various ways. The report on the existing business models describes this large variety of REScoop business models.

Thank you

We want to express our gratitude to the European Union, the European Commission and specifically DG Energy. Before the REScoop 20-20-20 project, the biggest REScoops in Europe met on occasion but with a three year grant in the Intelligent Energy Europe program we had the chance to research, analyse and bring together the European movement of REScoops. Without this EU grant the recognition of the citizens' role in the energy transition would not have happened in such a short time period. We truly believe this project has helped to accelerate the REScoop movement on a European level.

We also want to thank the project officers of the Intelligent Energy Europe for their guidance and their support in what was for most partners their first endeavour of managing, administrating and organising an IEE project.

Next to that we thank all the organisations supporting us during the project. We could not have organised all the seminars, workshops and presentations without their cooperation.

Last but not least, we thank all citizens in Europe supporting their REScoops. Without your active participation in these organisations, the energy transition and also the REScoop 20-20-20 project would not be as interesting and revolutionary as it is now!

While researching all the types of REScoops in Europe, we found they had not necessarily their legal entity in common but mostly their ideas. All are aware that we are in a time of change and as citizens they came together to be an active participant in that change. Seperately from each other these citizens from all over Europe set up organisations on the basis of their ideas. When looking at these organisations and how they established their ideas and principles in their statutes, we saw that they all organised themselves according to the 7 cooperative principles that were established in 1864.