

An aerial photograph of a dam and reservoir. The dam is a long, curved structure made of grey concrete or stone, extending from the top right towards the bottom right. The reservoir is a large body of greenish water on the left side. The surrounding landscape is a mix of green grass, brown earth, and grey gravel. There are two small, rectangular concrete structures on the right side of the dam, possibly spillways or intake structures. The overall scene is a natural, somewhat rugged environment.

10+1

**Proposals for an
improved energy
and climate policy
in the EU**

July 2019

Danish Energy is the association of Danish Energy Companies. Our members cover the whole value chain of electricity and deliver electricity at high levels of security of supply (99,996 percent) at competitive prices. They also provide Danish customers with an growing network of high speed fiber optical cables.

Danish Energy's membership also comprise suppliers of district heating, retailers of gas, technology providers to the energy sector (mainly renewable energy, energy efficiency, smart grids and EV charging stations and operators), and financial institutions.

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Contents

| | |
|-----------|---|
| 05 | Preface |
| 06 | Climate Change |
| 06 | 1. Set an end date for net-emission of greenhouse gasses |
| 08 | 2. Increase the EU's 2030 climate target to at least 55% |
| 10 | 3. Ensure a robust and stable CO ₂ price |
| 12 | Renewable energy and internal market for energy |
| 12 | 4. Accelerate the build-out of renewable energy |
| 14 | 5. Accelerate expansion of the trans-European electricity grid |
| 16 | 6. Finalise the internal market for energy |
| 18 | Green consumers |
| 18 | 7. Transform energy consumption in the transport sector |
| 20 | 8. Improve the efficiency of buildings and industry through intelligent solutions |
| 22 | 9. Future proof the regulatory framework of local electricity grids |
| 26 | Integrated energy systems |
| 26 | 10. Reduce greenhouse gas emissions through market-based sector coupling |
| 28 | Bonus |
| 28 | 11. Bring modelling assumptions up to speed with market developments |
| 30 | 10+1 Proposals for an improved energy and climate policy in the EU |



Preface

Towards a climate-neutral EU

Young people are protesting inaction against climate change. In the European Parliament election campaigns, climate and energy were two of the most debated issues.

Large energy-consuming companies, such as Apple, Maersk, Siemens and Arcelor Mittal, are lining up plans to become carbon neutral. Meanwhile, the European electricity sector has already committed to carbon-neutrality well before 2050.

In short, Energy and climate policy is back at the top of the European political agenda.

The heightened attention to energy and climate is both positive and necessary. We must take action quickly if temperature increases are to be limited to 1.5°C, in line with the ambition set out in the global climate agreement reached in Paris in 2015.

In October 2018, the UN Intergovernmental Panel on Climate Change (IPCC) reported that climate neutrality by 2045-2055 would be required to limit temperature increases to 1.5°C.

There is no “silver bullet” solution to the challenge. Vast expansion of renewable energy, combined with energy efficiency improvements, negative emissions (e.g. planting forests and carbon storage), and circular economy will be needed.

Wide-scale electrification will also be a key building block in the transformation to a climate-neutral society. In November 2018, the European Commission issued a nearly 400-page report on how to achieve a climate-neutral EU by 2050, which included the following statement:

“This analysis shows that the most important single driver for a decarbonised energy system is the growing role of electricity, both in final energy demand and in the supply of alternative fuels, which will be mostly met by renewables, and in particular by wind and solar electricity.”¹

The good news is that green electricity has become significantly cheaper in recent years. Since the 2011 presentation of the EU’s most recent long-term climate strategy, the prices of both wind and solar energy have declined drastically. This development will allow the EU to increase its climate goal for 2030 from at least 40% to at least 55% cost-efficiently.

Yet challenges remain unresolved, including: insufficient investments in electricity grids, an incomplete internal market for energy, a weak market for electric cars, and a heating sector where 75% of supply is still based on fossil fuels. Thus, a European strategy that identifies barriers to electrification and presents proposals for overcoming these barriers should be a cornerstone of the EU’s long-term vision of a climate-neutral society.

This publication presents 10 specific areas of the EU’s energy and climate policy that should be strengthened. There is a need for tighter climate regulation and increased focus on renewable energy, energy efficiency, electrification and integrated energy systems.

It is pivotal that the EU demonstrates climate leadership during the forthcoming legislative term to bring the Union on track to achieve climate neutrality by 2050 at the latest.

We hope that you find this booklet informative and inspiring!

¹ IN-DEPTH ANALYSIS IN SUPPORT OF THE COMMISSION COMMUNICATION COM (2018) 773. A Clean Planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy, p. 88.

7.

Set an end date for net-emission of greenhouse gasses

The road to a climate-neutral society requires a fundamental transformation of the way we produce, transport and consume energy. To succeed, EU policy-makers must establish a clear and unambiguous end date for net-emission of greenhouse gasses in the EU.

In October 2018, the UN Intergovernmental Panel on Climate Change (IPCC) presented a report on what it will take to limit global temperature increases to 1.5°C. The conclusion was clear: unprecedented measures will be necessary.

What does this mean for the EU? In November 2018, a comprehensive analysis conducted by the European Commission concluded that if the EU is to make a fair contribution to limiting temperature increases to 1.5°C, a balance between the emission and absorption of greenhouse gasses must be reached by 2050 at the latest.

This does not mean that greenhouse gas emissions will cease completely. Some natural processes (e.g. putrefaction) have always emitted greenhouse gasses.

However, it does mean that the EU must absorb as much greenhouse gas as it emits.

” More than 70% of energy consumption in the EU is currently based on fossil fuels. A climate-neutral EU will require a significant reduction of this figure. In the electricity and heating sector, fossil fuel consumption will likely have to be reduced to under 5%.

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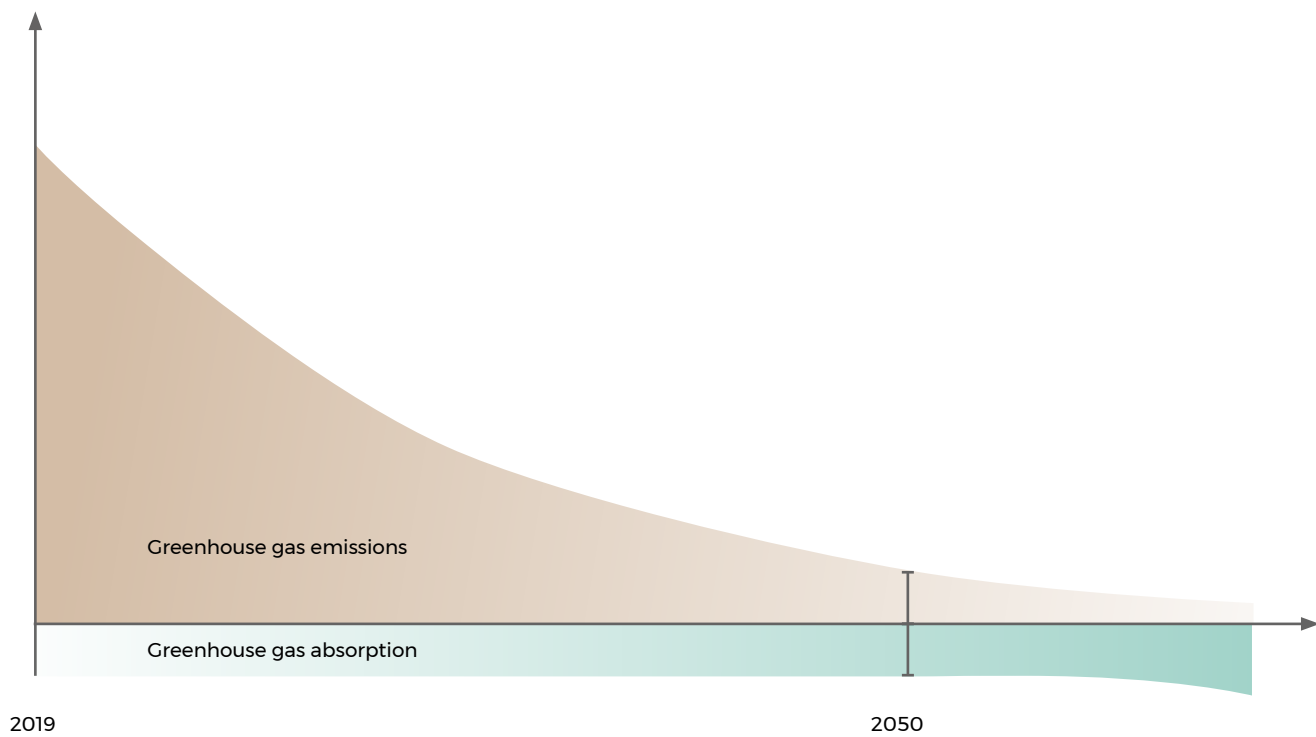
Such a sweeping transformation of the energy system will require vast investment in the production, transport and consumption of energy – and such investments require a clear political commitment to a climate-neutral EU by 2050.

What can the European Parliament do?

Before the end of 2020, the EU must notify the UN of what it intends to do to reduce its greenhouse gas emissions. The European Parliament should require:

- That EU heads of state and government adopt a political agreement with the goal of climate neutrality in the EU by 2050 at the latest.
- That, in connection with hearings of the new EU Commissioners in autumn 2019, the European Commission commits to present a plan of concrete actions to ensure a climate-neutral EU by 2050.
- That the new President of the European Commission proposes specific legislation to ensure climate-neutrality by 2050.

Balance between emissions and absorption of greenhouse gasses in 2050



2.

Increase the EU's 2030 climate target to at least 55%

The EU has ratified the global climate agreement from 2015, committing to efforts to limit global temperature increases to 1.5°C. Meeting this ambition will require a significantly faster transition in the short term. This should include a climate target of at least a 55% reduction in greenhouse gas emissions by 2030, instead of the current target of 40%.

The EU's future impact on global warming will be determined by our total emissions between now and 2050. Thus, it is not only important to become climate-neutral in the long term (see proposal 1), but also to reduce climate impacts every year between now and then. Thus, it is necessary to revise the EU's short- and medium-term climate vision, raising the ambition of its targets.

The current target of 40% reduction in greenhouse gas emissions compared to 1990 is based on calculations from 2013. The costs of renewable energy (offshore wind, onshore wind, and solar) have declined drastically since 2013. Thus, the basis of the EU's current 2030 goal is outdated.

A linear reduction path towards climate neutrality in 2050 corresponds with a 2030 reduction goal of around 55%. The 55% climate goal for 2030 is currently supported by the European Parliament and a number of EU countries, including Sweden, the Netherlands and Finland.

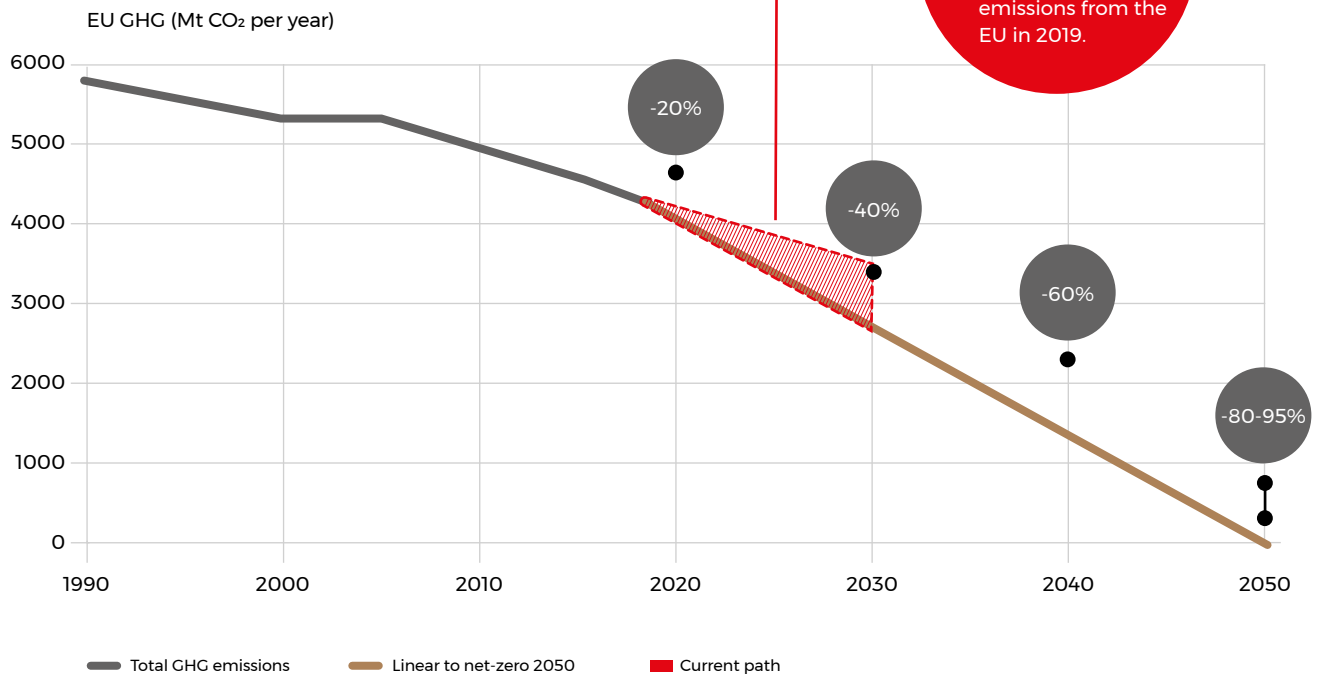
The added benefit of reducing greenhouse gas emissions by 55% by 2030, instead of by 40%, is a reduction in greenhouse gas emissions which is larger than the total expected greenhouse gas emissions from all EU countries in 2019.

What can the European Parliament do?

The first step towards a higher 2030 goal is to establish a political agreement on climate neutrality by 2050 (see proposal 1). After this, the European Parliament should require:

- An increase in the EU's 2030 climate goal from 40% to at least 55%.
- Amendments to the EU ETS Directive, to bring the number of CO₂ allowances in line with a climate target of at least 55% by 2030 (see also proposal 3).
- That the European Commission calculates a cost-effective reduction path from 2020 to 2050.
- That, in connection with these calculations, the European Commission updates its assumptions regarding the cost of renewable energy - particularly for the period 2020-2030 (see point 11).

A linear reduction of greenhouse gasses towards climate neutrality in 2050 corresponds with a 2030 reduction target of around 55%



Source: IPCC 2018: Special Report on Global Warming and 1.5°C, Danish Energy 2018.

3.

Ensure a robust and stable CO₂ price

To increase investments in climate-friendly technologies, a meaningful CO₂ price is of key importance. If the price of polluting is too low, the green transition will not progress quickly enough.

Since 2005, the European energy sector and manufacturing industries have been obliged to acquire CO₂ allowances corresponding to how many tons of CO₂ they emit.

The introduction of a transnational price on pollution by the EU was an important step in the right direction. It incentivises reductions in CO₂ emissions and it affects the largest CO₂ emitters the most (as they must purchase most CO₂ allowances) – regardless of the corporate nationality of the polluter. A robust CO₂ price also contributes positively to the economic viability of renewable energy.

However, a number of external and internal factors kept the price of emitting CO₂ at a far too low level over the past decade. When the system was introduced a price per CO₂ allowance of at least €40 per ton was expected in 2019, which would have had a profound effect on investments in the relevant sectors. However, the actual price has been well below €10 per ton for long periods of time.

After several legislative reforms to the emissions trading scheme in the mid-2010s, the cost of CO₂ emission has now increased to around €25 per ton. A key component of these reforms is the annual transfer of CO₂ allowances to the so-called “market stability reserve”, thereby reducing the supply and increasing the CO₂ price. To support these positive developments the continued transfer of allowances to a reserve until 2030 would be necessary.

However, the latest increases in the price of CO₂ will only have an impact if investors trust that the price will remain high in the long term. If investors are concerned that the price of CO₂ might fall to low levels again, they will protect themselves from this risk by calculating a risk premium. All other things being equal, this will make it more expensive to loan money for measures such as the establishment of new wind and solar energy.

A well-analysed solution to this problem would be to establish a minimum price for CO₂ allowances. A minimum price would establish long-term predictability for investors, thereby making long-term investments in carbon neutral solutions more attractive.

What can the European Parliament do?

By the end of 2021 at the latest, the European Commission will assess the EU’s Emissions Trading Scheme. In connection with this assessment, the European Parliament should require:

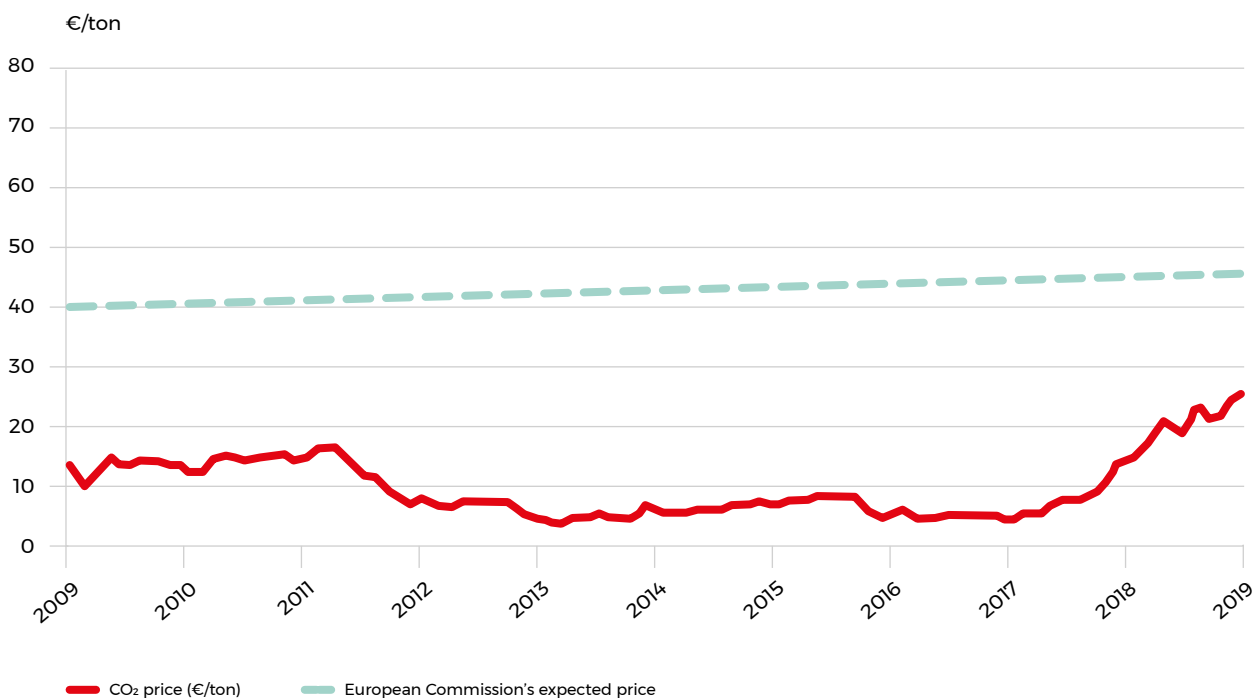
- That the Commission includes a minimum price for emitting CO₂, based on a CO₂ reduction target of at least 55% by 2030.
- A reduction in the share of CO₂ allowances allocated free of charge.
- That the annual transfer of allowances to the “Market Stability Reserve” continues to comprise at least 24% of the total number of allowances in the market.

A number of companies currently receive CO₂ allowances for free. This can be justifiable if they are in fierce competition with facilities outside of the EU that are not required to purchase CO₂ allowances. However, the allocation of free allowances has been too generous at times and should be tightened.

Lastly, some regions of Europe are particularly dependent on the coal sector. Therefore, it should be considered to earmark some of the proceeds from the sale of CO₂ allowances to support economic development in these regions.

” A minimum price would establish long-term predictability for investors, thereby making long-term investments in carbon neutral solutions more attractive.

The EU's CO₂ price and expectations at the time of establishing the EU Emissions Trading System (ETS)



Source: European Commission 2008: Impact assessment of the EU's 2020 goal of 20% CO₂ reduction and EEX.

4.

Accelerate the build-out of renewable energy

If the EU is to become climate-neutral by 2050, the European Commission finds that more than 75% of energy consumption must come from renewable energy. Today, renewable energy accounts for about 20% of energy consumption.

In the period 2031-2050 alone, the European Commission assumes that 50-55 GW of wind energy capacity must be established annually. The current level is 12-17 GW per year.

If the necessary expansion of renewable energy is to succeed, a number of supporting factors must be in place. Proposal 3 presents the importance of a stable CO₂ price; proposals 5, 6 and 9 underline conditions relating to infrastructure and the electricity market; and proposals 7, 8 and 10 touch on electrification. All of these are key enablers of accelerated renewable energy build-out.

In 2023, the European Commission will assess whether member states are expanding their renewable energy capacity at a sufficiently high pace to meet the EU 2030 renewables target of 32%. If not, the countries lagging behind should initiate collaborations with other member states to conduct a series of joint European tenders for renewable energy across national borders.

For example, a part of the North Sea could be designated for competitive bidding for offshore wind farms that will supply the country most in need of green electricity. If the wind farm is located in the vicinity of e.g. Germany, the German state will gain in terms of economic activity, regardless of whether the electricity is transported to Germany or to other member states.

The conditions governing how companies and households can conclude long-term contracts on

the purchase of renewable energy (Power Purchase Agreements, or PPAs) could become a key enabler of investments in renewable energy. However, the current legislative framework should be improved. It must be easy and attractive for businesses and households to conclude agreements with energy companies that supply renewable energy. Some EU countries currently favour fossil fuel power plants over renewable energy when it comes to these contracts. This should be addressed in upcoming revisions of state aid rules.

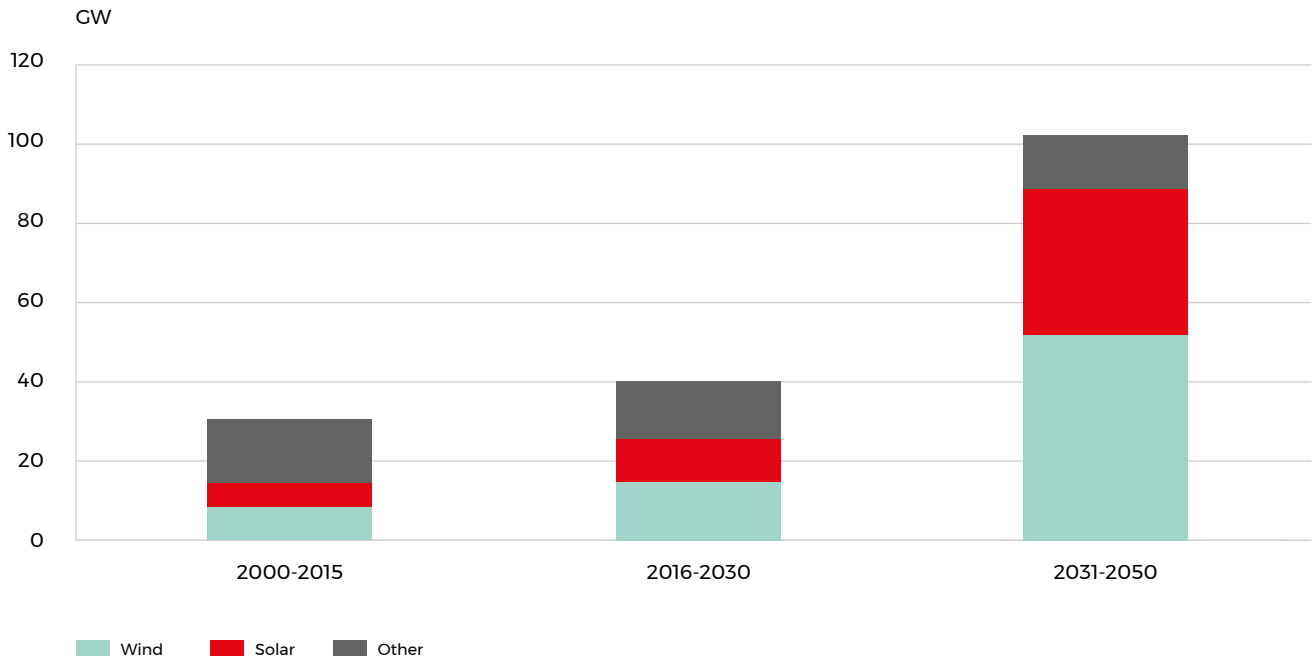
Lastly, the EU must improve its assumptions on the potential for renewable energy, accounting for the significant price reductions in recent years (see proposal 11 for more on this issue).

What can the European Parliament do?

By the end of 2023 at the latest, the European Commission must assess the EU's 2030 goal for renewable energy and the EU guidelines on the allocation of state aid. In connection with these assessments, the European Parliament should require:

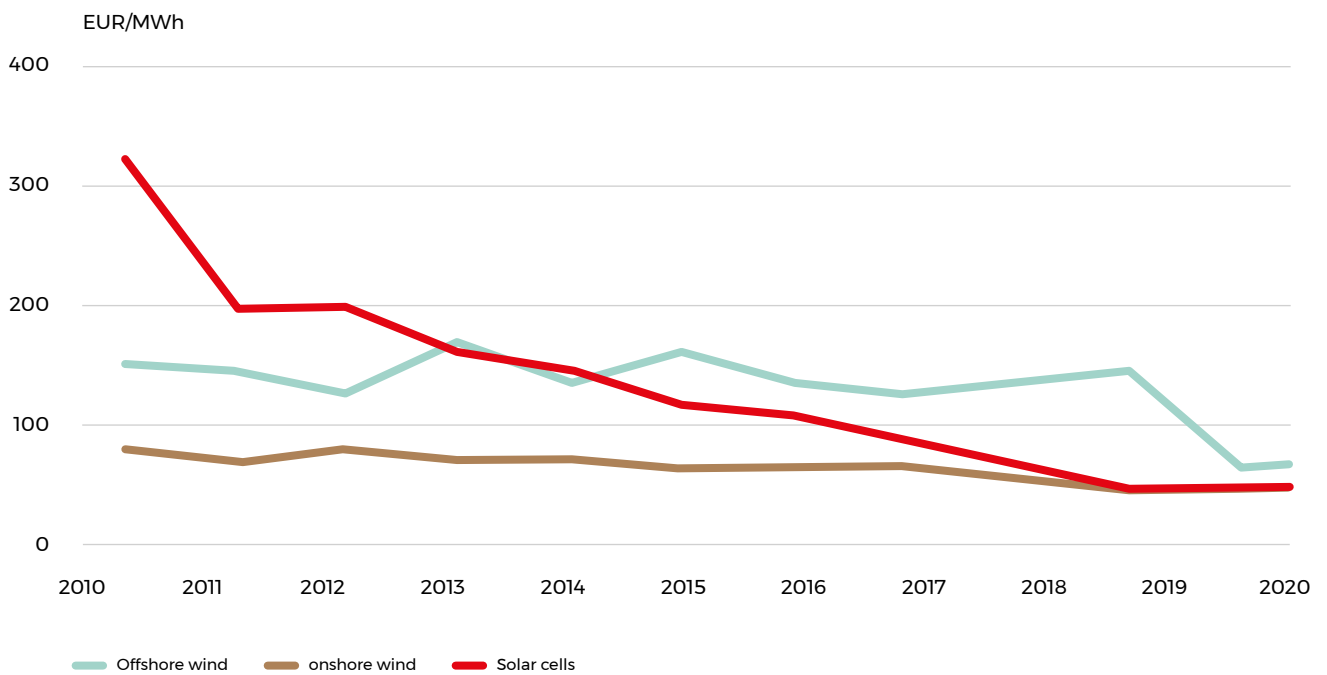
- That member states which make insufficient contributions to the EU's renewable energy target must be encouraged to collaborate with other member states on the planning and execution of transnational renewable energy tenders, e.g. in the North Sea.
- Improvements to the regulatory framework for Power Purchase Agreements (PPAs) to facilitate private investment in renewable energy.
- That the European Commission utilises updated data regarding the cost of wind and solar energy when assessing the 2030 renewable energy target.

Past and future build-out of electricity production capacity to achieve climate neutrality by 2050



Source: European Commission 2018: Analysis in support of the commission communication on climate neutrality by 2050.

Renewable energy prices have declined significantly in the past decade



Source: Danish Energy, based on IRENA 2018: Renewable Power Generation Costs.

5.

Accelerate expansion of the trans-European electricity grid

In the future, the location of European electricity production will be determined by completely different factors than in the past. First and foremost, electricity production will be located in areas with good wind conditions and frequent sunshine. Shifting electricity production to new locations will also require changes to the network that transports this electricity.

A significant share of the EU's current electricity supply is based on conventional power plants. These power plants are typically built in locations with particularly high electricity consumption, combined with easy access to lignite or good infrastructure for transporting coal. Access to cooling (seawater or rivers) has also been a critical factor in the establishment of the existing fleet of power plants in Europe.

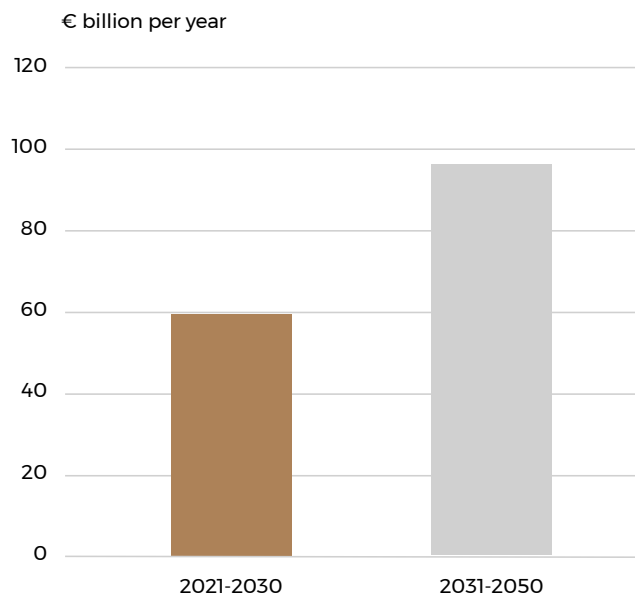
In the future, expansion of the European high-voltage grid needs to ensure that green electricity from areas with extensive carbon neutral resources can be transported to the major centres of consumption in Europe, i.e. across national borders.

This is particularly relevant in an electricity system with a large share of wind power. The European Commission assesses that around 50% of the EU's total electricity consumption will be based on wind energy in 2050. Thus, a significant share of Europe's future electricity production will be based in and around the North Sea.

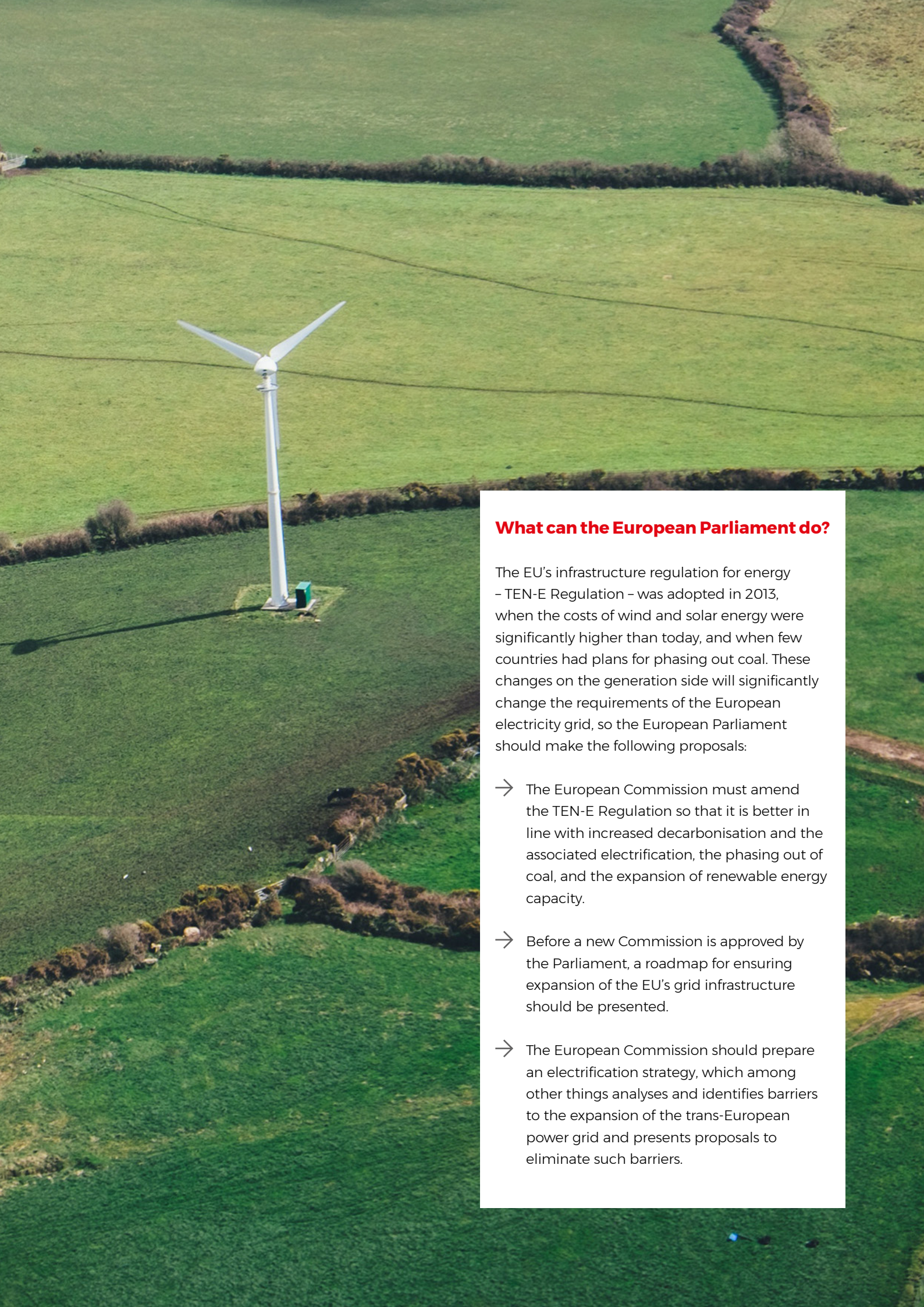
Meanwhile, European electricity consumption will remain particularly concentrated around the most densely populated areas and the major industrial centres. This includes, for example, the area around Paris, Benelux and Ruhr, and large areas of southern Germany and Northern Italy.

In other words, production of electricity is moving further away from the centres of consumption, thus requiring increased investment in infrastructure.

Annual investments in electricity grids in climate neutral scenarios for 2050



Source: European Commission 2018: Analysis in support of the commission communication on climate neutrality by 2050.



What can the European Parliament do?

The EU's infrastructure regulation for energy – TEN-E Regulation – was adopted in 2013, when the costs of wind and solar energy were significantly higher than today, and when few countries had plans for phasing out coal. These changes on the generation side will significantly change the requirements of the European electricity grid, so the European Parliament should make the following proposals:

- The European Commission must amend the TEN-E Regulation so that it is better in line with increased decarbonisation and the associated electrification, the phasing out of coal, and the expansion of renewable energy capacity.
- Before a new Commission is approved by the Parliament, a roadmap for ensuring expansion of the EU's grid infrastructure should be presented.
- The European Commission should prepare an electrification strategy, which among other things analyses and identifies barriers to the expansion of the trans-European power grid and presents proposals to eliminate such barriers.

6.

Finalise the internal market for energy

As the electricity system increasingly transitions to renewable energy, the need for exchanging electricity across regions will continue to grow. However, several members states significantly reduces access to the EU's electricity highways. This problem must be solved to ensure a cost-efficient transition to carbon neutral electricity supplies.

At an EU summit in 2011, the EU heads of state and government adopted Council conclusions calling for the completion of the internal market for energy by 2014. However, despite the positive intentions among the presidents and prime ministers of Europe, many member states changed their tune during the ensuing legislative process.

In 2016 less than 40% of interconnector capacity was made available to the market across the EU. On the interconnector between Western Denmark and Germany less than 15% of capacity was made available to Nordic electricity producers.

In 2018, the EU Competition Authority initiated an examination of the systematic limitation of accessibility at the Danish-German border. The German grid operator subsequently reached an agreement with the European Commission to make at least 70% of the capacity available to the market during all hours of the year. With the final adoption of the Clean Energy Package in early 2019, the rules on transnational trade were emphasised in European legislation.

This political intervention has led to major advances towards the establishment of an internal market. However, many issues must still be resolved before a true energy union can be realised.

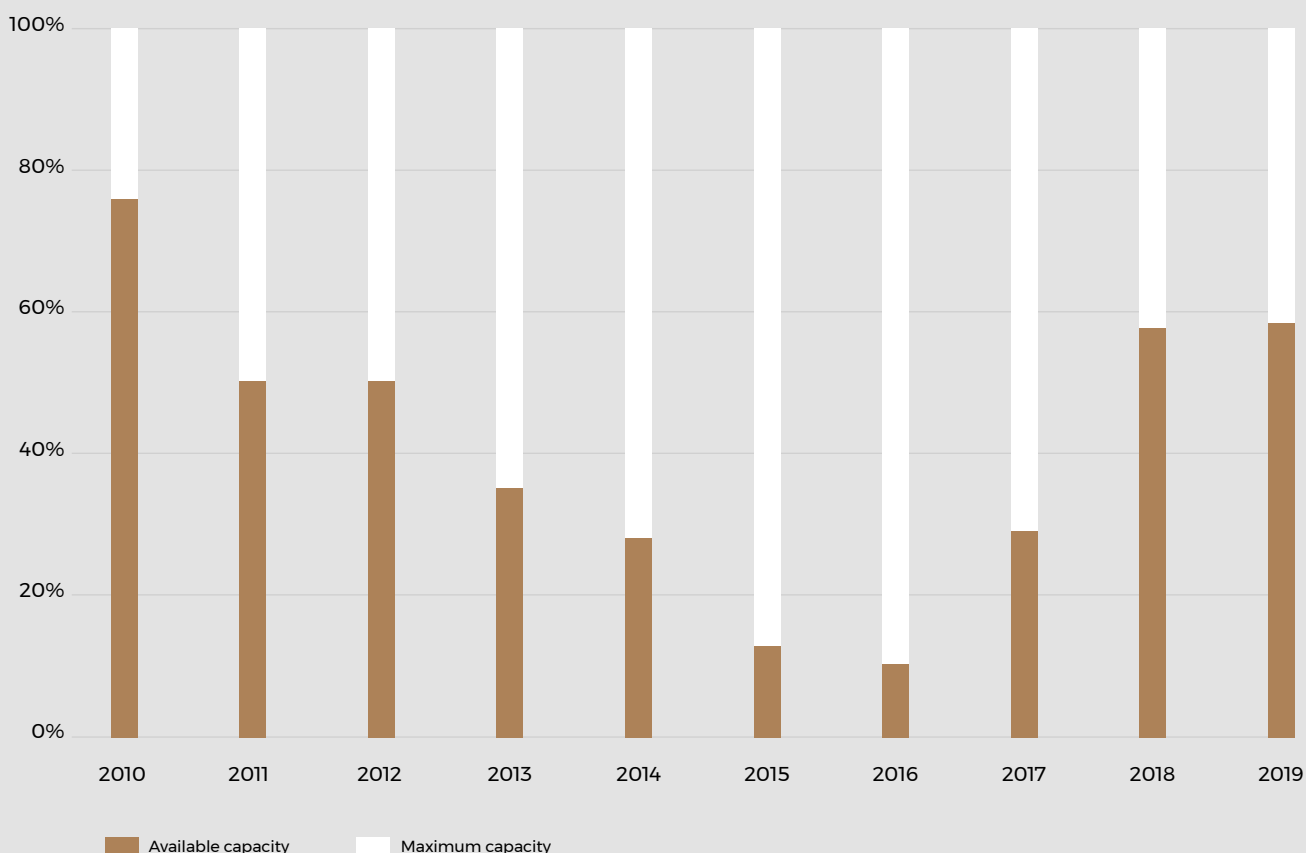
First, although 70% market availability on inter-connectors is a step in the right direction, this figure should be 100% in principle. A critical task in this respect is following up on the implementation and enforcement of the adopted measures in the Clean Energy Package.

Second, a well-functioning internal market is dependent on the market pricing of the services needed in the electricity system, and that commercial players have access to bid on these services. This is not always the case at present.

Third, several member states have implemented "capacity mechanisms", which in essence are subsidies to power plants to ensure sufficient capacity when the wind is not blowing and the sun is not shining. Such subsidies should only be implemented after all other options have been exhausted. Therefore, analysis of the need for capacity mechanisms should be primarily conducted at the European level, taking into account the possibility of exchanging electricity between neighbouring countries. Furthermore, capacity mechanisms should be technology-neutral, allowing not only power plants, but also wind, solar, battery and flexible consumption to submit bids.

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Available export capacity via power cables from Western Denmark to Germany



Source: Danish Energy, based on data from Nordpool.

What can the European Parliament do?

The EU's recently adopted legislation for the electricity market must be implemented and assessed in the coming years. The European Parliament should require:

- Ongoing reporting from the European Commission, the Council and the EU Agency for the Cooperation of Energy Regulators (ACER) on the implementation of internal energy market rules.
- A roadmap to get from 70% utilisation to 100% utilisation of the transnational infrastructure.
- That the European Commission, member states and ACER focus on ensuring that capacity mechanisms do not distort the market.

7.

Transform energy consumption in the transport sector

The green transition is progressing far too slowly in the transport sector – one of the few sectors where greenhouse gas emissions remain higher than 1990 levels. Key driving forces in the transformation of energy consumption in the transport sector are EU legislation on CO₂ standards for cars and rollout of necessary charging infrastructure. Persistent follow-up and strict enforcement of this legislation will be crucial in coming years.

The period 2019-2024 could be the time when European consumers truly embrace electric vehicles. The major car manufacturers are already busy preparing for this new reality. For example, in March 2019 Volkswagen announced a vision to develop the last petrol and diesel cars in the year 2026, and to introduce 70 new electric car models to the market in the coming decade.

An important obstacle to the increased use of electric vehicles is the lack of charging infrastructure. The 2014 Alternative Fuels Infrastructure (AFI) Directive requires EU member states to prepare national action plans to begin establishing charging infrastructure in 2019. Thus far, the quality of these action plans has been lacking. Large areas in every EU member state remain sparsely served by charging stations – not least due to inadequate government investment. Another need is the establishment of interoperability, whereby the same payment method or subscription can be used to charge electric vehicles across national borders.

Taxation is also a key tool for decarbonising the transport sector. The EU already has an energy taxation directive, but this has a very limited focus on climate change. The European Commission is considering a revision of the directive for this very reason, as taxes would be a highly effective means of reducing the

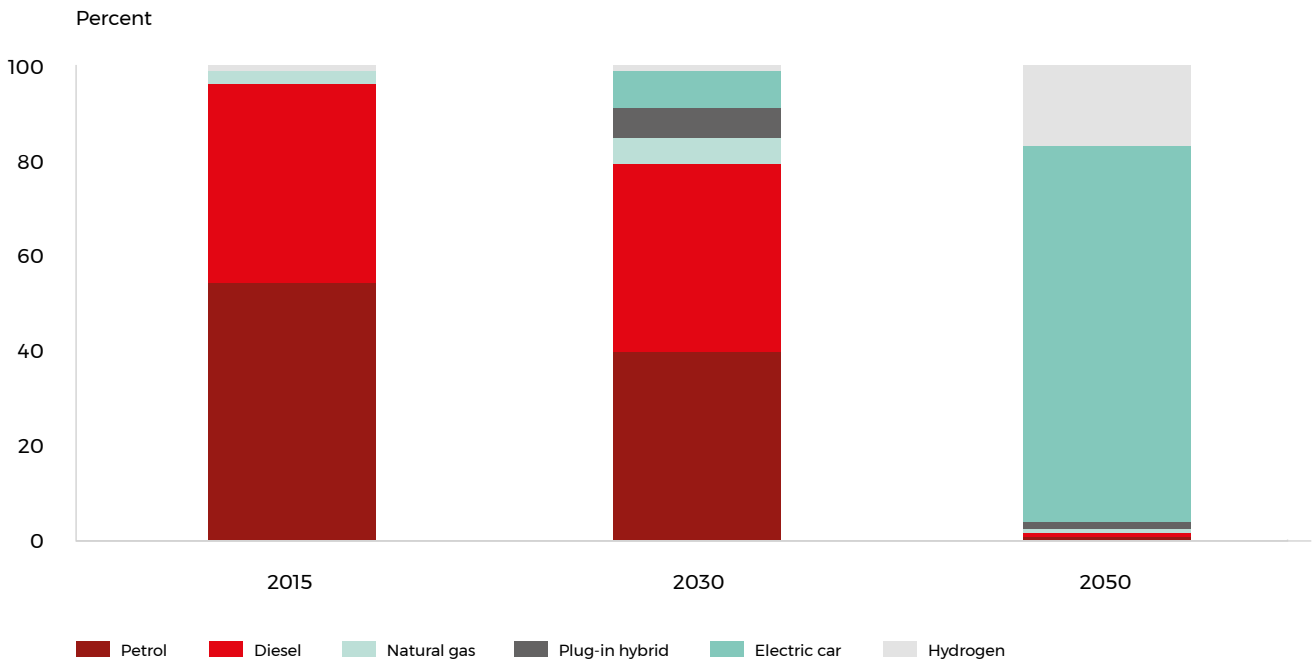
climate impacts of the transport sector. The same applies to heavy transport, where, for example, a European tax on aviation fuel can help drive a green transition, as emissions from this sector continue to grow at significant rate. Such policies must be implemented in accordance with the Chicago Convention, which prohibits taxation of aviation fuel already on board when an aircraft lands at an airport. Alternatively, the EU should work in support of amending the Chicago Convention.

What can the European Parliament do?

The green transition of the transport sector requires stronger incentives to switch from fossil fuels to renewable energy, combined with expedited establishment of the necessary infrastructure. Therefore, the European Parliament should demand:

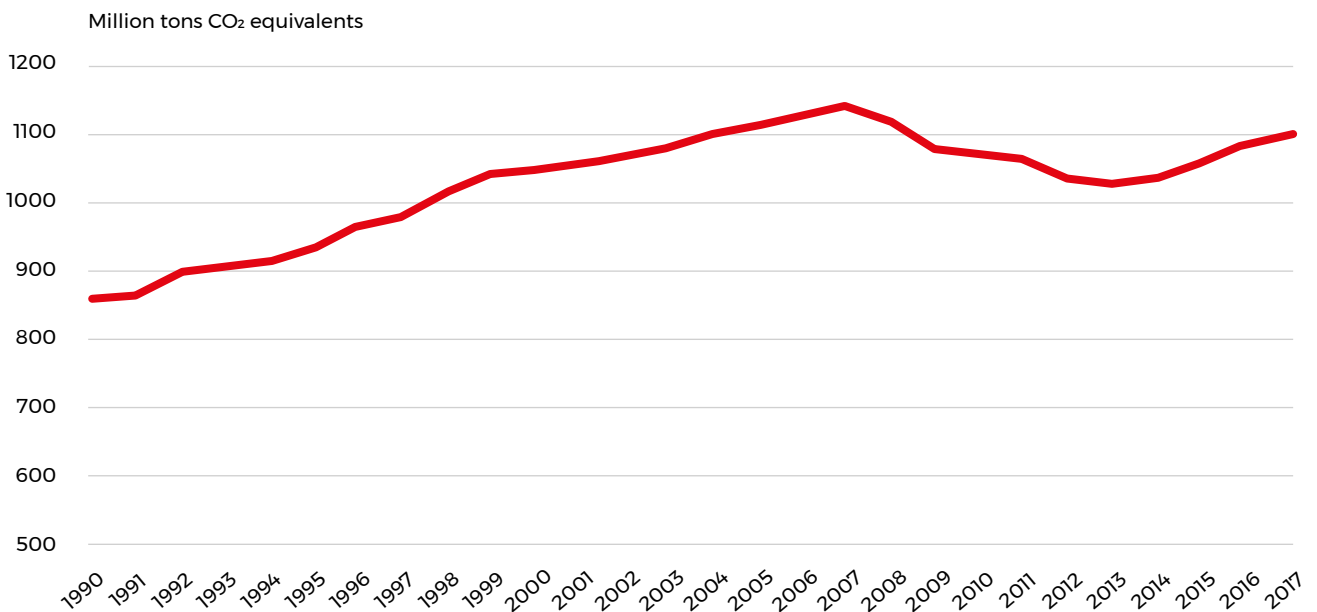
- A revision of the AFI Directive to include detailed and binding requirements on the preparation of national strategies for the establishment of charging infrastructure, combined with strict implementation and enforcement thereof.
- That a new Commission prepares a roadmap for charging and refuelling stations with green energy for heavy transport (e-highways, rapid charging stations for lorries at transport centres, etc.).
- Ongoing and robust follow-up on CO₂ standards for cars and light/heavy vehicles.
- More climate-oriented energy taxation in the EU, including exploration of options for EU measures to regulate the climate impacts of the aviation industry.

Distribution of car types in the EU necessary for climate neutrality by 2050



Source: European Commission 2018: Analysis in support of the commission communication on climate neutrality by 2050.

Greenhouse gas emissions from the transport sector in the EU



Source: European Environment Agency, 2018.

8.

Improve the efficiency of buildings and industry through intelligent solutions

To reach climate neutrality by 2050, the European Commission finds that the EU must significantly increase the energy efficiency of buildings and industry. According to the Commission's climate analysis, the primary energy consumption must be reduced by 35-40% compared to 2015 levels.

Buildings account for approximately 40% of the EU's energy consumption (heating, cooling, ventilation, lighting, etc.). This is partly due to the poor quality of buildings in many parts of Europe, and partly because much of the energy supply is based on inefficient burning of fossil fuels.

Well-established measures such as improved insulation will play key roles in these efforts – particularly in member states with many inefficient buildings. A number of intelligent data-driven solutions to optimise energy consumption in buildings and industry are also expected to gain traction in the coming years. These solutions can also help to improve the indoor environment in buildings.

Data-driven solutions will make buildings and industry a more integrated part of the energy system, rather than merely energy consuming entities. The EU Building Directive establishes a "Smart Readiness Indicator" for buildings, which may further accelerate this development.

In relation to energy supplies, the efficient use of renewable energy (e.g. heat pumps instead of burning natural gas) will improve energy efficiency and ensure better coordination throughout the energy system.

Significant potential also exists for expanded use of district heating e.g. in combination with large scale heat pumps. In areas without plans to establish district heating, individual heat pumps will be an important part of the solution.

What can the European Parliament do?

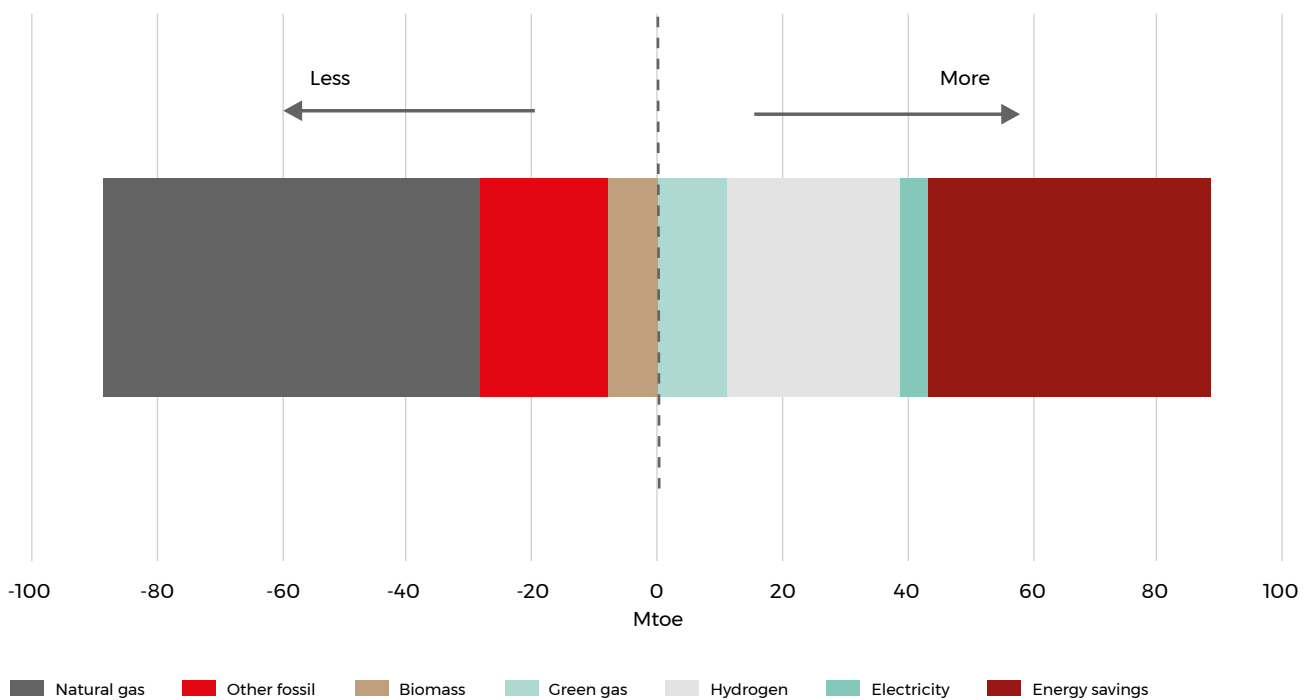
Reducing the climate impact of the EU's buildings and industry will require reductions in end use consumption, improved efficiency in the utility sector, and digitisation. Therefore, the European Parliament should require:

- Ongoing follow-up on member state implementation of the Building Directive, including implementation of the "Smart Readiness Indicator" for buildings.
- That the European Commission prepare an electrification strategy, which must include an examination of barriers to increased electrification of energy consumption in industry and buildings.
- That barriers to data management, particularly in larger buildings are eliminated, enabling stronger contributions to energy savings and flexible consumption.
- That the European Commission identifies the potential for – and the barriers to – establishing district heating throughout Europe.

According to the European Commission, in 2050 electricity must comprise around 80% of all energy consumption in commercial buildings (50% today) and 63% in residential buildings (25% today) if the EU is to achieve climate neutrality by 2050.

” A number of intelligent data-driven solutions to optimise energy consumption in buildings and industry are also expected to gain traction in the coming years.

Changes in industrial energy consumption towards a climate neutral EU in 2050



Source: European Commission 2018: Analysis in support of the commission communication on climate neutrality by 2050.

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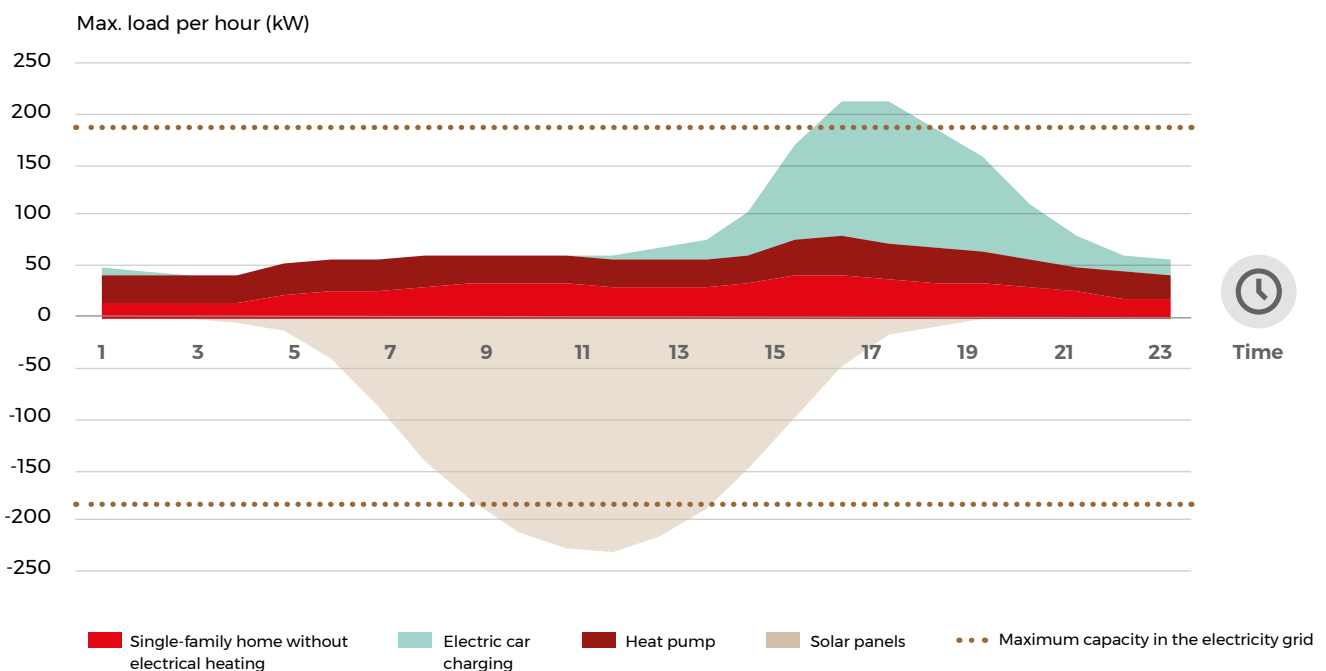
Future proof the regulatory framework of local electricity grids

Significant changes in the way we produce and consume energy will place new demands on the local electricity infrastructure, also known as the “distribution grid”. The distribution grid enables the transport of electricity along the electricity grid’s residential and rural roads, i.e. all transport of electricity between the high voltage grid (>100 kV) and power sockets.

Today, security of electricity supply is generally high in the EU. However, it is important to enable distribution grid operators (DSOs) to handle increased volumes of local consumption and local production in the future. The green electricity system needs to be interlinked from the bottom up and give individual Europeans the opportunity to participate in the green transition.

Residential road with solar cells (Summer)

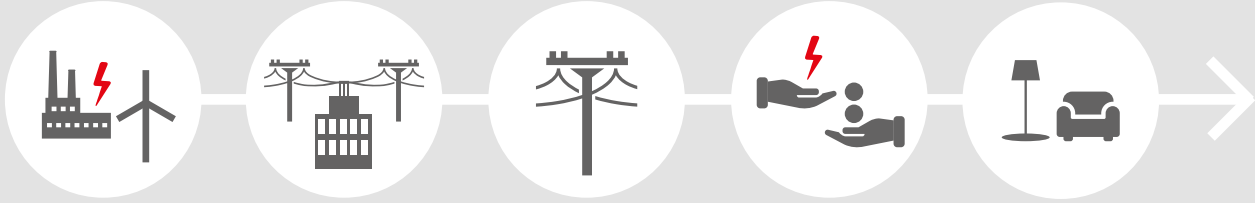
The future will bring increases in the number of household solar power systems, electric vehicles and heat pumps, adding pressure on the electricity grid. This issue must be solved by expanding the grid and through innovative solutions that enable flexible consumption at times when loads on the grid are lower.



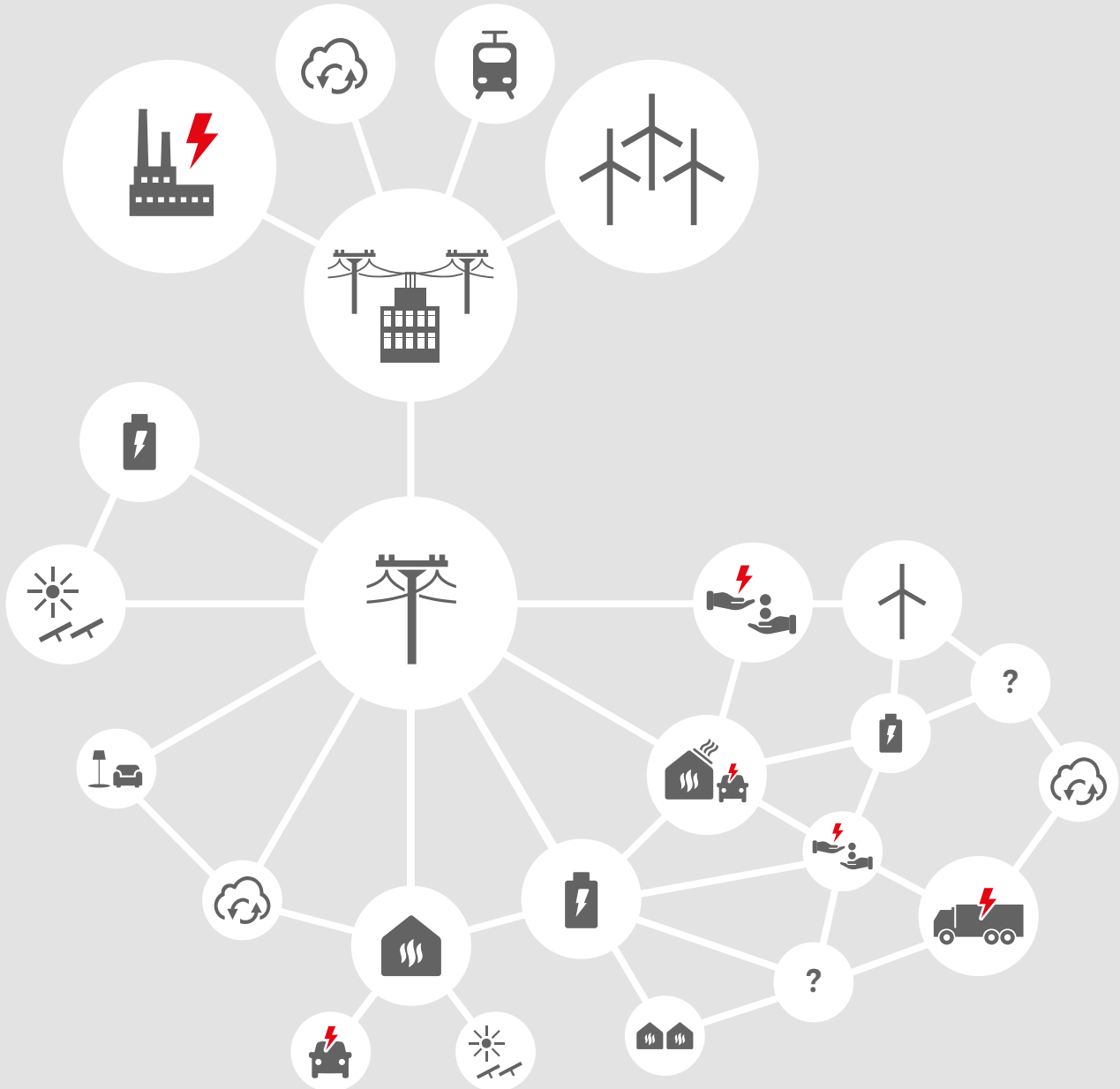
Source: Danish Energy, 2018: Electricity Grid Outlook 2018.

Now and in the years to come, the traditional one-way electricity system is being replaced with a network-oriented value chain. This process is radically changing the role of the grid companies. In the future, local grids will handle more production, consumption and storage.

Classic one-way value chain:



Network-oriented value chain:



Traditionally, traffic in the electricity grid has been one-way, with power from central power plants flowing through the high and low voltage grid and down to individual households and companies. With the expected influx of electric vehicles (proposal 7) and increased use of heat pumps (proposal 8), the amount of electricity flowing through the distribution grid will increase significantly. In addition, solar panels and onshore wind turbines are typically connected directly to the local distribution grid, creating two-way traffic in the electricity system and changing the flow of energy.

The EU electricity directive adopted in 2019 goes a long way towards establishing a distribution grid capable of supporting a green electricity system, but further developments are needed.

A significant increase in electrification will naturally require investments in grid upgrades. It will also require data-driven improvements in utilisation of the existing grid, as well as incentives for electricity customers to shift their electricity consumption to periods of the day with lower grid load.

The key phrase here is “flexible electricity consumption”, which provides value to electricity distributors by preventing bottlenecks and reducing the need for costly investments in the electricity grid. This flexibility is also valuable for the overall electricity system – both nationally and for the EU electricity market as a whole.

” The new electricity directive adopted in 2019 goes a long way towards establishing a distribution grid capable of supporting a green electricity system, but further developments are needed.

If everyone living on a residential street owns an electric car, and they all start charging it at 5:00 pm after returning home from work, expansion of the local grid capacity will be necessary. If the vehicles are charged at night instead, when electricity consumption is low, the load on the grid will be lower, eliminating or postponing the need for grid expansions. More efficient use of the grid will require incentivising customers to shift their consumption patterns (through adapted price signals) on the basis of increased data utilisation, and individual customers must in this context have easy access to their consumption and production data.

What can the European Parliament do?

Local grid companies will be the backbone of the energy transition absorbing increased local production and consumption of electricity. Therefore, the European Parliament should require:

- That the European Commission prepares an electrification strategy, including examination of the impact of electrification on the distribution grids and the distribution companies' ability to sufficiently upgrade the grids within the regulatory framework.
- That consumption and production data is available for use in the optimisation of operations and grid expansions, and that it is also available to sector players and customers within the bounds of the GDPR.
- Uniform conditions, rights and obligations for new players in the electricity market, with a view to ensuring cost-effective utilisation of flexibility.



10.

Reduce greenhouse gas emissions through market-based sector coupling

With the decreasing price of renewable energy sources, electricity can play a critical role in making other parts of the energy sector climate neutral. The success of these efforts will depend upon much stronger interaction between multiple energy sources, the energy grid and consumption.

In the period 2019-2024, the EU will review and amend its gas sector regulation. Key political battles in this respect include measures to promote the green transition of the gas sector and the speed at which this transition will take place.

In a climate-neutral society, natural gas will play a much smaller role than in the EU's current energy system. However, biogas and hydrogen produced from green electricity through electrolysis is expected to be relevant in industry and heavy transport as a result of the declining prices of renewable energy. Such a conversion is often referred to as "sector coupling" (which also covers a broader range of applications) or Power-to-X (PtX).

In this respect, it will be important to ensure that commercial players serve as the driving force in the transition, and to explore the incentive structures under which consumers of gas and competing forms of energy operate.

The advantage of hydrogen produced with e.g. wind energy is that it enables the implementation of renewable energy in many more sectors. Hydrogen and derivative products thereof can be produced flexibly and stored for use at a later time, including as transport fuel, for industrial applications, and as fuel in power plants.

To realise this potential, it is critical that electricity consumption for electrolysis is not subject to unnecessary burdens and that it is treated as a commercial activity in the electricity system on an equal footing with similar facilities.

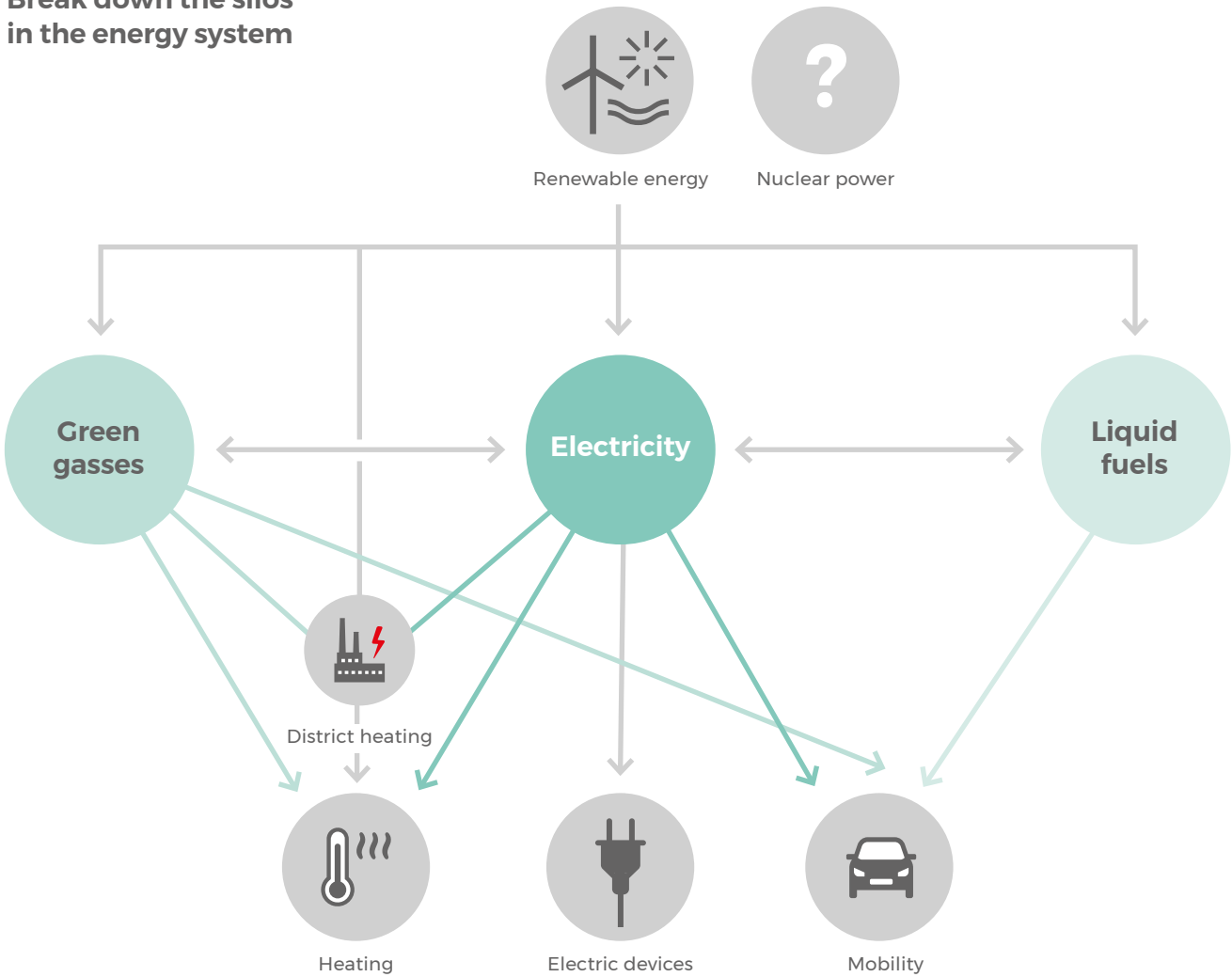
The promotion of hydrogen and other green fuels and products based on wind and solar energy (e.g. ammonia, plastic, steel and methanol) can also be supported by imposing stricter requirements on the energy sources utilised by the chemical, shipping and aviation industries, or through subsidy schemes for green transport fuels or chemicals.

What can the European Parliament do?

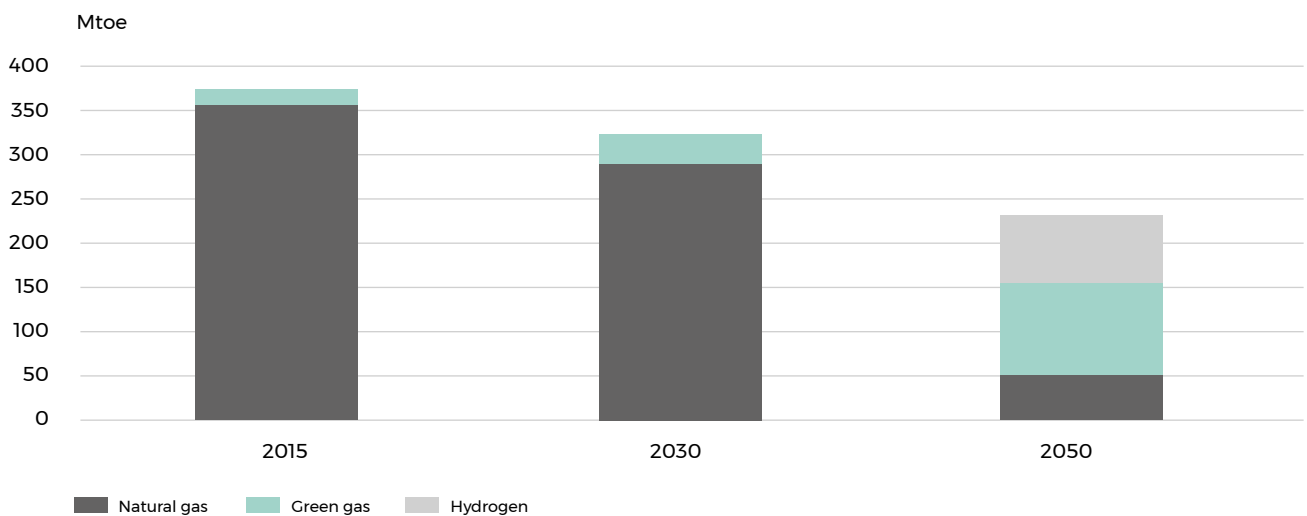
In the coming parliamentary term, the European Commission will present a major legislative package with proposals on the future regulation of the gas market. In this respect, the European Parliament should require:

- A framework that gives commercial players an incentive to invest in solutions across energy systems, e.g. additive requirements for transport fuels and mandatory adoption of green chemicals.
- Free market competition in the operation of storage facilities and power-to-X systems.
- That the European Commission identifies the flexibility value of coordination between electricity and gas in heating and industry between now and 2050.

Break down the silos in the energy system



Gas consumption towards a climate neutral EU in 2050



Source: European Commission 2018: Analysis in support of the commission communication on climate neutrality by 2050.

11.

Bring modelling assumptions up to speed with market developments

The 10 proposals highlighted above, focus on concrete policy initiatives needed to reinforce EU's energy and climate policy. However, behind current policies are a number of studies and analyses, whose assumptions overestimate the prices of renewable energy. As a result, the green transition appears more expensive than it truly is.

New legislation proposed by the European Commission is based on extensive analytical efforts, including assessment of the economic, social and environmental impacts of legislative measures.

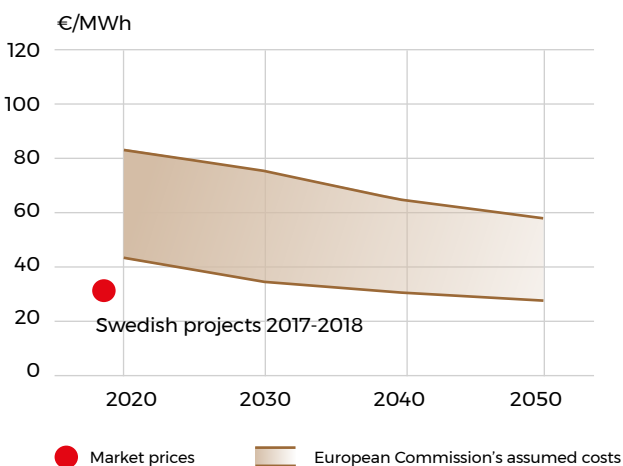
However, well-justified criticism has been directed towards the European Commission's analyses relating to energy and climate. As mentioned under proposal 2, the costs of establishing renewable energy have declined sharply in the last 5-10 years. However, these developments are not adequately reflected in

the analyses underlying the European Commission's vision of a climate-neutral EU by 2050. The cost of renewable energy is particularly overestimated for the period 2020-2030. As a result, the energy transition appears to be more expensive than it actually is – and this means that the current short term climate goals (towards 2030) lack the requisite ambition.

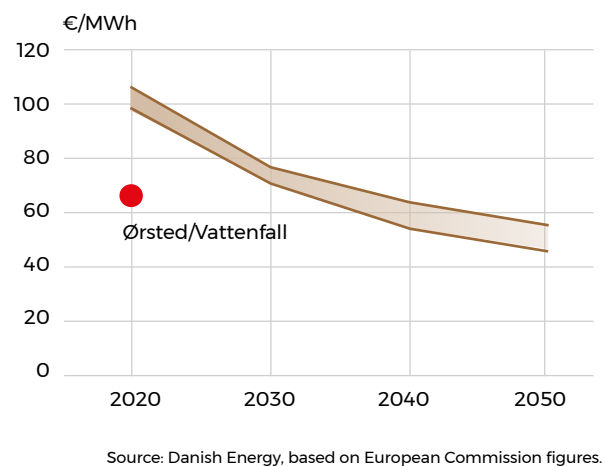
As discussed in proposals 3-10, the energy system of tomorrow will have a significantly different structure in terms of production, infrastructure and markets. If regulations are to support a cost-effective transition, it is crucial that the calculations underlying political decisions are accurate.

The new European Commission should be required to ensure increased transparency regarding the assumptions and results of the analyses on which political decisions are based. Being open about these analyses will enable further verification to ensure correct assumptions and a more democratic discussion about the basis for decision-making.

Costs land-based wind



Costs offshore wind



Source: Danish Energy, based on European Commission figures.

What can the European Parliament do?

In the forthcoming parliamentary term, the European Commission will update its “reference scenario”, which describes the expected developments in the energy sector. The reference scenario is a cornerstone of the analyses on which future EU energy and climate policy legislation is based. The European Parliament should require:

- More frequent updates of the assumptions regarding the costs of renewable energy in the European Commission’s calculations.
- That assumptions and results of all European Commission analyses are made transparent to the public.
- Hearings in which experts from other institutions can present their analyses.

10+1

Proposals for an improved energy and climate policy in the EU

Climate

1. Set an end date for net-emission of greenhouse gasses

Climate

2. Increase the EU's 2030 climate target to at least 55%

Climate

3. Ensure a robust and stable price on CO₂

Renewable energy and internal market for energy

4. Accelerate the build-out of renewable energy

Renewable energy and internal market for energy

5. Accelerate expansion of the trans-European electricity grid

Renewable energy
and internal market
for energy

**6. Finalise the
internal market
for energy**

Green consumers

**7. Transform energy
consumption in the
transport sector**

Green consumers

**8. Improve the
efficiency of
buildings and
industry through
intelligent
solutions**

Green consumers

**9. Future Proof
the regulatory
framework of local
electricity grids**

Integrated
energy systems

**10. Reduce
greenhouse
gas emissions
through market-
based sector
coupling**

Bonus

**11. Bring modelling
assumptions up to
speed with market
developments**

Read more at
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