

LEADING THE TRANSITION
TO A HEALTHY PLANET AND
A NEW DIGITAL WORLD



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Moving the Energy Sector in the European Legislative Cycle 2019-2024

“Europe must lead the transition to a healthy planet and a new digital world. But it can only do so by bringing people together and upgrading our unique social market economy to fit today’s new ambitions.”

European Commission President Ursula von der Leyen

Our continent is confronted with the urgent challenges of climate change, political polarisation and social inequality. At the same time, we are witnessing an era of major technological breakthroughs – especially in the fields of digitalisation and automation. These developments offer both new opportunities for doing business, as well as unprecedented ways to engage citizens.

For Europe to lead the transition to a healthy planet and a new digital world, the new European Commission, Parliament and Council leadership will need to actively anticipate these critical challenges and opportunities. The energy sector will play a decisive role in achieving this.

Energy production and use, including the energy used in transport, heating and industry, account for 80% of the EU’s greenhouse gas emissions today.¹ At the same time, more than 50 million households in the European Union are struggling to heat their homes, pay their energy bills and keep out damp and mould.²

That said, the energy sector offers an enormous potential for solutions. Technology developments for clean energy generation, storage and Demand Response, the strategic electrification of transport, buildings and industrial processes, and the emergence of new business models provide the answer to Europe’s challenges in the energy sector.



- Driven by their rapid technological development and dramatic cost decline, **renewable energy sources** like wind and solar power have become the core generation technologies for the clean energy transition.³



- The annually installed **electrical energy storage** capacity in Europe increased by 75% between 2017 and 2018⁴, and the European battery market alone is projected to be worth €250 billion annually by 2025.⁵



- At the end of 2018, more than 1 million passenger cars on Europe’s roads were already electric.⁶ Supported by smart charging infrastructure, **electric vehicles** can transform from mere transport assets to decentralised energy resources;



- The number of **smart homes** in the EU is expected to increase tenfold in the coming years:



homes which can use digitally controlled lighting, heating, ventilation, air conditioning, security and home appliances will increase from 8.5 million in 2016 to 80.6 million in 2021.⁷

- **Non-residential buildings** make up 30% of the total energy consumption throughout Europe.⁸ The implementation of the existing European policy measures on Building Automation and Control Systems (BACS) will not only save 14% of total building primary energy consumption by 2038, but these systems also enable the flexible operation of buildings in response to system signals.⁹



- Digitalisation and automation of **industrial processes** is already turning these energy users into flexibility resources. The current potential of the European energy intensive industry alone is estimated at 16GW.¹⁰

¹ https://ec.europa.eu/clima/policies/international/paris_protocol/energy_en

² <https://ec.europa.eu/energy/en/events/launch-eu-energy-poverty-observatory-epov>

³ E.g.: <https://ec.europa.eu/energy/en/data-analysis/energy-modelling/energy-modelling>

⁴ EASE and Delta-ee, European Market Monitor on Energy Storage (EMMES) 3.0, March 2019

⁵ EIT KIC InnoEnergy

⁶ Information based on the European Alternative Fuels Observatory database www.eafo.eu

⁷ EPSC: 10 Trends – Reshaping Climate and Energy, 2019

⁸ Buildings Performance Institute Europe (BPIE), “The active role of buildings in a transforming energy market”, October 2015

⁹ Waide Strategic Efficiency Ltd: The impact of the revision of the EPBD on energy savings from the use of building automation and controls

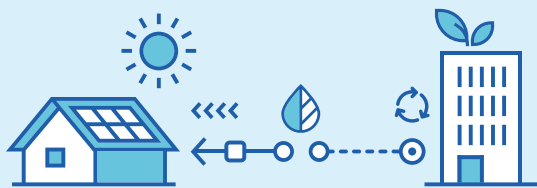
¹⁰ Klobasa; Marian (Fraunhofer ISI) 2012: Load Management and Demand Side Management in Germany and other EU Countries

The success of Europe's clean energy transition will depend on all these different solutions working together efficiently. European energy users - businesses and citizens alike – hold the key to this. They can not only spur technology investments, but also provide important flexibility to stabilise the system and support the wide acceptance and affordability of the transition.

Already today, prosumers are **driving investments** in clean energy technologies. On-site generation of renewable energy and green energy procurement have become important investment areas for businesses in Europe. Over the last five years, 6GW of new renewable energy sources have been contracted in Europe through corporate renewable power purchase agreements (PPAs) and at least another 10GW has been installed onsite.¹¹ The momentum is growing fast, with industrial and commercial consumers increasingly opting to rely on renewable energy supplies. The same energy prosumers often possess important flexibility potentials that can be activated in business processes and buildings.

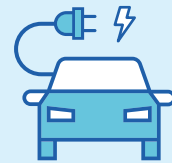


Private citizen equally play an increasingly important role through investments on site or through the participation in community projects. It is estimated that some 187 million EU households could contribute to demand response, storage and renewable energy production by 2050.¹² By 2030, energy communities could own some 17% of installed wind capacity and 21% of solar.¹³

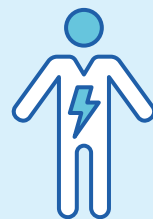


Crucially, energy users can provide significant amounts of **flexibility** that is indispensable for an efficient and secure energy system.¹⁴ In a system based increasingly on renewable energy sources, variability is putting pressure on the stability of supply. The adequacy forecast for the European

Power system indicates an urgent need for action to maintain the reliability of the power system. The need for fast-reacting resources (ramping) is projected to go up steeply, and increasing periods of excess power generation will alternate with times of low output.¹⁵ Trying to resolve this challenge entirely with back-up power generation capacity would not only pose a massive infrastructural challenge, but it would also mean that plants stand idle for large amounts of time, leading to massive costs for European consumers. On the other hand, flexibility from storage and Demand Response can provide efficient buffer solutions. A very substantial amount of industrial processes, commercial buildings, private homes and electric vehicles can be operated flexibly with only limited investments – typically by help of technology automation and aggregation services. The European Commission has assessed the potential of flexibility from Demand Response alone to be 160GW by 2030 already.¹⁶ This number will grow further thanks to sector integration with flexibility potentials from the operation of electric vehicles, heating & cooling and industry.



Finally, a system that involves businesses and citizen users as active participants in the energy transition will ensure **affordability and acceptance**.



If consumers are encouraged to contribute their resources and flexibility, they will not only gain value through direct earnings or reduced energy bills, but they will also reduce costs of the system at large. Rather than the isolation of those who can afford to invest in clean solutions, a consumer-driven energy system thus means an interaction that benefits all users. As has been shown in a study for the UK Committee on Climate Change, the reliance on flexible and decentralised resources can reduce the cost of a largely decarbonised energy system by billions of pounds annually for British customers alone.¹⁷ Similar benefits can be expected across Europe.

¹¹ <http://resource-platform.eu/wp-content/uploads/files/downloads/RE-Source-Platform-Policy-Recommendations.pdf>

¹² CE Delft (2016), The potential of energy citizens in the European Union

¹³ European Commission 2016: Impact Assessment on Renewable Energy Sources

¹⁴ ENTSO-E: Mid-term Adequacy Forecast 2019, <https://www.entsoe.eu/outlooks/midterm/>

¹⁵ Bloomberg New Energy Finance, Eaton, REA 2018: Beyond the Tipping Point

¹⁶ European Commission Impact Assessment accompanying the proposals for the Electricity Directive and Regulation, 30 November 2016

¹⁷ Imperial College London/NERA Economic Consulting 2015: Value of Flexibility in a Decarbonised Grid and System Externalities of Low-Carbon Generation Technologies - For the Committee on Climate Change

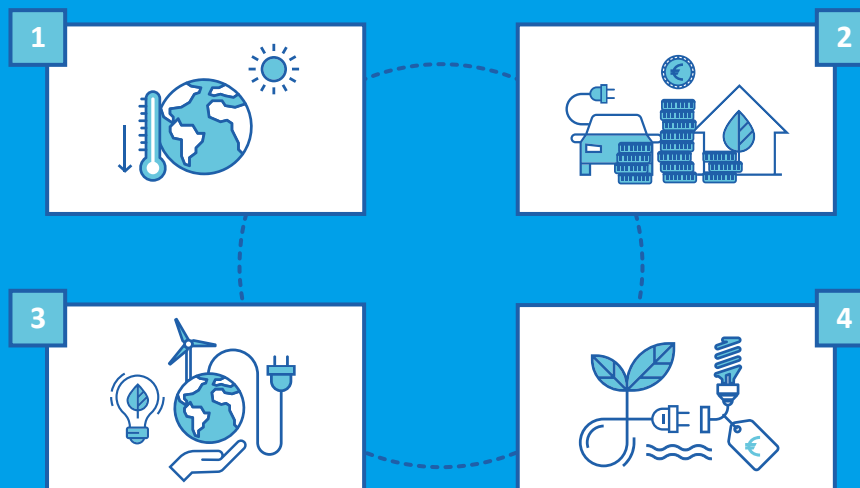
The new European Commission, Parliament, together with the Council and Member States, can set the conditions for this to happen. The European Green Deal offers the opportunity to set the stage for this, based on the following elements:

1. The successful transition requires ambitious **climate and energy framework objectives** to drive the necessary investments. To this end, smartEn welcomes the announcement of a European Climate Law to enshrine the target for carbon neutrality by 2050, and welcomes the ambition to increase the European 2030 target to 55%.

3. All players and solutions should be able to **access the energy markets and mechanisms**. The consequent implementation of the European Clean Energy Package should take priority, so as to remove existing barriers to decentralised energy resources and innovative business models.

2. Public **investments** should be fully in line with these objectives, avoiding stranded assets and lock-in effects. Infrastructure investments should target a strategic sector integration, focussing on decentralised resources including for the smart and flexible operation of buildings and electric vehicles.

4. Significant efforts are needed to ensure **effective price signals**. In order to allow energy users to engage and monetise the energy resources that the system needs, a package of measures should overcome blunting effects and reflect the real value of flexibility at wholesale and retail level.



“The world is in a flux and we are in the midst of the fourth industrial revolution. Everything is changing for everyone. Pretending otherwise is an abdication of common sense. The question is whether we are a victim of change, or whether we will embrace and guide it.”

European Commission Executive Vice-President Frans Timmermans

smartEn looks forward to engaging in the discussion and continue providing relevant expertise for the clean energy transition to succeed.



“The European energy transition will be successful when every European benefits from playing an active role in it.”

smartEn

smartEn is the European business association integrating the decentralized solutions of the clean energy transition. We create opportunities for every company, building and car to support an increasingly renewable energy system.

For further information please visit www.smarten.eu