

# TO THE COMMISSIONER RESPONSIBLE FOR CLIMATE ACTION AND ENERGY

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\* To decarbonise in line with the Paris Agreement, you will have to unleash a deep energy transformation in Europe. Policy choices made up to 2024 will define the shape of the EU energy system in 2050.

Fortunately, most of the necessary technologies are now available at declining costs and an increasing share of the population understands that Europe stands to gain from such a transformation in the long-term

You should fight for a price on all greenhouse gases in the EU and offer policies that enable all technology options to play to their full strengths in the decarbonisation process. Crucially, you must face up to the distributional effects of climate policies. Unless the distributional consequences of climate policies are addressed, there is a risk of a social backlash against decarbonisation.

\* PARIS AGREEMENT

\* ENERGY CHOICES

\* FAIR TRANSITION

## 1 STATE OF AFFAIRS

Your predecessor helped to deliver the Paris Agreement, which marks a historic juncture in global action against global warming. He spent a significant part of his mandate fostering international support for the Agreement, ensuring its continuation after the United States' withdrawal, and pushing for the adoption of a clear and comprehensive rulebook to make it operational. By doing all this, he further strengthened the European Union's position as a leader in global climate action.

Meanwhile, your predecessor worked on a tidal wave of more than 40 EU laws, addressing issues including new targets for renewable energy and energy efficiency, EU energy and climate governance, new rules for the EU's electricity market, a clean mobility package and a 2050 vision for carbon neutrality (European Commission, 2019a).

You will be no less busy. You will have to unleash a much deeper energy transformation in Europe, to decarbonise in line with the Paris Agreement and also to seize the economic and industrial opportunities offered by this global transformation. You must also ensure the social acceptability of the energy transition, creating the right policy framework to manage the distributional effects of deeper decarbonisation. You have a major responsibility, because policy choices made up to 2024 will define the shape of the EU energy system in 2050.

### **Paris Agreement**

The Paris Agreement is both resilient and delicate. Its resilience was demonstrated when, after the US announced its withdrawal from the agreement, countries, cities and companies around the world reconfirmed their commitment to implementing the Agreement and enhancing its ambition. However, the Agreement is a delicate legal hybrid, blending binding elements of accountability with non-binding emissions targets. It bets on the power of improving standards and ambitions rather than legally binding and effective rules. It remains a risky bet, particularly considering that about 78 percent of the nationally determined contributions (NDCs) – notably of developing countries – contained within the

Agreement are conditional on external financial and technical support (Day *et al*, 2016). This shows the key role of international climate finance in implementing the Paris Agreement and helping developing countries deal with climate change.

### **Energy Union**

Proposed in the aftermath of Russia's annexation of Crimea in 2014, the Energy Union concept was born with a strong focus on energy security –notably the reduction of the EU dependence on Russian gas (Tagliapietra and Zachmann, 2016). Since then, the Energy Union has become a framework for existing and developing EU policies on energy security, internal energy market, energy efficiency, decarbonisation of the economy and low-carbon research and innovation.

Competence for energy policy is shared between the EU and its member states and the choice of the national fuel mix is explicitly left to member states. Consequently, much EU energy and climate policymaking in the past was conducted through the competition and environmental policy competences of the EU. The core innovation of the Energy Union is that it introduces a new governance system to improve coordination between national and European energy policies.

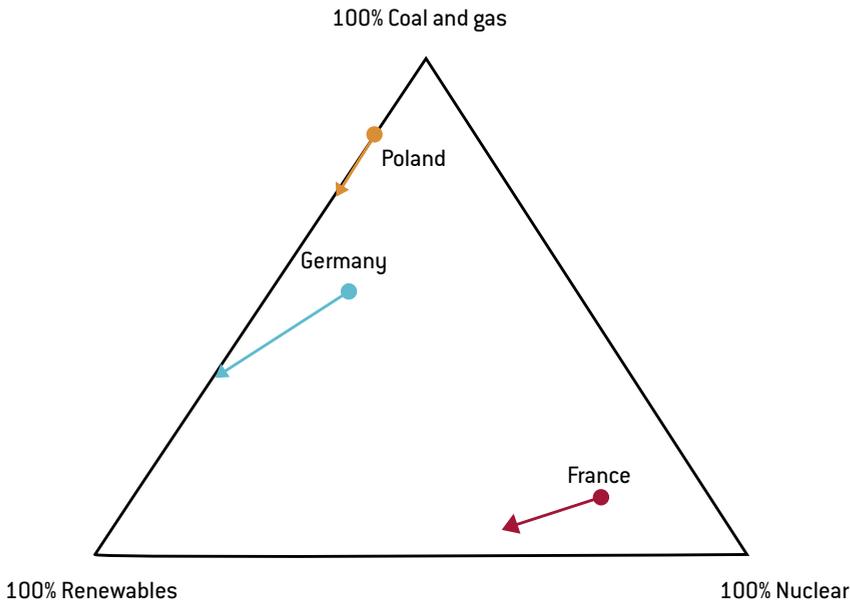
Member states must develop integrated (10 year) national energy and climate plans (Figure 1), consulting each other on their respective plans. Brussels will evaluate whether these plans are in line with the EU 2030 targets. The Paris Agreement requires a first revision of NDCs in 2020 and one of your first critical exercises will be to ensure that member states implement the European Commission's June 2019 recommendations on their national energy and climate plans<sup>1</sup>. You must ensure that all EU countries move towards the achievement of the 2030 targets and are on a trajectory to achieve the EU vision of climate neutrality by 2050 (European Commission, 2018).

This internally flexible framework enabled member states to agree on more ambitious 2030 energy and climate targets than initially expected. The 32.5 percent energy-efficiency target and the 32 percent renewables target should mean the EU overachieves against its target of cutting greenhouse gas emissions by at least

\*NATIONAL  
ENERGY AND  
CLIMATE PLANS

\*2030 TARGETS

**Figure 1: Planned changes to electricity fuel mixes of France, Germany and Poland from 2015 to 2030, according to their draft energy and climate plans**



Source: Bruegel based on Eurostat and National Energy and Climate Plans (December 2018 drafts).

40 percent compared to 1990 – the EU’s current pledge under the Paris Agreement.

**Technology trends**

The share of renewable energy in EU gross final energy consumption rose from 10.6 percent in 2007 to 17.5 percent in 2017. In the same year, electricity generation from renewables contributed more than 30 percent of EU gross electricity consumption, led by wind power (Eurostat, 2019). This positive development was the result of both policy support and technological developments. The EU’s target for the share of renewable energy in gross final energy consumption to be 20 percent by 2020 has led to the deployment of renewable energy subsidy schemes across the EU, mainly in the form of fixed feed-in tariffs. This has come at a cost to European households, which paid on average €24 /MWh for renewable energy subsidies in 2017 (12 percent of the total electricity price; see European Commission, 2019b). Subsidies have decreased since 2016. Meanwhile, the share of renewables has continued to

\*RENEWABLES

\*ENERGY PRICES

grow as a result of falling costs. Solar and wind electricity costs fell by 88 percent and 69 percent respectively between 2009 and 2018 (Lazard, 2018).

Cost for conventional generation technologies have not declined, while the cost of the few remaining nuclear projects has escalated massively. Moreover, the prospects for carbon capture and storage solutions for the energy sector – that were only a few years ago expected to shoulder a significant share of the decarbonisation burden – have significantly deteriorated. This rapid shift in the cost structure of electricity generation technologies enables a rethink of our future low-carbon energy system, but it also cautions against narrowing down policy support to too-few technology options.

### **Energy and climate: an increasingly politicised area**

\*POLITICISATION

Energy and climate are now among the most divisive EU topics. The FridaysForFuture movement has mobilised mainly young people to demand more ambitious climate policies. In contrast, the *gilets jaunes* movement in France and beyond has protested against fossil-fuel price increases that were perceived as unfair. Consequently, you will have to navigate a politically highly sensitive area.

## **2 CHALLENGES**

\*FALLING COSTS

Your overarching goal should be to foster a deep transformation in Europe. Fortunately, most of the necessary technologies are now available at declining costs and an increasing share of the population understands that Europe stands to gain from such a transformation in the long-term.

Your challenge will be to engineer a framework that ensures this transformation: 1) is sufficient to achieve climate neutrality<sup>2</sup> by 2050; 2) seizes the economic opportunities for European companies; 3) is managed in a cost-efficient way; and 4) distributes cost fairly across society.

Notwithstanding technical progress and increasing societal awareness, the challenge will be huge. All industries that are built on burning fossil fuels will have to transform or vanish within only



*Industries that are built on burning fossil fuels will have to transform or vanish within only 30 years*

30 years. This will affect the regions that generate a large share of wealth from these industries, and ultimately the people who work in these industries, live in these regions or consume these products. You must therefore: 1) create the policy framework for the swift deployment of already available no-regret options (renewables, energy efficiency, coal phase-out, transport decarbonisation); 2) moderate a societal discussion to promote ambitious national climate action; and 3) prepare the political and technical ground for cutting difficult emissions (including industry, agriculture and aviation) in the coming decades.

### **Renewables**

Electricity from renewables will be a main vector to decarbonise our economy – including transport and heating. Despite the falling costs of wind turbines and solar panels, increasing the share of renewables remains an uphill battle. The key challenge is to ensure that if the wind is not blowing and the sun is not shining in a certain place, consumers still get all the electricity they need. You should devise a regulatory framework that unlocks investment in a well-coordinated system of storage, networks, dispatchable plants and demand response. Otherwise, the system cost of renewables will substantially increase, or unmanaged variability will put at risk security of supply.

### **Energy efficiency**

Numerous laws<sup>3</sup> have been put in place to reduce energy consumption but progress has been uneven. In 2016, EU final energy consumption was 7 percent lower than in 2005, as a result of the economic downturn, of structural changes towards less energy-intensive industrial sectors and of the implementation of energy

\*INVESTMENT

\*HEATING AND  
COOLING

efficiency policies (EEA, 2018a). Since 2015, EU final energy consumption has risen as the economy has recovered from the crisis, jeopardising the achievement of the 2020 energy efficiency target. In the heating sector especially, energy efficiency is crucial to enable the switch to clean electricity and fuels.

Heat constitutes about half of EU energy consumption. Just replacing oil, gas and coal in heating by 'clean' fuels (eg electricity from renewables) would require massive investment in generation, transmission and distribution. Combining the switch to clean fuels with energy efficiency measures will most likely be a more economical solution.

### **The persistence of coal**

\*SUBSIDIES

Coal remains the most polluting component of the EU energy system – it alone represented about 15 percent of EU emissions in 2018. This is profoundly damaging not only for the climate, but also in terms of air pollution, substantial fiscal subsidies for coal and global credibility (Tagliapietra, 2017). Your challenge will be to push member states to implement a speedy coal phase-out, while supporting the most-affected regions with plans to help them re-skill the labour force, re-purpose decommissioned sites and find alternative income sources for their local economies. A sensible carbon price would help the coal phase-out, but alone would not be sufficient.

### **Transport emissions**

\*ROAD  
TRANSPORT

Between 1990 and 2016, EU emissions decreased significantly in all sectors except transport, which has seen an 18 percent increase (EEA, 2018b). Transport is thus becoming a key obstacle to EU decarbonisation and more aggressive policies are needed to decarbonise this sector. A particular focus should be decarbonising road transport because it is responsible for more than 70 percent of overall transport emissions. Decarbonising road transport would also improve air quality in cities, air pollution remaining the number one environmental cause of premature deaths in Europe. Tighter vehicle fuel economy standards have not sufficiently delivered and the latest EU clean mobility policies<sup>4</sup> – which should be duly implemented – are still insufficient to ensure EU



*You must foster transport decarbonisation, including by exploring options to reduce demand altogether*

transport decarbonisation. You must foster the sector's decarbonisation including by exploring options to reduce transport demand altogether. To replace the kilometres travelled by road vehicles, public transport, alternative transport modes such as walking and cycling, and more integrated modes of mobility should be promoted. To reduce the environmental impact of freight transport, a switch from road to rail and maritime transport should be promoted, and the environmental costs of transport should be included in the final purchase price of goods. Moreover several European air routes (both within and between countries) are suitable for substitution by high-speed trains.

#### **Guaranteeing security of supply**

Ensuring stable energy supplies is one of the three pillars of EU energy policy. The EU is the world's largest importer of gas, and the decline in domestic production implies a continued reliance on imports. However, since 2014, the EU gas security of supply situation has substantially improved, as a result of developments on the international markets and the EU's internal market. First, international gas markets have become more resilient, particularly as global liquified natural gas (LNG) capacity substantially expanded across the world. In the EU, this has led to a battle for market share between Russia and the rising international supply of LNG, to the benefit of both the EU's gas security and competitiveness. Internally, declining gas consumption has mitigated the EU's import dependency. Furthermore, infrastructure developments and improved market rules have helped to create a more European marketplace for gas and reduced the excessive dependence of some member states on individual suppliers.

\*GAS MARKETS

Nevertheless, you will need to make renewed efforts to further enhance EU gas security of supply, especially as the coal phase-out could increase gas demand. Several EU countries continue to remain isolated from gas hubs and remain sensitive to dependence on single gas suppliers. Regional cooperation related to gas security remains challenging, security concerns are used by several member states to undermine market rules, and the EU remains severely divided on strategic issues, from the role of gas in the EU decarbonisation process to strategic pipeline projects.

\*RUSSIA

The first gas supply challenge is already on the horizon: with the end of the gas transit contract between Russia and Ukraine at the end of 2019, there will be extremely tough negotiations on a new contract. As half of EU gas imports from Russia come via this route, the EU will have an important mediating role.

### **Distributional consequences of climate policies**

You must make every effort to ensure that decarbonisation policies are designed with a careful weighing of their distributional consequences. Managing this risk requires that the EU and its member states to properly assess the distributional effects of their energy and climate policies, and take adequate measures to address them.

## **3 RECOMMENDATIONS**

You should fight hard to push Europe towards climate neutrality by 2050, to meet the Paris Agreement objectives and also to seize the economic opportunities offered by this global energy (and overall economic) transformation. As political capital is – as usual – limited, you should focus on a specific set of priority actions. We make five recommendations:

\*CARBON PRICE

### **Fight for a sensible price on all greenhouse gases in the EU**

Without an appropriate price on emissions, there is a risk that most other policy measures such as efficiency standards or public support for low-carbon technologies will be washed away by ‘rebound effects’ – the fact that if policies reduce the

\*EMISSIONS  
TRADING SYSTEM

demand for carbon-intensive production factors in one sector, those factors tend to become cheaper and will subsequently be used in other unregulated sectors. Furthermore, current taxation systems often still entail implicit subsidies to carbon-intensive activities (for example, commuting). Hence, taxation is a key policy tool to foster decarbonisation.

Currently only half of all emissions fall under the EU emissions trading system (ETS) and prices for emission allowances remain at the level as before the financial crisis (about €25/tonne) and hence significantly below the levels required for full decarbonisation. A reform is needed that makes carbon prices higher, wider (covering the not yet covered sectors) and more long-lasting (providing longer-term price signals). You should seek a European approach to avoid distortions to the internal market.

\*ENVIRONMENTAL  
TAXATION

To increase the sectoral coverage, you should promote a new EU-wide discussion on environmental taxation. Moreover, decarbonisation will dramatically change the demand for some highly taxed products such as electricity (increased demand) or road fuels (reduced demand). Consequently, a discussion on the fiscal impacts of decarbonisation could be a good starting point for a discussion with the ministers of finance on making the fiscal system into a driver of decarbonisation. You will need to spend a significant amount of your time and political capital on this crucial question.

Credible long-term carbon price signals are crucial for directing investment to lower-carbon solutions. One concrete proposal for enabling investment in low-carbon technologies is to protect individual investors against too-low carbon prices in the future. The European Investment Bank, for example, might issue financial guarantees that protect today's investors against the political risk of too-low future carbon prices (Zachmann, 2013). This would create investment security for the protected investments and would serve as a credible signal to unprotected investors. Such a financial commitment to reasonable future carbon prices can act as a carbon floor price and ensure a much smoother investment pathway, helping to reduce decarbonisation costs substantially.

### **Make electricity systems fit for high shares of renewables**

Your policies should focus on allowing all technology options to play to their full strengths in the decarbonisation process. While large renewable energy units, big hydro storage and the high-voltage cross-border transmission system will continue to be the backbone of a decarbonised electricity system, new technology options such as decentralised storage, generation and load management (eg through electric vehicles and heat pumps) will provide a bottom-up vector for decarbonisation. Such decentralised solutions that can reduce the need for costly and sometimes controversial investment in the high-voltage system should be hosted by a growing and more digitalised distribution network that can become the core of the electricity system of the future. You will have to try to ensure that the regulatory system finds the right balance between providing credible signals for investment in capital-intensive infrastructure without blocking disruptive innovation.

Furthermore, jointly optimising the provisioning of transport, heating, computing and electricity services might open up a more cost-effective decarbonisation pathway (for example, using electric vehicles for electricity storage or using heat storage to reduce peak electricity demand). Allowing market participants to fully reap such efficiency gains without developing anticompetitive monopolies will require sophisticated regulatory changes.

You should work on corresponding policies, rules and standards that can make the European approach into a global blueprint for managing this complex system, and thereby supporting EU companies that develop the corresponding soft- and hardware for an emerging global market.

### **Fair climate policies**

You should face up to the crucial issue of the distributional effects of climate policies. If climate policies are crafted without extensive consideration of their distributional consequences, there is a risk of a social backlash against decarbonisation. In order to mitigate these potential social consequences, and to ensure that the decarbonisation process moves forward with strong social acceptance, it is crucial that policies put no undue burden on the weakest shoulders. Decarbonisation can be achieved through different policy

\*DECENTRALISATION

\*SOCIAL FAIRNESS



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\*REVENUE  
DISTRIBUTION

pathways, and some will be better for minimising the impact on low-income households. For instance, transfers to the most vulnerable segments of the society could allow space for an increase in fuel taxes without compromising social acceptance. Public programmes to improve the energy efficiency of social housing can actually make low-income households better off in various ways. You should compare the distributional effects of different policy options in the impact assessments you will have to do for each major policy initiative. In this field, countries have the main responsibilities and competences. However, you should guide this discussion and make sure they act in a sensible and consistent manner. You could also revise the way in which revenues from the ETS are distributed. Currently, more than half of the money goes back to polluting companies, some of the money is used for low-carbon projects and the remainder is used in the general budget. Using some of the money that is currently for companies to compensate the most-affected households would be an important signal that carbon pricing can actually reduce inequality.

\*LOW-CARBON  
FUND

### **Export the transition – an EU flagship project**

You should reinforce EU international action on energy and climate. The EU only produces 10 percent of global emissions. This implies that the only way for the EU to exercise global leadership in climate change is to move beyond its borders. To do so, you should make ‘exporting the transition’ into a flagship project. Together with other commissioners and willing member states you should design a €10 billion fund that will invest in low-carbon assets abroad. The fund’s investment in a certain country would be made conditional on regulatory

reforms in that country, thereby enabling and de-risking investments beyond the directly financed projects.

This will be a triple-win. First, it will help to meet Europe's climate-finance obligations and achieve the 'conditional' emission reduction commitments of the EU's partner countries. Second, it will enable European industry – which is very competitive in many of these technologies – to find new markets. And third, it can help economic development in partner countries, providing an invaluable stability dividend.

### **Streamline governance**

You should ensure that the EU institutional structure is able to accommodate the rapid structural changes occurring in the field. This implies going beyond the established silo-thinking, fostering greater cooperation between various Commission directorates-general, including energy, climate action, environment, mobility and transport, internal market and industry and financial stability and services. For instance, electric-vehicle policies imply close cooperation between the commissioners responsible for mobility, energy, environment and growth. These services will increasingly have to interact to ensure policy consistency in areas – from electric vehicles to sustainable finance – that are inevitably cross-cutting.

You should also promote the deployment of better-informed policies. Given the limits in your competences, you must build on the soft power of transparent and convincing analysis in order to coordinate national energy and climate policies meaningfully. Energy and climate issues are typically complex and interwoven. Policymaking must therefore rely on large-scale models to inform decisions, not directly observable indicators and detailed data. The Commission cannot do such analysis on its own. Currently, the Commission outsources individual questions to many different institutions<sup>5</sup>. As a result, these analyses suffer from costly duplication, inconsistency, lack of transparency and potential conflicts of interest<sup>6</sup>. This is a wasted opportunity to build consensus on facts between decision-makers<sup>7</sup> and the wide array of stakeholders (including civil society,

unions and companies) and decision-makers. To overcome this, you should establish a European Energy Agency as a go-to place for models, forecasts, indicators and data used for energy and climate policymaking<sup>8</sup>. For specific policy processes (including impact assessments, network development plans and assessments of national plans and targets) analyses produced by this Agency should be the formal inputs into the policy process. The Agency should be given the mission to become a trusted and transparent reference point that is also used by national and subnational parties.

## NOTES

- 1 See <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans>.
- 2 Climate neutrality means that the EU's greenhouse gas emissions do not exceed the emissions absorbed through natural (eg forests) and man-made (eg carbon capture and storage) sinks.
- 3 For example: the Energy Efficiency Directive; the Energy Performance of Buildings Directive; the Ecodesign Directive; the Labelling Directive; CO2 performance standards for cars, vans and trucks; increased financing through EU structural and investment funds, Horizon 2020 and dedicated facilities; the EU emissions trading scheme and the Effort Sharing Decision for non-ETS sectors.
- 4 CO2 emission standards, rules on public procurement of clean vehicles, rules on promoting the combined use of different modes for freight transport, and measures on batteries.
- 5 Including different Joint Research Centres, Horizon 2020 project consortia, consultants, the European Environment Agency, and Eurostat.
- 6 For example in the electricity and gas sectors, the association of network operators (an interested party) is legally required to provide input on network development plans and EU energy market design.
- 7 Including on the national level: ministries for energy and climate, energy regulators and competition authorities, national environment offices, (often state-owned) transmission system operators for electricity and gas. On the European level: Commission directorates-general responsible for energy, climate and competition; the agency for the cooperation of energy regulators; and the semi-official association of transmission system operators.
- 8 The US Energy Information Administration with an annual budget of about €100 million can serve as an inspiration. The EU already possesses an Environment Agency in Copenhagen (EEA) with a budget of around €55 million (2019) and the Agency for the Coordination of Energy Regulators with a budget of €13 million (2017), but neither carries out the described tasks.

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