RESEARCH REPORT

Eurofound

Anticipating and managing the impact of change

Distributional impacts of climate policies in Europe

Distributional impacts of climate policies in Europe

Eurofound

European Foundation for the Improvement of Living and Working Conditions

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Abbreviations

COVID-19	coronavirus disease 2019
CSO	civil society organisation
FIT	feed-in tariff
LTS	long-term strategy
NECP	national energy and climate plan
NGO	non-governmental organisation
SDG	Sustainable Development Goal
tCO2e	tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change

Executive summary

Introduction

The topic of climate change and the transition to a climate-neutral economy is high on the agenda at both European Union and Member State levels; action is needed to prevent and alleviate the effects of climate change. Climate policies and measures, however, may have significant adverse effects that reduce their acceptability, preventing their full and effective implementation. It is crucial to explore the impacts of these policy responses on individuals, organisations and society in general, with special regard for those groups that could be particularly adversely affected either by climate change itself or by the policies put in place to mitigate its effects.

There is a need for more information on certain aspects of the European Green Deal and related social policies. The research presented in this report, mostly based on experiences at national level, focuses on the extent to which the adverse distributional effects of climate policies are acknowledged and tackled. The report, based on information provided by the Network of Eurofound Correspondents, sheds light on the aspects that policymakers should consider when designing and implementing climate policies to ensure that they are well accepted and do not generate further inequalities and societal tensions.

Policy context

Climate change is a global challenge and is addressed globally in the United Nations' Sustainable Development Goals (SDGs). The SDGs are the 17 goals adopted in 2015 by all United Nations member states as part of the 2030 Agenda for Sustainable Development, which is the 15-year plan to achieve the goals. All 17 SDGs are interconnected; SDG 13 addresses climate change and calls for climate action, while SDG 7 relates to access to affordable and clean energy. The implementation of the Paris Agreement on climate change (also adopted in 2015) will be key to achieving the SDGs.

The European Green Deal launched by the European Commission reflects the EU's commitment to the SDGs. Securing affordable and clean energy for European citizens and businesses is a key priority for the EU, and this is clearly reflected in the energy union strategy of 2015. The EU's vision for a climate-neutral economy by 2050 envisages actions to be taken at both European and national levels. Member States are required to submit their own long-term strategies, which are to address greenhouse gas emission reductions over at least the next 30 years and also consider the socioeconomic effects of decarbonisation measures. Shorter-term measures, intended to ensure that Member States meet the 2030 targets, are included in national energy and climate plans. They have been assessed by the European Commission. On that basis, the Commission made specific recommendations – on employment, skills, energy poverty and other aspects – to the Member States. The EU helps the Member States with the Just Transition Mechanism, which aims to alleviate the anticipated social and economic costs of the transition to a climate-neutral economy. Other sources of financial support include the Multiannual Financial Framework and the newly established NextGenerationEU fund.

Key findings

- Although the distributional effects of climate policies have not been extensively studied, some national climate energy plans have identified (actual or potential) progressive and regressive effects. Social acceptance is at stake: regressive effects of climate policies could substantially reduce acceptance, constraining implementation.
- If not carefully implemented and targeted, other types of measures – subsidies for electric vehicles, for example – could also have regressive distributional effects. Other measures such as regulations and public investments can also have distributional effects, both progressive and regressive.
- National-level practices on mitigating negative distributional effects are emerging. For example, energy or fuel poverty is recognised as a severe problem in many Member States. In order to address it, measures have been put in place to support the most vulnerable population groups.
- Among the main issues in national debates on climate policies are the shift to renewable energy, the impact of taxes and excise duties, and energy prices and their effect on energy poverty. Preparing for the energy transition through the actions set out in national long-term strategies and energy and climate plans often involves ensuring that the costs are shared fairly among everyone in society and reconciling environmental and social concerns.

- The debates in the Member States involve a broad range of stakeholders. These include non-governmental organisations (NGOs), social partners, industries, social and environmental movements, regional authorities, political parties and the academic community. NGOs seem to be particularly active, and they are often supported by other stakeholders, for example, academics and sometimes also social partners.

Policy pointers

- Successful mitigation of the effects of climate change requires integrated and coordinated policies. An integrated approach across different public policy areas – such as energy, housing and employment – should be adopted when designing and implementing the necessary measures.
- Ambitious national industrial policies could be designed to include public and private investments in climate technologies. Such policies should take a holistic approach.
- Addressing energy poverty is essential, as is emphasised in the Commission's recommendation on energy poverty of 2020. In the Member States, measures to do this mainly involve providing financial support. This raises the question of the financial sustainability of public funds. Alternative funding models should be explored, with retrofitting the social housing sector as a priority (grants for housing associations and local authorities to deliver energy efficiency upgrades to buildings, community municipal bonds, green equity schemes).
- Where EU and national funds are used to support a just transition, a comprehensive and systemic approach should be preferred to single-point solutions. National- and regional-level authorities and the relevant stakeholders should explore potential development opportunities for the industries, workers and communities affected by the transition to a climate-neutral economy.
- Broad stakeholder engagement at early stages in the design and implementation of climate policies is crucial to minimise undesired effects and increase buy-in from all parties concerned.
- Social dialogue practices on a just transition and the effects of climate policies on industries and workers are not widespread across Member States. The role of social partners should be strengthened: there is evidence that the undesired effects of some climate policies, especially where firms and workers in certain sectors and regions are particularly affected, can be addressed by social partners and that solutions can be achieved through social dialogue and joint initiatives.

Introduction

The topic of climate change and the transition to a climate-neutral economy is high on the agenda at both European Union (EU) and Member State levels, as more action is needed to prevent and alleviate the effects of climate change. Climate policies and measures, like any other type of policies, may have significant adverse effects, and for that reason it is crucial to explore the impacts of these policy responses on individuals, organisations, sectors, regions and society in general, with special regard for those groups that could be more adversely affected either by climate change itself or by the policies put in place to mitigate its effects.

Policy actions are urgently needed, since the effects of climate change are already visible across the globe, for example, in the form of heatwaves, floods and other climate-related hazards. It is important that these effects are prevented from escalating further. In the EU, the urgency and importance of climate action has been recognised even amid the coronavirus disease 2019 (COVID-19) pandemic: 30% of the EUR 750 billion EU pandemic recovery fund, the highest share ever of the European budget, has been earmarked for fighting climate change (European Commission, 2020a).

Eurofound has carried out work on the potential impacts of climate policies in the past. Previous Eurofound studies have examined the effects of the greening of industries on the quantity and quality of jobs (Eurofound, 2013), the role of social partners in the transition to a green economy (Eurofound, 2011) and social partners' responses to the greening of the economy (Eurofound, 2009). One of its most recent research projects was concerned with the employment implications of the Paris Agreement on climate change (Eurofound, 2019). This current study, however, focuses on policies for transitioning to a climate-neutral economy that are being developed and implemented by Member States. While these policies mainly aim to reduce greenhouse gas emissions (primarily carbon dioxide (CO_2)), they may have adverse effects for individuals, in terms of income, and for firms, in terms of costs and changes to jobs.

In the light of policymakers' need for more information on certain aspects of the European Green Deal and related social policies, this study, mostly based on experiences at national level, focuses on the extent to which the adverse distributional effects of climate policies are acknowledged and tackled. In other words, it attempts to shed light on the aspects that policymakers should consider when designing and implementing climate policies to ensure that they are well accepted and do not generate further inequalities and societal tensions. The EU Platform for Coal Regions in Transition, for instance, has developed various toolkits to assist practitioners in those regions in this regard. The toolkits cover transition strategies, governance of transition, sustainable employment and welfare support, and environmental rehabilitation and repurposing (European Commission, 2020b).

This report is structured in four main chapters. The first chapter looks at the main plans in place for climate policies in the EU and its Member States in the decades to come – the long-term strategies (LTS) [1] to 2050 and the national energy and climate plans (NECPs) to 2030 – and briefly explores the extent to which they address the potential socioeconomic consequences of their implementation.

The second chapter examines some of the most important socioeconomic impacts, namely in terms of distributional effects, of ongoing and planned climate policies and measures. The third chapter attempts to identify and present the initiatives already taken or planned – at any administrative level, and including those involving social partners – to address, even if only partially, some of the adverse effects identified and characterised in the previous chapter.

The fourth chapter identifies and describes the main ongoing debates at national level related to the socioeconomic impacts of the transition to a climate-neutral economy. It also provides an overview of the main actors involved in those debates and their views and positions. Finally, the report presents the main conclusions and policy pointers that may serve to guide policymakers and practitioners working at different levels of intervention, from supranational to local level, with an interest in the socioeconomic impacts of the transition to a climate-neutral economy.

Key issues and objectives

The pursuit of climate policies – designed to anticipate the effects of climate change and take action to prevent or minimise them or to reduce emissions of greenhouse gases [2] – is very likely to have disproportionate effects on different socioeconomic groups. For example, most

1 For the sake of clarity, the abbreviation LTS is used for both the singular (long-term strategy) and plural (long-term strategies) in this report.

2 See 'Climate policies' in the glossary for the difference between adaptation and mitigation policies.

studies analysing the effects of carbon taxes show that they tend to have regressive distributional effects: they make low-income households worse off relative to high-income households. These effects may contribute to further increasing existing socioeconomic inequalities by, for example, negatively affecting the quality of life of certain vulnerable groups. This in turn may reduce public support for action on climate policies and may trigger political disengagement from (and even resistance to) the climate project. Climate policies can also have progressive distributional effects: when low-income households experience fewer negative effects or benefit more than high-income households. Examples include carbon pricing on air transport (Zachmann et al, 2018) or the removal of subsidies for fossil fuel industries in developing countries (Ohlendorf et al, 2018).

As the European Commission clearly stated in its report *Employment and social developments in Europe 2019*: 'Attention to social and environmental inequalities and distributional impacts of climate action is important for ensuring that the burden is fairly distributed across individuals, groups, sectors and regions' (European Commission, 2019a, p. 170). The socioeconomic effects of climate policies therefore constitute a highly sensitive political issue. This is well described by Zachmann and his colleagues:

> *The distributional consequences are likely to be a major driver of future climate policies. Policymakers will not accept forceful decarbonisation policies if they lead to visibly increasing inequality within their societies. The distributive effects of climate policies therefore need to be addressed. Furthermore, policy is not only driven by actual distributional effects, but also by the public perception of the effects.*
>
> (Zachmann et al, 2018, p. 13)

The required reform process can be understood as one that needs to both maximise social welfare and win political support (Roland, 2000). Policies and regulations can and must be designed in order to achieve those two targets of maximising social welfare (acting in the interests of society) and gaining political support. In setting out his theoretical framework, Roland (2000) underlines the difficulties inherent in implementing a set of reforms aimed at increasing social welfare with political support, also highlighting the associated implementation costs and uncertainty regarding the benefits. Social reforms tend to come up against the following hold-up problem:[3] the losers tend to be a minority group that can calculate its losses with certainty, while the winners are a majority of the population that is not only uncertain about the gains but expects small gains on an individual basis, since gains are supposed to be spread across the population. In addition, there are also important temporal effects. For example, higher costs or job losses in the short term may be offset by overall gains in the medium to long run. Most social reforms, therefore, are perceived by the population as having a potentially negative overall outcome prior to implementation. Since governments depend on population votes, this makes the introduction of social reforms a hazardous task politically.

The well-documented *gilets jaunes* ('yellow vests') movement in France is perhaps one of the best recent examples of dissatisfaction with public climate policies. The implemented reforms, which included the use of carbon taxes, did not seem to fully account for their effects across different socioeconomic groups and resulted in a serious backlash against the government. The grassroots movement, which started in France in 2018 with an online petition gathering nearly one million signatures, organised mass demonstrations protesting against, among other things, the disproportionate burden of the government's tax reforms on the working and middle classes, and especially on those in rural and peri-urban areas of France. This example underlines the need for policymakers to ensure that climate policies take into account any potential distributional effects, while also developing strategies to avoid, alleviate or compensate for any unintended effects.

Recent research has shown that the socioeconomic effects of climate policies, including their distributional effects, can vary according to the policy instrument used, the sector addressed, the design of the policy itself and the initial socioeconomic conditions in the country (see, for example, Zachmann et al (2018) and Ohlendorf et al (2018)). This clearly means that measures that are apparently similar or even identical can have different effects in different countries, or even regions.

Against this background, Eurofound carried out a study aimed at supporting policymakers in their efforts to avoid, alleviate or compensate for unintended socioeconomic effects of climate policies, and therefore ensure their overall acceptability. The main objectives of the study are as follows.

To identify policy responses to climate change with a significant risk of uneven distributional effects: What are the key policy responses to climate change in the Member States? When mitigating measures are planned or implemented, in which areas could an increased risk of uneven distributional effects be observed, and what could these effects be?

3 A hold-up problem is a situation where two parties may be able to work most efficiently by cooperating but refrain from doing so because of concerns that they may give the other party increased bargaining power and thus reduce their own benefits.

To provide an account of the current debates in Member States on the distributional aspects of climate change: What are the main issues in public debates on both the distributional effects and the socioeconomic effects more generally of climate policies, and who are the key actors/stakeholders involved in the debates?

To provide guidance on how negative distributional risks can be mitigated: How can negative distributional effects be alleviated, and what measures/efforts are already in place to do that?

Policy context

> *Ensuring a socially fair transition is crucial to ensure a politically feasible transition.*
>
> (European Commission, 2018)

Climate change is a global challenge and therefore must be addressed at a global level. This is the aspiration of the Paris Agreement, which was adopted in 2015 within the United Nations Framework Convention on Climate Change (UNFCCC) and entered into force in 2016. This framework was set up in the early 1990s, and the Paris Agreement sets out the terms of the latest of the global efforts under it (UN, 2015a). The European Green Deal launched by the European Commission not only recognises the commitments under the Paris Agreement but specifies that the EU will take a leading role in the global response to climate change (European Commission, 2019b). In 2021, 189 countries had ratified the Paris Agreement, out of the 197 parties to the UNFCCC. Its aim is to limit global warming in this century to well below 2 °C compared with pre-industrial levels and pursue efforts to limit the increase to 1.5 °C. A more specific target intended to achieve this temperature goal is zero net anthropogenic greenhouse gas emissions during the second half of the 21st century.

Although a global approach is essential, the Paris Agreement recognises that most actions to tackle this challenge need to happen at country level, and even at regional or local level. Accordingly, the impacts of the required actions will be felt within countries and may vary across regions and different societal groups.

The implementation of the Paris Agreement will be key to achieving the United Nations' Sustainable Development Goals (SDGs). The SDGs are the 17 goals adopted in 2015 by all UN member states as part of the 2030 Agenda for Sustainable Development, which is the 15-year plan to achieve the goals (UN, 2015b). All the 17 SDGs are interconnected, and SDG 13 specifically addresses climate change and calls for climate action.

In November 2018, the European Commission brought forward its strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy (European Commission, 2018). In its resolution on climate change in March 2019, the European Parliament endorsed the net-zero greenhouse gas emissions objective (European Parliament, 2019). In December 2019, the European Council endorsed the objective of achieving climate neutrality in the EU by 2050, in line with the Paris Agreement. The Council recognised the need to put in place an enabling framework that benefits all Member States and encompasses adequate instruments, incentives, support and investments to ensure a cost-effective, just, socially balanced and fair transition, taking into account different national circumstances in terms of starting points.

In January 2020, the Parliament endorsed a resolution on the European Green Deal, which reflects the EU's commitment to the Paris Agreement and the SDGs. Through the European Green Deal, a roadmap has been set up with the aim of implementing a series of ambitious actions. With the ultimate target of making Europe climate neutral by 2050, the European Green Deal aims to promote the efficient use of resources by moving to a clean, circular economy, to restore biodiversity and to reduce pollution. In March 2020, the EU finally submitted its LTS on reducing greenhouse gas emissions under the Paris Agreement to the UNFCCC.

In the first quarter of 2020, financing and support actions were adopted through the European Green Deal Investment Plan and the Just Transition Mechanism, which are intended to facilitate the transformation of the economy while ensuring that no one is left behind (European Commission, 2020c). The investment plan will mobilise EUR 1 trillion in investments over the decade between 2020 and 2030, thus setting the direction of the economy and encouraging other economic actors to make further investments. To ensure that workers affected by the transition will be looked after, the Just Transition Mechanism (which includes the Just Transition Fund) intends to mobilise EUR 150 billion in the period between 2021 and 2027. Solidarity and fairness are at the heart of its establishment.

The objectives of the European industrial strategy adopted in March 2020 tie in with those of the European Green Deal (European Commission, 2020d). At the same time, the proposed circular economy action plan and European climate law are to provide the bases for actions to achieve climate neutrality (European Commission, 2020e, 2020f). In the meantime, the European Commission adopted the 2030 climate target plan in September 2020 (European Commission, 2020g), and the new climate adaptation strategy in February 2021 (European Commission, 2021). All of these establish the context for the EU's plan to achieve carbon neutrality by 2050. It is hoped that, through the new circular economy action plan, a transition to a regenerative growth model will be attained. While some critics consider the EU's financing of its plan to transition to a carbon-neutral economy to be less ambitious than the climate challenge demands, it should be noted that this is the first such plan, and it is hoped that the EU's commitment will attract private investment and accelerate decarbonisation.

Securing affordable and clean energy for European citizens and businesses is a key priority for the EU, and this is clearly reflected in the energy union strategy (European Commission, 2015). The EU's vision for a climate-neutral economy by 2050 envisages actions to be taken at both European and national levels. Member States are required to submit their national LTS (European Commission, undated), which are to address greenhouse emission reductions over at least the next 30 years and also take into account the socioeconomic effects of decarbonisation measures. Shorter-term measures, intended to ensure that Member States meet the 2030 targets, are included in the NECPs (European Commission, 2019c). Both the LTS and the NECPs demonstrate governments' commitment to addressing emissions and energy issues, and governments are expected to provide regular reports on progress towards achieving their aims. These strategies and plans are treated in more detail in Chapters 1 and 2.

At the conclusion of its meeting in December 2020, the European Council acknowledged that, in order to meet the objective of a climate-neutral EU by 2050, in line with the objectives of the Paris Agreement, the EU would need to increase its level of ambition for the coming decade and update its climate and energy policy framework. Consequently, the European Council endorsed a binding EU target of a net domestic reduction of at least 55% in greenhouse gas emissions by 2030 (European Council, 2020).

Methodology

This study is essentially based on information collected between August and October 2020 through a questionnaire (reproduced in Annex 1) circulated to the Network of Eurofound Correspondents (see Annex 2 for the contributors), which was complemented by desk research.

The correspondents were asked about three main topics. First, the socioeconomic aspects of the national LTS: to what extent do the LTS account for the potential socioeconomic impacts of decarbonisation policies and measures? Second, the NECPs: to what extent were the policies and measures proposed in the NECPs assessed in terms of their potential distributional effects on individuals and households but also on certain population groups, companies and communities in certain sectors or regions? What are the lessons learned and how can undesired distributional effects be avoided or minimised? Finally, the correspondents were asked to provide an account of the main debates taking place in their countries on the distributional effects of climate policies, including information on the main themes, the actors involved and their views.

The analysis was performed on the data provided by the correspondents, which is based on information published by national authorities or other relevant institutions, papers published in peer-reviewed journals, official documents and other sources, and information collected through direct contact with key actors in relevant institutions or organisations, such as representatives of peak-level social partner organisations or officials in relevant ministries.

Key concepts and definitions

This section briefly defines the key concepts referred to in this study. The definition of other concepts, sometimes of a rather technical nature, are provided in the glossary at the end of the report.

Climate policies and measures are those that address climate change, and they fall into two main types. Climate adaptation policies and measures are those designed to adjust to climate change. These policies envisage adjustments to natural or human systems in response to actual or expected climatic changes or their effects. The main objective is to moderate the harm caused or exploit opportunities that may arise. Climate mitigation policies and measures are those aimed at alleviating the anticipated effects of climate change, and basically involve reducing the emission of heat-trapping greenhouse gases into the atmosphere. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other 'carbon sinks' to remove greater amounts of CO_2 from the atmosphere. This report focuses on mitigation policies and measures.

The **distributional effects** of climate policies are the effects of the redistribution of gains and costs that result from actions determined by those policies. Climate policies and measures may impact on the income level of households or the expenditure or investment level of firms in different ways. These distributional impacts can be negative/regressive (when they negatively affect low-income households or firms with lower revenues), or positive/progressive (when the opposite happens). A policy or measure that affects all socioeconomic groups or firms equally is said to have proportional effects.

The **carbon tax** is in line with the 'polluter pays' principle, according to which the polluter should undertake the cost of control and prevention of damage (Directive 2004/35/CE, also included in the Treaty on the Functioning of the European Union (Article 191(2)) and the Rio Declaration on Environment and Development (principle 16)). For instance, consuming petrol creates pollution and social and environmental costs; a tax on petrol should aim to reflect those costs.

Industry standards are a way of discouraging the use of certain products with certain characteristics, for example, where this results in energy consumption or greenhouse gas emissions that are too high (Zachmann et al, 2018).

This report also refers to the concept of a **just transition**, which is a term that is not always used consistently in policy documents and research. The European Green Deal does not define 'just transition' as such, but it refers to investments and support to 'provide affordable solutions to those affected by carbon pricing policies, … as well as measures to address energy poverty and promote re-skilling' (European Commission, 2019b). Addressing issues in regions and sectors most affected by the transition because of their dependence on fossil fuels or carbon-intensive processes and ensuring that no one is left behind are aspects of a just transition.

An International Labour Organization policy brief of 2018 identifies two dimensions of just transition, referring to outcomes (the new employment and social landscape in a decarbonised economy) and the process (how to get there). The policy brief states that a just transition 'needs to be an integral part of the sustainable development policy framework' (Galgóczi, 2018, p. 2). The Paris Agreement invites the parties to take into account a just transition for the workforce and the creation of decent work and quality jobs. The International Trade Union Confederation (ITUC), in a research paper, describes a just transition as follows:

> *[It] secures the future and livelihoods of workers and their communities in the transition to a low-carbon economy. It is based on social dialogue between workers and their unions, employers, government and communities. A plan for Just Transition provides and guarantees better and decent jobs, social protection, more training opportunities and greater job security for all workers affected by global warming and climate change policies.*
>
> (ITUC, 2019, p. 8)

Given these definitions of just transition, the research investigated policy measures and social partners' actions that were aimed at reducing dependence on fossil fuels while supporting the regions, industries and workers affected.

1 Climate policies in the EU: Long-term strategies and national plans

This section will briefly describe the main plans for climate policies for the decades to come in the EU. It starts by briefly focusing on the European LTS and the extent to which it addresses the potential socioeconomic impacts of the policies and measures that must be put in place to achieve its main objective of net-zero greenhouse gas emissions by 2050. Next, the national LTS are analysed regarding the extent to which they acknowledge the potential undesirable socioeconomic impacts of the necessary climate policies and measures. Finally, the NECPs, which serve as the main basis for the analysis performed in Chapter 2, are briefly touched upon in order to complete the picture in terms of the planning that has been done.

The EU's long-term strategy and socioeconomic concerns

The EU's LTS, which was submitted to the UNFCCC in March 2020 (EU, 2020), aims to deliver Europe's commitment 'to lead in global climate action and to present a vision that can lead to achieving net-zero greenhouse gas emissions by 2050 through a socially-fair transition in a cost-efficient manner' (European Commission, 2018). The proposed strategy does not present new policies. It sets the direction of the EU's climate and energy policy and outlines what the EU considers will form its long-term contribution to achieving the objectives of the Paris Agreement, in line with the SDGs. It is also intended to open 'a thorough debate involving European decision-makers and citizens at large as to how Europe should prepare itself towards a 2050 horizon' (European Commission, 2018).

In its strategic long-term vision, the Commission remarks on and warns about the potential social challenges associated with the transition to a climate-neutral economy. First, it contends that environmental taxation, carbon pricing systems and revised subsidy structures ought to play an important role in steering the transition. However, while taxation may be among the most efficient tools for environmental policy, the Commission emphasises that environmental taxation must remain socially fair. The long-term vision recognises that '[u]nless adequate regulatory or mitigating measures are in place, the transition bears the risk to disproportionally affect people on low incomes, leading to the emergence of some form of energy poverty' (European Commission, 2018). This represents a clear concern for the potential distributional effects of climate policies, especially for those that take the form of taxes. The Commission makes some suggestions as to how these issues could be tackled, stating, 'These social issues are generally better addressed through the social policy and welfare systems, the financing of which could benefit from tax shifts and revenue recycling.'

Second, according to the Commission's long-term vision, the economic challenges associated with the transition have the potential to increase social and regional disparities in the EU. This means that 'the ensuing deep modernisation process will have to be managed well, ensuring a fair and socially acceptable transition for all in the spirit of inclusiveness and solidarity'. For the Commission, the social consequences of the transition cannot be addressed as they happen but must be taken into account from the very start. Both the EU and the Member States must take into consideration the social implications from the beginning and deploy the relevant policies to mitigate these challenges, including through the EU budget, employment and social policies, and cohesion policies. Notably, the vision calls for the involvement of social partners in the preparations for the transition when it refers to the ongoing regional initiatives launched by the Juncker Commission, such as the platform and pilot projects on coal and carbon-intensive regions in transition.

Third, the Commission underlines the role of the European Pillar of Social Rights in supporting transition through adequate social protection systems, inclusive education, training and lifelong learning. Skills development will be particularly important in this transition, as people's reskilling and upskilling will be essential to ensure that no one is left behind. Among other principles set out in the European Pillar of Social Rights, the principle of access to essential services is relevant, as it states that everyone has the right to access energy and transport services, among others, and specifies that support for access to such services will be available for those in need.

National long-term strategies and socioeconomic concerns

EU Member States are required to develop LTS stating how they plan to achieve the greenhouse gas emission reductions required to meet their commitments to move towards the long-term goal set by the Paris Agreement adopted in 2015. The process through which EU Member States must prepare these strategies is set out in Regulation (EU) 2018/1999 on the governance of the energy union and climate action (European Parliament and European Council, 2018). According to it, the LTS must be consistent with the Member States' integrated NECPs. The LTS must cover not only the reductions in greenhouse gas emissions to be achieved over at least the next 30 years (including in individual sectors such as electricity, industry and transport) but also the expected socioeconomic effects of decarbonisation measures including in relation to macroeconomic and social development, health risks and benefits, and environmental protection.

At the time of consultation of the Network of Eurofound Correspondents (August–October 2020), only 15 Member States had adopted an LTS. Of those, substantial considerations regarding the potential socioeconomic effects of climate policies could only be found in the LTS of nine Member States (Austria, Belgium, France, Germany, Greece, Latvia, Lithuania, the Netherlands and Portugal) (see Table 1).

Table 1: Main socioeconomic challenges and considerations in selected national long-term strategies (LTS), mid-2020

Country	Socioeconomic challenges considered	Main considerations/actions/policies aimed at tackling socioeconomic challenges
Austria	• Effects of the energy system transformation and the transition to a climate-neutral economy and society on the labour market, work environments and occupational profiles • Ensuring a just transition, thus avoiding serious negative social effects	• Consideration of social effects in climate policies • Investment in education and vocational training to enable a timely response to emerging occupational profiles
Belgium	• Ensuring secure, sustainable and affordable energy • Encouraging environmentally responsible consumption patterns	• Ban on appliances that run on coal • Moving towards a circular economy for prosperity, well-being and competitiveness • Food policy: nutritional policy that takes account of ecological, economic, social and health considerations and aims to make diets more sustainable
France	• Ensuring the social acceptability of public policy measures resulting from the LTS	• Increase in public participation actions in the implementation of public policies, action plans and territorial projects • Consideration of the impact on households (especially the poorest) of measures associated with the transition to climate neutrality • Prioritisation, as much as possible, of socially just and redistributive measures • Development of public policy based on scientific research, for example, sociological studies
Germany	• Social justice • Affordability • Growth and employability • Participation of various stakeholders	• General: future socioeconomic challenges will be tackled through innovation, modernisation and competitiveness • Energy Market Act to reduce energy prices for households • Proactive regional and industrial policies to support regional coal phase-out
Greece	• Achieving socially equitable energy and climate transition in a way that is cost-effective for the economy and society • Providing high-quality jobs	• Development of renewable sources of energy • Improved energy efficiency • Making industry more competitive and moving towards a circular economy
Latvia	• Increasing the competitiveness of the Latvian economy • Providing a safe and secure living environment for the population • Ensuring economic welfare and social justice	• Creation of green workplaces • Investment in research and development • Development of human capital

Country	Socioeconomic challenges considered	Main considerations/actions/policies aimed at tackling socioeconomic challenges
Lithuania	• Ensuring the socially just transformation of all sectors in the economy • Leaving no one (no citizen, employee, community or region) behind in the transition	• Providing incentive measures, particularly for vulnerable groups, when eliminating subsidies for fossil fuels and taxing fossil fuel use • Ensuring good coordination of national policies with regional and municipal authorities, so that the transformation is properly managed and no region, community, employee or citizen is left behind
Netherlands	• Quality of the physical living environment • Affordability of certain products, safety and *levenszekerheid* • Job losses in the fossil fuel industries	• Ensuring an equal division of the burden created by climate policy • Keeping housing costs steady • Ensuring an education transition alongside the energy transition
Portugal	• Ensuring social justice • Creating a positive economic impact • Creating jobs • Achieving benefits in terms of air quality and human health • Valorisation of the country and national cohesion	• Proper management involving all relevant actors • Creation of the necessary conditions and skills for job creation through professional retraining and requalification • National and European support frameworks focusing on technological research and development • Investment in education and professional and vocational training

Source: *Authors, based on information provided by the Network of Eurofound Correspondents, 2020*

The impact of the transition to a climate-neutral economy on labour markets, jobs and work environments is one of the matters addressed in the LTS of Austria, Germany, Greece, the Netherlands and Portugal. More specifically, these concerns include impacts on the labour market, work environments and occupational profiles in Austria; employability in Germany; the creation of high-quality jobs in Greece; job losses in fossil fuel industries in the Netherlands; and job creation in Portugal. Some LTS provide suggestions on how these challenges can be met. The Austrian and the Portuguese LTS, for example, call for investment in education and vocational training to support job creation and to enable a timely response to emerging occupational profiles. Similarly, the Dutch LTS advocates for an education transition alongside the energy transition, to help in tackling the issue of job losses in the fossil fuel industries.

The second most mentioned socioeconomic consideration in the climate LTS is a just transition, which Austria commits to in its strategy. The Lithuanian LTS aims to ensure a socially just transformation of all sectors in its economy. The German LTS posits that the transition must be socially just as a means of gaining broad public support for its policies. Latvia's LTS states that a social justice approach will mean that, during the transformation, social dialogue will be safeguarded and that the specificities and potential of every sector in the national economy will be taken on board. In the Portuguese LTS, social justice is highlighted as an underlying principle and value of the transition to carbon neutrality. Other key issues are achieving a positive economic impact, gaining benefits in terms of air quality and human health, and ensuring national cohesion.

Climate policies that take into account social effects (Austria); investment in innovation, modernisation and competitiveness (Germany); and proper management involving all relevant actors (Portugal) are some of the mechanisms that LTS suggest could contribute to a just transition. The Lithuanian LTS seems more straightforward in that it underlines the importance of providing incentive measures, particularly for vulnerable groups, when eliminating subsidies for fossil fuels and taxing fossil fuel use. The Latvian LTS aims primarily to limit climate change while promoting economic competitiveness and providing a safe and secure living environment for the population, but it also envisages that progress towards climate neutrality will go hand in hand with increased economic welfare and social justice. Then it goes even further, by establishing the 'creation of green workplaces' – defined as those producing climate-friendly and environmentally friendly goods and services – as one of its general transition principles.

Affordability, namely in relation to the cost of energy, is a concern mentioned in the Belgian, German and Greek LTS. The Belgian strategy clearly states that one of its goals is to ensure 'secure, sustainable and affordable energy: an optimum is sought between eco-efficiency, economic efficiency and social efficiency'. In this case, affordability applies to people and businesses, as the strategy aims to keep energy costs affordable for both small and large consumers. Germany's LTS acknowledges that energy prices will rise as a

consequence of the transition and aims to lower prices for households through a planned Energy Market Act, which envisages the liberalisation of the energy market. The Greek strategy calls for a socially equitable energy and climate transition that is cost-effective for the economy and society as a whole.

Although the Dutch LTS makes only brief mention of the societal impacts of the required climate measures, it is a good example of a strategy in which all the above considerations are brought together. It considers that the transition will not only directly change the physical living environment but also influence other aspects of life, such as the affordability of certain products, safety and *levenszekerheid* (life security). It does identify social risks connected with the transition, such as job losses in the fossil fuel industries, the risk of an educational deficit and rising housing costs. The Dutch LTS stresses that an equal distribution of the burden created by climate policies will be vital, and it points out that ensuring cost-effectiveness will avoid unnecessary social and economic harm.

In Czechia, Denmark, Estonia, Finland, Slovakia and Sweden (and Norway), LTS have been adopted but they make little reference to any potential socioeconomic impacts of climate policies or measures. The Estonian, Finnish and Slovak LTS, for example, contain brief references to the effects on employment of the transition. The Czech LTS does not contain any references to such considerations, while the Swedish LTS emphasises synergies between decarbonisation measures and health considerations, noting the positive effects that decarbonisation in transport and commuting could have on urban environments and people's health. The lack of focus in the LTS on such socioeconomic concerns does not mean that they will not be considered in the future. The current version of the Danish LTS, for example, omits such considerations while stating that information on the expected socioeconomic effects of decarbonisation measures – including aspects related to macroeconomic and social development, health risks and benefits, and environmental protection – will be included in future updates to the strategic document.

In Bulgaria, Cyprus, Hungary, Ireland and Spain, the LTS were still at draft stage and were undergoing approval processes at the time of writing this report. In Cyprus, for example, the final version of the LTS was expected to be ready at the end of 2020 or beginning of 2021. There is an additional group of seven Member States – Croatia, Italy, Luxembourg, Malta, Poland, Romania and Slovenia – and the United Kingdom (UK) for which an LTS, even a draft version, was not available and it was not known when it would be available.

National energy and climate plans

Further to the LTS, Member States have also submitted their NECPs to the European Commission. These set out how the Member States will meet the EU's energy and climate targets for 2030. In line with Regulation (EU) 2018/1999 on the governance of the energy union and climate action (European Parliament and European Council, 2018), Member States were to submit their 10-year NECPs for the period 2021–2030. At the time of writing, nearly all countries had submitted their NECPs or were in the redrafting phase (the Irish and Italian NECPs were not finalised). The information contained in this section refers only to the NECPs submitted by summer 2020.

NECPs include a large number of policies and measures (71 in the Estonian plan and 300 in the Austrian one), some of which have already been implemented and some of which are planned for future implementation. NECPs are sometimes based on existing measures adopted prior to 2020, while including additional measures or targets aimed at meeting the energy and climate targets for 2030. Some of them will also require changes to the national regulatory framework. Each Member State identifies its own national objectives and targets in various areas (decarbonisation, energy efficiency, research, innovation and competitiveness); provides a list of policies and measures through which the objectives will be met; and assesses the impact on areas such as energy systems, the economy, employment, education, skills, health and a just transition. The following example illustrates the difference between policies and policy measures, both of which are included: a national policy might be to reduce emissions from conventional power plants, and a policy measure might be the utilisation (or importing) of natural gas for electricity production, because it creates less greenhouse gas emissions than coal or oil (fuel switching). Similarly, policies to improve energy efficiency in the economy might be implemented through policy measures in the transport sector to promote renewable energy sources, low-emission buses and the like.

Member States conducted ex ante impact studies to assess the expected results of the implementation of the policies and measures included in the NECPs (particularly new measures) and to reflect the situation at the time when the plans were created. The plans also report on the consultation and involvement of national institutions and organisations and the outcomes of these processes. It is notable that by and large the NECPs reviewed do not make extensive reference to the socioeconomic or distributional effects of the various policy measures on specific groups, sectors or regions.

The impact assessments are principally based on macroeconomic models and analyses, and they examine effects on the economy overall (macroeconomic effects), on certain sectors and on household incomes (or income categories). Regarding other socioeconomic effects, information on regional impacts tends to be very general, and the plans are more likely to provide some detail on just transition activities in certain regions, for instance coal-dependent areas. Some plans refer to specific groups, such as vulnerable groups affected by increases in energy prices. The Cypriot and Slovenian NECPs, for example, define these vulnerable groups in detail. In those plans, vulnerable consumers or groups likely to suffer from energy poverty include beneficiaries of minimum income schemes, recipients of a pension, recipients of a paraplegic care allowance and large households.

Member States often suggest in their plans that more detailed impact analyses (ex ante and ex post) of the various measures are to be conducted in the future. They sometimes also indicate that these analyses will cover national energy and climate strategies collectively, rather than assessing each policy measure individually.

As a non-EU country, Norway has submitted a national plan to the European Free Trade Association Surveillance Authority, and the government has also (as part of the 2020 state budget) created a plan that is to be submitted to the UN as part of the follow-up on the Paris Agreement. Addressing socioeconomic effects is part of the strategy; measures in this regard are guided by the International Labour Organization's 2015 *Guidelines for a just transition towards environmentally sustainable economies and societies for all* and cover the following key policy areas: ensuring good living conditions for those who are adversely affected by green restructuring, support for green restructuring in businesses, skills development for all and green transition through social dialogue. The strategy is, however, more focused on solutions for potential problems than on identifying what exactly the effects of decarbonisation measures will be. A new study, launched in spring 2020, aims to assess opportunities, challenges and costs associated with efforts to reduce emissions in all relevant sectors and social areas.

The European Commission has conducted an assessment of the 27 NECPs submitted by the Member States and, in particular, has provided observations and suggestions with regard to the strategies and objectives of their just transition plans, to be submitted to secure funding through the Just Transition Mechanism (European Commission, 2020h). The Commission stresses the need for the just transition plans to be consistent with the NECPs, and it emphasises the role of the Just Transition Mechanism and the Just Transition Fund in addressing the social and economic impacts of the transition. It also points out that Member States need to focus on regions, industries and workers who are likely to be faced with the greatest challenges. The assessment highlights the need to adequately address energy poverty and ensure a 'clean and fair energy transition in the most affected regions'. It recognises that actions to achieve this will require private investment and the use of other funding sources and mechanisms for regional cooperation.

As this research is focused on the distributional effects of policies, the next chapter looks at those deriving from policies and measures in the NECPs, and other national strategy documents, development plans and policy initiatives associated with the NECP objectives.

2 Distributional effects of policy measures in the Member States

National policy measures with distributional effects

NECPs often make very general references to the socioeconomic impacts, including distributional effects, of the actions suggested. As mentioned in the previous chapter, some of the policy measures covered by the plans have already been implemented while others are planned. This chapter reviews the main policy measures included in the NECPs for 2030 and other national strategies and development plans that are primarily intended to contribute to achieving the NECP objectives. The chapter attempts to assess what kind of distributional effects they may have. Studies and assessment reports were used to characterise measures as progressive or regressive, but where there were no relevant studies Eurofound's national correspondents provided a rough estimate of the potential effects on various groups, based on their professional judgement.

Climate policies are within the remit of ministries or departments of environment. Studies and assessments produced by these bodies generally include information on the environmental impacts and effects of policies on broad demographic groups. By and large, distributional effects do not appear to be a priority for these departments, but their assessments do tend to cover issues such as energy poverty and just transition. Climate policies and measures to bring about transition may create inequalities and adversely affect some social groups and economic actors more than others. While policymakers increasingly acknowledge that risk, there is often a lack of action. In some countries (Estonia, Finland and Slovenia, for example), it is recognised that the issue is important, but certain impediments – such as limited resources and lack of assessment methods – may inhibit action.

Ministries or departments of labour or other departments responsible for social policy (for instance, health departments) tend to be less involved in climate policies and their effects. The introduction of a carbon tax in France was not unanimously embraced by the various ministries; the Ministry of the Economy and the Ministry of Ecology were broadly in favour of its introduction, while the Ministry of Labour was more cautious. In Germany, the Ministry of Labour's involvement in discussions and policies on coal phase-out focuses on the training of and qualifications for workers employed in carbon-intensive industries, rather than on climate policies more broadly. In Lithuania, the Ministry of Environment does not foresee any effects of climate policies on vulnerable groups, while the Ministry of Social Security and Labour considers that increased compensation for heating and water costs may be necessary, and it may also seek to establish protections for vulnerable consumers.

National reports from Finland, Luxembourg and Sweden suggest that the distributional effects of climate policies are not a major concern for these countries in so far as potential adverse effects can be mitigated through the social welfare system. Some national authorities and experts in Finland and Sweden argued that social welfare arrangements can address such effects, while in Luxembourg this can be done through the wage indexation and cost of living protection system.

Among the few official assessments that have been carried out of the distributional effects of climate policies and measures proposed in the NECPs, there seems to be agreement on actual or potential regressive effects. Several other studies assessing the distributional effects of climate policies have been conducted without reference to the NECPs. Most have also identified regressive effects, and some even delve into solutions that could address the regressive character of energy taxation. Some of the most interesting findings in this regard are briefly presented in a working paper that will be published alongside this report.[4]

Building on a report published by the think tank Bruegel (Zachmann et al, 2018), this research examines policy measures relating to carbon taxes, industry standards, regulations, subsidies and public investments.

Carbon pricing (implemented through taxes and limits on emission allowances in the EU Emissions Trading System) has long been believed to be an effective mechanism to reduce emissions. Policymakers use carbon taxes to send a price signal to the market, consumers, companies and investors to encourage them to adapt their behaviour to the required policy

4 This working paper can be found on the Eurofound website at http://eurofound.link/ef20037

objective (consuming fewer fossil fuels). For instance, manufacturers using diesel engines or coal in production may adjust their behaviour if the tax is increased (making cleaner forms of energy comparatively cheaper). Companies and industries that produce heavily polluting vehicles or produce high levels of emissions will have to pay higher taxes, which can act as a deterrent and thus encourage them to turn towards, for instance, the production of electric cars. Several carbon pricing mechanisms exist across the globe; the World Bank (2019) states that more than 50 such mechanisms are in operation.

Industry standards can determine how products are made, maintained and disposed of and can affect the environment in various ways. For example, industry standards in the automotive industry can establish requirements for the production of cars with lower emissions. Regulations can be used, for example, to promote energy-efficient buildings.

Subsidies can encourage end-users to favour products with lower or no carbon emissions (for instance, products that use photovoltaic cells). In addition, subsidies and tax breaks can incentivise private companies to invest in certain technologies, products and services. Innovation grants are used to encourage companies to invest in innovation and low-carbon technologies. Finally, public investment in research and development, renewable energy sources, road infrastructure or electric charging stations, for example, may reduce the risk for companies of developing innovative energy technologies, increasing the reliability of energy supply, developing charging infrastructure for electric cars and implementing other innovations.

All of these measures can be either regressive or progressive, depending on whether they are more likely to benefit low-income or high-income households, or certain companies, industries or regions.

Carbon taxes

Policymakers may set a tax rate for the carbon content of fossil fuels. The various NECPs and other national, regional or sectoral policy measures examined as part of this research mentioned six broad categories of carbon-related taxes:

- taxes on motor vehicle fuel
- taxes on cars, road taxes, road charges and aviation taxes
- carbon taxes on electricity
- carbon taxes on heating
- carbon taxes on (any other) energy products
- waste taxes (taxes on agricultural waste, waste incineration taxes)

Notwithstanding that most of these policy measures and taxes are relatively new, there has been some consideration of the distributional effects of these taxes – a number of studies, conducted by the relevant ministries, in many cases identify potentially vulnerable groups, industries or regions and provide recommendations. The extent to which the recommendations are followed is outside the scope of this exercise.

While the effects of carbon taxes on households (particularly low-income households) have sometimes been identified, the effects on industries or regions (for instance, on rural, urban and peri-urban areas) are not always clear. For some countries, there is no information on whether certain taxes have a progressive or regressive character in relation to any group; this applies to Bulgaria, Latvia, Malta and Spain, whose NECPs are new, but also to Greece and Hungary. Others, such as the Netherlands (see Box 2), have provided an assessment at the level of the country's national climate agreement, but even in these cases not all the distributional effects of the policy measures are known; agreements at sectoral or regional level can determine the progressive or regressive character of the individual policy measures resulting from a national climate agreement.

Negative effects or regressive impacts were identified for the majority of the taxation measures (either those in the NECPs or other policy measures) in 13 of the EU countries for which it was possible to make this assessment. Overall, across Member States, effects on income-level categories and at industry level are most commonly identified, and effects at regional level are less frequently reported. At regional level, regressive effects tend to result from the fact that rural and peri-urban areas are likely to have lower income levels than urban areas and are less densely populated (this is relevant, for example, with regard to road fuel taxes). Some cross-border effects of road fuel taxes have also been identified as arising from the intensity of commercial cross-border transport (Luxembourg). The intensity of the effect will also depend on mitigation or relief measures put in place. On the other hand, it is interesting to note the progressive effects of taxes introduced in some Member States; this demonstrates the different ways in which countries have structured tax measures intended to implement climate policies. The road fuel tax in Estonia has been assessed as having a progressive character, or at least this was the case in 2016 when the study in question was conducted (Võrk et al, 2016). Some countries have used an excise duty on top of a carbon tax; for instance, the Norwegian vehicle excise duty – paid on purchase and based on CO_2 emissions, value, emissions of nitrogen oxides, engine size, weight and type – has also been found to be progressive.

In the Netherlands, taxes (and all climate and energy measures) and their associated costs are assessed not at the level of the individual measure but as part of the national climate agreement. Income effects for households were calculated with the explicit intention of limiting the total burden and distributing it fairly between various groups. Distributional effects were investigated for income level, income source, household type and household composition groups. The evaluation report published by the Netherlands Bureau for Economic Policy Analysis found that the impact of overall climate and energy policy to 2021 would be limited for all income groups. It calculated that the 'lowest income group will benefit by 0.2%, while the income effect for the highest income group will be -0.1%'. The effects on the other income groups were also at or around zero (Netherlands Bureau for Economic Policy Analysis, 2019, p. 13). The results showed very limited differences between the various groups for both 2021 and 2030.

The domestic tax on the consumption of energy products in France negatively affects low-income households and sectors not included in the EU Emissions Trading System (energy-intensive industries); some sectors, however, seem to benefit from it, for instance rail transport, public transport, river transport and freight transport by road using diesel fuel. Similarly, the Polish co-generation fee (which, as part of the electricity tariff, finances the combined heat and power bonuses provided to energy end-users), while regressive for low-income households, has introduced a mechanism to address the negative effects on energy-intensive sectors.

In Luxembourg, the minimum carbon price and adjustments to taxation on petroleum products (introduced to enable the country to meet its Paris Agreement commitments) will have negative distributional effects, but the Luxembourg government intends to use the revenues to provide tax relief to low-income households, thus counteracting these effects. This is also the case in Ireland, where the carbon tax (introduced as early as 2010) has regressive effects for poorer households, which spend a greater proportion of their income on the tax than more affluent households (Tovar Reaños and Lynch, 2019). However, funding to protect the vulnerable and to ensure a just transition is in place (see Chapter 3).

The policy measures set out in the Lithuanian NECP that aim to reduce fossil fuel consumption through taxation (and elimination of subsidies) are not expected to have a large effect, as, according to national studies, coal is not widely used. It may, however, have a negative impact on low-income households, as coal is the cheapest way to heat a home (Labutytė-Atkočaitienė, 2019). A report by the Lithuanian Confederation of Renewable Resources shows that most of the coal burnt in Lithuania is consumed by only one company, Akmenės Cementas, so it is likely that it will be disproportionally affected, as will its 450 employees (L24.lt, 2018).

In Denmark, different effects of the carbon tax and excise duties on households of different income levels, industries and regions have been observed. In particular, excise duties on energy products (mineral oil, gas, coal and electricity) have a regressive effect, as low-income households spend a proportionately larger part of their disposable income on energy taxes than higher-income households. Energy used for production processes is taxed at a lower rate than energy for heating. The Danish Chamber of Commerce argues that sectors such as retail and the liberal professions are disadvantaged because of this.

The effects of some taxes, such as the aviation tax in Sweden, are not entirely clear. The tax is paid by the airline and the amount depends on the destination, according to Sweden's NECP. A report by the Swedish Transport Administration (2018) suggests that increased prices resulting from the introduction of the aviation tax will have a greater adverse effect on low-income households, as they will make it more expensive for them to travel. On the other hand, higher prices also affect middle-income households, which may reduce the amount they travel or may stop them travelling, and therefore the effect could be proportional or even progressive.

Industry standards

Although several measures of this type have been identified in various countries, there is little information on their distributional effects. As with other types of policy measure, regional effects are difficult to identify.

The industry standard measures fall into the following categories:

- sectoral standards
- energy savings and energy management
- production technologies

Positive effects have been identified in Lithuania in connection with the promotion of new technologies in production processes (see 'Production technologies'). Negative effects on workers in the oil shale industry in Estonia have been identified as arising from energy transition measures (see 'Sectoral standards').

Sectoral standards

Most of the measures in this category target the agricultural sector. They aim to introduce environmentally friendly agricultural methods, ensure sustainable agricultural practices, increase energy efficiency and promote ecolabelling of agricultural products. Sectoral standards are to be introduced in the shipping and air transport sectors (Belgium) and in the

oil shale industry (Estonia) and will affect entire industries. The transition in the oil shale industry in Estonia (involving both greater efficiency and a reduction in the industry's carbon footprint) is expected to negatively affect employment in the Ida-Virumaa region (Sepper and Michelson, 2020). However, new skills and new jobs will be required to achieve a lower carbon footprint and a successful transition. Therefore, a national programme will promote the development of new skills and jobs in the region and provide support to counteract the negative effects on Ida-Virumaa while achieving climate ambitions (for example, reducing toxic waste and other forms of pollution) (Estonian Ministry of Finance, 2018; see also 'Just transition programmes: Regional focus' in Chapter 3).

Building standards in this area aim to increase energy efficiency and the renovation of buildings. Climate-related building standards are all fairly new, and their effects are mixed. Some – such as those that form part of the long-term strategy for the renovation of buildings set out in Portugal's new NECP – may benefit consumers who are in energy poverty; others may adversely affect these consumers, by resulting in higher prices (for example, energy labelling in the construction sector in France and measures for energy efficiency in construction in Spain). The effects of these new standards on the construction sector and on different regions are either deemed likely to be minimal or are not yet clear.

Energy savings and energy management

These measures mainly affect businesses and energy production and distribution networks; they aim to reduce emissions and modernise networks and businesses. While the target sectors and businesses can be identified, the exact negative or positive effects are hard to determine. It is reasonable to consider that energy savings will not only reduce CO_2 emissions but also result in financial gains that can be passed on to consumers through lower product prices.

Production technologies

Through these measures, countries promote the use of low-carbon technologies in production processes (for instance, in processing secondary raw materials). In Lithuania, the replacement of polluting production technologies with less polluting ones through subsidies and investment in tangible assets, such as equipment and technologies (Order No. D1-309 of 26 May 2020), appears likely to have a proportional effect (BGI Consulting, 2020). In Czechia, activities such as the introduction of low-carbon technologies to facilitate the processing of secondary raw materials and the production of low-carbon motor vehicles – for which the purchase of machinery and equipment will be supported – are deemed likely to affect companies and industries, but there is no clear identification of what those effects may be (Operational Programme Enterprise and Innovation for Competitiveness, undated).

National regulations

Member States have introduced several regulatory measures to deal with the transition to carbon neutrality. Some of them have distributional effects, identified in the NECPs, studies or expert reports (including the assessments of Eurofound's national correspondents). National administrations may choose to introduce a regulatory measure, for instance an act, or deal with the topic in industry standards (see 'Industry standards' above). Often, combinations of measures are put in place. While distributional effects are more evident for specific groups and to a certain extent for certain sectors, regional effects are usually less obvious. Regional effects are clear, however, in the case of regulatory measures addressing transition in specific regions of the country. The regulatory measures examined here fall into the following categories:

- energy efficiency measures and increased use of renewables
- transition measures
- sectoral measures and measures relating to motor vehicles

Progressive and regressive effects have been identified for each type of regulatory measure; an overview of these effects follows below.

Progressive effects: Some energy efficiency measures (in France, Sweden and the UK) have been identified as having progressive effects. In terms of sectoral measures, regulations on the use of biofuels in the road transport sector (Finland) and in agriculture (Poland) have been identified as having progressive effects on low-income households and farmers, respectively. A potentially regressive effect on farmers caused by a regulation on reducing the use of nitrates in agriculture can be identified (for instance, in the Netherlands), but a related policy measure also provides support to farmers, thus resulting in a progressive effect. Regulatory measures on decarbonisation of the energy sector and other sectoral agreements in the Netherlands are likely to have progressive effects.

Regressive effects: These have been found in relation to Denmark's green owner tax on motor vehicles and vehicle registration tax, which are both intended to increase fuel efficiency. Other energy efficiency schemes, such as the UK's Energy Company Obligation, are also estimated to have regressive effects.

Energy efficiency measures and increased use of renewables

Measures of this type make up a large number (10) of the regulatory measures that have been identified as having distributional effects.

Progressive effects have been identified in relation to energy saving certificates for buildings (France) as they will benefit low-income households at least to some extent; the increase in housing costs is expected to be offset by the regulation of electricity prices. Similarly, no negative effects on energy companies are expected, and the regulation applies to the whole country.
A progressive effect on the energy sector in Sweden has been found to be associated with the abolition of the requirement for building permits for solar energy panels. A progressive regulatory measure was identified in the UK: the Domestic Gas and Electricity (Tariff Cap) Act 2018. Based on this, the energy regulator, the Office of Gas and Electricity Markets, has set a temporary price cap to protect 11 million households (disengaged consumers[5]) on standard variable and default tariffs until 2020, with the possibility of three 1-year extensions (until the conditions for effective competition are in place).

The majority of people in the UK remain on poor-value standard variable tariffs and default tariffs, hence the passing of this legislation. A government impact assessment states that the difference between the energy tariffs offered to people who actively seek better deals and switch provider and those offered to customers of larger companies who do not do so typically exceeded GBP 350 (EUR 406) per year in February 2016. These have typically been well above GBP 225 (EUR 261) per year since then and were around GBP 300 (EUR 348) per year during the six months to December 2017.[6] These figures apply to England, Scotland and Wales.

Studies suggest that some energy efficiency schemes in the UK are regressive (Barrett et al, 2018; Jennings et al, 2019). For instance, this applies to the UK's Energy Company Obligation, a statutory obligation on energy suppliers with over 250,000 domestic customers and delivering over a certain amount of electricity or gas to make reductions in carbon emissions or achieve heating cost savings in domestic households. This is funded by levies applied to household energy bills. The Energy Company Obligation focuses on the installation of insulation and improvements to heating in low-income and vulnerable households and will run until March 2022. The study by Jennings et al argues that this approach to funding energy efficiency is regressive for two reasons:

> *Firstly, energy bills make up a higher proportion of disposable income for the poorest households (10% of disposable income) compared to the richest households (3% of disposable income). Secondly, applying the levy at the household level ignores the energy costs embedded in the supply chain of goods and services. If the full supply chain energy embodied in all goods and services is considered, the lifestyles of the richest require nearly four times more energy than the poorest (because the richest consume more), but the richest only pay 1.8 times more towards the energy policy costs because the levies are raised at the household level. Raising money for energy efficiency via general taxation has been suggested to be a fairer way to pay for the measures.*
>
> (Jennings et al, 2019, p. 9)

Other decarbonisation measures, relating, for example, to industrial emissions, renewables, eco-design and energy labelling (to implement EU directives) may be potentially regressive, as price increases may be passed on to low-income households. In addition, targets for biofuel use by diesel and petrol suppliers may

Box 1: Energy efficiency policies – Employment opportunities and energy poverty in the UK

A UK study has estimated that up to 108,000 jobs per annum would be created in construction and services over the period 2020–2030 should a national programme of energy efficiency policies become a priority (Cambridge Econometrics and Verco, 2014). The study suggests that such a programme could offer upskilling opportunities and tackle the issue of energy poverty. According to the authors' calculations, this could be a high value-for-money infrastructure programme with the potential to greatly benefit lower-income households that are energy poor.

5 Disengaged consumers are those who remain on the same default standard tariff and do not search for better deals or switch suppliers to receive cheaper energy supplies. They are thus 'disengaged' from their energy tariff choices and remain on expensive default energy tariffs. These consumers are not actively trying to change tariffs and failing; rather, they are not engaging.

6 All currency conversions are correct as of 21 April 2021.

disproportionally affect those in certain occupations, such as drivers (because of the potentially higher cost of fuel).

Transition measures

Such measures have been adopted by nine Member States, with the aim of reducing dependency on fossil fuels, and in all cases it is reported that a large number of workers and companies will be negatively affected. However, these negative effects are counteracted by support measures and subsidies, other initiatives taken by governments or regional authorities, and support from European structural and investment funds.

For instance, the act regulating the phasing out of coal in Germany affects the populations of three German lignite coal mining regions (Rhineland, Saxony and Saxony-Anhalt). Similarly, measures related to the closure of peat plants operated by the Irish electricity provider, the Electricity Supply Board (ESB), in the Midlands region of the country, as well as the discontinuation of peat extraction for energy generation (by 2028) and the closure of sites by Bord na Móna,[7] will affect 80 ESB workers at the plants and 1,000 workers at Bord na Móna and in the energy sector. The measures will also affect the local communities more generally. The transformation of the Mátra Power Plant in Hungary (as part of the country's NECP) will affect the energy and mining sectors and workers in the region (for more details on transition measures, see Chapter 3).

Sectoral measures and measures relating to motor vehicles

In Finland, an act to promote biofuels in the transport sector[8] has been found to have a progressive effect on low-income households. However, the legislation has had regressive effects on the road transport sector and on rural areas compared with cities. Sipilä et al (2018) have estimated that the impact on rural households has been a maximum increase in costs of 0.60%, while the increase in costs for households in cities has been below 0.25%.

Decarbonisation and greening of the energy sector in the Netherlands have been assessed by van Dril (2019) as likely to have mixed effects: some workers in fossil fuel industries may lose their jobs, but the measures will have an overall positive effect on employment as a result of reskilling – for instance, through the Coal Fund set up to reduce the impact of transition – and new business opportunities.

Regulatory measures to reduce the use of nitrogen in agriculture in the Netherlands evidently affect farmers, who have protested against these measures in the past. This example, however, shows how public support measures can reduce regressive effects. The government will provide support amounting to EUR 172 million to farmers to help them to take advantage of technological innovations; it plans to put in place a transition fund to help farmers who want to make their operations more circular; and it intends to provide EUR 350 million to fund a voluntary buy-out scheme for livestock farmers.

In addition, sectoral climate agreements have been adopted by the Netherlands as part of its national climate agreement. Studies and estimates suggest that these agreements have served to mitigate the (already small) distributional effects caused by existing measures (see Box 2).

Box 2: Climate agreements in the Netherlands

To achieve the country's 2030 climate targets, a large number of instruments have been adopted in the Netherlands, including a national climate agreement (concluded in June 2019). This is made up of a combination of regulatory policies, agreements between enterprises at sectoral level and measures to encourage voluntary changes in behaviour (both hard and soft policy measures). The sectoral agreements set out what the relevant sectors will do to help achieve the climate goals. The participating sectors are electricity, industry, construction, traffic and transport, and agriculture. The Netherlands Bureau for Economic Policy Analysis has estimated the impacts of around 130 measures included in the climate agreement and established measures with an effect or a renewed effect resulting from the climate agreement on the government budget, business costs and household income (Netherlands Bureau for Economic Policy Analysis, 2019). For households, income effects were calculated only for all climate and energy measures, including climate agreement measures and measures taken in 2018, as the package of measures was created with the explicit intention of limiting the total burden and distributing it fairly. Distributional effects were investigated for income level, income source, household type and household composition groups. The results showed very limited differences between the various groups for both 2021 and 2030.

7 A semi-state company that was formed to develop the peatlands in Ireland.

8 Laki biopolttoaineiden käytön edistämisestä liikenteessä, 446/2007.

In Poland, a measure to introduce mandatory minimum shares of biocomponents in fuels and encourage the use of biomass in agriculture (with farmers to produce liquid biofuels for their own use) has had a positive effect on farmers, as it allows stable revenues owing to mandatory contracts to supply biomass. Minimum shares of biocomponents and other renewable fuels in the total volume of marketed liquid fuels and biofuels have become mandatory for producers and importers of those fuels. There are simplified procedures in place, enabling farmers to produce liquid biofuels for their own use, with an obligation to produce and supply biomass as contracted by biocomponent producers. The mandatory minimum share of 50% biomass in fuels is thus supplied by farmers. Small and medium-sized enterprises (SMEs) in the area of biocomponents and liquid biofuel production are affected, as are the agricultural sector and rural areas.

Regressive effects on low-income groups have also been identified in connection with the green owner tax on motor vehicles and the vehicle registration tax (linked to fuel efficiency) in Denmark. It can be argued that these taxes create a greater burden for low-income groups, as they represent a larger proportion of their income.

Subsidies, tax breaks and exemptions

To address climate change effects, policymakers have used taxes, regulations and industry standards, as mentioned above, but they have also introduced subsidies and other incentives for individuals and companies. Subsidies are, by definition, not neutral or necessarily progressive. Table 2 shows both progressive and regressive effects, where these are known. Furthermore, the phasing out of subsidies on fossil fuels is an important aspect of climate policy (in, for example, Austria, Portugal and Slovenia), but distributional effects have not been identified.

Subsidies can be of different types and include support for a number of activities, including purchasing solar panels, retrofitting buildings and investing in energy. It is notable that policy schemes often address broad categories of beneficiaries – households or certain sectors/industries. However, there is not always clear information on whether certain parts of the population (for instance, low-income households) will be less able to benefit as a result of their own financial circumstances. For instance, funding for purchasing photovoltaic equipment requires a prior investment by the household that those on low incomes may not be able to afford; this may lead to higher-income households benefiting more from the scheme.

The mapping exercise carried out for this report revealed that Member States have used the following categories of subsidies and support measures:

- support for purchasing electric vehicles and for alternative fuel infrastructure
- tax breaks and subsidies for energy-efficient buildings, retrofitting and heating improvements
- subsidies to encourage use of sustainable energy
- feed-in tariffs
- other measures

Subsidies may also have regressive effects. These are best demonstrated by subsidies on electric vehicles, as lower-income households cannot afford to buy environmentally friendly but expensive electric cars. Indeed, most such subsidies have been found to be regressive although analyses carried out in two countries considered them progressive.

Progressive effects have been shown to result from subsidies carefully designed for certain segments of the population. For instance, ensuring a building is energy-efficient, installing solar panels or obtaining an eco-loan may require significant investment by a household before it receives the subsidy, and low-income households will not necessarily be able to afford it. However, specifically targeting vulnerable groups (as Cypriot measures to support the installation of photovoltaic systems do) can have a progressive effect. Energy cheques to help less well-off households in France with their energy bills, electricity support for vulnerable groups in Malta, support for household energy efficiency for vulnerable groups in Slovenia and the Warm Home Discount Scheme for low-income and vulnerable groups in the UK all have progressive effects. In addition, support in the UK for electric vehicle infrastructure has been found to be progressive.

Support for purchasing electric and hybrid vehicles

Premiums for low-emission vehicles are widely used by many countries, but distributional effects have been identified for only a small number (eight). Support measures of this type also include the provision of charging stations for electric vehicles and electrification of transport. Distributional effects have been identified for some of these schemes, such as the Austrian green vehicle insurance tax, which is considered rather regressive. For insurance purposes, and since 1 October 2019, CO_2 emissions are included in the assessment of insurance (in addition to the cubic capacity or power of the internal combustion engine). Preferential treatment is given to hybrid cars and cars with below-average CO_2 emissions. This means that users of environmentally friendly (usually more expensive) vehicles are incentivised, while users of high-emission vehicles (usually low-income households, which cannot generally afford to buy a pure electric or hybrid car) are penalised.

Table 2: Examples of subsidies, tax breaks and exemptions with progressive and regressive effects

Type of subsidy	Progressive effects	Regressive effects
Support for purchasing electric vehicles and for alternative fuel infrastructure	Premium for the purchase of a low-emission vehicle (France); compensation for changing a polluting car for a less polluting model (Lithuania); electric car incentives and electric vehicle infrastructure (potentially progressive, the UK)	Vehicle insurance tax (Austria); incentives for purchasing electric vehicles (Lithuania); subsidies for electric vehicles and taxes, road tolls, registration tax that has effects on lower-income households (Norway); tax breaks for electric transport (potentially regressive, Portugal); subsidies for electric and hybrid cars (Romania); insurance bonus for low-carbon vehicles (Sweden)
Tax breaks and subsidies for energy-efficient buildings, retrofitting and heating improvements	Installation and upgrade of photovoltaic systems for domestic use and energy-efficiency upgrades to private homes for vulnerable groups (Cyprus); incentives for the use of renewable energy resources in public and residential buildings, incentives for the use of solar energy technologies, heat pumps and heat storage in district heating systems to replace fossil fuels (subsidies for companies), incentives for modernisation of multi-apartment houses/individual dwellings (Lithuania); premium for energy renovation and energy cheques to help with the energy bills of the poorest 20% of households (France); subsidies for solar panels (Sweden); electricity support for vulnerable groups (Malta); household energy efficiency support for vulnerable groups (Slovenia); Warm Home Discount Scheme for low-income and vulnerable groups and Domestic Renewable Heat Incentive (the UK)	Oil phase-out bonus, renovation cheque, funding for photovoltaic systems and Small Storage Systems Programme, abolishment of tax on self-produced energy (Austria); eco-loans (France); Ecobonus and Bonus Casa (Italy); incentives for people to purchase solar power from solar farms (Lithuania); subsidies to households to reduce energy needs and transition to green energy sources (Norway)
Subsidies to encourage use of sustainable energy	Support for production of renewable energy sources and VAT reduction for energy improvements (310,000 companies have benefited) (France); extension of subscriber electricity system (possibly progressive, Hungary); grant for CO_2 reduction measures for businesses (the Netherlands); climate change agreements on energy efficiency (potentially progressive) and VAT reduction on energy prices (the UK)	Subsidies (fixed amounts) for green energy sources for both households and companies (Romania)
Feed-in tariffs	Progressive FITs for the 12% of households with renewable energy installations (the UK)	Contracts for Difference (CfDs) (the UK)
Other forms of subsidies	Business tax deduction for businesses purchasing electric bicycles and motorcycles (Austria); subsidy for conversion of arable land to nature (Denmark); aid for conversion to organic farming (favourable to small farmers) (France); subsidies for people to use public transport and other less polluting alternative modes of transport (Lithuania); support for vulnerable groups when replacing old white goods with newer technologies (Malta); selected groups of farmers benefit from tax breaks for 'green diesel' (Slovakia)	

Source: *Network of Eurofound Correspondents, 2020*

A premium for low-emission vehicles, introduced in France, covers 27% of the purchase price up to a limit of EUR 6,000 for vehicles that cost less than EUR 45,000 (in 2020). It is notable that the premium was doubled in 2019 for households with relatively modest incomes. Incentives to purchase electric cars have also been provided to Lithuanian consumers, through Order No. D1-175 (allowances of EUR 2,000 for a newly purchased used electric vehicle and EUR 4,000 for a new electric vehicle). Additional compensation of EUR 1,000 is paid to purchasers of electric vehicles who apply for support for disposal of their old vehicles. Again, these subsidies are rather regressive, as lower-income households cannot generally afford to purchase electric vehicles. Other effects (for example, on industries and employment) have been analysed in a national study (BGI Consulting, 2020).

The Portuguese national correspondent notes risks of regressive effects on low-income households with regard to tax breaks in electric transport. In Romania, no distributional effects have been identified in official reports. However, according to the national correspondent, regressive effects are possible in

connection with a Romanian scheme to incentivise consumers to use low-emission cars, as electric cars are more affordable for higher-income households. Under the scheme, a grant of RON 45,000 (EUR 9,122) can be provided for the purchase of a fully electric vehicle, and one of RON 20,000 (EUR 4,054) can be provided for the purchase of a hybrid vehicles with maximum emissions of 50 g of CO_2 per kilometre.

Finally, measures to support the uptake of ultra-low emission vehicles, such as the plug-in car and plug-in van grants in the UK, are potentially progressive.

Tax breaks and subsidies for energy-efficient buildings, retrofitting and heating improvements

These are among the most popular support measures in the EU. While it was not the intention of this study to map the available measures, a total of 38 such measures were identified in 16 Member States. As with support measures relating to electric vehicles, few countries indicate in their plans and reports what the distributional effects of these measures are or are likely to be.

Four types of subsidies in Austria – namely an oil phase-out bonus (up to EUR 5,000 per residential unit) for switching to renewable forms of energy; an initiative to encourage thermal renovation of buildings (the renovation cheque), which provides grants of up to EUR 6,000 per residential unit, with top-ups; the '100,000 Roofs' solar power programme; and the abolition of tax on self-produced energy – are rather regressive, as they require up-front investments that many low-income households will not be able to undertake.

The installation of photovoltaic systems for domestic use and energy efficiency upgrades to private homes for vulnerable groups are subsidised by the Cypriot authorities and can be considered progressive. Quite an extensive definition of vulnerable groups is provided by the state (for example, large families, social welfare recipients and beneficiaries of guaranteed minimum income), so the measure carefully targets those who are not likely to be able to afford photovoltaic systems without support. The subsidies vary; for photovoltaic systems, the sum depends on the generating power of the system installed (for example, installation of a 1-kW system would attract a payment of EUR 750). For energy efficiency upgrades to homes, subsidies cover 50% of the investment with a cap of EUR 25,000.

Three support measures in France appear to have antithetical results. A payment towards the energy renovation of a household's main residence (with a ceiling of EUR 20,000) has been granted to more than one million households; it was intended for low-income households and owner-occupiers. Energy cheques for households with modest incomes (households in the poorest 20%) subsidise their energy bills and benefited nearly six million households in 2019. By contrast, the zero-interest eco-loan (which can also be combined with a tax credit scheme) has no progressive character, because it is not means tested. These measures are favourable for the construction sector, which benefits from an increase in demand for building works from homeowners. The measures are applied equally to all regions.

The Italian Ecobonus and Bonus Casa schemes offer tax deductions for retrofitting buildings (the deductions being conditional on the type of retrofitting system used); they are regressive, as they are dependent on the investment made up front. This means that higher-income households benefit more than lower-income households. Some adjustments have been introduced to mitigate these adverse effects, such as the extension of the measures to social housing schemes and the possibility of exchanging a tax deduction for a discount or 'selling' the expected tax deduction to a credit institution.

Electricity support for vulnerable groups in Malta targets its intended recipients rather well; however, the eco-reduction benefit, which incentivises lower electricity consumption, applies in a uniform way to all electricity consumers, without differentiating between low-income and high-income consumers. Subsidies provided to Norwegian households to encourage them to reduce their energy consumption and facilitate their transition to green energy sources are premised on the type of building and its age. Therefore, lower-income tenants (those who are not property owners) may be disadvantaged. In Sweden, subsidies for the installation of solar panels (to a maximum of 20% of the investment and with a total budget of SEK 835 million (EUR 82 million) for 2020) have proved attractive to many individuals and organisations, and they are progressive according to the Swedish Energy Agency (2018). The measure also has a positive effect on the energy sector (producers and providers of solar panels and materials). Finally, the UK Warm Home Discount Scheme and Domestic Renewable Heat Incentive are both progressive and address the needs of low-income and vulnerable households.

Subsidies to encourage use of sustainable energy

A large number of support measures of this type (at least 22) have been identified in 11 Member States, with few highlighting distributional effects in their plans and reports.

The tax exemption on self-produced energy in Austria is likely to be regressive, as it requires prior investment in a photovoltaic system, which is not likely to be affordable for lower-income households. By contrast, French public support for the production of renewable energy may have a progressive effect for low-income

households, as the state pays the difference between the market price and the production price.

The Hungarian NECP provides for an extension of the subscription-based electricity connection scheme for households living in buildings that have deteriorated or are unsuitable for renovation, which ensures the electric heating of at least one room for families with small children; this is likely to have progressive effects for low-income households. In addition, the Dutch grant scheme to stimulate CO_2 reduction (formerly called SD+, now SDE++), which is intended for businesses with no suitable alternative to CO_2-producing methods, has a progressive character, as it attempts to redress the burden on industries that presently cannot (fully) reduce their CO_2 levels.

The introduction of green taxation, included in the NECP for Portugal, will phase out fossil fuel tax benefits. However, the risks identified for various social groups and groups of workers and employers need to be addressed. Subsidies for private households and companies that use green energy sources in Romania are expected to be rather regressive, since only part of the investment is covered by the subsidy and some low-income households may not be in a position to avail themselves of it.

Two UK support measures potentially have progressive effects: climate change agreements and low VAT on energy prices. The former are sectoral agreements that aim to mitigate the climate change levy on energy and trade-intensive industries; the scheme is administered by the UK Environment Agency. These agreements offer discounts on the levy in exchange for firms meeting targets for carbon reduction or energy efficiency improvements. Since April 2019, the discount for electricity has been 93% and that for other fuels 78%. The lower VAT rate (5% compared with the standard rate of 20%) on domestic energy prices effectively works as a subsidy for households using gas.[9] Another UK scheme, the Non-Domestic Renewable Heat Incentive, provides financial incentives for businesses, public sector bodies and non-profit organisations to increase their uptake of renewable heat. Those with eligible installations receive quarterly payments for 20 years based on the amount of heat generated. This scheme is regressive for domestic consumers, as they pay comparatively higher energy bills.

Feed-in tariffs

Feed-in tariffs (FITs) refer to financial incentives and subsidies provided to companies, individuals and consumers as a group to encourage the generation and use of renewable energy. Some Member States make explicit reference to FITs; however, distributional effects have been identified for only two.

A study conducted by the German Institute for Economic Research (DIW Berlin) on the distributional effects of energy policy found that the levy imposed on households to finance the German FIT has a regressive effect (Bach et al, 2018). According to the study, the expenditure on this levy (known as the EEG-Umlage) as a percentage of a household's net income is highest for the lowest income decile[10] (1.8%) and then decreases for higher income groups (down to 0.2% for the highest income decile).

Households in the UK with a small-scale (5 MW or less) installation (12% of households) see the benefits of FITs. Estimating the distributional impact of the FIT scheme, a study finds that the cost of FIT payments made to installation owners by electricity suppliers is passed on to all electricity consumers in the service areas of the electricity suppliers. 'This means that the FIT scheme is paid for by electricity consumers rather than taxpayers. While the FIT framework authorises electricity suppliers to pass on the costs of FIT payments to electricity consumers, it does not specify how this should be done in practice. As a result, it is unclear how electricity suppliers recoup these costs or how this burden is distributed across different household income groups' (Advani et al, 2013, p. 78).

Other forms of subsidies

Danish subsidies for the conversion of organic arable land to nature compensate farmers adequately (according to the Danish Agriculture and Food Council). An amount of EUR 8.7 million per year was earmarked for the conversion of arable land to nature during the period 2016–2020. The scheme was co-financed by the European Agricultural Fund for Rural Development. Also in the agriculture sector, the French aid scheme for converting to organic farming – Avenir Bio – provides a tax credit of EUR 3,500 per year during the conversion to organic production; it is a progressive scheme. The Netherlands Enterprise Agency's Innovation Fund provides subsidies in the form of credits for companies developing innovative low-carbon technologies.

9 The effective carbon tax on household electricity consumption would be GBP 59 (EUR 68) per tonne of carbon dioxide equivalent (tCO2e), a similar level to that levied on most businesses and in line with the government's stated carbon price of GBP 59 (EUR 68)/tCO2e. However, accounting for the subsidy, the carbon tax on household electricity consumption falls to just GBP 6 (EUR 7)/tCO2e, while the figure for gas is negative.

10 Lowest income decile = the poorest 10%; highest income decile = the richest 10%.

Incentives in the form of subsidies (EUR 1,000), which are progressive, are provided to people in Lithuania to encourage the use of public transport and other less polluting alternative modes of transport. Tax breaks for 'green diesel' in Slovakia are provided through Act No. 43/2019, which is intended to benefit farmers producing certain products (for instance, fruit and vegetable growers, as well as those farming cattle, pigs, sheep, goats, horses, poultry and bees).

Tax-related subsidies, such as energy investment tax deductions and excise refunds, have been put in place by Czechia and the Netherlands. Partial refunds on excise duty on diesel in agriculture in Czechia have a positive effect on the sector.

Public investments

Unlike some of the other types of policy measure, most public investment measures are seen as clearly having progressive effects or being beneficial to various socioeconomic groups, sectors, companies or regions. Examples of the progressive effects of public investments include those related to mobility, such as investments intended to encourage the use of public transport, to encourage cycling (Austria) or to enlarge the electric vehicle charging network on motorways and major roads (Sweden). Investments in clean energy (Spain), such as biomass, are also associated with progressive effects, as low-income households can directly benefit, as does industry, through increased employment. These investments can contribute to regional development, mitigate the risk of depopulation and facilitate adaptation in certain regions. As shown earlier, low-income households may not be able to afford energy-efficient homes; therefore, public sector investment, particularly in improving the social housing stock and addressing energy poverty, can be highly effective (Portugal, the UK). Similarly, public investment that facilitates a just transition, such as the setting up of the Just Transition Fund in Ireland and the Coal Fund in the Netherlands, are largely seen as progressive. Finally, the role of public investment in research and innovation (the Netherlands) is vital, as it means that the state de-risks investment in new technologies that might not otherwise be developed by the private sector. Several sectors (and indirectly the public sector) can benefit from the outcomes of public investment in the development of technologies to address climate change more effectively and reduce costs.

Other state initiatives include the formulation of new strategies for energy production (for instance, a wind power initiative in Sweden), the setting up of funds and the development of a legal framework for electric charging stations or for municipal actions (see Table 3).

Considerations for public policy

Empirical literature has provided much evidence on the distributional effects of carbon taxes; however, it has focused less on the distributional effects of subsidies, public investment and standards. The analysis above attempts to identify these distributional effects through official public policy documents, studies and expert views. What is clear is that not all policy measures have been designed with their potential distributional effects in mind. Regressive effects of taxes have been identified in 13 Member States while progressive effects were clear in only a minority of countries (just four) and for different groups, for instance, specific sectors, companies or low-income households. In five countries (Germany, Ireland, Luxembourg, the Netherlands and Poland), governments have introduced relief measures

Table 3: Examples of public investments with progressive effects

Type of public investment	Progressive effects
Investment in citizens' mobility	Investment in cycling infrastructure, walking routes and public transport (Austria) Investment in charging stations for vehicles on major roads (SEK 50 million (EUR 5 million) over three years) (Sweden)
Investment in energy, such as biomass, biogas, energy from waste, renewables, thermal, solar power	Investment in biomass (Spain) Support for biogas and wind power (Sweden)
Investment in the energy efficiency of private homes and social housing	Investment in social housing (Bulgaria) Investment in sustainable construction, renewable energy and increasing the energy efficiency of private homes (Portugal) Investment in insulation for private homes (with a target of 6–9 million homes) and investment to upgrade the energy performance certification of homes by 2030; investment in heat networks (the UK)
Investment in a just transition	Investment in the peatlands in the Midlands region (Ireland) Establishment of the Coal Fund (the Netherlands)
Investment in research, development and innovation	Innovation programmes on climate change and technology, and innovation credits to support research and development (the Netherlands)

Source: *Network of Eurofound Correspondents, 2020*

or support for low-income households, vulnerable groups, communities and companies to address the negative consequences of carbon taxes. Such relief measures have been possible because of government revenues generated from carbon taxes.

A mixed picture appears with regard to regulatory measures. Regarding energy efficiency, transition measures and support for specific industries (agriculture mainly, but also transport, electricity and construction), many measures in six Member States were characterised as progressive. Those may include energy performance certificates for buildings (which target low-income households, among others) combined with (temporary) regulation of electricity prices (Finland), energy performance certificates targeting the rental sector, price caps for vulnerable and disengaged consumers (the UK) and several sector-specific measures (in Finland, the Netherlands and Poland). Where negative or regressive effects of regulatory measures were identified, the national correspondents referred to the risk of increased prices being passed on to consumers, for example in the form of higher road fuel prices and vehicle registration taxes.

Just transition regulatory initiatives in nine countries have been put in place to counteract the negative effects of transition to more efficient or carbon-free forms of energy on specific industries, regions or groups of workers.

Similarly, industry standards discourage the use of products with certain characteristics or highly polluting technologies, but their distributional effects can be unclear. Replacing polluting technologies with less polluting ones or renewable energy sources has been found to have proportional effects in Lithuania, while technology replacement and standards in the oil shale industry in Estonia have had regressive effects for workers in the industry and companies. Some studies suggest that the effects of standards are often regressive because they do not generate revenue for governments and discourage the most polluting technologies and activities even when they are used only to provide back-up capacity (Zachmann et al, 2018).

Subsidies do not automatically benefit all in the same way; for instance, low-income households and some companies may not be able to afford investment in energy-efficient buildings. If a low-income household is faced with a choice between, for instance, investing in retrofitting its home and paying utility bills, buying food, etc., it is hardly likely to choose the former. Hence policy measures need to take into account the probable responses and behaviour of low-income households. Policy schemes characterised as progressive are often designed with the needs of specific groups in mind, such as vulnerable groups (in the case of measures in Cyprus, Malta and the UK, for example) or certain companies (in the case of support for the production of renewable energy sources and VAT reduction for energy improvements in France).

Many public investment measures have been found to have progressive effects, as they are likely to benefit several sectors, counteract the negative effects of transition or address social housing issues, for example. Government support to stimulate research, development and innovation in relation to new technologies that are environmentally friendly and more affordable for both producers and (indirectly through cheaper products) consumers across the economy and industries are more likely to have progressive effects, as they can benefit all of society. However, this is not to say that all such measures are progressive.

3 Addressing the distributional effects of climate policies

As demonstrated in the previous chapter, many climate policy measures have significant undesired regressive effects. This means that, although they are designed to contribute to the necessary reduction in greenhouse gas emissions, they may also contribute to increasing existing inequalities, between individuals, firms or regions. In addition, this tends to reduce the general acceptability of the necessary policies and makes their implementation much more difficult. To gain some insights into how to mitigate those adverse distributional effects, Eurofound asked its national correspondents to provide information about measures, projects or specific funds that have been earmarked to address the anticipated or observed negative effects of any of the climate policies identified as having regressive effects.

National correspondents were also asked to highlight success stories of distributional risks being effectively addressed through specific policies (at any level of administration). Many correspondents cautioned that many policy measures and initiatives that take into account distributional considerations have only recently been introduced and therefore evidence (and views and opinions) on their performance is still lacking. Nevertheless, some initiatives in a handful of countries have been suggested as good examples, and these are highlighted below in Boxes 3, 4 and 5.

Most Member States have a mix of various measures in place to deal with the adverse effects of climate policies, covering different areas. The most common type of measure relates to ensuring a just transition. These measures usually address specific sectors and/or geographical areas particularly affected by the transition to a climate-neutral economy. Other measures address specific population groups, such as the energy poor or other vulnerable consumers. Fewer countries have measures supporting building renovation with embedded mechanisms to prevent or reduce further inequalities. Other examples of measures include ongoing state research and development investment in energy efficiency, investment in renewables, green taxes and the inclusion of climate adaptation considerations in business strategies. It is also important to note that, overall, very few countries have revenue recycling systems in place that use the revenue from measures such as carbon taxes to specifically finance measures addressing their adverse effects.

The socioeconomic impacts of climate policies, including their distributional effects, have also been tackled through social dialogue and the adoption of agreements between social partners, in either bipartite or tripartite settings. Some of the most interesting examples of such initiatives, from EU level to company level, are presented at the end of the chapter (see 'Social dialogue and collective agreements').

Just transition programmes: Regional focus

Several Member States have put in place programmes to ensure a just transition: Estonia, Germany, Greece, Ireland, the Netherlands, Portugal, Romania and Slovakia have some of the most prominent examples. These programmes have a strong sectoral focus (on coal mining, peat extraction or the oil shale industry) and a strong regional focus (on the location of the resources being extracted), and they are often related to the phasing out of extraction activities or the production of electricity using coal, oil or peat. These initiatives often make use of EU support (namely the Just Transition Fund) and include support measures for workers (such as compensation for workers made redundant, training programmes, early retirement programmes, tax deductions or unemployment/income-loss allowances) and support measures for businesses (such as incentives to attract new firms or maintain existing ones), but also development of infrastructure, such as roads and industrial parks.

In Ireland, a programme dedicated to supporting the Midlands region is mostly funded by earmarked revenue from carbon taxes, providing an example of recognition of the challenges posed by the transition allied to the (re)use of revenue from climate measures to tackle the undesired consequences of the necessary transition to a climate-neutral economy (see Box 3). Similarly, in Romania, the potential negative impacts of decarbonisation measures on some specific geographical areas where coal mining activity is concentrated have been identified in the country's NECP. Support from EU funds and platforms, as well as national initiatives, is being put in place to tackle those impacts (see Box 4).

The German federal government and the coal companies have reached an agreement on socially acceptable restructuring, resulting in the adoption of the Coal Phase-out Act. The act affects workers in lignite mines and coal-driven energy plants (about 40,000 in total) in the Rhineland, Saxony and Saxony-Anhalt regions. It provides state compensation for redundant

workers aged 58 years or older for a maximum of five years at the level of their forthcoming pension. Some criticism has been voiced, however, by environmental experts on the timeline for the phasing out and the compensation provided by the government to coal companies (Bartholdsen et al, 2019). Germany has also adopted the Transformation of Coal Regions Act, in August 2020, which provides EUR 40 billion in funding to support structural change in the affected regions until 2038. Of the EUR 40 billion, EUR 14 billion will be given to the affected states and municipalities for economic transformation in Rheinisches Revier (a region in the Rhineland), the central German mining district (Saxony and Saxony-Anhalt) and Lausitz in eastern Germany. This has been hailed as a great success, but it is too early to evaluate the results of the various initiatives (German Federal Ministry of Economics and Technology, 2019).

Box 3: Just transition in the Midlands region in Ireland

Ireland has earmarked part of the revenue from its carbon taxes (around EUR 130 million per annum) for measures aimed at alleviating the adverse effects of its climate mitigation policies. Revenues raised in 2020 were ring-fenced for climate action measures, with a direct commitment to funding support for a just transition, retrofitting, protecting the most vulnerable from rising energy costs and improving the electricity distribution infrastructure. More specifically, the Irish budget for 2020 included provisions to support a just transition in the Midlands region, including:

- EUR 20 million for a new energy efficiency scheme targeting the social housing stock in the region
- EUR 5 million for peatland rehabilitation
- EUR 6 million for a dedicated new Just Transition Fund (topped up to EUR 11 million with a contribution of EUR 5 million from the ESB, the state-owned electricity company)

The new energy efficiency scheme, financed with EUR 20 million to deliver a new model for group housing upgrades (as set out in Ireland's climate action plan), specifically targets the Midlands. It is estimated to support 400 jobs, directly or indirectly, and resulted in significant upgrades to the social housing stock in the region during 2020.

In addition, a Just Transition Review Group will be established within the National Economic and Social Council. Through this group, the council will review the ongoing transition and identify specific needs among cohorts of workers and enterprises, in communities and among specific groups of people. Work on ensuring a just transition for the Midlands region will be assisted by the inclusion of the Midlands region in the EU Platform for Coal Regions in Transition.

Some EUR 5 million has been allocated to a bog restoration and rehabilitation programme. This programme will enable the National Parks and Wildlife Service to restore 1,800 hectares of bog in seven counties over the next five years, resulting in 28 million tonnes of carbon stored. It will create 70 jobs in its first year, rising to 100 as the programme develops.

The Irish Just Transition Fund, totalling EUR 11 million, is designed to support retraining and reskilling of workers and to assist local communities and businesses in the Midlands in adjusting to the transition to a low-carbon economy. Decisions on how the funding will be used will be made in consultation with various regional structures, including the Midlands Transition Team. The Department of Employment Affairs and Social Protection, SOLAS (the state agency responsible for further education and training), and other government departments and agencies are supposed to engage closely with affected workers to inform them about available retraining, education and employment opportunities. They also intend to explore with affected workers opportunities through schemes such as the Community Employment programme and the Rural Social Scheme.

Greece has developed a lignite phase-out plan for power generation. This involves integrated programmes to support lignite-producing areas in the country, in order to smooth the transition to the post-lignite era in a fair way, in particular for the region of Western Macedonia and the municipality of Megalopolis. In the plan, the Greek government commits to shutting down lignite-fired plants by 2028, while stating that maintaining jobs and utilising the expertise of human resources in these areas are top priorities. An integrated, multifaceted and front-loaded plan – the Just Transition Development Plan – was published in September 2020 and constitutes a roadmap for the post-lignite era (Greek Ministry of Environment and Energy, 2020). Western Macedonia and Megalopolis, whose economies depend strongly on lignite extraction for power generation, will be supported by the 'Special account for just transition in lignite-producing areas'. The plan includes 15 different incentives aimed at attracting investment in new production processes, maintaining existing operations and supporting individuals. This last objective is to be achieved through measures including income tax breaks, mortgage subsidies, and improved allowances and training programmes. The investment, which is estimated to total EUR 5 billion, will be funded by subsidies (from the EU Just Transition Fund), special loans (for example, from Special InvestEU), commercial loans and equity.

Box 4: Decarbonising coal mining in Romania

The Romanian NECP acknowledges the potential negative impacts of decarbonisation on some specific geographical areas where coal mining activity is concentrated, specifically the counties of Hunedoara (extraction of anthracite in Jiului Valley), Gorj, Vâlcea and Mehedinți (extraction of lignite). Hunedoara and Gorj alone account for about 90% of the labour in the mining sector. The total number of jobs directly dependent on coal mining and production of coal-based energy amounts to 18,600, with another 10,000 jobs indirectly dependent on coal. Power plants in Hunedoara and Gorj emit approximately 90% of greenhouse gas emissions from coal-based plants and approximately 30% of all greenhouse gas emissions from mining and manufacturing in Romania. If mining and use of fossil fuels are reduced or stopped, these jobs will be endangered.

The NECP considers that the intervention of the EU Just Transition Mechanism in these areas would be justified, as it would in counties where coal-based plants are still operational, such as Timișoara, Arad, Suceava, Bihor and Iași. In this context, Jiului Valley, a mono-industrial region, is included in the European Commission's Platform for Coal Regions in Transition, which enables regions to identify and respond to their unique contexts and opportunities. The Romanian state has obtained support from the Commission to fund a study on the preparation of a transition strategy for the region through the Structural Reform Support Programme (renamed the Technical Support Instrument as of 2021).

In addition, with the participation of the private sector, the Ministry of Economy, Energy and Business Environment will support a project to create a training centre in Jiului Valley. It will aim to redirect and improve workers' skills, competences and education, and run initiatives related to job search and start-ups. Retraining coal workers for jobs in business sectors with significant labour shortages, such as construction or the rail and road infrastructure, will also be taken into consideration. Jiului Valley also received specific support under the Romanian Human Capital Operational Programme, which allocated a budget of EUR 2 million in 2020 to improve the professional skills and employability of unemployed and inactive people in the region.

Additional measures to mitigate the negative distributional effects of the Romanian plan to achieve climate neutrality are:

- investment in setting up new enterprises, including the provision of consultancy services and business incubators
- investment in SMEs, including start-ups, and support for economic diversification and conversion of heavily polluting activities
- investment in the implementation of the technologies and infrastructure required to supply clean energy at affordable prices, in the reduction of greenhouse gas emissions and in energy efficiency and renewable energy sources
- investment in the regeneration and decontamination of sites, in the rehabilitation of land and in the redefining of projects
- provision of assistance to jobseekers

The Italian NECP includes specific actions to phase out coal-fired power plants, which, on the basis of 2017 data, are estimated to employ over 3,800 full-time equivalent workers, directly or indirectly. The plan states:

> *With a view to ensuring a fair energy transition, the coal phase-out will be accompanied by employee protection measures ensuring their employment development and retraining, and measures to combat poverty and inequality and to safeguard their local areas.*

The Netherlands has created the Coal Fund to reduce the impact of the energy transition, in particular on the coal sector. The fund will invest EUR 22 million in efforts to help those in the coal industry who are negatively affected by the energy transition; such efforts will include offering early retirement programmes and allowances to cover unemployment/income loss.

In Portugal, one of the eight overarching objectives of the NECP is specifically concerned with the mitigation of negative effects: objective 8 deals with guaranteeing a fair, democratic and cohesive transition. One of the measures under that objective is the development of a strategy for a fair transition. This strategy will identify and anticipate opportunities and risks related to decarbonisation and energy transition; prevent negative social, economic and environmental impacts in the medium and long run; enhance the creation of new jobs and businesses; and lead to adequate investment in education, training and requalification. It is expected to ensure a fair transition for all companies, workers and communities, providing the basis for action plans on specific relevant issues. In addition, the Portuguese NECP envisages that the Just Transition Fund created in the context of the European Green Deal will support the transition of carbon-intensive regions in Portugal, those most affected by the need to abandon an economic model based on fossil fuels.

In Slovakia, a detailed evaluation was carried out in preparing a proposal to terminate coal mining and electricity production from coal in mines and power plants in the Horná Nitra region (which includes the cities of Prievidza, Nováky, Partizánske, Handlová, Bánovce nad Bebravou and Topoľčany). In this context, the Slovak government approved an action plan that is being gradually implemented. With a preliminary cost estimate of EUR 3.2 billion, the plan envisages the termination of coal mining by 2027 and the development of improved road infrastructure by 2035, and includes the following measures.

- Measures focusing on mobility will involve improving access to the motorway, increasing the quality of the road infrastructure and modernising railway lines.
- In the area of the economy, business and innovation, support will be provided for the creation of new jobs and the development of SMEs, and industrial parks will be revitalised.
- Environmental sustainability in the region will be increased by eliminating environmental impacts (closing of mining works, reclamation, severance pay for employees) and improving the environment (wastewater treatment, reduction in landfill waste, development of low-carbon energy).
- In relation to quality of life and social infrastructure, measures will focus on social security for miners (those who are not able to adapt to other occupations) and improved health and social services.

Meanwhile, an additional layer of support has been created in the form of the national project 'Support for employability in the Horná Nitra region', which aims to provide support for vulnerable employees during the transition. It was approved by the European Commission in October 2019 at a meeting of the Monitoring Committee of the Human Resources Development Operational Programme.

Estonia, on the other hand, faces an important transition in the oil shale industry in Ida-Virumaa (a county in the north-eastern part of the country). A dedicated plan was developed for Ida-Virumaa for 2015–2020 with the aim of developing the region to make it more versatile and to attract new economic activities and jobs to the region. The plan states that 'diversification of the economy is important for the sustainable development of the region in order to prepare the region for the gradual reduction of the activities of the oil shale-based industry'. The plan proposed increased investment in the region (EUR 200 million from the state budget) including financing from various EU funds. The actions also included transferring state-financed jobs (for example, in ministries or state agencies) to the region and paying wage top-ups to those working in the region (for example, police officers).

Tackling energy poverty and supporting vulnerable groups

In addition to measures and programmes put in place to ensure a just transition, several Member States have developed initiatives aimed at tackling energy poverty[11] and/or supporting vulnerable consumers that may also address the potential distributional effects of climate policies. Energy poverty is an issue that affects a large share of people living in the EU: according to Eurostat, 6.9% of the EU population reported in an EU-wide survey in 2019 that they could not afford to heat their home sufficiently. The situation varies across the EU Member States. The largest share of people who said that they could not afford to keep their home adequately warm was recorded in Bulgaria (30.1%), followed by Lithuania (26.7%), Cyprus (21.0%), Portugal (18.9%), Greece (17.9%) and Italy (11.1%) (Eurostat, 2021).

Correspondents from all those countries, except Lithuania, reported that measures were in place to tackle energy poverty and therefore also address the distributional effects of climate policies. However, in Lithuania, the assessment of the NECP submitted to the Ministry of Environment in 2020 concluded that the measures set out in the plan would help to reduce energy poverty and the share of people at risk of poverty or social exclusion. These positive effects would be generated by increased income and investments aimed at improving housing energy performance.

In Belgium, there is a general awareness of the risk that people with less financial means can be adversely affected by stricter insulation norms and the shift away from oil heating systems, which are mainly used by people who rent their homes or cannot afford to switch. In order to support these people, the Flemish government approved an energy poverty programme, consisting of 34 actions, in March 2016. Under that programme, vulnerable groups receive bonuses on top of the energy premiums that are already in place to help people to buy environmentally friendly appliances.

'Den grønne check' (the green cheque) is a Danish example of an initiative to mitigate the distributional effects of climate policies. It compensates low-income households for rising energy taxes. Individuals receive a green cheque to help them to pay their energy bills if they have a low income (this includes most students and pensioners). Those whose income is below a given lower limit receive the maximum amount; the amount received decreases as income increases. The payments are tax free.

Luxembourg has also implemented several measures aimed at providing targeted assistance to people affected by fuel poverty. Under the amended laws of 1 August 2007 on the organisation of the electricity market and the natural gas market, a residential customer who is unable to pay his or her electricity or gas bills can obtain social assistance from the competent social office. Later, the act of 18 December 2009 on the organisation of social assistance established that the competent social office must carry out an examination to determine whether the residential customer is able to pay the energy bills and is entitled to social assistance. The existing cost-of-living allowance may also help to combat fuel poverty. Low-income households can also benefit from state housing assistance in the event of a rent increase. It should be noted that the current legislation on social assistance stipulates that all people who meet the conditions for eligibility for social assistance are entitled to a minimum supply of domestic energy if they are unable to cover the cost of their energy consumption.

The Cypriot authorities have focused on the electricity needs of large families and have provided for reduced fixed electricity prices. In addition, they have forbidden electricity providers to interrupt electricity supply to vulnerable groups, for health reasons. The Greek NECP includes provisions for the introduction of an energy card that will enable vulnerable electricity consumers to choose for themselves how they will have their energy needs met. Furthermore, some interesting new initiatives are planned by the Portuguese authorities (as explained in the NECP) with regard to the encouragement and stimulation of energy communities and the promotion of efficient household appliances. Free public transport has been championed by Luxembourg, which was the first country to introduce it, in March 2020.

The Greek Ministry of Environment and Energy considers the Save Energy at Home programme to have been relatively successful as a result of the provision of 40% advance funding. This meant that applicants were not required to pay up front for improvement works to their properties. This was an important condition, as most people could probably not have afforded to make the improvements otherwise. Estimates by the Ministry of Environment and Energy suggest that funded home improvements have helped recipients to achieve an average annual saving of EUR 1,200 on household energy costs. The scheme has also helped to create over 2,500 new jobs per year. From a homeowners' perspective, the main issues preventing them from taking advantage of the programme were related to

11 While there is no consensus on a definition, 'energy poverty' can be defined as the situation in which individuals are not able to adequately heat their homes or use the energy they need in their homes because they cannot afford the cost. The issue is characterised by three key drivers, in combination or isolation: low incomes, poor thermal efficiency of buildings and high energy costs (Pye et al, 2015).

financial viability, access to finance and a general societal mistrust of banks and financial instruments. It is notable that there are no banking products for financing energy performance improvement actions.

In Poland, the energy allowance for vulnerable electricity end-users is one of the measures that have been introduced to tackle energy poverty; it is widely recognised in Poland that the energy poverty situation may be worsened by rising fuel and energy prices resulting from the transition to a climate-neutral economy. To be eligible, a person must already receive a housing allowance (available to households whose average income per capita does not exceed 175% or 125% of the minimum pension amount in a multi-person household or a single-person household, respectively), have a contract for electricity supply with an energy utility company and live in the place to which the electricity is supplied. The energy allowance is set annually by the Ministry of Climate and Environment and depends on the number of people in the household.

In addition, the Polish government reduced excise duty on electricity (from PLN 20 (EUR 4.40) to a minimum rate of PLN 5 (EUR 1.10)) in 2018. In the same year, it also reduced the transitional fee (by 95%) to compensate for a steep rise in the prices of CO_2 allowances. The beneficiaries of the intervention were end-users of electricity, including enterprises and households. More recently, in February 2020, a draft law on compensation for electricity price increases was brought forward by the Polish Council of Ministers. The proposed regulation, unlike the reduction in excise duty on electricity mentioned above, targets only electricity end-users in households. This draft law was subsequently withdrawn and new solutions focusing on groups in energy poverty are being sought.

Slovenia has been addressing the issue of energy poverty since at least 2014. As part of the 2014–2020 Operational Programme for the Implementation of the EU Cohesion Policy, EUR 5 million was earmarked for subsidies for energy efficiency measures in 500 households with low incomes. The Slovenian Climate Fund's programme for 2020–2023 earmarked EUR 50,000 for each year of the four-year period for energy poverty reduction measures (a total amount of EUR 200,000). Slovenia aims to reduce energy poverty among socially vulnerable population groups, primarily through the measures 'Financial incentives for enterprises for investments in sustainable mobility' and 'Promotion of sustainable mobility of nature conservation areas'. In addition, a green jobs programme will be financed through the Slovenian Climate Fund, which will provide EUR 1 million per year.

The Slovenian Environmental Public Fund (Eco Fund), in place since 1993, also implements several measures to reduce energy poverty.

- The Eco Fund will grant non-repayable financial incentives to low-income households facing energy poverty, amounting to 100% of the eligible costs, for investments in the energy renovation of their buildings. This is a pilot scheme being run as part of the programme 'Subsidising energy efficiency measures in 500 low-income households to solve energy poverty – programme ZERO500'. Funding comes from the Slovenian national budget, namely from funds earmarked for implementing cohesion policy in 2020, 2021 and 2022.
- It is also introducing a consultancy service to help reduce energy costs. Within the framework of the Energy Advisory Network, which is managed by the Eco Fund, energy consultants help to reduce energy poverty among citizens (as part of the programme 'Reducing energy poverty by assisting energy-poor citizens – ZERO'). Recipients of regular social assistance can sign up for a free visit by an energy consultant to their home. The energy consultants perform energy assessments and provide advice on how to reduce energy and water use, and thus cut household energy costs.
- Socially vulnerable citizens are entitled to a 100% subsidy for the replacement of old combustion installations with new wood biomass combustion installations in residential buildings.
- Recipients of regular financial social assistance who own apartments in multi-apartment buildings are entitled to a 100% subsidy for the full cost of their share of the investment in improving the energy efficiency of buildings and renovating common boiler rooms.

The Warm Home Discount Scheme operates in the UK between the months of September and March each year, providing a one-off lump-sum discount on electricity bills to people on low incomes. However, in the UK, fuel poverty is a devolved issue, and different initiatives have been implemented in the various countries. For example, since 2011, the Welsh government has invested more than GBP 240 million (EUR 278 million) in improving the energy efficiency of more than 45,000 homes of those on low incomes or living in the most disadvantaged areas. A further GBP 104 million (EUR 121 million) is being invested in the Warm Homes programme for 2017–2021, improving up to 25,000 homes and leveraging up to GBP 24 million (EUR 28 million) in EU funding.

In Northern Ireland, the executive's fuel poverty strategy is delivered mainly through the Affordable Warmth Scheme. The scheme identifies and assists those low-income households most at risk of fuel poverty. Since its inception in September 2014, the Affordable Warmth Scheme has invested more than GBP 60 million (EUR 70 million) in improving the energy efficiency of 14,000 low-income households.

In Scotland, the Fuel Poverty (Target, Definition and Strategy) (Scotland) Bill was introduced to the Scottish Parliament on 26 June 2018 and then passed into law. It includes the target that in 2040 no more than 5% of Scottish households will be in fuel poverty and sets out a new definition of fuel poverty.[12] Alongside the bill, the Scottish government published a draft fuel poverty strategy, which sets out more information on the actions it is taking to support householders. By the end of 2021, the Scottish government will have allocated over GBP 1 billion (EUR 1.2 billion) since 2009 to tackling fuel poverty and improving energy efficiency and it is on track to deliver its commitment under the 2016 programme to make GBP 0.5 billion (EUR 0.6 billion) available over four years to address these issues, making people's homes warmer and cheaper to heat. The Scottish House Condition Survey showed that in 2016 just over two-fifths (43%) of homes had an energy performance certificate with a rating of C or above, an increase of 77% since 2010.

In this context, it is important to mention the case of Portugal, where the objective of the NECP – to guarantee a fair, democratic and cohesive transition – requires the development of a specific LTS to fight energy poverty and improve protection for vulnerable consumers. This will entail creating a national system to evaluate and monitor the prevalence of energy poverty, studying the introduction of new mechanisms of protection, developing programmes to enhance energy efficiency and use of renewable energy to mitigate energy poverty, and supporting local strategies to reduce energy poverty. The measure is scheduled to run during 2020–2030, but the timing is still uncertain. It will involve the Ministry of Environment and Climate Action, the Ministry of the Economy, the Ministry of Labour, Solidarity and Social Security, and the Ministry of Science, Technology and Higher Education, as well as the autonomous regions of Azores and Madeira. It will be financed by the Energy Efficiency Fund, the Environmental Fund and the Innovation Support Fund, using an amount allocated by the state budget and revenues from energy-related taxes, fines and donations.

Bulgaria's funds earmarked to deal with the negative effects of climate policies will be used to lower the prices of electricity and heating for households, thus protecting vulnerable consumers. According to Bulgaria's NECP, energy-saving measures are regarded as the most appropriate means of decreasing the financial burden on households. It is recognised that the planned entry into force of the Eco-design Regulation – which will introduce the mandatory accelerated discontinuation of the use of traditional polluting heating devices (stoves) – will expose large social groups to increased expense. The plan is to provide support to households affected by the mandatory discontinuation of stoves and the transition to heating systems fuelled by natural gas or district heating (both of which will require reconnection and building new network extensions), or by heating devices that conform to eco-design requirements. Vulnerable consumers are to receive payments of about BGN 500 (EUR 256) for five months of the winter; this support was provided to 252,600 households during 2020.

In this context, the example of the Superbonus in Italy is relevant. The Superbonus is a tax deduction of 110% that is intended to ensure that energy efficiency and anti-seismic interventions are carried out on buildings. The 110% deduction is also applicable to the installation of photovoltaic systems, energy storage systems and charging columns for electric vehicles and to the removal of architectural barriers (physical features that limit or prevent people with disabilities or limited mobility from obtaining the goods or services that are offered). The deduction can be received as a discount on the invoice or sold to credit institutions, thus making it possible to carry out interventions at no cost and making them accessible even to the poorest and most vulnerable groups in the population, who, as a result, will have lower energy bills.

Finally, Germany's carbon pricing scheme (Brennstoffemissionshandelsgesetz, BEHG) was adopted in December 2019. It will entail a gradual increase in a fixed carbon price from 2021 to 2026, and later a national carbon emissions trading system. It will also include reimbursement measures (paid for using revenues from carbon emission taxes) for households and companies. These measures were included in the revised carbon tax legislation in spring 2020 and in the COVID-19 recovery package.

12 According to the new law, a household is in fuel poverty if the fuel costs necessary to meet the requisite temperature for the requisite number of hours and the household's other reasonable fuel needs are more than 10% of the household's adjusted net income, and, after deducting these fuel costs, benefits received for a care need or disability and childcare costs, the remaining income is not enough to maintain an acceptable standard of living.

Support for renovation of buildings

As seen above, some measures targeting those affected by energy poverty involve financial support to improve homes' energy efficiency by replacing heating systems with greener ones or by renovating buildings. Indeed, support for building renovation is a type of initiative that not only contributes to the reduction of greenhouse gas emissions but also addresses the problem of energy poverty. Such support is mainly provided through co-financing of renovations to social housing (in Belgium, for example) or favourable loans or grants for renovations to private houses (in Estonia and Luxembourg, for instance).

In 2019, Belgium started rolling out an emergency purchase fund for building renovation, providing vulnerable owners with loans of up to EUR 25,000 with deferred repayment. When the Flemish Climate Policy Plan 2013–2020 was approved, a budget of EUR 7.8 million was set aside to co-finance a thorough renovation premium for social housing companies. This scheme was further expanded, and the Flemish Climate Fund allocated EUR 20 million annually between 2016 and 2019 to additional investments in the energy renovation of social housing. The resources of the Flemish Climate Fund are used to subsidise energy efficiency measures in the renovation and replacement of existing dwellings, such as installation of high-efficiency glass, insulation of the building's outer shell and installation of technology including heat pumps, high-efficiency boilers and solar boilers.

Estonia has developed a specialised support measure to increase the energy efficiency of buildings, which is offered by KredEx, a foundation set up by the Ministry of Economic Affairs and Communications. It aims to provide financial support for the renovation of private houses and apartment buildings to increase the energy efficiency of the buildings and encourage the use of renewable energy sources. The measure is financed using European structural and investment funds. Each applicant receives support in the amount of 30–50% of the project costs up to a ceiling that depends on the project. According to a representative of the Ministry of the Environment, this support has been offered for years. After an assessment of the measure, the conditions were adjusted and the budget was distributed among regions to increase its accessibility.

Similarly, Luxembourg has developed energy renovation support measures, which include investment grants for households (through the PRIMe House scheme) and municipalities (through the Environmental Protection Fund), as well as the introduction of a climate bank offering low-interest loans for energy renovation. In order to give new impetus to efforts to increase energy efficiency, Luxembourg has introduced a commitment mechanism that obliges natural gas and electricity suppliers to make concrete energy savings each year by implementing energy efficiency measures in sectors that they themselves have decided on.

Box 5: Examples of policy measures addressing regressive effects of climate policies

Support for solar panel installation and energy efficiency improvements and discount vouchers for purchasing energy-efficient household appliances for those in social housing (Belgium)

Assistance with heating to vulnerable groups to offset regressive effects of the Eco-design Regulation (Bulgaria)

The **green cheque** to compensate low-income households for rising energy taxes (Denmark)

The **Save Energy at Home programme** to fund improvements to properties to reduce energy costs (Greece)

Transition plans for the peatlands in the Midlands (Ireland)

State support for modernisation of multi-apartment buildings (Lithuania)

The **Warm Home Discount Scheme**, offering a lump-sum discount on energy bills for vulnerable and low-income groups (the UK)

Box 6: Subsidies for the energy efficiency of buildings in Berlin

The climate and energy programme pursued by the city state of Berlin aims to achieve climate neutrality by 2050. If this target is to be reached, the energy efficiency of buildings will need to be improved, because nearly 50% of Berlin's CO_2 emissions stem from buildings. Berlin is a highly attractive real estate market and many development companies may be interested in renovating buildings and making use of federal subsidies. However, some tenant organisations have been concerned that the renovation of buildings may result in rising rents that will be unaffordable for many.

Berlin's Urban Planning Department, guided by climate justice principles, created Climate Justice Maps. The maps provide data and information on noise levels, air pollution, green spaces and bio-climate, as well as social problems. In the light of the concerns raised by the tenant organisations and the available data, policymakers acknowledged that the two policy objectives of climate protection and social protection had to be reconciled.

The local government's response was to provide additional state subsidies for energy efficiency and building refurbishment – on the condition that rents would not be raised. It was also decided to set a rent cap on apartments that did not have any such restrictions in place already. The decision was strongly opposed by the landlords' association and opposition parties in the Senate of Berlin (but appreciated by tenant organisations). As a result, a legal challenge against the Berlin rent cap was filed at the German Constitutional Court. The case is of national interest and raises the issue of how to reconcile social and ecological concerns in planning in cities and, more broadly, nationally.

Lessons learned from some national initiatives

The implementation of some policies provides some important lessons on initiatives that need further reflection, which can be useful for stakeholders involved in related policy discussions. Well-intentioned policies sometimes have undesirable, and perhaps unexpected, effects. The example of energy efficiency subsidies in Berlin is presented in Box 6 to illustrate how difficult the implementation of climate measures can be. The example from Slovenia, described in detail in Box 7, demonstrates the importance of evaluating the implementation of measures to gain a thorough understanding of their weaknesses.

A couple of measures implemented to support vulnerable groups in Cyprus also deserve to be reflected upon. Regarding a measure to address energy poverty, the Code 8 electricity pricing reductions, it has been noted that only 50% of eligible consumers have applied for the price reduction (of 20%). It is possible that the measure is not widely known among the public and/or that the application process is not straightforward enough. Furthermore, the prohibition on disconnection from the electricity grid to protect the health of vulnerable consumers, introduced in 2020, reached only a very small number of vulnerable consumers (15) who applied for the scheme and were approved by the Cyprus Medical Council. Similarly, the subsidies provided to vulnerable groups for the installation of domestic photovoltaic systems (up to 5 kW) and the residential energy efficiency upgrades have had a limited effect because of households' relatively small budgets, the fact that the schemes are not available every year – at least not at the same time – and the fact that the application process is complicated.

In the same manner, measures to reduce energy poverty and address the needs of vulnerable groups in Slovenia suffered from a lack of effectiveness. The evaluators of the measures found that the lack of effectiveness could mainly be attributed to difficulties in accessing the target population. The demand for these instruments from the target group was extremely modest and there was difficulty in communicating with and assessing the needs of the group. It was concluded that measures aimed at socially vulnerable parts of the population can be effective when coordinated with a wider range of social policy instruments, ideally through the centres for social work (see Box 7).

Box 7: Lessons learned from measures to reduce energy poverty in Slovenia

An analysis of energy poverty in Slovenia was published as part of the project 'LIFE ClimatePath2050 – Slovenian path towards the mid-century climate target'. This included an evaluation of the following measures for reducing energy poverty:

- Project ZERO (reduction of energy poverty of citizens through energy consulting)
- non-repayable financial incentives, in the amount of up to 100% of the recognised investment costs, provided to socially vulnerable citizens to replace old solid-fuel combustion systems
- non-repayable financial incentives, in the amount of up to 100% of the recognised investment costs, provided to socially vulnerable apartment owners for new joint investments to achieve greater energy efficiency in older multi-apartment buildings

Despite the relevance and potential impact of these measures, the evaluation rated all of them as having had a low degree of effectiveness, mostly related to difficulties in accessing the target population. It is notable that a greater impact was achieved in cases where the Eco Fund, which financially supports such initiatives, cooperated with the centres for social work. The knowledge and experience of the centres with regard to the profile and needs of the target population could only enhance the impact of the initiatives. This demonstrates the need for better integration of social and environmental policies.

Assessing the impact of the energy consultation scheme, the evaluators noted that energy audits of buildings were intended to result in advice on the efficient use of energy, which would result in energy and water savings and reductions in the related costs. However, the audits that were conducted did not cover the most wasteful elements of energy use (for instance, old refrigerators and freezers, unsuitable windows) or other aspects of unsuitable living conditions (for instance, humidity). It was therefore concluded that combining the energy consumption data with data on the living conditions of household members in the audits would help significantly in reducing energy poverty and improving the living conditions of the most vulnerable parts of the population.

Source: *Jožef Stefan Institute Energy Efficiency Centre, Ljubljana, 2018*

Social dialogue and collective agreements

In general, examples of initiatives by social partners, including collective agreements, addressing the potential undesirable consequences of the transition to a climate-neutral economy are still relatively scarce. The few cases presented here, however, illustrate how social partners, sometimes in bipartite or tripartite settings (for example, in the Polish mining sector and the Spanish electricity sector), and at all levels (from EU level to company level) are working together in the context of the transition to a climate-neutral economy.

At EU level, it is important to underline an initiative that brought together both sides of the automotive industry. In May 2020, European automotive industry trade unions, IndustriALL Global Union and employer organisations – the European employer organisation for the metal, engineering and technology-based industries (Ceemet), the European Automobile Manufacturers Association (ACEA), the European Association of Automotive Suppliers (CLEPA), the European umbrella organisation for national automotive trade associations and European brand dealer councils (CECRA) and the European Tyre and Rubber Manufacturers' Association (ETRMA) – called in a joint press release for 'a bold industrial recovery plan' based on two objectives: bringing the industry back on track by stimulating sales and production and supporting the industry in its transition to a carbon-neutral future, based on the European Green Deal and Europe's climate objectives.

These European business organisations and the trade unions for the sector consider that the sector can make a real contribution to the Green Deal and assist in mitigating the climate emergency. Among other requirements, they underline the need for support for companies in maintaining and developing their human capital and preserving workers' incomes and job security, for example through short-time working arrangements coupled with skills upgrading. In addition, they are calling for the introduction or strengthening of temporary demand stimulus measures in the form of vehicle renewal schemes coordinated at EU level and financially supported by the European Commission. In order to assist the sector in becoming carbon neutral, the social partners suggest, among other ideas, the development of ambitious technology programmes to support the digital and energy

transitions, the provision of investment support (grants, loans, equity) for the market introduction of new sustainable technologies and accelerating the deployment of charging and refuelling infrastructures for cars.

In addition to the previously mentioned Coal Phase-out Act in Germany, a social agreement on the phasing out of coal mines by 2049 was reached in Poland in September 2020 between the government and trade unions (Planet Labor, 2020a). The agreement affects 15 mines, the gradual closure of which will start in 2021. It includes provisions on job protection and energy transition. Miners will be transferred to mines or coal-processing plants that are still operational and, where this is not possible, they will be granted allowances.

In April 2020, the Spanish electricity sector saw the signing of a tripartite just transition agreement between several companies (Endesa, Iberdrola and Naturgy), the Ministry of Labour and the Ministry of Ecological Transition, and the Trade Union Confederation of Workers' Commissions (CCOO) and the General Union of Workers (UGT). The sectoral agreement establishes the framework for the conclusion of regional agreements in an attempt to cushion the impact of coal-fired power plant closures, which will mostly affect the regions of Andalucía, Asturias, Aragon, Castile and Leon, and Galicia. The agreement seeks to maintain or regenerate employment levels in the affected regions and aid affected employees. The companies compromised to offer solutions such as retraining and requalification, and prioritisation of hiring from ancillary companies. This comes in addition to other initiatives and protocols being signed by central, regional and local administrations to develop projects to support areas where sites will close (Planet Labor, 2020b).

An example of national-level social dialogue is the bargaining round of 2018 in Norway, during which the Norwegian Confederation of Trade Unions (LO) and the Federation of Norwegian Enterprise (Virke) agreed to amend the way in which their agreement regulates information, cooperation and co-determination. A new article states that, through co-determination and cooperation, employees should be able to use their experiences and insights, with help to ensure, among other things, sustainable development for the benefit of both the company and the employees. Virke and LO also signed a roadmap to achieve a green retail trade by 2050; its main objective is to facilitate the retail trade to be a key player in environmental policy and be competitive in a green and sustainable future. In the bargaining round of 2020, employers in construction (the Federation of Norwegian Construction Industries (BNL), affiliated with the Confederation of Norwegian Enterprise (NHO)) asked the United Federation of Trade Unions (Fellesforbundet) to include a regulation in their collective agreement giving the employer the right to decide that employees must make use of public transport or any other environmentally friendly transport where possible. This amendment, however, was not included in the new collective agreement.

A sectoral agreement in the Italian electricity sector is another example of what can be achieved through collective bargaining. The renewal of the industry-wide agreement for the Italian electricity sector on 9 October 2019 provided a single framework for all workers in the sector, including those working in the renewable energy industry and in commercial and sales activities. Among other objectives, the agreement includes a special provision on training to ensure employability and support during the energy transition. The agreement provides a right to 28 hours of certified training (in addition to health and safety training). How eight of those hours are spent can be decided by the worker. A sectoral joint body is meant to monitor training initiatives in the electricity sector and to propose specific programmes to support industrial relations on the impacts of the energy transition. At the time of the previous renewal in January 2017, the parties had already agreed to introduce several instruments to address the challenges posed by the energy transition and support sectoral enterprises and workers facing critical situations, and reorganisation processes in particular. These instruments included the establishment of a solidarity fund to integrate the income support measures available to industry workers and a system for the redeployment of redundant workers across companies in the sector (Planet Labor, 2019a).

There are few company agreements regulating distributional effects. The two examples identified have been concluded by multinationals, and one of them is a global framework agreement. In Italy, ENI – the Italian multinational oil and gas company, one of the largest in the world – and the main trade unions signed an agreement – called 'Insieme' ('Together') – in December 2020 to support the company's decarbonisation strategy. This three-year protocol agreement aims to facilitate the company's reduction of its carbon emissions, a sharp reduction in its oil business activities and an increase in activities relating to green alternatives. More specifically, it envisages the joint governance of the energy transformation process 'by creating new bilateral bodies and laying down principles, especially as regards skills development, occupational health and safety, agile work and well-being at work' (Planet Labor, 2020c).

The other example is the renewal of the global framework agreement on social responsibility by Gamesa, a formerly Spanish-based wind turbine manufacturer and wind services provider that merged with Siemens in 2017. This renewal was signed with IndustriALL Global Union in November 2019. Among other issues, the agreement covers a just transition and a sustainable work environment; it applies to about 23,000 workers. In terms of a sustainable work environment, the agreement includes a commitment to foster direct employment based on permanent contracts and to provide decent wages. It also seeks to promote a better work–life balance and to enable professional development and advancement, irrespective of the type of employment contract (Planet Labor, 2019b).

4 Key issues in public debates on socioeconomic impacts of climate policies

The aim of this chapter is to identify the main issues at the centre of public debates about the socioeconomic impacts of climate policies in the EU Member States. While these cannot entirely be separated from the issues outlined in the LTS and the NECPs, these official documents cannot offer deeper insights into either the controversies surrounding the key issues or the feasibility of certain plans. In addition, although the plans may reflect stakeholders' views, the documents obviously do not contain information on the views that they have expressed on certain topics. Finally, as mentioned earlier, the socioeconomic impacts of climate policies are explicitly addressed or considered in the LTS of only nine countries, whereas in almost all countries public debates have been taking place around processes of decarbonisation and the social impacts of climate policies. There are, however, two notable exceptions: in Cyprus and Czechia, no significant public debate on the topics was identified. The Cypriot LTS is still in draft form, and the Czech LTS deals only marginally with socioeconomic impacts.

From the responses of Eurofound's national correspondents, it is clear who the main actors involved in the debates are. NGOs and civil society organisations (CSOs) play a prominent role (as do social partners in specific cases). In addition, other organisations, such as academic institutions, have also voiced concerns not only about long-term plans but also about topical emerging issues that are not necessarily directly related to government plans.

Main issues identified

Most topics of debate on climate policies and their effects concern issues that fall under the broad theme of decarbonisation/energy transition. The first subsection focuses on general topics, the second on social impacts and the third on the (potential) costs of planned measures.

Concerns over decarbonisation and its impact

In many countries, one of the biggest issues is the substantial share of energy supply still dependent on carbon-intensive plants. That is the case in Poland, for example, which is heavily dependent on coal for heat and electricity generation. Related to this, the issue of the timing of and the process for the closure of coal mines and the conversion of coal-based industry is a recurring topic of debates in several countries (such as Germany, Hungary, Poland, Romania, Slovakia and Slovenia). Coal phase-out in Germany is a source of concern regarding the timeline, compensation for companies and the ongoing depopulation of villages in the coal mining regions, as well as workers being redeployed to jobs far from their homes. In Romania, plans for restructuring two coal companies (Oltenia Energy Complex and Hunedoara Energy Complex) have also led to much debate, including claims that the government does not have a clear coal phase-out strategy, resulting in an uncertain future. The main issue is whether state aid for restructuring could help these companies to become less polluting. Similarly, in Greece there are ongoing debates about the lignite phase-out plan for Western Macedonia and Megalopolis. The discussions focus on adopting integrated programmes to support lignite-producing areas in Greece, to smooth the transition to the post-lignite era. The closure of all lignite-fired plants is expected to be complete by 2028. Maintaining jobs and exploiting existing expertise in these areas are top priorities.

In other countries, similar topics arise in relation to the decarbonisation process, the oil and gas industry, and/or other sources of carbon-intensive energy. In Norway, for example, a central issue in current debates is whether the oil and gas industry should be scaled down or whether oil companies should be granted prospecting rights. Those who argue against scaling down these industries are concerned about loss of revenue and jobs. Their arguments emphasise that scaling down would not have only a direct effect: a decision to keep the oil in the ground would affect not only workers in the oil and gas industry but also those in other industries delivering services to oil and gas companies; it would also affect public funding that relies on the revenue from the oil and gas sector. Similar concerns have been raised in Estonia, concerning its oil shale industry in Ida-Virumaa. In Finland, the use of peat in energy production is at the centre of debates: whether it should be banned or a more gradual transition to a peat-free energy production should be made. While peat is now used in the production of less than 5% of energy, peat burning for energy production is still responsible for about 16% of the energy sector's emissions (Finnish Innovation Fund, 2020).

As mentioned previously, transport is a sector that will be heavily affected by the decarbonisation process. Consequently, the debates in many countries centre on potential changes in the sector. In Spain, for example, an important objective is to achieve low emissions, especially in urban areas, where traffic restrictions are a topic of debate. However, not only urban residents are affected. For example, in Sweden, it was decided that transport fuel taxes should be increased on a regular basis. This triggered a debate because these increases will adversely affect rural residents.

In other countries, there is more general concern about transport services. In Slovenia, an important question is how to make commuting more sustainable and reduce congestion. Some solutions include improving public transport, lowering fuel taxes and changing the system of subsidies for commuting. Public transport development is a central topic in other countries as well. For example, lack of infrastructure to encourage a modal shift – growth in the demand for a certain transport mode at the expense of other modes – towards more sustainable modes is an important issue raised in Malta, which lacks an integrated and sustainable transit system linked to the ferry network. It is also argued that there is a need to create bicycle lanes and build a better pedestrian infrastructure.

In both Bulgaria and Luxembourg, concerns have been raised in relation to emissions from road transport, which are high in both countries. In Bulgaria, reducing emissions, switching to other modes of transport and limiting the use of old diesel and petrol cars seems challenging: the average age of the car fleet, at over 18 years, is high. At the same time, the price of new cars is not affordable for people with average incomes. In Denmark, there are plans to subsidise the use of electric cars (through either lower registration taxation or exemption from road tax), but affordability is debated in this country too, especially in relation to low-income households and the rural population. In Finland, people living in rural areas are also at the centre of the debate of how transport fuel taxes will affect them. In Sweden, the bonus-malus system – low-emission vehicles can qualify for a lump-sum bonus at the time of purchase, while vehicles with high carbon emissions have increased vehicle taxes during their first three years – has been the subject of a debate initiated by the opposition party, especially regarding the subsidies for electric cars. In its opinion, this measure will have great regressive effects because the support will be disproportionally taken advantage of by high-income groups, owing to the high price of electric cars.

In the transport sector, the topic of air traffic has drawn much attention in some countries. For example, in France, various NGOs suggest further taxing larger companies, including those in the air transportation sector. In Austria, there are plans to increase the flight ticket duty. At the same time, there is a need to develop better public transport to replace short-haul flights. In Denmark, however, the debate is quite different: there are fears that various excise duties on climate-damaging consumer goods, such as flight tickets, could adversely affect low-income groups.

The issue of energy pricing is a major point of discussion in several Member States. This is the case, for example, in Austria. The 'eco-social tax reform' will introduce CO_2 pricing in the coming years (before the COVID-19 pandemic, implementation was planned to take place in 2022). The measures include pricing climate-damaging emissions (with the aim of reducing emissions), and sectoral relief measures for companies and private individuals. Energy pricing and its impact on the competitiveness of industry is a subject of debate in Slovenia. Similarly, there are fears that new environmental legislation in Bulgaria may pose challenges for energy-intensive industries, because most lack developed technologies to reduce their greenhouse gas emissions. In Denmark, there is a widespread debate on whether to introduce a higher, regressive CO_2 tax. There too, there are fears that a higher tax might severely damage some industries that would lose competitiveness. In Latvia, the government wanted to promote the energy transition by introducing mandatory procurement to support electricity producers that use co-generation or renewable energy sources. In 2013–2014, owing to this new requirement, electricity bills increased for all consumers, affecting households and businesses. This raised a first wave of discussion on green energy surcharges. Consequently, the mandatory procurement component of the price of electricity is to be reduced in 2021. CO_2 emission tax is also a subject of debate in Luxembourg, in particular with regard to the introduction of a CO_2 tax that affects all fossil fuel energy products, including road fuel, gas, heating oil and coal.

An important part of the decarbonisation process is promoting higher energy efficiency. In Lithuania, for example, the renovation of multi-apartment buildings is a subject of debate. State support for the renovation of apartment buildings is in place, but the support is provided only to those households that receive social benefits and compensation payments for heating/hot water. Those with slightly higher (but still relatively low) incomes must shoulder the entire burden of renovation costs. These groups are outraged that they are required to contribute to apartment building renovations and take out loans to pay for it. Poor renovation quality and lack of efficiency are issues that are also frequently discussed.

In Belgium, a debate is going on about financing a shift to greater energy efficiency of housing by insulating buildings (especially in Flanders). The issue of energy efficiency in poor households is also debated in Hungary. No solution has, however, been offered by the government yet. The government wants to maintain its

scheme to reduce energy costs without helping households with the required renovations to achieve greater energy efficiency. An energy company obligation scheme has been introduced, mainly based on free market solutions. This scheme requires energy suppliers and/or distributors to make energy efficiency gains. The debate centres on how efficient the scheme is likely to be, since these suppliers and distributors may focus on lower-risk investments to achieve faster returns. The opponents of the scheme argue that it will not promote large-scale, complex investments in the retail sector and does not support comprehensive energy remodelling of buildings (MEHI, 2020). Retrofitting of buildings is also a subject of debate in Italy.

There are two countries, Estonia and Finland, where energy security seems to be an important issue in the context of the energy transition. In Estonia, the debate relates to reliance on oil shale in the energy and chemical industries. Oil shale is Estonia's only independent means of ensuring electricity supply; such is the industry's importance, it is regarded as crucial for national security and sovereignty. Developing nuclear energy or wind energy to replace energy produced using oil shale is therefore under serious consideration. In Finland, the issue of energy security features prominently, since the country relies heavily on imports from Russia for its fossil fuel and nuclear energy. However, the share of renewable energy consumed stands at 40% (Association of Finnish Municipalities, 2020). Nonetheless, a rapid shift to peat-free energy production raises doubts in terms of the country's self-sufficiency. Taxing energy production based on peat is a topic of debate; for example, some stakeholders argue that the discounted tax rate on peat should be abolished.

There are also debates on the subject of switching to alternative energy sources. In Germany, it is acknowledged that the renewable energy sector will be important in compensating for job losses, specifically in the metal and machinery sectors. In Hungary, there are proposals for building up and relying more on wind energy capacity, for which the country has great potential. In addition, a more diverse energy mix with a greater proportion of renewable sources is needed, as emphasised by the National Society of Conservationists. In Lithuania, the increase in the share of renewable energy sources and the development of small-scale energy production by prosumers[13] are also much debated; in addition to increasing energy efficiency, an increase in the use of green energy in public infrastructure is often mentioned in public discussions. In Sweden, setting up windmills is regarded as controversial: on the one hand, it would potentially have a damaging impact on the living conditions of local residents; on the other, it would create jobs, which would be beneficial for the local economy.

Social impacts of the energy transition

Social impact considerations in public debates on climate policies most often highlight job losses as the main concern regarding the consequences of the energy transition. For example, in Germany, there are fears of job losses in the automotive industry: significant job losses are predicted by 2035. In Poland, stopping coal use would involve the closure of mines that, in December 2019, employed 83,300 people, including 64,000 working underground. In Estonia, the fate of the oil shale industry in Ida-Virumaa will also have direct social impacts: if companies in the industry cease their operation, severe unemployment among local people could occur (Holmgren et al, 2019). In relation to job losses, requalification is often suggested as a solution (for example, by the trade unions; see 'Conversion and requalification' later in this chapter). In Norway, requalification of workers is a focus of debates on the 'twin transition' – that is to digitalisation and to climate neutrality.

Energy pricing could affect not only competitiveness in industry but, of course, households and citizens as well. For example, in Germany, the social impact of carbon pricing on low-income households and on those depending on public benefits is debated; regulations so far seem insufficient to address future problems for low-income households. In the UK, there are ongoing debates on the effects of decarbonisation on prices in general, and particularly on energy prices and thus fuel poverty. In this context, the duration of the decarbonisation process is also a relevant topic, since these challenges will need to be addressed until a proper infrastructure for low-carbon energy across electricity, heat and transport is fully built and operational.

In Croatia, the issue of energy poverty is debated. Considering the theoretical energy poverty line of 10% of disposable income spent on energy (see the definition of fuel poverty in the glossary), the average household in the bottom six income deciles struggles with the problem of energy poverty. As part of the solution, a programme for the elimination of energy poverty has been created and capacity building is envisaged under the Fourth National Energy Efficiency Action Plan. In Portugal, the prevalence of energy poverty is also an issue in a context in which several energy companies have benefited from excessive

13 An energy prosumer is one who both produces and consumes energy.

profits, and this is a central theme of debates on energy-related economic inequalities. In Luxembourg, in order to prevent energy poverty, the government plans for half of the revenue from the increased CO_2 emission tax to be passed on directly to low-income households to compensate them for rising energy costs. Details are to be specified in an upcoming tax reform. In Hungary, a scheme to reduce overhead costs (launched by the government a couple of years ago), while encouraging private energy efficiency investments, has been criticised for not targeting low-income, energy-poor households. Moreover, according to the Hungarian National Society of Conservationists, the programme for high-rise buildings (Panel Programme) mentioned in the LTS, which is a 'centrally controlled residential thermal insulation project', is not sufficient to 'maintain the results of overhead cost reduction'. Almost paradoxically, in Greece, where the effects of heat exposure due to climate change can already be felt, energy poverty has worsened over the past couple of years.

Social acceptability and citizen participation in decisions constitute central issues in the debates in many countries, but in France this is explicitly reported: the ability of citizens to engage with environmental issues and influence decisions is the subject of debates on the legitimacy of elected representation and forms of direct democracy (this may have become a particularly prominent topic following the *gilets jaunes* movement).

Finally, in Malta, health-related issues – such as respiratory conditions due to air pollution, or lack of green spaces due to cutting down trees and over-building – are the most important topics of debate. Air pollution, with a focus on diesel particulates, is also a prominent issue in debates in the UK, where the government has failed to meet the EU's air pollution standards.

Distributing the costs

Especially in France, where the increase in carbon tax has been abandoned, the central question is now how the costs of the transition should be covered. Not only is further taxation of large companies suggested (as mentioned before), but a climate convention of 150 citizens proposes an annual tax of 4% on dividends for companies that distribute more than EUR 10 million in annual dividends, to ensure that they participate in efforts to finance the transition. These measures are rejected by the (centrist) government, but the trade unions, the far left and part of the social democratic left are in favour of the idea. In addition, there are proposals for a floating carbon tax mechanism that would involve modulating increases in tax according to variations in world prices and achieving greenhouse gas reduction targets. Another suggestion involves carbon pricing at borders. The border tax could be combined with compensation mechanisms for the poorest households.

The costs of measures mitigating climate change effects are often debated in the context of compensatory mechanisms; this is the case, for example, in the Netherlands, where one of the purposes of the Coal Fund is to help in retraining workers whose jobs have become redundant. The cost of requalification is also an issue in Slovenia, where the question is who will bear those costs, whereas in Slovakia the Modernisation Fund is intended to cover at least part of the cost of the transition. Also in Slovakia, employers demand that the cost of decarbonisation be co-financed from public sources.

Main actors: Roles and standpoints

This section first gives a brief overview of the main actors who shape and drive national or local debates on climate change. The views of the social partners on distributional effects (and climate policies more generally) are described in a separate subsection.

Overview and highlights

Other than governments, the most prominent and visible actors seem to be CSOs, NGOs (including major international players in the field, such as Greenpeace), political parties, prominent former politicians/decision-makers, social partner organisations and advisory bodies attached to governments.

This last type of organisation can be regarded as a kind of semi-governmental body. An example of this can be found in Bulgaria, where, by a decree of the Council of Ministers, the Advisory Council on the Green Deal was established as a collective advisory body to the Council of Ministers. The Advisory Council, which is obviously a semi-governmental organisation, includes representatives of all ministries, a representative of the presidency of Bulgaria, nationally representative trade unions and employer organisations, parliamentary political parties, the academic and scientific community and the National Association of Municipalities.

However, in many cases, independent scientists and academics (not attached to the government) also play an important role. For example, in Austria, Climate Change Centre Austria – consisting of an influential group of scientists from several Austrian universities (over 70 in total), among them the most renowned researchers in the field – published an alternative 'reference NECP' in September 2019, as a basis for a scientifically sound NECP that would be in line with the Paris climate targets. In the UK, scientific experts also play a prominent role through their work on various bodies/committees, for example, the Climate Change Committee. Expert organisations that include academics, such as the Grantham Institute and the Institute for Public Policy Research, are also involved in

the debate. Reports from these bodies often focus on policy failures and, therefore, policy improvements.

In other countries, there are non-profit organisations that include researchers among their members, such as Arbeid en Milieu VZW in Belgium, which aims to gather and distribute information regarding climate and climate transition. This organisation places a strong emphasis on social aspects and elements such as social justice and inequality. In other countries, such as Denmark, Hungary and Ireland, think tanks (for example, the green think tank Concito in Denmark or the energy think tanks in Hungary) and academics (Croatia, Ireland, Italy, Malta, Portugal and Slovenia) are reported to be among the important actors. However, in Croatia, for example, NGOs were mentioned as the main drivers of debate, and specifically those players who are active in environmental protection. Some of the NGOs (for example, the Society for Sustainable Development Design (DOOR) in Croatia) have been working on sustainable energy issues since 2003.

In many countries, there are organisations in which various actors/stakeholders join forces and work together. In Austria, the Just Transition Initiative was formed by over 20 CSOs, including several trade unions and NGOs (among them Attac, Greenpeace and Global 2000). In Belgium, the Social and Economic Council of Flanders (SERV), which consists of representatives of the main employer organisations and representative trade unions, is an important actor. Various organisations also release statements and reports on relevant subject matter, for example the Combat Poverty, Insecurity and Social Exclusion Service.

In the contributions provided by Eurofound's national correspondents, 12 countries were identified where political parties play a prominent role in shaping the debates and articulating their views. These countries are Cyprus, Denmark, Finland, France, Germany, Lithuania, the Netherlands, Poland, Portugal, Slovenia, Sweden and the UK. In Cyprus, in their programmatic documents, various political parties have included declarations on reforms to achieve a green economy. Nevertheless, such declarations do not deal with the possible socioeconomic impacts of these reforms. CSOs with an environmental background intervene in favour of the transition, sometimes criticising the government for lack of ambition, but they do not address the socioeconomic impacts either. In Germany, the long tradition and crucial role of the Green Party is well known. But other political parties have also reportedly contributed to debates and activities related to climate policies. In Denmark, the most active political parties from a climate change perspective are the Red–Green Alliance Denmark, the Social Liberal Party and the Socialist People's Party. In France, all political parties use ecological slogans, including the National Rally (Rassemblement National, a far-right party). In Finland, the different parties involved in the debates seem to specialise in particular issues: the Green Party has been arguing for cutting financial support for companies, whereas two other political parties, the Finnish Party and the Centre Party, advocate against increasing fuel taxes. In the UK, the Green Party dominates this scene; it is a social democratic party that campaigns for social equality and on green issues (it has one Member of Parliament). Although the role of other opposition political parties in the UK was not mentioned explicitly by the national correspondent, the House of Commons' Environmental Audit Committee was mentioned. This is a body where the parties' views on environmental issues are represented. In Sweden, the leading opposition party, the Moderate Party, plays a particularly active role in debates on transport fuel taxes.

In France and Germany, more collaboration between NGOs and trade unions seems to be newly emerging. This is interesting, especially in France, where these two types of actors have long opposed each other on democratic legitimacy and on the employment/environment dilemma. Nowadays, there seems to be some convergence between the movements. Nicolas Hulot, the former Minister for Ecology in the first government of Emmanuel Macron, and Laurent Berger, Secretary General of the French Democratic Confederation of Labour (CFDT), signed a joint declaration with 14 other union or association leaders in March 2019 to call for 'urgent investment in ecological solidarity and territorial transition'. In Germany, new alliances have been formed between social and environmental NGOs and some trade unions. Examples include the networks Klima-Allianz and Soziale Plattform Klimaschutz, and joint statements issued by IG Metall (the metalworkers' union) and the German Federation for the Environment and Nature Conservation (BUND, a large environmental organisation), and by ver.di (the United Services Trade Union) and Fridays for Future, the climate strike movement. In Croatia, collaboration between various social stakeholders and the social partners started quite a long time ago, focusing on specific issues, in particular the energy poverty agenda; as part of a project in 2011, for the first time in Croatia, a number of these actors were included in energy efficiency planning.

The role of NGOs was highlighted in all national contributions, although in Cyprus they do not focus on socioeconomic impacts. In most cases, the NGOs mentioned were established specifically because of concerns about climate change. In Denmark, for example, the Green Student Movement has a prominent voice in the debates, and the climate movement more generally is influential. In some other countries, movements of young people also play an important role; for example, the Slovenian Youth for Climate Justice movement, or Youth for the Environment in Malta. In Estonia, two NGOs (the Association of Estonian

Mineral Resources and the Estonian Fund for Nature) have raised the issue of how socially important the oil shale industry in Ida-Virumaa is, but these two organisations arrived at different conclusions regarding the energy transition.

In Finland, many actors are involved in the debate surrounding the use of peat in energy production. One of them is the Finnish Association for Nature Conservation. In Germany, social organisations such as social welfare NGOs and tenant and consumer organisations are particularly outspoken in addressing distributional effects and the risks that the energy transition poses for low-income and poor households. In Romania, some local NGOs, such as Terra Mileniul Trei, report on climate policies on a regular basis. In Poland, the Polish Ecological Club and the Polish Green Network are key actors.

In addition, country affiliates of well-known international NGOs, such as Greenpeace, Friends of the Earth, the World Wide Fund for Nature and ClientEarth, are also active in the field of environmental protection (for example, in Luxembourg, Malta, Poland, Romania and the UK; in Luxembourg, the Catholic relief and development organisation Caritas is also active).

In some countries, advocacy groups also play a prominent role (for example, in Ireland, where many types of organisations take part in the debates on climate policies,[14] including the Green Party as part of a coalition government).

For several countries, for example Italy, the role of local authorities was highlighted. In the Netherlands, various regional authorities are important actors, as are municipalities, provinces and regional water authorities; interprovincial consultations on climate issues are also taking place in the country. In Spain, both the City Council of Madrid and that of Barcelona are active (obviously, in both cases the mayors may have played a driving role in this). The role of municipalities was also mentioned in the case of Portugal.

Professional organisations were also identified as active players in the field of climate policy in Member States, including Greece, Latvia and Malta. In Greece, these are social partner organisations and they participate in social dialogue. For example, the Small Businesses Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE) is such an institution. In Malta, the Chamber of Engineers and the Chamber of Architects and Civil Engineers are also among the most prominent organisations active on climate change issues, as are the Chamber of Commerce and the Malta Employers' Association. In Latvia, professional organisations involved in the climate debate focus mainly on the issue of increasing the energy efficiency of buildings. It was mentioned, however, that the debate never turns to distributional effects.

Worker and employer organisations are the main actors driving the debate in, for example, Denmark, where they focus on a just transition. However, they have diverging priorities. The country's largest trade union, the Danish Trade Union Confederation (FH), argues for the importance of focusing on low-income families, while the Confederation of Danish Industry (DI) argues that regulation and taxation that will push Danish companies and jobs out of the country should not be implemented.

The social partners also include sectoral and other business organisations (such as the Hellenic Federation of Enterprises (SEV) and its Council for Sustainable Development); the Groupement des Pétroliers in Luxembourg, affiliated with the employer organisation Business Federation Luxembourg (FEDIL); the Malta Chamber of SMEs; the Slovakian Automotive Industry Association (ZAP); United Danish Motor Owners (FDM) and the Danish Agriculture and Food Council; and the Swedish Wind Energy Association). Some companies that represent specific interests (such as EDP and GALP in Portugal) are engaged in the debate.

Although the next two sections describe the role of social partners in some detail, it is worth mentioning here that the trade unions in some countries play an important role in debates on environmental issues (this was specifically mentioned by national correspondents for Germany, Greece, Hungary, Italy, Poland, Portugal, Slovakia and the UK). For example, in Germany the trade unions lead the debate on potential negative and positive sectoral employment effects. In Hungary and Slovakia, trade unions in sectors that are directly affected by energy transition measures are active (such as the Metal Trade Union Association (OZ KOVO) and the Association of Industrial Unions (APZ) – both are in Slovakia). In Greece, Portugal and the UK, however, general confederations play a prominent role: in Greece, the Greek General Confederation of Labour (GSEE), with the GSEE Environmental Secretariat specialising in relevant issues; in Portugal, the General Confederation of Portuguese Workers (CGTP) and the General Union of Workers (UGT); and in the UK, the Trades Union Congress (TUC), which campaigns for a just transition. In Poland, the trade unions do not generally involve themselves in public debate; rather, they bring their demands directly to the government.

14 The most significant are Stop Climate Chaos, Friends of the Earth, Climate Ireland, the Irish Environmental Network, the Environmental Protection Agency, TASC (a think tank), the Nevin Economic Research Institute, the trade unions (for example, through the Irish Congress of Trade Unions), the Sustainable Energy Authority of Ireland and the Climate Change Advisory Council.

Views and positions of the social partners

As mentioned above, social partner organisations have been quite active in many Member States. This subsection will briefly attempt to summarise their main views and positions in relation to the potential socioeconomic impacts of the transition to a climate-neutral economy. Although both employer and worker representative organisations support the transition to a climate-neutral economy and society, and agree on the need for climate policies, they tend to diverge in their main concerns. Different preoccupations, however, do not preclude social partners from implementing joint initiatives or even reaching agreements, as the examples below demonstrate.

Business and employer representatives

The information collected through Eurofound's Network of Correspondents shows that business or employer representative organisations' main concerns are ensuring that climate policies do not reduce competitiveness or become a competitive disadvantage. The Malta Employers' Association may be an exception, as it explicitly highlights that it is important to consider the socioeconomic impacts of climate policies and makes specific suggestions for the design of climate policies. For example, the association contends that such policies should ensure education for all by promoting lifelong learning and capacity building; ensure fair wages by favouring licensed suppliers; provide support to suppliers engaged in environmental campaigns; and encourage involvement in corporate social responsibility initiatives.

The Confederation of Danish Industry (DI), on the other hand, considers that climate policies must avoid placing a heavy burden on companies and that the main question is how to ensure a transition that is fair for energy-intensive businesses lacking the technology to mitigate emissions. The DI proposes a greater focus on investment in new technology to capture CO_2, education and subsidies, instead of carbon fees or taxes. It also underlines the relevance of increasing demand for low-emission products through product and public procurement standards, thus encouraging faster transition. In a similar vein, the Chamber of Commerce and Industry of Slovenia (GZS) emphasises the impacts of climate policies (e.g. taxes, regulation) on production costs and competitiveness in international markets. The organisation criticises the draft NECP, contending that it does not offer 'a stable, predictable and competitive business environment'.

Several organisations see the transition to a climate-neutral economy as an opportunity to foster competitiveness and create more and better jobs, which will ultimately remedy social exclusion and inequalities. The Confederation of Employers and Industries of Spain (CEOE) considers that the energy transition is essential to generate more and better employment and better salaries, which are the best tool for achieving social inclusion. In Estonia, 15 umbrella organisations and companies (including the Estonian Wind Energy Association and the Estonian Association of Information Technology and Telecommunications (ITL)) have made a joint appeal arguing that the country must seize the opportunities and tools offered by the green transition. They expect this to improve the competitiveness of the economy and the living environment of the population and to reduce climate impact substantially and early.

In its 2018 White Paper on Renewable Energy Resources, the General Confederation of Italian Industry (Confindustria) analysed the potential of the transition to renewable energy sources for economic growth and employment and its impact on the production system. The main focus of the paper is, however, on the last aspect. In order to avoid a loss of competitiveness, it suggests managing the energy transition in a way that fully exploits the potential of available technologies without increasing energy costs for companies. It also suggests that a balance between tariffs and subsidies must be maintained, while focusing on the technologies that will result in a more cost-effective transition.

Other organisations call for caution, fearing that climate policies' requirements and consequences may have high costs for business, reducing competitiveness. The Slovakian National Union of Employers (RUZ), for example, considers it important to avoid unrealistic requirements that will bring competitive disadvantages for entrepreneurs and recommends that the costs of the transition be co-financed by public sources. Similarly, the Estonian Chamber of Commerce and Industry (ECCI) considers that, in pursuing the European Green Deal, the necessary measures must be implemented at a reasonable pace that does not harm business competitiveness, taking into account technological developments; it adds that the measures should not reduce living standards.

Finally, some employer organisations emphasise certain financial aspects of the transition. The Confederation of British Industry (CBI), which, like the TUC, has campaigned for 'green growth', calls for an acceleration of 'green finance' in the UK and for the importance of all firms having access to it alongside other forms of finance. In Luxembourg, employer organisations such as FEDIL also support ambitious climate targets, but they ask for stronger public support for transition. The director of the Chamber of Commerce has put forward the idea of using revenue from the planned CO_2 tax to reimburse not only low-income households but also companies that invest in energy efficiency measures. FEDIL has also raised the issue of the automatic indexation of wages, with wages adjusted to consumer price increases. The employer organisation suggested that rising fossil fuel prices should not be compensated

for through the wage indexation mechanism, which is a discussion that trade unions seem to be unwilling to enter.

In May 2019, the Irish Business and Employers' Confederation published the report *Building a low carbon economy – A roadmap for a sustainable Ireland in 2050*, which includes a recommendation to establish a multistakeholder social dialogue on climate action, bringing together industry, trade unions, environmental groups, local representative groups and political parties.

Worker representatives

Worker representative organisations from various Member States, including Austria, Belgium, Bulgaria, Finland, Greece, Ireland, Italy, the Netherlands and Spain, as well as the UK, consider it vital to ensure a just transition to a climate-neutral economy for the workforce. Trade unions in Finland and Portugal are concerned with the reskilling of workers and their need for further education. Trade unions in Austria, Hungary and Luxembourg also worry about the financial consequences of the transition in terms of purchasing power and distribution of income.

Just transition for the workforce

The TUC in the UK has been campaigning on the need for a just transition and investment in the green economy for well over a decade. According to the TUC, the UK's trade union movement recognises the need to decarbonise society but affirms that workers must be at the centre of the transition. New jobs in a greener economy must be just as good in terms of pay, skills, pensions and trade union recognition as those that are lost.

In its Biennial Delegate Conference of 2019, the Executive Council of the Irish Congress of Trade Unions (ICTU) adopted a motion including a very similar definition of what a 'just transition' means:

> *[T]he promise of the Sustainable Development Goals and the Paris Climate Agreement can only be realised by way of a Just Transition that ensures 'workers, communities, employers and Government (engage) in social dialogue to drive the concrete plans, policies and investments needed for a fast and fair transformation to a low carbon economy and to ensure that employment jobs in the new economy are as decent and as well-paid as those left behind'.*
>
> (ICTU, 2019)

Austria's Chamber of Labour (AK) maintains that a just transition means shaping climate and energy policies in such way that the requirements of climate policy and workers' interests are taken equally seriously. The GSEE's Environmental Secretariat appeals for a just transition to a low-carbon economy through the creation of high-quality jobs and the involvement of the trade unions in the policy process. Taking a broader perspective, the Confederation of Independent Trade Unions of Bulgaria (CITUB) and the Podkrepa Confederation of Labour consider that it should be ensured that the costs of the policies and measures implemented do not place an additional burden on people who are already at risk of energy and economic poverty and that they do not lead to increased inequalities or regional disparities. The CCOO in Spain also stresses the importance of guaranteeing a just transition for the working class and, therefore, that it is necessary to pay more attention to the issues relating to employment and working conditions in agreements and regulations on climate change.

In Belgium, the largest trade union federations, the General Labour Federation of Belgium (ABVV-FGTB) and the Confederation of Christian Trade Unions (ACV-CSC) signed a joint document in October 2019 with several other environmental and social organisations and NGOs. Together they have formulated five rules for a socially just climate and energy transition (Greenpeace, 2019):

- fair contributions of large polluters and large corporations
- right to energy- and climate-neutral housing
- energy sharing – renewable energy for all
- better public transport, good cycling infrastructure and climate-friendly cars
- widely acknowledged, participative and fair industrial transition

Other national peak-level worker organisations have also published position papers and action plans on climate change. FH launched its own climate action plan in May 2020. Its climate plan seeks to answer the question of how the government can reach its climate targets while ensuring social justice. A central element of this plan is education and training, so that groups that will lose their jobs as a result of the transition are retrained to take up jobs in the green economy. In addition, the plan states that the average worker must not end up paying a large part of the costs of the transition.

In Sweden, the Swedish Trade Union Confederation (LO) wrote its own LTS in 2018. According to it, climate- and sustainability-oriented investments will provide both old and new companies with a wide range of new business opportunities. The unions demand that the new jobs are 'green decent jobs', meaning that they should be ecologically, socially and economically sustainable. The jobs must be resource efficient, with a low environmental impact, have a good working environment under decent working conditions and a reasonable salary. The best way of ensuring this is through collective agreements. LO's LTS also emphasises that the best way to avoid unemployment resulting from climate policies is investment in lifelong learning and further education of employees.

The Association of Free Trade Unions of Slovenia (ZSSS), the leading private sector labour union in the country, has also adopted a position paper on climate change, in which it argues that preventing environmental crisis must not be done at the expense of workers and their rights. ZSSS supports the transition to a circular economy, calls for the creation of green and decent new jobs and argues for the introduction of innovative approaches in industry that benefit the environment and workers. It calls for a comprehensive social, environmental and economic investment plan that provides suitable financial compensation (equal to previous earnings) for workers, free education and requalification, preferential employment treatment, direct and indirect investment in and support for the creation of new jobs, and sufficient funds for the comprehensive development of affected communities to ensure a just and decent transition.

In a similar vein, the Italian peak-level trade union organisations – the Italian General Confederation of Labour (CGIL), the Italian Confederation of Workers' Trade Unions (CISL) and the Italian Labour Union (UIL) – adopted two joint papers in which they set out a series of priorities, such as:

- development of 'dialogue with institutions and bargaining at all levels for preserving and restoring ecosystems and stopping the loss of biodiversity, by protecting the species at risk of extinction'
- climate justice and a just transition
- urban development as an opportunity for improving the quality of cities

Also noteworthy is the participation of CGIL, CISL and UIL as members of the Italian Alliance for Sustainable Development (ASviS), constituted in 2016 with the objective of raising the awareness of Italian society, economic stakeholders and institutions about the 2030 Agenda for Sustainable Development, and to mobilise them towards the SDGs. ASviS, comprising nearly 300 different organisations throughout the country, has published a manifesto entitled *Priority for an ambitious, just and sustainable transition*, which sets out conditions for a just and sustainable transition (ASviS, 2019).

The German trade unions and the environmental movement are also interested in bringing climate and social aspects together. In April 2020, IG Metall released a joint statement with BUND stating that they share the vision of a good life for everyone and of a socioecological transition to an economy that has the common good, as opposed to profit, as its first priority. However, the trade unions' position on existing climate policies is ambivalent, as in the face of job losses they also argue for massive investment in climate-unfriendly sectors and technologies.

Conversion and requalification

In Portugal, trade unions and employer organisations have broadly supported the transition to a climate-neutral economy, although they raise concerns and express some disagreement regarding specific public policy measures. Regarding the socioeconomic impacts of climate policies, trade unions have been concerned in particular with the requalification of workers, while employer organisations have focused on the conversion of industrial activities using fossil fuels.

In Finland, peak-level social partners have also emphasised the role of education, agreeing that a fair transition to climate neutrality will require investments in education. The Central Organisation of Finnish Trade Unions (SAK) argues that more should be done to assess the concrete effects of climate policy on different sectors, especially in terms of demand for labour and the need for further education. Furthermore, peak-level trade unions in Finland argue that they have not been sufficiently involved in policymaking and that the ministries should do more to consult them.

Financial repercussions

In Luxembourg, trade unions want to balance the need to protect the climate and the need to protect existing jobs, even those that are carbon intensive. The Independent Luxembourg Trade Union Confederation (OGBL) has engaged with Luxembourg's branch of the Fridays for Future movement, called Youth for Climate, and seems willing to incorporate environmental concerns more strongly into its positions. In its position on the NECP, the OGBL calls for financial compensation to mitigate the potential adverse social impacts of climate measures. The civil servants' union (the General Public Sector Confederation, CGFP) and the Luxembourg Confederation of Christian Trade Unions (LCGB) have criticised the rise in fuel taxes and demanded that the introduction of taxation on CO_2 emissions does not lead to a loss of purchasing power.

The Austrian Trade Union Federation (ÖGB) comments on environmental tax measures and emphasises that special attention needs to be paid to the distributional effects of environmental taxes (which are mass taxes and regressive in their effects); people with very high incomes should make a larger contribution, and compensatory measures should be implemented for people on low incomes.

The Trade Union Federation of Electricity Workers' Unions (EVDSZ) expects the Hungarian government, the EU and employers to create funding sources for programmes especially designed to alleviate the impacts of decarbonisation. Policy should be designed to deal with workers' poverty and energy poverty, and access to electricity should become a basic human right, like access to water. Renewable energy can be supplied only at a higher cost than fossil fuel energy, and therefore the government should create an adequate strategy for dealing with the cost. Proposals setting out minimum levels of power needs should be produced. In neighbouring Slovakia, the Trade Union of Mine, Geology and Oil Industry Workers (OZ PBGN) has expressed its concerns about the financial security of workers in the Horná Nitra region because of plans to close the coal mines there.

Other issues

The Spanish UGT considers that the government's initial NECP should establish a link with migration policies (planning and financing actions that facilitate mobility and protect and ensure the human rights of displaced people). It also argues that there is a need to ensure a coherent approach in all sectoral and economic policies, so that climate action is always considered in all political decisions.

Conclusions and policy pointers

This report aimed to explore the socioeconomic effects of climate policies, including the distributional effects in 29 European countries (the 27 EU Member States plus Norway and the UK). The research focused on a set of measures that have been introduced and applied widely through climate policies: carbon taxes, industry standards, subsidies, regulations and public investments. The report sought to discern which of these measures create a significant risk of uneven distributional effects.

Distributional effects have not been extensively studied in designing policy measures to achieve climate neutrality

Some national energy and climate plans have already identified (actual or potential) progressive or regressive effects, but not many publicly available national assessments have been found. The few studies identified suggest that caution should be exercised when designing policy measures, as distributional effects have often been neglected. Experts suggest the need for ex ante evaluations of policy measures, in order to adjust them as required to avoid or mitigate risks of distributional effects. After the implementation of a measure is complete, its effectiveness should be evaluated, taking into account distributional aspects.

There is a need to identify distributional effects of policy measures other than carbon taxes for effective and cohesive policy measures

The available evidence indicates that carbon taxes are highly likely to have uneven or regressive distributional effects, disproportionally affecting those with lower levels of income. However, in a couple of countries, revenues from carbon taxes have been used to provide relief and support measures for vulnerable population groups. This kind of measure seems to work best when funds are earmarked for such relief, and policy and operational commitments are made.

With regard to industry standards, the evidence presented on distributional effects is not conclusive. Economists have argued that better results are produced through taxation than through industrial standards. Evidence on subsidies and tax breaks or exemptions indicates that they tend to be progressive if well targeted. In some cases, however, there is a risk that even the effects of targeted measures could be regressive. Subsidies for electric vehicles are a good example of this. If not very carefully implemented and targeted, they may have regressive effects.

Member States have put in place several regulatory measures dealing with specific sectors, promoting energy efficiency and renewable energy, and encouraging transition measures. Most of the energy efficiency measures that have known distributional effects have been identified as progressive, while only in a small number of cases do they seem to be regressive. Such effects, however, could not be identified in all countries from the existing evidence. Some regressive effects associated with energy efficiency measures are attributed to the way in which they have been designed and implemented, for instance through levies applied to household energy bills. Policymakers must be aware that energy bills make up a higher proportion of disposable income in the poorest households. Even small changes causing an increase in energy bills can have significant disproportionate effects.

Transition measures are already quite extensive in some countries, showing that these Member States understand the urgency of dealing with decarbonisation, as well as tackling its negative effects on workers, industries, regions, citizens and communities. Eight countries have plans with strong sectoral and regional features, while two countries (Ireland and Romania) have initiated strong actions aimed at achieving a just transition: in Ireland by engaging communities and a wide spectrum of stakeholders to gain buy-in and in Romania by reallocating, reskilling and upskilling workers and investing in support for new firms and technologies.

Regulatory measures related to motor vehicles, such as ‘green owner taxes’, are likely to be regressive, as the burden tends to be greater for individuals and households with lower levels of income. An interesting practice that has been observed (for instance, in the Netherlands) involves adopting regulatory measures through national climate agreements with the participation of industries and sectors. Including sectoral and industry representatives means that regulatory measures reflect the concerns of the various sectors and potential negative effects are therefore addressed. However, the distributional effects of regulatory measures on households should be explored further.

Public investment is likely to be progressive for individuals (for example, investment in clean energy benefiting low-income households) or regions (for example, measures aiming to mitigate the risk of high levels of unemployment or depopulation). Public investment in research and development and technology and cooperation with the private sector can remove the risk associated with green technologies and encourage further take-up and investment by companies, having a multiplier effect on the economy.

Such public investment can help in developing affordable technologies and increasing know-how. Investment in human capital, through research and development and training, could greatly foster green skills, which will be important in the transition to a climate-neutral economy.

Emerging national-level practices on mitigating distributional risks offer lessons to be learned

An additional objective of this research was to provide insights into how negative distributional risks could be mitigated. Several countries, mostly owing to their reliance on coal, peat or oil shale to produce energy, have put in place programmes ensuring that there will be a just transition to renewable sources. These programmes, sometimes backed by earmarked funds from carbon tax revenues, provide support to affected businesses, workers and the wider population in order to minimise the undesired effects of the reduction of operations or even the closure of coal mines and the effects on all the related activities.

Another important way of reducing the regressive effects of climate policies, also implemented by many Member States, is to address head on the issue of energy poverty through policies and measures supporting the most vulnerable consumers. Energy or fuel poverty is recognised as a great problem in many Member States, which is reflected by the fact that it is at the core of some national debates.

Among the most common measures are grants and subsidies to help reduce the energy burden on household expenses by helping to make housing more energy efficient and/or equipped with renewable energy sources. Grants for renovating buildings play a significant role in this regard, and the details of this type of measure are often the subject of public debate. While not all these measures have been assessed regarding their effectiveness, many have been deemed successful in reducing the negative distributional effects of other green measures. The following measures are good examples, owing to their well-targeted character:

- support for social housing solar panel installation and energy efficiency improvements and discount vouchers for purchasing energy-efficient household appliances (Belgium)
- assistance with heating to vulnerable groups to offset regressive effects of the Eco-design Regulation (Bulgaria)
- the green cheque to compensate low-income households for rising energy taxes (Denmark)
- the Save Energy at Home programme to fund improvements to properties to reduce energy costs (Greece)
- transition plans for the peatlands area in the Midlands (Ireland)
- state support for modernisation of multi-apartment buildings (Lithuania)
- the Warm Home Discount Scheme, offering a lump-sum discount on energy bills for vulnerable and low-income groups (the UK)

Certain measures aimed at minimising negative distributional effects did not always function as intended, and this provides some additional and important lessons. One of these is the importance of ensuring good communication of the measures. If the target population is not aware of the existence of such measures, they will not benefit from them. Proper awareness-raising among the target population, and coordination with other measures of a similar nature, seems to be crucial for effectiveness. Another important lesson is that implementing means-tested measures, in particular if they are incentives such as subsidies for solar panels, increases their effectiveness and prevents public discontent regarding disproportionate effects.

In the long-term strategies in which the Member States set out their paths to reducing greenhouse gas emissions over the next 30 years – in accordance with the 2015 Paris Agreement – few or no specific considerations are mentioned regarding potential distributional impacts. However, many of the long-term strategies acknowledge some potential socioeconomic challenges associated with the measures designed to achieve the necessary transition to a carbon-neutral economy, such as the impacts on employment, labour markets and workplaces; the need to ensure social justice or a just transition; and the need to ensure a secure and affordable energy transition. These are all important echoes of the main concerns raised in relation to the transition to a carbon-neutral economy in the different Member States. It is also important to note that, while not all of the national long-term strategies adopted included socioeconomic considerations, several were still being drafted and discussed at the time of writing.

National stakeholders' engagement will be vital for successful implementation of climate policies

The European Green Deal specifies that attaining the European and national goal of climate neutrality will require changes in production models, consumer behaviour and lifestyles. Such changes cannot be achieved without broad stakeholder engagement. Indeed, debates in the Member States suggest that the issues have attracted the attention of NGOs, social partners, industries, social and environmental movements, regional authorities, political parties, the academic community and others. Among the main issues in these national debates is the energy transition, followed by the impact of taxes, excise duties and energy prices and their effects on energy poverty.

Preparing for the energy transition as part of the actions under national energy and climate plans and long-term strategies often involves the sharing of costs in society and the reconciliation of environmental and social concerns.

Some Member States have introduced an extensive stakeholder consultation process to determine measures facilitating transition. For instance, concerns about effects on industry, job losses and potential regional degeneration in Ireland triggered widespread engagement with all relevant stakeholders. Sectoral climate agreements in the Netherlands represent many sectors and public regional authorities and have introduced a broad range of measures with wide consensus. One of the key topics is that of job loss, often discussed as the main social impact of the energy transition. Various NGOs in ecological and socioeconomic fields are the main driving forces in public debates across the EU. However, in several Member States, various bodies consisting of academics, experts and think tanks also play an important role, whereas the social partners are, so far, mostly active on specific issues such as addressing redundancies resulting from the energy transition.

Social dialogue practices on a just transition and the effects of climate policies on industries and workers are not widespread across Member States

It is important to underline the potential role of social dialogue as a source of solutions to mitigate adverse effects of climate policies, including distributional effects. Social dialogue on these subjects may not yet be widespread, but there are interesting examples of initiatives carried out by or with the participation of social partners that aim to design and implement solutions to the problems raised by the transition to a climate-neutral economy.

- At EU level, initiatives taken by both sides of the automotive industry invite companies in the sector to support training and skill upgrading of their workforces, wage and job security, and investment in technology.
- At national level, tripartite agreements in the energy sector (Spain) or agreements concluded between trade unions and government (Germany, Poland) have regulated the training and reskilling of workers affected by the transition, with the aim of maintaining or generating employment in the local region, transferring workers to other plants, etc.
- A sectoral agreement in the electricity sector in Italy is quite comprehensive, including the right to 28 hours of training for each worker to ensure their employability; additional health and safety training; a sectoral joint body overseeing training and certification; redeployment; and other measures to support transition.
- Global framework agreements in multinational companies, such as the Italian oil and gas company ENI and the Spanish wind turbine manufacturer and wind services provider Gamesa, cover key issues relating to potential distributional effects on workers.

The examples presented above show that these initiatives can take place at EU, sectoral or company level, and be of a bipartite or tripartite nature. They also suggest that there is great potential for a stronger role for social dialogue in dealing with distributional effects, with a view to achieving a coordinated approach and mutual gains for present and future generations.

Policy pointers

Integrated and coordinated policies are more effective

- When designing policy measures to achieve the goals of climate-neutral policies, Member States must account for potential socioeconomic effects that would affect workers, population groups (citizens and communities), industries and regions differently. Sound evaluation and assessment studies need to be carried out and a monitoring system put in place to assist in assessing the effects, progressive or regressive, of policy measures.
- A whole-of-government approach is particularly important, following which departments and ministries exchange information on the implementation and impacts of climate policies, searching for complementarity between policies from different perspectives (for example, departments of the environment, the economy, labour, social security, education and health). This can help in avoiding undesired socioeconomic effects of climate policies. As new taxes or regulations, likely to be introduced in the context of the national energy and climate plans and long-term strategies, may be met with resistance from certain groups, designing these schemes with early input from all the relevant social policy ministries and departments can contribute to more effective policy measures.

Industrial and innovation policies must be ambitious

- Public and private investment in climate technologies that goes beyond individual sector support and addresses environmental challenges across the economy could be designed as part of ambitious national and regional industrial policies. Such policies should take a holistic approach rather than focusing on compartmentalised and siloed policymaking. A multistakeholder approach, involving the public and private sectors, social partners, NGOs, citizens, the research community and regions, for example, is essential for bold,

inclusive industrial policies to succeed. Some examples of smart specialisation in regional industrial policy are relevant in this context. Designing climate policies is not just a technical exercise. It involves not just an energy transition but a societal transition as well. Societal support is critical if climate policies are to be accepted and effective, given the gains and losses involved. Therefore, policymakers designing and implementing such policies should seek wide societal consensus.

- National governments should be assisted in the design of such policies and learn from each other's experiences. Taking a mission-oriented approach to industrial strategy is important to develop the radical innovations and transformations needed to meet grand societal challenges such as achieving climate neutrality.
- Policies designed with a mission-oriented approach, like that adopted by the European Commission in its mission-oriented policymaking,[15] apply an economy-wide perspective, rather than a narrow industry-specific one (for example, aiming to support certain sectors). This approach focuses on the major challenges for society, in this case climate change, and engages all actors, citizens, the private sector, NGOs, social partners, the research and innovation ecosystem, communities and regions, etc., to determine priority actions and assess possible benefits and losses. This is critical for a society that takes the distributional effects of policies seriously into consideration.

Energy poverty needs to be addressed

- While energy poverty is being addressed in some countries, it remains a topic of debate and of great concern for many different actors. Tackling energy poverty is essential: according to Eurostat data for 2018, nearly 34 million people in the EU are unable to afford to keep their homes adequately warm (see the Commission's recommendation on energy poverty (European Commission, 2020i)). In the Member States, this issue is tackled mainly through financial support, which raises questions about the sustainability of using public funds. Although the Commission's recommendation makes suggestions regarding measures other than financial support, it is important to explore alternative funding models, whereby a more holistic approach could be adopted with the participation of the finance, energy and social sectors. Making the various finance mechanisms known to end-users would be of importance. National actors could explore sustainable finance schemes for retrofitting the social housing sector as a priority (for example, grants for housing associations, local authorities to deliver energy efficiency upgrades to buildings, community municipal bonds, green equity schemes).

A just transition requires a comprehensive approach

- Managing a just transition is supported by EU and national funds, which provides opportunities for adopting a comprehensive and systemic approach rather than single-point solutions. In addition to taking a change management approach, national- and regional-level authorities and relevant stakeholders could embed anticipation of socioeconomic effects into their planning work, seeking to examine potential development opportunities for the industries, workers and communities affected by transition. More specifically, drawing up a plan for the future of industries and workers is important for the regional and national economies; it is vital that local and regional communities can imagine and plan for a future where existing industries are transformed, new industries are established and new jobs and training opportunities are created, rather than a future in which the change is just managed. Workers who are likely to lose their jobs need to be able to plan in advance their transition to a new job profile (with the support of social partners and public authorities). Such plans should also take on board different ways of attracting the investment that will be crucial for the future of the regions affected.

Stakeholder involvement is crucial

- The involvement of all stakeholders – including social partners, industries, NGOs and academics – in the design and implementation of climate policies is crucial to prevent or mitigate any undesired effects and increase buy-in from all parties concerned. This ensures not only the greater effectiveness of the policies and measures but also the greater overall awareness and desirability of climate policies and measures. European institutions can play an important role by encouraging (through guidance and resources) the participation of all stakeholders at national, regional and local levels.

The capacity of social dialogue needs to be strengthened to address distributional effects and facilitate a just transition

- Social dialogue can be an important tool to deal with (some) side effects of climate policies. There is evidence that the undesired effects of some climate policies, especially if they affect firms and workers in certain sectors and regions, can be addressed by social partners and that solutions can be achieved through social dialogue and joint initiatives. As of early 2021, there are few examples of social dialogue and collective bargaining initiatives in this area across Europe. However, the report did present some cases in which trade unions and NGOs joined forces to address climate policy

challenges. These initiatives may create an impetus for the social partners to not only engage in dealing with current problems but also proactively anticipate potential effects on sectors, companies, etc.

- Furthermore, taking a future-oriented approach will enable the social partners to balance the needs of present and future generations of workers and those of companies within the planet's limits. To successfully manage the transition to carbon-free production models in a socially sustainable way, company-level social dialogue should expand to cover the topic and seek innovative solutions. Both company management and worker representative bodies (trade unions or works councils) should actively involve young workers in such discussions and consultations at company level (but also at other levels). As the topic is rather new, European, national and sectoral social partner organisations could organise capacity-building exchange events and workshops for their members, to equip them with the knowledge required to engage in meaningful social dialogue and consultation on public climate policies. The European cross-sector and sectoral social dialogue committees, with their reach to national social partners, will have a crucial role to play in facilitating capacity building and organising workshops for their memberships.

The Just Transition Platform could be developed further as an EU hub and coordinated with other EU-level initiatives

- The Just Transition Platform was set up in 2020 as an EU-level hub for sharing national experiences. One of its aims is to facilitate knowledge sharing among participating national actors such as government departments, social partners, industries, NGOs and academics. Although this activity has already started, the platform could be developed further. For instance, it could provide more support to local authorities that do not have the experience or capacity to deal with just transition plans and implementation. This would enable national actors to exchange examples of good national policies and policy processes. It would be useful if the activity of this EU hub could be coordinated with other, established, EU-level initiatives in the field of climate change, such as the EU Energy Poverty Observatory.
- It is notable that countries are at different levels of preparedness regarding planning and implementation of climate policies. EU-level support is therefore essential to achieve green agenda objectives in a coordinated and cohesive way and to strengthen the collective ability to transform the European economy and society, with the aim of achieving the objectives of the European Green Deal.

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Glossary

Carbon neutrality: Strictly speaking, refers to achieving net-zero CO_2 emissions – that is, when emissions of CO_2 to the atmosphere are balanced by the removal of CO_2 from the atmosphere.

Climate neutrality: Achieving net-zero greenhouse gas emissions, that is, when emissions of greenhouse gases to the atmosphere are balanced by their removal from the atmosphere.

Climate policies: Policies used to address climate change. Climate **adaptation policies** are those devised to anticipate the effects of climate change and take appropriate action to prevent or minimise the damage they may cause (for example, measures dealing with protection from floods or help to shift crop production). Climate **mitigation policies** are those aimed at reducing anthropogenic emissions of greenhouse gases (for example, policies aiming to increase use of renewable energy, such as wind or solar energy, or to reduce CO_2 emissions from transport or industry).

Co-generation: An efficient technology that produces heat and electricity simultaneously; also known as 'combined heat and power'.

Distributional effects: Differing impacts of policies or measures on groups of households or types of firms. These can be **regressive**, when they hurt low-income households the most, for instance, or **progressive**, when the opposite happens. A policy or measure has proportional effects when it affects all socioeconomic groups or firms equally.

Excise duties: Excise duties are indirect taxes on the sale or use of specific products, such as alcohol, tobacco and energy. The revenue from these excise duties goes entirely to the country to which they are paid (European Commission definition).

Feed-in tariff: The price per unit of electricity that a utility or supplier has to pay for renewable electricity from private generators. The government regulates the tariff rate.

Fuel poverty: A household is deemed to be in a situation of fuel poverty if it has to spend more than 10% of its income on all domestic fuel use, including appliances, to heat the home to a level sufficient for the health and comfort of its occupants.

Green budgeting: According to the OECD, 'environmentally responsive or green budgeting means using the tools of budgetary policy-making to help achieve environmental goals. This includes evaluating environmental impacts of budgetary and fiscal policies and assessing their coherence towards the delivery of national and international commitments. Green budgeting can also contribute to informed, evidence-based debate and discussion on sustainable growth.'

Greenhouse gases: The atmospheric gases responsible for causing global warming and climate change. The major greenhouse gases are carbon dioxide (CO_2), methane and nitrous oxide. Less prevalent – but very powerful – greenhouse gases are hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (UNFCCC definition).

Long-term strategies: 'Member States should develop long-term strategies with a perspective of at least 30 years contributing to the fulfilments of the Member States' commitments under the UNFCCC and the Paris Agreement, in the context of the objective of the Paris Agreement of holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels and achievement of long-term [greenhouse gas] emission reductions and enhancements of removals by sinks in all sectors in line with the Union's objective' (Regulation (EU) 2018/1999, recital 36).

National energy and climate plans: Ten-year integrated national energy and climate plans outline how the EU Member States intend to address energy efficiency, renewables, greenhouse gas emission reductions, interconnections, research and innovation (European Commission definition).

Photovoltaic systems: These systems use photovoltaic, or solar, cells, which are electrical devices that convert the energy of light into electricity.

Renewable energy sources: Energy production sources that are naturally replenished. Common sources of renewable energy include solar energy, geothermal energy and wind power.

Annexes

Annex 1 – Questionnaire used for data collection

Eurofound devised this questionnaire which was used by the Network of Eurofound Correspondents to collect data at national level. It was preceded by a background note, which is not replicated here as its contents are fully addressed in the introductory chapter of this report. The bibliographical references provided by the correspondents have been integrated into the list of references for this report.

1 The socioeconomic aspects of the long-term strategies
(indicative length of replies to this section: 300–500 words)

1.1 To what extent does the LTS of your country account for potential socioeconomic effects of decarbonisation measures, including aspects related to macroeconomic and social development, health risks and benefits, and environmental protection? Please present succinctly the main socioeconomic effects considered in the LTS, highlighting if there are any related considerations arising from its fundamental principles or values. If the LTS for your country is not available, please refer to the available proposal or draft strategy.

1.2 How have trade unions, employer organisations, other CSOs (such as NGOs) and/or the general public been consulted in the design of the strategy? Please briefly describe the initiatives carried out to involve the different actors (for example, public consultation, social partner consultation, co-creation initiatives) in the design of the LTS.

2 National energy and climate plans
(indicative length of replies to this section: 3,000–3,500 words)

2.1 The NECPs contain numerous policies and measures that range from taxes to subsidies, from industrial standards to agreements on 'green growth'. In Table 4 below, please describe in detail which distributional effects (with regressive or progressive features) have been identified for the following types of policy measures (please identify clearly whether these effects are based on official or independent reports or studies):

- carbon and energy/excise taxes (for example, road fuel tax, gas tax, coal tax, mineral oil tax, natural gas tax, electricity tax)
- subsidies (please distinguish between (i) subsidies for households such as grants for purchasing solar panels or for home insulation and (ii) subsidies for companies such as tax breaks for acquiring low-carbon technology, or other subsidies for research and development into, for example, carbon capture and storage or carbon-reducing technologies)
- industry standards (for example, for agricultural products or the automotive industry)
- regulations (for example, legislation on the electricity sector or energy regulator actions on energy pricing)
- public investments (for example, in public transportation and infrastructure)

Please emphasise and provide a detailed presentation of groups that have been identified as particularly vulnerable to the distributional effects of specific policy schemes. For example, low-income households, private and social housing tenants versus homeowners, those in employment versus those not in employment (pensioners, students), certain groups of workers, groups with specific characteristics and in specific economic sectors and regions.

Table 4: Information to be provided by respondents on climate policy measures and their distributional effects

Policy measure	Name of measure	Description	Distributional effects (progressive or regressive) and groups, sectors or regions identified			Sources (include studies, reports referring to the measure and effects identified)
			Groups affected	Sectors affected	Regions affected	
Carbon taxes	(e.g. road fuel tax)	(e.g. X% per litre of petrol)	(e.g. regressive, estimates, indicate if lower-income households are affected)			
Subsidies	(e.g. subsidy for solar panels; removal of fossil fuel subsidies)					
	(e.g. tax breaks for electric cars)					
Industry standards						
Regulations	(e.g. decarbonisation of energy sector)		(e.g. some workers in the sector may lose their jobs, low-income households may pay higher prices, industrial consumers may benefit)			
Public investments						
Other (please specify)						

2.2 Assessment and measurement of distributional effects of policy measures indicated in the table above:

2.2.1 How has each policy measure been measured and assessed prior to introduction? What kind of metrics were used? Please report on policy review performance (metrics) with regard to the regressive or progressive impacts of policies (actual or potential), based on official studies and reports.

2.2.2 Have there been plans for ex post evaluation of the distributional impacts of the policy measures mentioned above?

2.2.3 Are there any other studies assessing and measuring the distributional effects (ex ante or ex post)? What are their findings? If there are multiple studies with differing results, please try to explain the reasons for these discrepancies (i.e. which factors) (please indicate what kind of data was used, methodology, selection, evaluation, etc.).

2.3 Consultation on the policy measures above:

2.3.1 What methods have been used for public consultation (for example, written contributions, co-creation workshops) prior to introducing each of the policy measures above and to what extent have any social and economic actors been consulted, for instance, NGOs, consumer and producer groups, trade unions, employer or business organisations, citizens' assemblies, other governmental departments (please refer to the governmental department leading the consultation process)?

2.3.2 To what extent have their views been reflected in the policy documents?

2.4 Have any measures/projects been designed or funds been earmarked to address the negative effects of any of the mitigation policies mentioned above (for instance, funds allocated to projects dealing with restoration of peatlands and socioeconomic support for workers and citizens in the affected areas)? Please also provide information if there is an intention from the government to introduce such measures or funds in the near future, indicating the earmarked amounts.

2.5 The policy measures mentioned in the table above may have, to a certain extent, addressed distributional effects in society (or not). What are the views of governmental departments (for instance, ministries of the environment, employment, labour and social affairs, economic affairs or health) on how well these distributional effects have been tackled? In the absence of such considerations on distributional effects in the policy measures, what are the views of governmental departments on priorities (what needs to be targeted and why)? (Please distinguish between the views of different departments.)

2.6 What are the success stories of distributional risks being effectively addressed through policies (at any level of administration) and what makes them successful? In your response, please consider whether any of the following have been used:

- compensation mechanisms for low-income households (for example, lump-sum transfers to low-income households, reduction of regressive taxes, a just transition to new jobs for affected workers, revenue recycling schemes – that is, carbon tax revenues used for social housing or public transportation infrastructure)
- introduction of policy measures with progressive features
- designing policy measures so that distributional effects are reduced

3 Current debates in Member States on the distributional aspects of climate change
(indicative length of replies to this section: 1,500–2,000 words)

3.1 Which topics are the focus of current public debates at national level regarding the socioeconomic effects of climate policies, including their distributional effects? Please provide a brief description.

Please mention the three to five most important topics, considering, for instance, consequences of inaction, carbon taxes and their direct and indirect effects, investment in energy-efficient goods, sustainable transport, converting heavily polluting power plants, incentives for investment in solar power or other renewable energy resources for companies and households, building retrofitting.

(Possible sources of information: climate change lobby groups, social partners, media outlets, political parties, national barometer surveys that measure public perceptions of distributional effects, etc.)

3.2 Who are the main actors driving the debates and what are their positions?
(for example, certain CSOs, social partners, municipalities, political parties)

3.3 What are the views and positions of trade unions and business and employer organisations on the socioeconomic impact of climate policies? Please indicate any concrete proposals to address these impacts.

3.4 Social dialogue: please present any tripartite, cross-sectoral or sectoral (any sector) agreement, addressing the distributional aspects of climate policies. What aspects do they cover (for instance, requalification of workers, subsidies)?

3.5 Please report on any relevant prominent national court cases related to the socioeconomic effects of climate policies.

For instance, in the Netherlands, as a result of a successful legal challenge, known as the Urgenda case, the government's existing pledge to reduce emissions by 17% was found to be insufficient to meet the state's fair contribution towards the UN's SDGs, and therefore the Dutch government was ordered to accelerate the reduction of carbon emissions. In another court case (Friends of the Irish Environment vs Government of Ireland), an Irish NGO (Friends of the Irish Environment) challenged the government's national mitigation plan and then appealed in the Supreme Court.

4 Other socioeconomic impacts of climate policies, with a focus on unintended effects and alleviation strategies
(indicative length of replies to this section: 300–500 words)

4.1 Please refer to any other issues of relevance in your country concerning socioeconomic impacts of climate policies that have not been captured by your replies to the previous sections.

For example, are there any signs that the government is taking up the current COVID-19 crisis as an opportunity to introduce, strengthen (or perhaps relax) green policies (for instance, on green growth, green budgeting, green jobs)? Has the introduction of company support instruments been made conditional on companies making environmental adjustments and investments (for instance, reducing their carbon footprint by X%, investing in renewables, training their employees on environmental technologies to assist in transition)? In addition, consider the extent to which climate policies have influenced new business models and organisation of work (for example, a shift to a circular economy, reskilling, provision of training).

Annex 2 – Network of Eurofound Correspondents

Country	National correspondents and institutions
Austria	Bernadette Allinger, Working Life Research Centre (FORBA)
Belgium	Dries Van Herreweghe, KU Leuven
Bulgaria	Tzvetomila Sabcheva, Institute for Social and Trade Union Research (ISTUR)
Croatia	Predrag Bejaković, Institute of Public Finance
Cyprus	Pavlos Kalosinatos, Cyprus Labour Institute (INEK-PEO)
Czechia	Aleš Kroupa, Research Institute for Labour and Social Affairs
Denmark	Anders Randrup, Oxford Research
Estonia	Ingel Kadarik, Praxis Center for Policy Studies
Finland	Amanda Kinnunen, Oxford Research
France	Cécile Jolly, ASTREES – France Stratégie
Germany	Birgit Kraemer, Hans Böckler Foundation
Greece	Elena Kousta, Labour Institute of General Greek Confederation of Labour (INE GSEE)
Hungary	Nóra Krokovay, Kopint-Tárki Institute for Economic Research, and Alida Szalai, ELTE University, Budapest
Ireland	Gerard McMahon and Andy Prendergast, IRN Publishing
Italy	Roberto Pedersini, University of Milan
Latvia	Kriss Karnitis, EPC Ltd
Lithuania	Rasa Miežienė and Inga Blažienė, Lithuanian Centre for Social Sciences
Luxembourg	Gaetan de Lanchy, Nathalie Lorentz and Adrien Thomas, Luxembourg Institute of Socio-Economic Research
Malta	Gilmour Camilleri and Melchior Vella, Centre for Labour Studies, University of Malta
Netherlands	Amber van der Graaf and Paul Vroonhof, Panteia
Norway	Kristin Alsos, Fafo Institute for Labour and Social Research
Poland	Dominik Owczarek, Institute of Public Affairs
Portugal	Manuel Abrantes, Centre for Studies for Social Intervention (CESIS)
Romania	Victoria Stoiciu, European Institute of Romania, and Alexandra Deliu, Euractiv
Slovakia	Rastislav Bednárik, Institute for Labour and Family Research
Slovenia	Renata Karba, Umanotera
Spain	Alejandro Godino, Sociological Research Centre on Everyday Life and Work, Autonomous University of Barcelona
Sweden	Sirin Celik, Oxford Research
UK	Claire Evans, Industrial Relations Research Unit, University of Warwick

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With the European Green Deal, the EU is setting in motion a set of policies and measures aimed at preventing and alleviating the effects of climate change. The main objective is to embark on the transition to a climate-neutral economy. These much needed climate policies, however, may have undesirable distributional effects on individuals and companies. As well as their intended effects, some measures, such as carbon taxes, can have associated regressive effects, negatively impacting on people with lower income levels, and hence lowering their acceptability. Based on the most recent national experiences, this report identifies those climate policies having significant distributional effects and explores how these are being addressed in the various Member States. In addition, the report identifies and describes the main issues and players in the ongoing public debate on the socioeconomic impacts of climate policies.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

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