



European
Commission



Clean energy

for all Europeans



Energy

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Foreword

The gradual transition away from fossil fuels towards a carbon-neutral economy is one of the greatest challenges of our time. How will the EU tackle it? Through the clean and fair energy transition that creates growth and jobs in a modern economy and increases our quality of life as citizens, while at the same time putting us in the lead in the fight against climate change following the Paris Agreement.

To do so, the EU has taken a wide range of initiatives. In broad terms, the establishment of the EU Energy Union provides a framework for a consistent approach in all policy areas – and central to the Energy Union is the Clean energy for all Europeans package. The purpose of these measures is to ensure a clean and fair energy transition at all levels of the economy – from energy generation all the way to people's homes, such as increasing renewable electricity and encouraging the use of smart meters. These measures aim to improve energy interconnections between Member States and to make the different actors in the energy field more competitive and innovative. This means finding the right blend between regulatory tools and market forces, encouraging private investment on clean energy where it makes economic sense and using EU funding to stimulate investment where market forces alone are not sufficient.

The Clean energy for all Europeans package aims to set the right balance between making decisions at EU, national, and local level – because all levels of government are involved. In doing so, we unearth synergies and efficiency gains that could not be found if each EU country acted alone. And yet each country retains its independence to choose its own energy mix and the path it will take to reach its energy and climate targets – but within an EU context and following a common approach. This is European added value.

The new measures are not just for businesses – they provide far greater opportunities for citizens. Indeed, through improved market efficiency and reinforced consumer rights, citizens will have real influence over their energy footprint – whether through smart meters, taking control of household bills, or actually investing to produce their own renewable energy, which is then fed into the grid.

This document presents the numerous benefits the new EU rules will provide, from different angles – environmental, economic, security of supply, consumer, international, and from a longer time scale. The key message is that these changes are good for the planet, good for growth and jobs, and good for consumers. It is no coincidence that we called it the 'Clean energy for all Europeans' package.

"CLEAN ENERGY FOR ALL EUROPEANS"

the most ambitious set of energy proposals ever presented by the European Commission...

...adopted in record time with impressive support from the European Parliament and Council

to accelerate the clean energy transition...

...to give all Europeans access to secure, competitive and sustainable energy

...making the EU's Energy Union – one of the ten political priorities of the Juncker Commission – a reality



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1. Accelerating the clean energy transition in the EU

In the face of the 21st century's global energy challenges, the EU is leading the clean energy transition: striving for a more secure, competitive and sustainable energy system which will address the existential challenge of our time - climate change. By setting ambitious energy and climate targets for 2030, the EU is giving a clear sense of direction; in addition to these targets, it provides a stable legal framework to foster the necessary investment. But this is not the end of the road: with its 2050 long-term climate neutrality strategy, the EU is also looking further ahead than 2030, and setting the foundations for what a cleaner planet will look like by the middle of the century and beyond.

The EU was an early mover on clean energy: back in 2009, the EU was the first to set ambitious energy and climate targets. The 2020 objectives of achieving a 20% greenhouse gas emission reduction, 20% in renewable energy and 20% energy efficiency were ground-breaking at the time. They set a clear sense of direction which drove investment in infrastructure, and research and innovation. It was a concept that has now been followed by other countries all over the world.

Ten years later, the EU is broadly on track to achieve the 2020 objectives. We have felt the economic benefits of clean energy: it is possible to reduce emissions and achieve GDP growth plus a net increase in employment in the energy sector. Moreover, renewable energy in Europe has become much cheaper. Solar and wind power now compete on market terms with other forms of power generation.




With the Paris Agreement, the EU has now pledged to move further ahead and achieve greenhouse gas emission reductions of at least 40% by 2030. In order to respond to this challenge and continue to lead the global energy transition, the EU has adopted a set of ambitious new rules, defining the legislative parameters for the coming years, but also enabling the necessary investment. This new framework is called the “Clean energy for all Europeans package”.

What is in the package?

1. Energy efficiency first!

The new rules contain the principle of “energy efficiency first”, and set a target to be almost one third more efficient - at least 32.5% - in our energy use by 2030. A particular emphasis is also given to improving energy performance in the building sector. This sector is crucial to the clean energy transition, as buildings are the largest energy consumers, accounting for 40% of final energy consumption and 36% of greenhouse gas emissions in Europe. By accelerating the renovation rate of buildings and exploiting all smart technologies available, this sector can contribute to a carbon-neutral and competitive economy.



EU Energy targets by 2030

- At least **40%** cuts in greenhouse gas emissions
- At least **32%** renewables in energy consumption
- At least **32.5%** energy efficiency

2. Showing global leadership in the take-up of renewables

An ambitious new target of at least 32% renewables by 2030, binding at EU level, will drive an acceleration of clean energy uptake in all sectors, and facilitate public and private investment in the years ahead.

3. A new energy rulebook

While these headline targets are fixed at EU level, the new rules establish that each country will decide how it contributes to these EU objectives by drafting a National Energy and Climate Plan (NECP) for 2021-2030. The draft plans will be evaluated by the European Commission in order to ensure that the EU can collectively meet its Paris Agreement commitments. The national plans also require EU countries to outline a long-term strategy for at least the next 30 years.

The changes are not just for the public sector. The new rules provide a stable enabling framework that should facilitate and encourage private investment in the clean energy transition.

4. More rights for consumers

As well as a strengthening consumer rights - more transparency in household bills, greater choice and more flexibility to change supplier - the new rules will make it easier for individuals to produce their own energy, for example through solar panels, store it or sell it onto the grid.

5. Increased security of supply thanks to a smarter and more efficient electricity market

Constantly adding higher volumes of variable renewables is a challenge for systems. The new laws will increase our security of supply and flexibility by helping integrate renewables into the grid and manage risks, and by improving cross-border cooperation: this will lead to a cleaner, more stable and more competitive electricity sector across Europe.

But the Clean energy for all Europeans package is not the end of the road. It looks towards 2030 and beyond, and that is why the European Commission – in the context of the COP24 climate talks in Katowice in December 2018 – presented its 2050 Long-Term Climate Neutrality Strategy. This proposal presents options on how best to decarbonise the whole EU economy, and will be the basis of discussions in the coming years.

2. Modernising the economy for the benefit of everyone

The benefits of the clean energy transition go far beyond the reduction of greenhouse gas emissions. The enormous investments required for this economic transformation will also bring opportunities for growth and jobs in Europe, fostering industrial competitiveness and driving research and innovation. At the same time, cleaner and smarter energy will mean improved health, a better quality of life and will allow citizens to take their own decisions regarding their energy use. Managed well, a fair and just transition can ensure that these benefits are shared by all citizens and all regions of Europe and that no one is left behind.

The clean energy transition = growth, jobs, and competitiveness

As we move from fossil fuels towards a decarbonised system, fit for the 21st century, completing the Energy Union and the clean energy transition will be of paramount importance for the modernisation of the European economy. This is a clear opportunity to boost investment, growth and jobs in Europe, while still ensuring that the transition is fair and just.

The clean energy economy has been growing faster than the overall economy over the past 15 years in the EU – both in terms of value added and jobs. Renewable energies already employ 1.4 million people in Europe. Eco-industries, linked in particular to the refurbishment of buildings, represent more than 3.4 million jobs in Europe. But that will increase further as a result of the Clean energy for all Europeans package. These jobs are mainly local jobs where small and medium sized enterprises (SMEs) play an important role, notably in the construction and engineering sectors. Up to 400,000 additional jobs could come from the energy efficiency sector alone.

By staying at the forefront of this revolution, the EU is modernising its economy and businesses and will be able to enjoy first-mover benefits and see its competitiveness increase. The ongoing improvements to the functioning of Europe's energy markets will lower energy costs and keep industries competitive. In the heating and cooling sector for example, the take up of renewables has been much slower than expected, but these changes will help kickstart a major change in this field.



€180 billion

Mobilising up to €180 billion of public and private funds per year until 2021



1% increase

Generating up to a 1% increase in economic growth over next decade

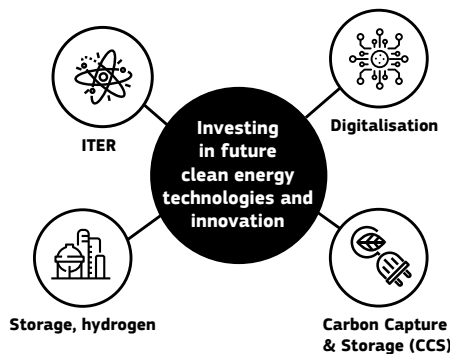


900,000 new jobs

Creating around 900,000 new jobs in Europe linked to the clean energy sector

Addressing these challenges at EU level, and through forums such as the Clean Energy Industry Forum, will make it easier to learn from each other and enable the rapid spread of best practices. This will be particularly important for energy-intensive sectors such as the steel, aluminium, chemical, cement or paper industries since energy represents a major share of their production costs. These industries have already made major efforts to reduce their energy and carbon intensity, notably through energy efficiency measures. Further reductions will require the development and deployment of innovative technologies and solutions. As for the defence sector, a more sustainable and efficient use of energy is also a must. In this regard, the Commission is closely cooperating with the European Defence Agency to improve the energy use of the military sector.

Investing in future clean energy technologies and innovation



The clean energy transition requires important investments: research and innovation will contribute to the creation of a strong industrial basis and make the EU a global technology leader

Over the next decade, Europe will need around €180 billion a year in investments to improve energy efficiency and increase the production and deployment

of renewables, in order to reduce greenhouse gas emissions and meet our Paris Agreement commitments. While an important amount of the investment will come from public funding (at EU, national or local level), most of it will come from private sources. A stable policy environment is therefore essential, one which encourages and accelerates the necessary public and private investment in innovation and modernisation in all key sectors. The Clean energy for all Europeans package is an important step in this direction – establishing a stable legal framework and a clear direction for the next decade. This greater predictability reduces the risk for investors and provides a clear perspective looking further ahead.

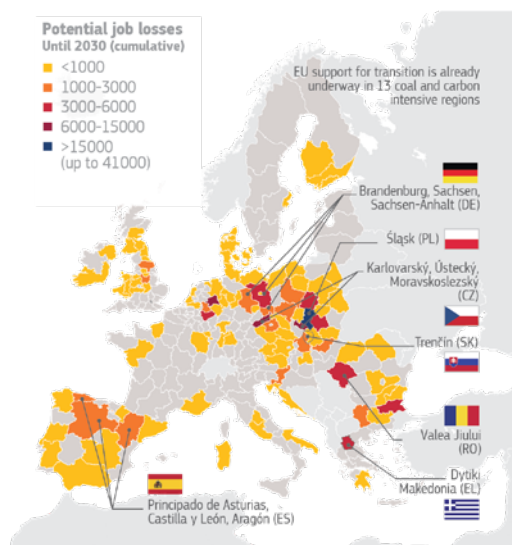
At the same time, EU spending has an important role to play as a catalyst. Research and innovation is the best way to improve competitiveness and to help become a global technology leader. While the EU is still a leader in manufacturing in the renewables sector, in particular for wind energy, ocean energy, heat pumps and district heating technologies, it is facing greater competition from other parts of the world and needs to accelerate its efforts in order to maintain its position.

The clean energy transition must benefit everyone - no citizen, no region should be left behind

While economists agree on the potential for growth and jobs from the clean energy transition, the EU is well aware that it will be particularly difficult for some regions or some sections of society – especially in the short-term. The deep transformation of the economy needs to be managed well to avoid social and regional disparities. The clean energy transition must be fair and socially acceptable to all. This is at the core of the European Social Model and is a clear priority of the Clean energy for all Europeans package. With this in mind, the EU has launched a series of initiatives to ensure that all citizens, regardless of their location, benefit from the clean energy transition.

INNOVATION AND RESEARCH EXAMPLES

- **Smart grids:** WiseGrid (Spain). Enables a two-way communication between the electricity provider and its customers and allows provision of renewable and affordable energy for electro-mobility and storage use.
- **Reducing energy consumption of energy-intensive industries:** HYBRIT project (under the SET Plan). Ambitions to reduce emissions in Sweden by 6 million tons of CO₂ by 2040.
- **Electricity storage:** Europe supports the development of a domestic green battery value chain consisting of high performant, safe and sustainable battery cells with the lowest environmental footprint possible. Example: TILOS island project, winner of two EUSEW 2017 awards (EUSEW=EU Sustainable Energy Week) for hybrid power plant combining the use of sun and wind together with big battery systems and introducing smart energy management system on the island; BATCircle project (Finland), which focuses on upscaling of metallurgical or chemical processes and improvement of current commercial processes recovering metals.



Energy Poverty has been addressed in the new legislation so that a common definition of the concept has been agreed for the first time. With estimates suggesting that more than 50 million Europeans are affected by this growing issue, Member States are required to monitor the situation in their country. Many of the new elements aimed at strengthening the position of the consumer in the market will support the most vulnerable in our society.

In addition to this, the Energy Poverty Observatory has been established to help Member States in their efforts to combat energy poverty. It will improve the measuring and monitoring of the problem and share knowledge and best practice in addressing it.

The Coal Regions in Transition Initiative aims to help develop strategies and projects for viable social, economic and technological transformation in regions which have previously been particularly dependent on coal or carbon-based industries. This will involve retraining and upskilling. The EU is already providing assistance to 14 coal regions in 7 Member States.

Islands are frequently highly dependent on imported fossil fuels to generate their energy, but have significant potential to generate much of their own energy through renewables. Consequently, the Commission has established the Clean Energy for EU Islands initiative aimed at providing a long-term framework to help islands become more energy independent. This will result in better energy security, improved air quality and the creation of new jobs and business opportunities, boosting islands' energy self-sufficiency.

EU BUDGET SUPPORTS CLEAN ENERGY TRANSITION

Under the current programming period 2014-2020, the European budget has established programmes and developed instruments that have supported the clean energy transition. In total, 20% of EU spending is currently used for climate-related measures. But the European Commission is already looking to increase the level of ambition in the future. In its blueprint for the future EU budget (for 2021 to 2027), the Commission proposed a new target of at least 25% of total EU expenditure contributing to fighting climate change, including the clean energy transition.

Under the next financial period 2021-2027, the Commission has proposed to increase the budget for R&I to almost €100 billion under Horizon Europe, including a budget for research and innovation (R&I) dedicated to energy, mobility and climate of around €15 billion. The Commission also launched the Clean Energy Industrial Forum to build a strong industrial basis in Europe and to boost their competitiveness along the entire value chain in key areas of the clean energy transition: renewable energy, construction and batteries. In addition, the European Strategic Energy Technology Plan (SET Plan) aims at accelerating the development and deployment of low-carbon technologies, at improving new technologies and at bringing down their costs, by coordinating national research efforts and facilitating financing of projects in the energy sector. Its goal is to promote innovation partnerships across Europe by supporting the most impactful technologies that will contribute to the EU's transformation to a low-carbon energy system.

THE JUNCKER PLAN SUPPORTS THE ENERGY TRANSITION

One relatively new element of EU funding which is proving particularly effective is the Investment Plan for Europe, the European Fund for Strategic Investments, whereby public funds are used as leverage for securing private investment. Energy is the sector that benefits most of all from this instrument, in particular energy efficiency, renewable energies and infrastructure. Of the overall €371.2 billion of total investments approved under EFSI since it was established in 2014/15, roughly 19% has gone to energy projects. For example, this has allowed some 8.2 million European households to be supplied with renewable energy and 28 million houses have had electricity and gas smart meters installed.

3. Increasing energy security

The EU currently imports more than half of its energy, mainly in the form of oil and gas. With our new rules in place, we can lower this reliance on imports by reducing consumption, producing more renewable energy and improving cross-border connections within the EU. Indeed, the considerable savings on import costs will contribute to investment growth and jobs in Europe. The new rules will ensure more flexible and efficient electricity markets, better suited for the energy transition, in particular to integrate the increasing use of variable renewable energy sources. Together with improved inter-connections between EU countries, this will make our energy supply more secure and diversified. The new emphasis given to the security of energy supply will make blackouts less likely and ensure that EU citizens and businesses always receive the energy they need. At the same stage, a range of elements foresee increased cooperation and preparedness just in case the unexpected happens.

Diversification, renewables and energy efficiency = less dependence on external energy supplies

With an external energy bill averaging €300 billion over the last 2 years, the EU has enormous potential to significantly reduce its imports of fossil fuels and increase its energy sovereignty. Saving energy through energy efficiency is the easiest way to improve our energy independence, and increase our resilience to external shocks or political pressure. Being the global leader in the development and deployment of renewables will allow the EU to substantially reduce dependency on external energy suppliers. This will be even more the case in the future, since electricity will become more strategic, and likely to account for more than half of the EU's energy needs by 2050. The new Energy efficiency and Renewables directives of the Clean Energy Package will therefore boost the energy security of the EU.

More flexible and efficient electricity market, better suited for the energy transition

The new electricity market design resulting from the Clean energy for all Europeans package will also ensure a more stable EU energy market in future, by making the electricity market in the EU better suited to variable and intermittent renewable energies. With the new rules, electricity can be traded closer to real time, when weather forecasts are more accurate and renewable plants are able to better predict their production. The new regulations also strengthen price signals and increase cross-border trade to ensure that electricity can always flow to where it is most needed. When we need a lot of electricity in the peak of the day of a cold

winter, we must make sure that the clean and cheap electricity from the wind farms of the North of Europe or from the solar farms of the South of Europe can arrive where it is most needed. This is not only good for the environment, it is also good for consumers' pockets, reducing the need for constructing new back-up power plants in each country that would be used only a few hours a year and would eventually be paid by electricity consumers.

Strengthened interconnections = more secure energy supply

Interconnected electricity and gas grids are also vital for energy security of supply. Well integrated networks are not only the best protection against a possible infrastructure failure in an EU country, but they also bring more supply options and hence more competitive prices into the national markets. Through a wide range of structural investments – notably those identified as Projects of Common Interest (PCIs) (which are eligible for EU funding) – there has been a significant increase in cross-border connection projects in the course of this decade. These include projects aimed at synchronising the Baltic countries with other Member States, or extending the Southern Gas Corridor, and more and more new electricity projects seeking to link two or more Member States, such as the integration of the Iberian peninsula with the rest of Europe.

Reconciling security of supply and decarbonisation

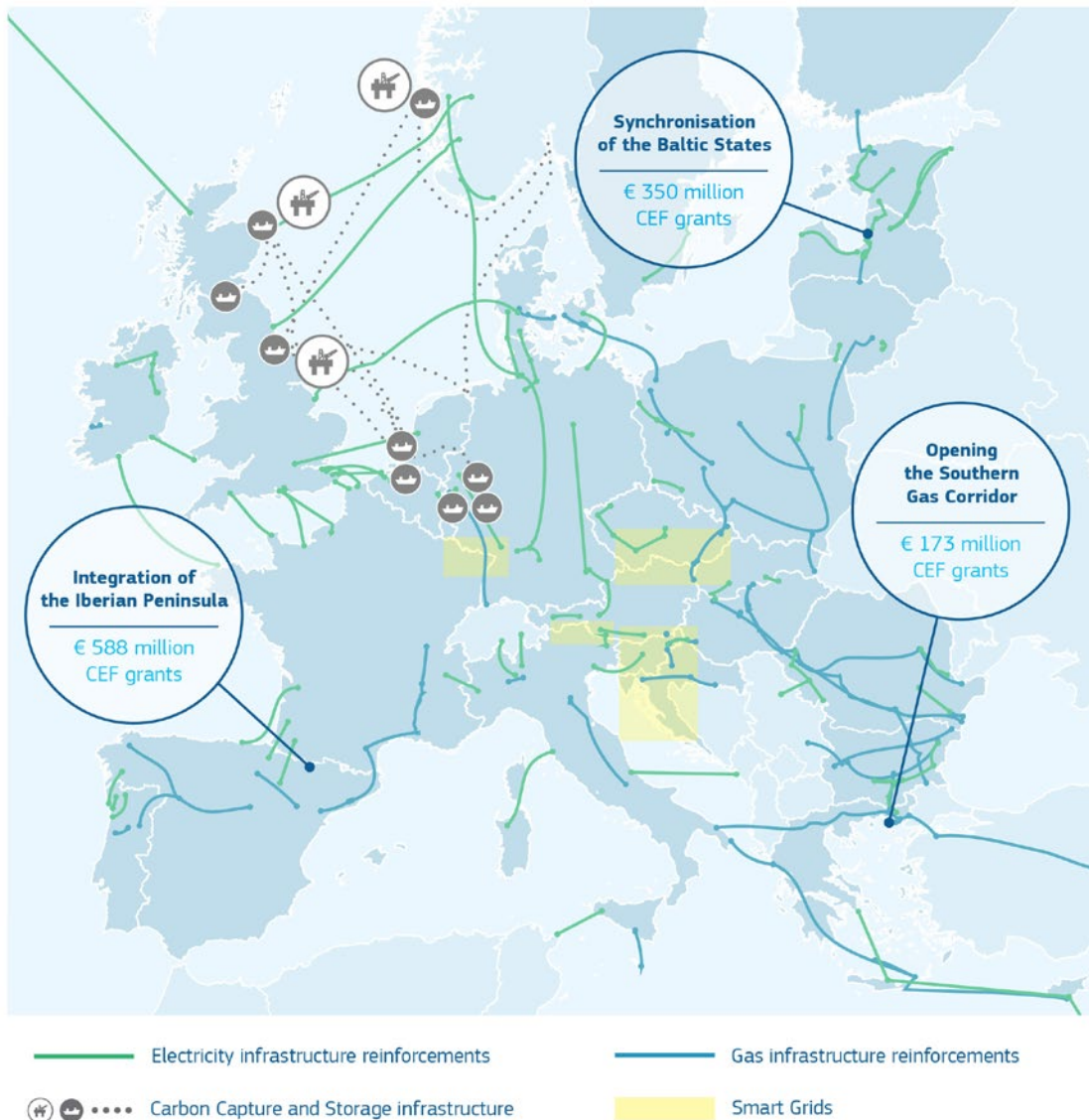
The new electricity market design rules introduce a framework for cross-border cooperation and put an emissions cap on new capacity mechanisms in order to restrict subsidies for the most polluting technologies. This important change reconciles our objectives of decarbonisation on the one hand and security of supply on the other.

Prepared against risk: security of supply also means prevention and solidarity

Together we are stronger! With the principle of solidarity enshrined in EU legislation for gas security of supply

as well as for electricity risk preparedness, European citizens are better protected against energy crises (such as blackouts and gas shortages). Under the new rules on risk preparedness, all neighbouring countries are required to coordinate efforts and prepare solutions to any potential threat or crisis.

The EU has recently agreed rules to ensure that EU law will be applied to pipelines bringing gas to Europe and that everyone interested in selling gas to Europe must respect European energy law. By standing united, Europe has given itself a strong set of tools to deal effectively and collectively with our external energy suppliers.



4. Bringing people and countries closer

A safe, sustainable and affordable energy system is only possible if EU countries work together in a spirit of solidarity. By creating a new rulebook on how the EU and its Member States collaborate to reach our ambitious energy and climate goals, we can reach our collective ambitions in the most efficient way, bring people, regions and countries together, and provide real added value for Europeans. Cooperation and solidarity also mean stronger interconnections and solid infrastructure.

A common rulebook combining consistency and flexibility

Energy is an area where Member States have shown a high level of ambition both at national and EU level. To deliver a secure, sustainable and competitive energy system, the EU can now rely on a new rulebook, the Governance of the Energy Union and its national energy and climate plans. Embodying trust and consensus between all parts of the EU, it encourages a new political dialogue between Europeans and enhances forms of regional cooperation between Member States. Combined, these new practices will help us achieve the Energy Union objectives.

For the first time, the new governance system puts European citizens as well as local governments and stakeholders at the centre of the political debate on the definition of National Energy and Climate Plans that cover 10 year periods. A number of strict requirements on the participation and consultation of national stakeholders have been introduced, thus enabling European civil society to make its voice heard more clearly. Active participation of local and regional authorities is key for the success of the energy transition, as the energy system becomes more decentralised. Future energy and climate policies will therefore be developed closer to EU citizens, hopefully increasing public acceptance of the EU's policies and raising awareness of the goals and the efforts needed to achieve them.



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Stronger interconnections and infrastructure = better and safer energy markets

Closer cooperation between Member States, regulatory authorities and energy system operators at regional and European level boosts competitiveness and energy security. It also engenders a cost-efficient clean energy transition. The EU has the most interconnected and secure electricity grid in the world: and it manages the highest share of electricity generated from renewable energy sources. To keep up this high standard, the EU continues to improve its key interconnections and fill in the missing links to better integrate energy markets and production of renewables. Making Europe's electricity grid fit for the energy transition still requires further action, in parallel to the application of the revised rules for the electricity market, as agreed in the Clean energy for all Europeans package.

EU support for modern infrastructure and interconnections is channelled through the Projects of Common Interest (PCIs) framework, supported financially by the Connecting Europe Facility. For gas, Europe should soon achieve a well-interconnected and shock-resilient gas grid, having being well supported by the PCI system. In the coming years, electricity projects will become increasingly important for the integration of renewable energy across borders, including the digitalisation and smartening of the grid. In some areas of Europe, such as in the Iberian Peninsula, or between the North and South of Germany, better electricity interconnections are being planned and the political commitment to remove these bottlenecks is strong. For the future, as we move towards a high renewables scenario, the investment needs of interconnectors will have to more than double.

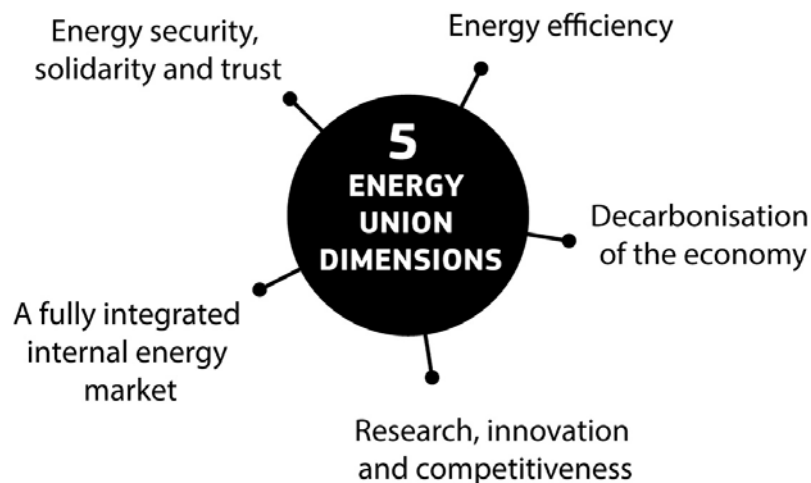
Strengthened collaboration at all levels between energy regulators and transmission system operators in all EU countries

In the same spirit of solidarity and collaboration, the Clean energy for all Europeans package also introduces new tasks for the Agency for the Cooperation of the Energy Regulators (ACER). Created to help solidify the European internal energy market, ACER will in future issue best practice reports in a series of areas, helping to align the approaches of the different Member States. The new rules also enhance the cooperation among the Transmission System Operators (TSOs) through the Regional Coordination Centres. This will reduce the risk of blackouts and in general increase the efficiency of the system operation, thus reducing costs.

A strengthened political collaboration between regulators, governments and civil society also comes to life through the High Level Groups, which discuss energy issues in European regions that have been identified as being of high priority and provide strategic guidance on technical topics and monitor the progress of high priority projects.

The new EU energy and climate governance provides a unique cooperation framework between Member States and the EU, in order to:

- Ensure synergies between EU and national trajectories
- National plans
- Structured reports



5. Consumers at the heart of the energy transition

Consumers need to be at the centre of a renewed EU energy system: improved rules will give them more flexibility and better protect them, but also allow them to take their own decisions on how to produce, store, sell or share their own energy. More control and more access for consumers will translate into better quality of life and better finances. And this democratisation of energy will alleviate energy poverty and protect vulnerable citizens.

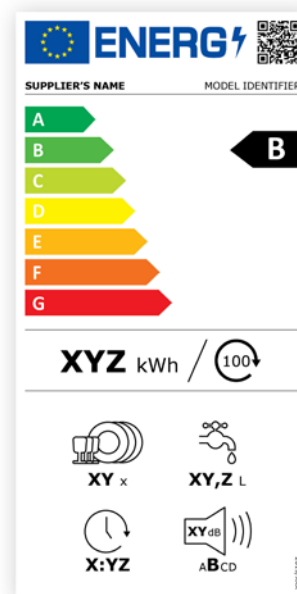
Energy is central to modern life and social inclusion: it is necessary for education, health, security and well-being. Energy represents on average 6% of the annual expenditure of the 200 million households in the EU. The lowest-income households spent almost 9% of their total expenditure on energy in 2014. This corresponds to a 50% increase over the last ten years, far more than for average households. It is therefore impossible to separate the energy transition from socio-economic considerations. That is why the concept of access to energy has been reinforced in the Clean energy for all Europeans package.

For the first time, consumers have been put at the heart of the Energy Union, allowing them to actively take part in the clean energy transition. They will be better protected and put in a stronger position in the supply chain. Empowering citizens and giving them ownership of the energy transition are not only slogans. By unlocking both technological and social innovation, the new rules can help harness all aspects of human potential to drive the energy transition and help them reduce costs.

Better information on energy consumption and costs

With the new rules, consumers will be better informed and have clearer, more transparent energy bills and more understandable contracts. They will have the right to request a smart meter, thus being informed about their energy consumption and costs in real time, with

full control over their data, which remains protected. For example, dynamic pricing in electricity offers the best value (i.e. lowest prices over time) to consumers. Certified price comparison tools will help them in their choice of supplier, and switching supplier will be easier and faster. As such, the consumer will be in a stronger position in the chain, leading to greater competition among suppliers and greater variety in the options on offer.



A more active role, more choice and flexibility

From enhanced digitalisation, to smart grids and smart appliances, passing through the Internet of Things, new batteries and storage systems: all these new technologies are creating ample opportunities for European citizens to participate and benefit from the energy markets. The Clean energy for all Europeans package gives consumers more choice in their homes and more flexibility to reduce their energy use when it is expensive and consume or store energy when it is cheap. The package creates a regulatory framework which enables new services to compete more efficiently and transparently.

play an active role means more democracy, and more opportunities for citizens to take their own decisions on which type of energy they want to use. The new rules promote this actively with provisions on self-consumption of energy, and local and renewable energy communities.

Energy labels = savings

When consumers buy new household appliances, they know that the widely recognised EU energy label is an important tool to help them choose more energy-efficient devices. Saving energy is a sure way to save money on household bills. Recognised by 85% of consumers, the labelling and eco-design measures are estimated to save up to 500 euros per household every year.



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Consumers and the renewables revolution

Consumers will also find it easier to invest in renewable energy, most obviously in solar panels, and then consume, store or sell the energy they produce. Studies show that households can save on energy costs by installing solar panel systems, recovering the full cost of their investment in a short period of time. The new Renewables Directive helps with the administrative procedures and the new Electricity Directive improves the market conditions. Citizens can join in “energy communities”, pooling their energy, and benefit from incentives for renewable energy production. Estimates suggest that by 2030, energy communities could own some 17% of installed wind capacity and 21% of solar. By 2050, almost half of EU households are expected to be producing renewable energy. Finally, the move to a more decentralised energy system where consumers

A tighter safety net

An EU and an Energy Union that protects, defends and empowers will not leave any citizen behind, and not least the European energy consumer. The new rules will improve access to energy for all, tackling energy poverty at its root and protecting vulnerable consumers. Under the new energy efficiency rules, Member States have to give priority to households in social housing and suffering from energy poverty, and must consider energy poverty in their long-term renovation strategies. The Governance Regulation and the Electricity Directive together ask that Member States monitor energy poverty and introduce in their National Energy and Climate Plans specific national objectives on energy poverty. The Energy Poverty Observatory – launched by the Commission – will assist in this task.

6. Europe as an energy and climate action leader in the world

By strongly backing the Paris climate agreement, setting ambitious energy and climate targets for 2030 and fixing a clear long-term decarbonisation strategy for 2050, Europe is showing the world the way forward. Moreover, the EU's external energy policy is based on close cooperation with all our external partners, to ensure security of supply, foster the global clean energy transition, and create a level playing field for EU companies on global energy markets. International energy cooperation is also key for managing the EU's external energy dependency, given that the EU imports half of its energy needs. Boosting investment in clean energy in our close neighbourhood, and particularly in Africa, will create sustainable growth and jobs locally. Europe is also strengthening its energy alliances with strategic partners and looking to enhance trade by advancing the international role the euro in energy contracts.



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The energy transition at the heart of the Paris Agreement

The EU's vision to create a European Energy Union and place Europe at the forefront of energy efficiency, clean and renewable energy production and the fight against climate change, is becoming a reality. European energy and climate policies are accelerating public and private investment in innovation and modernisation, creating sustainable jobs, and enabling all citizens to benefit from the transition to a modern and low-carbon economy. The EU has shown that the world can count on Europe for clean energy transition and climate leadership. It is the

first major economy to translate its promises under the Paris Agreement into binding laws. At the UN climate conference in Katowice in December 2018, the EU played an instrumental role in making the Paris Agreement operational, with the adoption of a clear rulebook.

The EU's commitment to international energy cooperation

Leading on the Paris Agreement also means defending an international approach as the best way to address global challenges. Within the current geopolitical context, it is more important than ever to demonstrate the value of cooperation. The EU has a unique opportunity to promote the clean energy transition leading by example, while advancing its energy security objectives through continued and further engagement with key partners, including the United States, Japan, China, India, Norway and Canada. By promoting clean energy, the EU reinforces its global role, mitigates threats and contributes to a more stable and peaceful world. Moreover, Europe is committed to systematically including energy efficiency and renewable energy as a priority in all existing geopolitical, diplomatic and financial initiatives. That is why the EU will continue to promote the clean energy agenda in multilateral fora such as the G7 or the G20.

ITER

ITER is one of the most ambitious energy projects in the world today.

In southern France, 35 nations are collaborating to build the world's largest tokamak, a magnetic fusion device that has been designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy.

The project already has a clear positive impact in making Europe more competitive and in creating new skills, jobs, and partnerships between big and smaller companies.



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The new EU-Africa alliance

Africa is home to the world's highest number of people without access to electricity, yet it has ample energy resources. The EU is Africa's biggest partner for sustainable energy, and access to energy in Africa is a key European policy goal. President Jean-Claude Juncker recently proposed a new EU-Africa alliance for sustainable investment and jobs. Approximately €2.7 billion of financial assistance has been or will be provided to Sub-Saharan Africa in the period from 2014 to 2020, giving about 40 million people access to energy. To help in this endeavour, a high-level EU-Africa sustainable energy platform has been established, bringing together key players in the sustainable energy sector from the public and private sectors of both Europe and Africa.

Strengthening European sovereignty: a stronger international role for the euro

The EU is the world's largest energy importer, with an annual energy import bill averaging €300 billion over the last 2 years. Around 85% of this is paid in US dollars. In order to increase access to reliable finance and strengthening sovereignty, the European Commission is seeking to increase the use of the euro in international agreements and non-binding instruments related to energy, as well as in energy-related transactions, financial transactions and energy-related projects.

Moreover, the EU has also adopted new rules to screen and monitor foreign direct investments, to ensure that Europe is well equipped to protect its essential interests, while remaining one of the most open investment regimes in the world. The EU will defend its strategic interests and scrutiny purchases by foreign companies that target Europe's strategic assets.

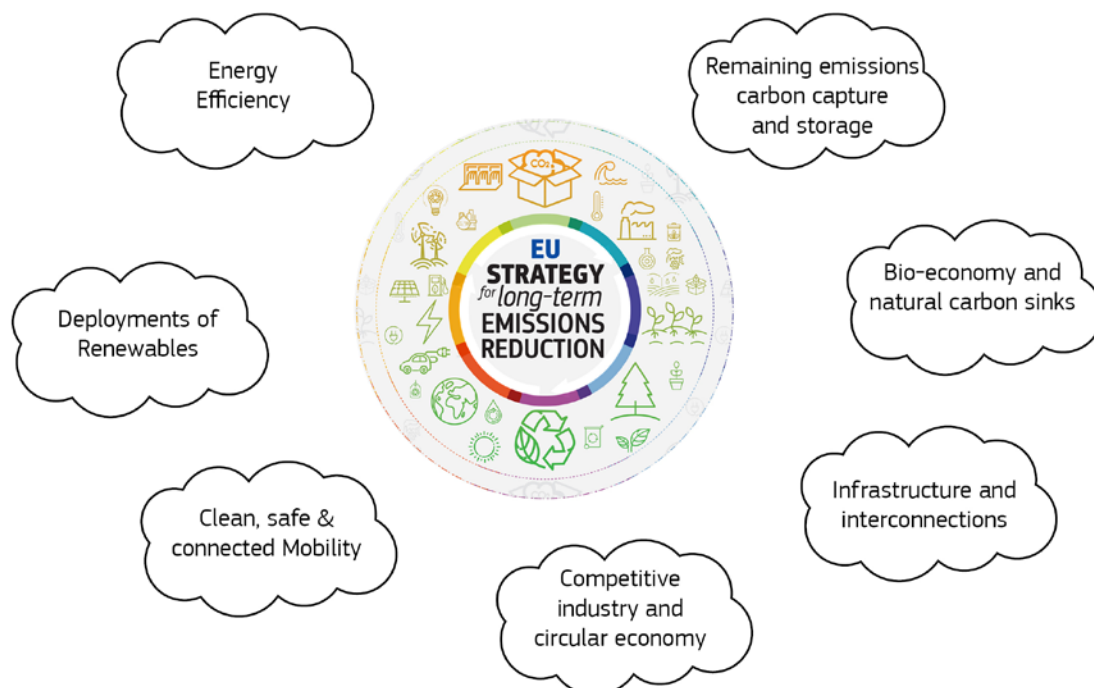
7. Moving towards a Clean Planet for All

The EU's targets for 2030 are important, but the energy transition will not stop there. The challenge goes further. And the European Commission has again shown leadership by publishing a blueprint for taking things further forward, with a view to the achievement of a carbon-neutral economy by the middle of the century.

With its ambitious targets for 2030 at EU level, the Clean energy for all Europeans package has put in place the most advanced legislative framework in the world to transform the energy sector and decarbonize the economy: a new renewable energy target of at least 32% binding at EU level and a new EU headline energy efficiency target of at least 32.5%. Both targets include the possibility of a further upward revision in 2023. When fully implemented, they could lead to an EU greenhouse gas emissions cut of some 45% by 2030. But the fight against climate change will not stop there. The Intergovernmental Panel on Climate Change has confirmed that urgent acceleration of global climate action is needed. The world will have to go to net zero greenhouse gas emissions by around 2070 to limit the temperature increase to 1.5 degrees Celsius.

Going beyond 2030 towards 2050

With this in mind, and in order to show global leadership and reap the benefits of first mover advantage, the EU has been the first major economy to present a long-term vision towards a modern and climate neutral economy by 2050. Published in November 2018, just ahead of the COP24 meeting in Katowice, this strategy constitutes the EU's long-term contribution to the aims of the Paris climate agreement to keep the temperature increase to well below 2°C and pursue efforts to keep it under 1.5°C. The EU will achieve this by investing in realistic technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance, or research, while ensuring social fairness for a just transition to the climate neutral economy.



A dynamic economy and reducing emission can go together

Reducing emissions and transforming the energy system does not imply that the livelihoods of Europeans need to suffer. It is possible to reduce emissions while creating prosperity, high-quality local jobs, and improving quality of life. This can be done by developing and deploying current technologies. It is in Europe's interest to reduce spending on fossil fuel imports and invest in a clean, green Europe that generates growth and new jobs. In this process, no European citizen and no region should be left behind. As new sectors emerge, traditional ones will need to adjust. The EU will support those more impacted by the transition so that everyone can benefit from our investment in the clean energy transition.

The road to a climate-neutral economy will require joint action across the whole economy: in energy efficiency (savings of up to 50% by 2050); renewables (to be 80% of electricity alongside nuclear energy); transport (electric cars and low carbon fuels); industry (more recycling and decarbonised production processes); infrastructure (digitalised and connecting Europe); the new digital economy and the bio economy (up to 80% bigger than today's). Across the board, sectors can develop new decarbonised technologies as well as create new markets for the new technologies needed in a clean, decarbonised world.

The extra investment needed to decarbonise the economy has been estimated at around €550 billion per year, up from approximately €400 billion today. This investment is not only about showing the world how to decarbonise. It also demonstrates the opportunities that come with this widespread "re-industrialisation".

Economic, social and air quality: meeting the concerns of citizens

There are certainly economic benefits from this transition (new jobs and up to an additional 2% increase in GDP), but there are further benefits as well – in terms of improved air quality and health and creating a cleaner, less polluted planet. Today, air pollution causes half a million premature deaths annually. By going climate neutral, we can reduce this by more than 40% and save up to €200 million in healthcare costs. 75% of the European population lives in urban areas, which represent 70% of energy consumption and a similar share of CO₂ emissions. These measures will improve the overall air quality, and particularly in cities. Cities must be at the heart of any policy that contributes to a cleaner planet. The active participation of local and regional authorities, through the Covenant of Mayors initiative, is paramount to delivering clean energy solutions for citizens. In the EU's social market model, these social and environmental gains have to come in tandem with the purely economic gains.

Where do we go from here?

Building on the 2030 energy and climate framework now being put to work, the EU's long-term strategy sets the scene for Member State discussions on how to move forward into a prosperous, modern, competitive and climate-neutral world of the mid-21st century.

Recommended sources of information

- ♦ Clean energy for all Europeans package:
<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>
- ♦ Long-Term strategy – A clean planet for all:
<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy>
- ♦ The EU priority: Establishing the Energy Union:
https://ec.europa.eu/commission/priorities/energy-union-and-climate_en Union
- ♦ Horizon 2020:
<http://horizon2020-story.eu/>
- ♦ Strategic Energy Technologies Information System (SETIS):
<https://setis.ec.europa.eu/>
- ♦ BRIDGE:
<https://www.h2020-bridge.eu/>
- ♦ Horizon Europe:
https://ec.europa.eu/info/designing-next-research-and-innovation-framework-programme/what-shapes-next-framework-programme_en
- ♦ EU Sustainable Energy Week:
<https://eusew.eu/>

For more information : ec.europa.eu/energy/

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