
1. The global importance of EU climate policy: an introduction

Tim Rayner, Kacper Szulecki, Andrew J. Jordan and Sebastian Oberthür

The EU is one of the major emitters of greenhouse gases (GHGs) in the world, both historically and in terms of the situation prevailing in the 2020s. By international standards, its energy mix is relatively diverse, encompassing fossil fuels, nuclear power and renewables. While the shift towards a greater share of renewables progresses apace, fossil fuels are still reckoned to account for 72 per cent of its energy mix, compared with an 80 per cent share globally (IEA 2020).

Recognizing this context, the EU has long tried to act as a leader in international climate policy, both in terms of shaping evolving international institutional arrangements and developing policies and measures to reduce its own emissions. Dating from the early 1990s, its climate-related policy activities have had enormous influence within its own borders and beyond, and over time have gradually expanded to encompass a widening range of economic sectors. Indeed, climate action now has quasi constitutional status in EU law. Although the EU's founding treaties do not explicitly define climate policy, Article 191(1) of the Treaty on the Functioning of the European Union (TFEU) refers to combating climate change as one of the core objectives of its policy on protecting the environment (Stoczkiewicz 2018). In 2019, with much fanfare, climate change moved to the very top of the EU's legislative agenda when the European Commission launched proposals for a European Green Deal: a package of measures aiming to reduce net EU emissions to zero by mid-century, in the context of a wider set of environmental and social goals (European Commission 2019).

Among the countries and organizations subscribing to the objective of 'climate neutrality' by the middle of the twenty-first century, the EU is nonetheless a rather distinctive actor, whose long-standing efforts to deliver decarbonization deserve particularly close attention. With 450 million citizens and a €14.5 trillion economy (European Union 2022), it is neither a sovereign state nor an international organization. The EU's efforts have been shaped by its characteristics as a complex multi-level institutional landscape, a supranational organization, and a set of 27 Member States of varying levels of wealth and economic size, with different and at times contradictory interests, visions, domestic political dynamics and willingness to act collectively. Although overall the EU is dependent on fossil fuel imports, especially for oil and gas (IEA 2020), some Member States host significant fossil fuel production and supply industries, underpinned by powerful vested interests. In others, the continuation of carbon-intensive economic sectors has powerful backers; in each case, climate policy is rendered economically and politically sensitive at national and EU levels. European ways of life, moreover, are heavily associated with per capita GHG emissions that, although gradually falling, continue to exceed the global average (IEA 2022). Nevertheless, in view of its economic and institutional strength, the EU can be looked upon as a rather benign 'critical case': 'if [it] cannot develop effective climate policies, then the implications for the globe are grim' (Wettestad 2000: 26).

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Over three decades or so, targets and policies to address both climate change mitigation and adaptation have regularly emerged in the EU. Policies currently encompass a wide array of instruments, covering a widening range of economic sectors. As a policy ‘laboratory’, the EU has seen policy and institutional innovations in many areas. For example, novel ways have been developed to share the effort required to reduce emissions between Member States, and across different economic sectors. The EU has also pioneered the use of novel policy instruments such as emissions trading, which have been emulated elsewhere. While the financial resources at its disposal are relatively limited compared to its Member States, important commitments to dedicate increasing proportions of the EU budget to climate purposes have been made (van Asselt et al. 2015; Rietig 2021).

Meanwhile, in global-level negotiations, the EU has practised a ‘leadership by example’ approach, and consistently advocated ‘targets and timetables’ to drive action, such as the target that average global temperature rise should not exceed 2°C above pre-industrial levels, and that global GHG emissions should be halved from 1990 levels, by 2050 (Council of the European Union 2007, Council of the European Union 2014). In addition to meeting emission-reduction targets under the Kyoto Protocol, the EU, its Member States (including the UK) and the European Investment Bank have together constituted the biggest contributor of public climate finance to assist developing countries (European Commission undated). Although there have been high-profile setbacks – exemplified by an unexpectedly marginalized role at the Copenhagen UN conference of 2009 – political momentum towards stricter standards has continued. Indeed, the Paris conference of 2015 offered cause for cautious optimism about the EU’s continuing role as an international pace-setter (Oberthür and Groen 2018).

On top of this, as the impacts of a warming climate have increasingly been felt, the countries of the EU have increasingly recognized the importance of pursuing greater climate resilience alongside the goal of more ambitious emission reduction (Rayner and Jordan 2010, Biesbroek and Swart 2019). To reflect this increasingly dual focus, Stangl (2015: 13) has helpfully defined EU climate policy as ‘a set of coordinated actions by the EU institutions aimed at counteracting climate change, in particular through the reduction of GHGs [*sic*] and reducing the consequences of climate change, in particular through adaptation’ (our emphasis). Following the example of more progressive Member States, EU policy moved from a White Paper to a first Adaptation strategy (European Commission 2009, 2013), through to a more comprehensive approach launched eight years later, intended to enhance adaptive capacity, strengthen resilience and reduce vulnerability in the face of present and projected future impacts, including those occurring beyond Europe’s borders (European Commission 2021).

This *Handbook* is intended to take stock of the EU’s efforts, assess how far they have come, and consider the EU’s ability to deliver on increasingly ambitious climate policy objectives. In the next section of this chapter, we begin by providing a necessarily brief outline of the main actors, institutions and policy processes. We go on to offer a brief chronological recapitulation of the evolution of EU climate policy and politics, from the early 1990s up to the 2021 ‘Fit for 55’ package of measures, designed to reduce emissions by 55 per cent by 2030. The final section explains the rationale for the structure of the book, and summarizes the aims and objectives of individual chapters.

EU CLIMATE POLICY: THE MAIN ACTORS, INSTITUTIONS AND PROCESSES

The origins of the EU date back to the post-war period, long before the emergence of the modern environmental movement (Jordan, Huitema, and van Asselt 2010). Over time the EU has gradually expanded from six founding states, eventually reaching 28 Member States. Following the UK's unexpected departure in 2020 after a long and protracted process ('Brexit'), the EU currently comprises 27 Member States.

With so many Member States, several large institutions – the European Commission, the Council of Ministers and the European Parliament to name but three – criss-crossed by myriad formal and more informal networks, it remains a genuinely open question as to who in fact 'governs' the EU (Rayner and Jordan 2016). Clearly, it is the Member States who make up the Council of the EU (when represented by national ministers with responsibility for particular areas, such as environment, energy or finance), and the European Council (consisting of Heads of State or government). The Presidency of the Council in turn sets the daily agenda and rotates every six months among Member State governments. On the basis of the Treaties, and sometimes following more specific mandates from the Council, the European Commission acts as 'guardian' of what are perceived to be Europe-wide interests, by proposing legislation that, if adopted, is binding across all states. However, it is the way that these EU institutions interact with one another, and with the array of non-state actors that orbit around them, that shapes specific policies and thus constitutes the politics and governance of the EU.

In the context of climate policy, the European Commission is arguably the key institutional actor, and one which is quite unique globally, without a comparable equivalent anywhere outside the EU. Its Directorates-General (DGs) are akin to national ministries. These include, since 2010, DG Climate Action, which has joined separate DGs for Energy and for Environment. Although appointed to represent the interests of the EU as a whole, the Commissioners that head each DG also serve as a clearinghouse for the interests of the Member States in policy formulation. Since 2019, the Commission has also boasted an Executive Vice-President for the European Green Deal, a function that aims to achieve environmental policy coordination across all sectors, with climate action as the key goal. The Commission also acts as the EU's external representative (Vogler 2010) together with the current and incoming Council Presidency. Finally, since 1994, the Commission has been assisted by a technical agency – the European Environment Agency – which shares environmental data and evaluates various policy practices and their effectiveness (Mickwitz 2021).

In developing proposals for new legislation, the Commission normally consults national governments and civil society stakeholders (Wallace et al. 2015). Only if such proposals are jointly adopted by national governments (in the Council) and the European Parliament does EU-wide legislation come into effect. In contentious areas, 'issue linkage' (combining different issues for joint settlement) and 'side-payments' – whereby 'winners' can compensate 'losers' so that all benefit – may be required to overcome disagreements and arrive at negotiated outcomes (Jordan and Gravey 2021). The Presidency of the Council is influential in deciding which items in the legislative pipeline are pushed towards adoption. For its part, the European Parliament (directly elected since 1979) is essentially a reactive chamber that amends policy proposals from the Commission, and must negotiate with the Council to see its preferences realized in final legislative texts. It nevertheless acts as a key entry point to the legislative process for many societal actors who might otherwise be excluded. Once legislation

has been adopted, forms of free-riding, non-implementation, or discrimination by Member States can be sanctioned by the Court of Justice of the European Union, potentially through fines (Krämer 2021). However, the EU's relatively limited enforcement capacity often opens up 'implementation gaps' (Zhelyazkova and Thomann 2021). Targets may go unmet because policy delivery mechanisms at the national level have not been specified.

The depth and pace of political integration over the last 50 years has been such that, today, the boundary between national policy and EU policy has become blurred in many sectors. Cooperation between actors at sub-national level is also encouraged, as in the case of the Covenant of Mayors: a movement of European cities committed to developing energy efficiency and renewable energy and, more recently, investing in climate resilience. In this multi-level policy-making system, environmental concerns have shifted from being a fairly marginal aspect (in the 1960s) to a high-profile area which, unlike many other EU policy areas, generates relatively strong public support. Environmental issues in general, and climate change in particular, lend themselves logically to supranational rather than national policy. Periodic changes to the EU's founding Treaties have provided more and more legal authority (or 'competence') to act (see e.g. Benson and Jordan 2008). Over time, the EU competence in relation to climate policy has grown, reducing the possibilities that individual Member States have to veto specific legal EU acts.

However, in some specific areas that are particularly germane to climate policy, Member States have insisted on preserving a high degree of autonomy – 'subsidiarity' in the language of the EU – meaning that the Commission's influence on core state powers, including taxation, energy supply, as well as land-use planning matters, is limited by the requirement for Member State unanimity on common policies (Delreux 2021). Lack of competence over land use planning aspects, for example, has been one reason why EU policy on adaptation has remained relatively incrementalist in nature (Rayner and Jordan 2010; Russel et al. 2020). The 2007 Lisbon Treaty extended the EU's energy policy competence in the area of energy markets, security, and infrastructure, but at the same time reconfirmed Member States' sovereignty over their use of energy resources by requiring that EU decisions are made on the basis on unanimous voting (Szulecki and Westphal 2014, p. 44). Unanimity among Member States is also required in adopting overall emission reduction targets for the EU (Woerdman et al. 2022).

Since the late 1980s, when the issue of climate change began to emerge on the international political agenda, policy development has been driven by a mixture of factors. These include the need to avoid national policy differences causing distortions of the EU's internal market; the potential for climate action to enhance the often shaky legitimacy of the wider project of European integration (see Hofmann 2021); the desire to develop a distinct European identity on the global stage; the need to improve energy security (Buchan and Keay 2015); and the desire to increase the competitiveness of European industry through a programme of 'ecological modernisation' (Szarka 2012). At different times, different actors throughout the EU have adopted a policy-entrepreneurial role to highlight these opportunities, and skilfully overcome potential obstacles to policy agreement (Jordan et al. 2012).

THE EVOLUTION OF EU CLIMATE POLICY

The Origins of EU Action

EU climate policy dates back to the late 1970s (Jordan et al. 2010). However, for a long time, it mainly comprised a collection of informal objectives and broad strategies, with very few concrete policy instruments to achieve them (Jordan and Moore 2020: 64–75). The December 1997 Kyoto Conference of the Parties (COP) to the UNFCCC represented a major milestone in EU, as well as global, climate policy. With the talks fast approaching, the EU moved beyond a set of policies that had been in a sense ‘symbolic’ (Oberthür and Dupont 2011) to negotiate a significant internal ‘burden sharing’ agreement, among its then 15 members. Crucially, this arrangement allowed less developed Member States ‘headroom’ to grow economically and increase their emissions, while quite substantial reductions were made by the richer, more environmentally progressive Member States. The overall effect was to reduce emissions by around 9 per cent by 2012 from 1990 levels. Although this fell short of the 15 per cent that the EU suggested as a reduction target for industrialized countries, it defied expectations that such burden-sharing arrangements were unlikely in multi-levelled governance systems (Ringius 1999). This development marked a significant landmark in the evolution of EU climate policy, even if subsequently the Kyoto Protocol required a lesser, 8 per cent reduction over the same timescale.

The Protocol’s ‘targets and timetables’ approach reflected the EU’s preference for a regulatory approach to governing. But it also saw EU negotiators swallow their opposition to ‘flexible mechanisms’ – emissions trading, the Clean Development Mechanism (CDM) and Joint Implementation – that were suspected of providing a means for the US in particular to evade domestic emission reductions. By dropping its opposition, the EU was able to secure US agreement to adopting the Kyoto Protocol – though ironically not, as it happened, its ultimate ratification.

EU Climate Policy Takes Shape

Internationally, while the EU was taking steps to ensure it could deliver its Kyoto commitments, and demonstrating how flexible mechanisms could be implemented, it was also pressing for the required number of Parties to ratify the Protocol, in order for it to come into effect. Once President Bush had announced the US’s withdrawal (in 2001), the EU worked to secure Russian ratification in 2004, thereby allowing the Protocol to enter into force. As a *quid pro quo*, the EU agreed to support Russia’s membership of the World Trade Organization, and adjust some of the terms on which Russian gas entered the European Single Market (Bretherton and Vogler 2006).

In the aftermath of the Kyoto Protocol, Member States acknowledged that when combined, their national efforts would be insufficient to deliver the necessary 8 per cent emission reduction. In March 2000, the Commission responded by beginning to develop what came to be known as ‘common and coordinated policies and measures’, using a multi-stakeholder dialogue process known as the European Climate Change Programme (ECCP). This programme was able to build on a pioneering voluntary agreement between the Commission and vehicle manufacturers, the centrepiece of an EU strategy to reduce CO₂ from cars, signed in 1998. In

the event, slow progress in vehicle emission reduction led to this being replaced by a binding regulation in 2009 (Jordan et al. 2012; Jordan and Matt 2014).

The other major EU-level policy to emerge at this time was the emissions trading system (ETS). Launched in 2005, it encompasses around 40 per cent of the EU's total GHG emissions; participants are allocated permits to release a certain amount which, in order to incentivize the most cost-effective forms of abatement, are tradable in an emissions market (Skjærseth and Wettestad 2010). The sectors initially covered included power generation and energy-intensive industries such as steel and cement making plus aluminium production. Aviation within the European Economic Area was eventually included. In the initial phase, Member States were given responsibility for producing national allocation plans, which set out the total cap for domestic emissions and the more specific distribution among eligible installations. However, the Commission could reject plans deemed insufficiently ambitious in view of the EU's Kyoto commitment.

The original system was successively amended, on occasion with great difficulty, as the EU implemented its obligations first of all under the Protocol and then the Paris Agreement (see below), setting out its targets and timetables in advance of the 2009, 2015 and 2021 COPs of the UNFCCC (Jordan and Moore 2020). In all these cases, the intent was to call for more ambitious international action while demonstrating the EU's own credibility, through additional measures promoting energy efficiency and an increase in renewables, as well as reform of the ETS.

The ETS continues to be described routinely as the world's first and largest carbon market, and policymakers maintain the aspiration that it will both encourage and link with similar markets elsewhere in the world. According to the European Commission (2022a), the ETS has proven to be a highly cost-effective tool, with installations covered by the ETS reducing emissions by about 35 per cent between 2005 and 2019.

The EU's Bid for International Climate Leadership

The adoption of the ETS, and subsequently a series of other policy instruments, signalled a trend towards deeper, faster and smoother policy harmonization than had been possible in the 1990s (Jordan et al. 2012). A consensus looked to be in place around the idea that the EU should not only lead within Europe, but also – by example – at global level. Between 2003 and 2009, several significant pieces of legislation were adopted. The initial ETS Directive, and its extension to cover aviation, were followed by four proposals that together comprised the 2009 climate and energy package. These included a directive providing for a new phase of the ETS, extending its operation from 2013 to 2020, introducing a common, annually declining cap for the whole EU (replacing the previous system of national allocation plans) and phasing in auctioning as the basis on which to allocate allowances. Additional proposals included a regulation providing for differentiated 'effort-sharing' targets to reduce emissions in sectors not covered by emissions trading (such as transport, housing, agriculture); a directive setting out the world's first legal framework for safe carbon capture and storage (CCS); and a directive including targets for renewable energy sources. Legislation on fuel quality and limiting CO₂ emissions from cars was negotiated separately.

The first climate and energy package was designed to implement commitments endorsed by European leaders in 2007 that, by 2020: overall emissions should be cut by 20 per cent from 1990 levels; 20 per cent of total energy consumption should come from renewable sources

(corresponding to about 34 per cent of electricity); and the EU's energy consumption be reduced by 20 per cent (below business as usual).¹ Rapid adoption of the '20–20–20' package was prioritized by an EU policy elite now convinced of the necessity of, and benefits from, European leadership, and that others could be persuaded to raise their ambition as part of a post-Kyoto successor agreement due to be negotiated at the Copenhagen COP in December 2009. To Member State leaders such as the UK's Tony Blair and Germany's Angela Merkel, EU leadership allowed Europe to distance itself from domestically unpopular positions adopted by the US, and to align themselves with the growing consensus that the costs of climate change mitigation were minor compared to the damages that would eventually be incurred from inaction. Less climate-conscious East Europeans, who had been hit by the withholding of supplies by Gazprom in early 2006 (and who, like Poland, were highly protective of coal-reliant power sectors), were won over by a mixture of the prospect of reduced energy dependence on Russian gas and other side-payments built into the package.

Challenged Leadership after the 2008 Financial Crisis

At the Copenhagen COP, EU policymakers expected the rest of the world to welcome their adoption of an aspirational emission reduction target of 80–95 per cent for 2050, presented as reflecting the most recent scientific assessment by the Intergovernmental Panel on Climate Change. As part of its negotiating strategy, the EU committed to increasing its domestic reduction target from 20 to 30 per cent by 2020, if its industrialized-world counterparts also made significant pledges. In the event, the appetite for stronger UN-led policies declined significantly after the 2008 financial crisis and in Copenhagen EU negotiators found themselves sidelined (Parker and Karlsson 2010) by countries whose shares of global emissions were considerably larger, and whose willingness to commit to absolute emission reductions was far less; the profoundly disappointing Copenhagen Accord was the result.

With hindsight the Copenhagen COP marked a significant turning point in the EU's leadership approach. When the newly appointed Climate Commissioner Connie Hedegaard proposed a unilateral increase in the EU's mitigation target to 30 per cent (despite the pre-defined conditions not being met), the idea was flatly rejected not only by Central and Eastern European Member States but many others; even Germany – until then a significant advocate of stronger EU-level action – had no clear position (Fischer and Geden 2015). After that debacle, the EU regained some prestige two years later through negotiation in December 2011 of the 'Durban Platform' aimed at working on a new global agreement involving mitigation actions by all Parties, sufficient to prevent the mean global temperature rise from exceeding 2°C, as well as a new focus on adaptation. The EU's stated ambition was a new climate accord, 'ambitious, legally binding, multilateral rules-based with global participation and informed by science' (European Union 2013).

At the same time, the EU's international credibility was being undermined by the chronic inability of the ETS to deliver an allowance price sufficiently high to motivate low-carbon investment and innovation; from a high of around €30/tCO₂ in mid-2008, by mid-2013 prices had dropped to under €5/tCO₂. The surplus of allowances causing the price to fall was caused by a combination of the economic crisis (which had an unanticipated emission-reducing effect), high imports of international emission credits and, to some extent, successful EU policy to promote renewable energy (Wettestad and Jevnaker 2015).

Preparations for the 2015 Paris Agreement

Consensus on the need to secure a credible position ahead of the next big COP, in Paris, was one reason a ‘rescue’ of the ETS ultimately proved possible, through the agreement, in 2015, to establish a Market Stability Reserve (Wettestad and Jevnaker 2015). The EU also needed to agree new emission reduction targets out to 2030, which could then serve as a contribution to a new round of global-level negotiations. Internationally, it had been agreed that Parties to the UNFCCC should submit ‘intended nationally determined contributions’ (INDCs) by March 2015, the adequacy of which would be reviewed in view of the 2°C target before a new global deal was reached. At their October 2014 summit, EU leaders agreed to a new (2030) climate and energy package, setting targets for an ‘at least’ 40 per cent reduction in overall emissions (from 1990 levels), 27 per cent of overall energy consumption to come from renewable sources, and a 27 per cent improvement in energy efficiency compared to business-as-usual. International emission reduction credits would not count towards the 40 per cent. The consent of Central and Eastern European Member States was ensured only through substantial financial compensation and exemptions (Fischer 2014). For example, a derogation to the EU ETS Directive allowed lower-income Member States to continue free allocation of allowances to the electricity sector until 2019. Although this was meant to be conditional on countries investing at least the equivalent monetary value of the free allowances in the modernization and diversification of their energy systems, concerns were expressed that support for fossil fuel infrastructure was being unnecessarily prolonged, without sufficient transparency and scrutiny (Carbon Market Watch 2016).

An additional factor that helped to bring Central and Eastern European Member States on board was the merging of climate policy and energy security agendas under the umbrella of the EU Energy Union. Initially proposed by the Polish prime minister Donald Tusk as a response to the ongoing war in Eastern Ukraine and a perceived threat to gas supplies from Russia (which were cut once again in 2009), the Energy Union idea was picked up and reshaped by the newly established Juncker Commission as a means of integrating climate and energy policy goals (Szulecki et al. 2016).

The Commission argued that a 40 per cent emission reduction in 2030 would nonetheless put the EU on course to achieve its longer-term 80–95 per cent reduction goal. The ambition of the targets for renewables and energy efficiency was at the lower end of the spectrum of negotiating positions – another concession to the Central and Eastern European Member States. Nevertheless, agreeing the 2030 package allowed the EU to meet the INDC submission deadline. Arguably, leaving the discussion any longer could have been fatal, given the many calls on leaders’ attention presented by renewed economic problems and the worsening migration/refugee crisis (Oberthür et al. 2021). The 2030 package thus testified to how energy and climate policy was entering a more inter-governmental, or ‘renationalized’, phase (Fischer 2014).

The Quest for Net Zero: EU Policy after Paris

In the event, the celebrated Paris Agreement of December 2015 did not set targets and timetables as historically favoured by the EU. Instead, it relies on a combination of transparency, peer pressure and national accountability to ensure that pledges made every five years through nationally determined contributions (NDCs) are implemented. Recognizing the need

for greater ambition, the EU, along with partners in the so-called High Ambition Coalition, strongly and successfully advocated a five-yearly review of progress under UN auspices to assess the prospects of remaining under 2°C, and a ‘ratchet’, or ‘ambition mechanism’, to enhance national mitigation plans (Betts 2021). One of the more surprising outcomes was the Agreement’s endorsement of 1.5°C as an aspirational temperature goal. This decision was based on improving evidence of the damage to small island states and vulnerable countries associated even with 2°C of warming. With even 2°C recognized as probably requiring the deployment of as yet untested ‘negative emissions’ technologies, such as bioenergy with carbon capture and storage, the EU’s Climate Commissioner Cañete felt obliged to comment that further research would be needed into such technology (Neslen 2015).

In 2018, the EU adopted Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (often referred to as the Governance Regulation for short) as its main legal instrument to monitor progress regarding the overall GHG reduction objective, as well as objectives for renewable energy deployment and energy efficiency. It committed Member States to reporting regularly on related policies and measures in National Energy and Climate Plans (NECPs), to be regularly evaluated by the Commission, which gives recommendations in cases of insufficient commitments or progress.

Following significantly louder public demands (expressed, *inter alia* by the emerging ‘Fridays for Future’ school strike movement, large-scale marches and direct actions in many national capitals, and by a strong performance by the green parties in the 2019 European Parliament elections), in late 2019 the newly appointed von der Leyen Commission adopted its European Green Deal (EGD). A package of legislative proposals followed, including the European Climate Law (Regulation (EU) 2021/1119) that legally binds the EU to its target of net zero GHG emissions (‘climate neutrality’) by 2050, as well as a 55 per cent net reduction in 2030 (see Box 1.1). Although hailed by the Commission, its proposal to assume power to set binding post-2030 short-term climate targets without unanimous approval from all 27 Member States proved politically unacceptable. Similarly, the Council rejected the setting of a 2050 carbon neutrality target for each Member State.

The EGD and Climate Law highlighted the importance not just of climate neutrality by mid-century, but also climate resilience to increasingly severe impacts (Bednar-Friedl et al. 2022). On this, a new and revised EU Adaptation Strategy recognized the necessity for more urgent, ambitious and large-scale efforts to mainstream action across policy sectors, ‘climate proof’ key infrastructure, and build societal resilience, prevention and preparedness (European Commission 2021, Lenaerts et al. 2022). The EGD also proposed a new circular economy action plan, biodiversity strategy, and strategy for a more environmentally friendly and healthy food system. The Sustainable Europe Investment Plan (SEIP), announced in early 2020 as the EGD’s ‘investment pillar’, was expected to mobilize at least €1 trillion by 2030 (European Commission 2020).

BOX 1.1 THE EUROPEAN CLIMATE LAW

The European Climate Law (Regulation (EU) 2021/1119) features a range of provisions. Some key aspects include:

- The objective to reach climate neutrality by 2050 at the latest is legally enshrined.

- Agreement to reduce net GHG emissions by ‘at least 55%’ by 2030, compared to 1990 levels is also a legal obligation for the EU and its Member States. The amount of GHG ‘removals’ that can contribute to this target is capped.
- Regular checks of progress towards climate neutrality and the consistency of measures with the pathway towards it, with corrective action if necessary.
- An independent European Scientific Advisory Board on Climate Change, intended to ensure evidence-based law-making and provide advice on the aligning EU policies with commitments under the Paris Agreement.
- All future legislative proposals, including budget-related, should be consistent with the 2030 target and the climate neutrality objective.
- An indicative GHG budget for 2030–2050 to be published by the Commission.
- Commission to engage with voluntary industry sectoral decarbonization roadmaps, to facilitate and monitor progress.
- Continued efforts to ensure the phasing out of fossil fuel energy subsidies, including adoption of methodology for reporting steps towards this goal.
- Enhanced action on adaptation, including provisions concerning mandatory strategies, assessments of progress, consistency of measures and mainstreaming; adapting the Governance Regulation to reflect this.

After the COVID-19 Pandemic: EU Policy-Making Maintains Momentum

However, shortly after the EGD’s initial presentation in December 2019, the EU, like the rest of the world, faced an unexpected public health emergency and related economic crisis, precipitated by the COVID-19 pandemic. The rupture of global value chains made European policymakers painfully aware of the geo-economic vulnerabilities of the EU – the largest market for manufactured goods in the world, but heavily dependent on the import of raw materials, rare earth minerals, as well as technologically advanced commodities such as semiconductors. Nonetheless, the pandemic-induced recession was seized upon by high-level EU policymakers and some Member States as an opportunity to strengthen climate ambitions (Dupont et al. 2020), in particular by linking the EGD more prominently with an agenda of ‘green recovery’, and specifically the *Next Generation EU* fund. However, it also led to pressure from some quarters to scale back climate action. Polish and Czech leaders floated the idea of postponing the EGD, and even exempting countries from key policies such as the ETS (Abnett and Baczynska 2020; Euractiv 2020). But the Commission was determined to maintain momentum, and indeed to exploit the opportunities for transformation that the pandemic presented. For example, the pandemic led to an historic drop in energy consumption: in 2020, the EU’s primary energy consumption (which includes all energy uses) and final energy consumption (by end users) reached their lowest levels since 1990, helping the EU meet its 2020 energy efficiency target (EEA 2022).

In July 2021, the Commission presented its ‘Fit for 55’ package of policy instruments to reflect the raised 55 per cent GHG reduction objective of the Climate Law. Initially consisting of no fewer than 16 legislative and strategic proposals, it aimed to adjust existing climate and energy acts and introduce new instruments. The proposals encompass more or less the entirety of EU climate policies, ranging from the ETS (the coverage of which would expand to include

maritime emissions), through to effort sharing, land use and forestry, energy taxation, energy efficiency and renewable energies. As well as revising existing instruments, entirely new instruments were also proposed including a second, parallel emissions trading system ('ETS II') to encompass the buildings and transport sectors (applying to distributors that supply fuels to these sectors from 2027), a Carbon Border Adjustment Mechanism, designed to tax carbon-intensive products imported from more lightly regulated jurisdictions, and a Social Climate Fund. The latter was designed to compensate poorer households for increased costs imposed by the introduction of carbon pricing (through the ETS II and other instruments) for road transport and domestic heating fuels, potentially to be financed by revenues raised from emissions trading.

The Social Climate Fund proposal (COM/2021/568 final), with a limit of €65 billion for the 2025–32 period to be supplemented by national contributions, testified to growing awareness of the importance of equity, not just in the demands placed on the EU's different Member States, but also *within* societies. Concerns about the importance of 'just transition' towards net zero had been heightened by the emergence of social movements at national level, most notably the French *Gilets Jaunes* protests against the social impact of increasing fuel taxation as part of climate policies (Kinniburgh 2019). Grievances provoked by such regressive policies were heightened by the knowledge that aviation fuel was exempt from taxes (Tubiana 2021). In January 2020, as part of its Sustainable Europe Investment Plan, the Commission proposed a Just Transition Mechanism as a tool to support more equitable decarbonization, 'leaving no one behind' (Sarkki et al. 2022). The mechanism comprised the Just Transition Fund (JTF), supporting investment in alternatives for regions that are highly dependent on fossil fuels and high-emission industry sectors; the Just Transition scheme providing funding for a wide range of low-carbon investments; and a Public Loan Facility available to support eligible areas.

Concerns about the need to secure consent to far-reaching policy measures also lay behind increased apparent openness to public involvement, in the form of the Climate Pact, designed to support the EGD by gathering bottom-up climate initiatives originating within Member States (Colli 2021; Tosun et al. 2023). According to the Commission: 'Game-changing policies only work if citizens are fully involved in designing them ... Citizens are and should remain a driving force of the transition' (European Commission 2019: 22). The Just Transition Platform offered a hybrid, ongoing form of public consultation, to complement standard consultations per legislative proposal (ibid).

Rising Gas Prices and the War in Ukraine

Concerns about sharply rising gas prices, their impact on consumers and EU climate policy ambitions, led to heightened tensions about the pace and ambition of EU climate policy development throughout 2021 (Rankin 2021, Tubiana 2021, von Homeyer et al. 2022). But a greater shock was looming, carrying profound consequences for EU policy and politics. On 24 February 2022, Russia launched a full-scale invasion of its neighbour Ukraine, causing a humanitarian crisis, with over 7 million refugees entering the EU, and tectonic shifts in the security landscape of a kind previously assumed to be the stuff of history. Unprecedented sanctions followed, negatively affecting not just Russia but European economies too, and highlighting once again the EU's dependence on the import of strategic resources – now most importantly gas, oil, coal and uranium for energy generation.

After announcing its intent in March, the Commission presented a *REPowerEU* plan in May 2022 as a significant boost to the EGD. Its objectives were threefold: reducing dependency on Russian fossil fuel imports, accelerating the transition to a clean economy, and increasing the resilience of the EU energy system (European Commission 2022b). To those ends, it offered a fresh emphasis on energy efficiency (aiming to cut gas consumption 30 per cent by 2030), phasing out of fossil fuels and scaling up the development of renewables. The proposed plan, which relied primarily on diverting unused funding from the COVID-19 Recovery and Resilience Facility (part of *Next Generation EU*), was published alongside an announcement on the EU's External Energy Strategy, intended to underpin the EU's future energy diplomacy and offer an external dimension to the EGD.

PLAN OF THIS *HANDBOOK*

The rest of this volume is divided into six parts. Part I covers the range of *actors and institutions* whose activities constitute the governance of climate change in the EU. Part II focuses on the internal and external *dynamics* shaping EU climate policy and governance. Part III provides a detailed summary of the main *policy instruments and modes of governance* employed by the EU to address climate change, and explores their origins, purpose and effectiveness. Chapters in Part IV focus on those sectors which, unlike for example electricity production, have proven 'hard to abate'. Part V addresses particular *challenges and controversies* affecting contemporary EU climate policy, while Part VI takes stock and assesses future prospects.

Part I: The Main Actors and Institutions

The four chapters in Part I cover some of the principal institutions of the EU. Alexander Bürgin's chapter introduces *the European Commission*, outlines its organizational structure, broad motivation and competences in pursuing a climate policy agenda. His chapter also highlights the growing 'presidentialization' of the Commission, and its evolving relationship with other key institutions, namely the European Parliament and the Council. Bürgin explores the Commission's role as a 'climate policy entrepreneur': an organization that seizes opportunities to pursue ever more ambitious policies. But his chapter also highlights the importance of economic constraints potentially obstructing deeper decarbonization, as well as challenges of monitoring and enforcing Member State compliance that have hindered the Commission's ambitions.

The following chapter, by Rüdiger Wurzel, Maurizio Di Lullo and Duncan Liefferink, looks at those EU institutions which directly represent the interests of the Member States, namely the *European Council* and the *Council of the European Union*. Together, these are the main fora in which national governments exert their influence over EU policy. They pay particular attention to the Environment Council, the impact of the rotating EU Presidency and the often-overlooked role of the Council Secretariat. Member States are shown to exploit various bilateral and multilateral platforms with other governments, and to align into a number of important groupings, such as the Visegrad Group including countries of Central and Eastern Europe, and the Green Growth Group.

The third major EU institution, and the only one whose members are directly elected, is *the European Parliament*. The Parliament, where Members are grouped according to ideo-

logical, not national affiliation, is eager to be seen as a climate policy ‘champion’. In their chapter, Franziska Petri, Veronika Zapletalová and Katja Biedenkopf describe the mechanics of how the European Parliament can influence climate policy outputs, and cite examples of how it has championed higher standards or more innovative legislation than otherwise would have been the case. However, they also draw on an analysis of roll-call votes and plenary debates to nuance the claim that it always champions higher standards. Finally, they trace the Parliament’s engagement in international policy by analysing its involvement in the UN climate negotiations and broader external climate governance.

Acknowledging the growing significance of finance in climate policy debate, the section on EU institutions closes with a chapter focusing on a key, but somewhat overlooked EU institution in this regard: the *European Investment Bank* (EIB). Daniel Mertens and Matthias Thiemann explain what the EIB means by proclaiming itself the EU’s ‘Climate Bank’, outlining the goals, scale, and functioning of the available financial instruments and resources at its disposal for climate action. Their chapter scrutinizes its efforts both empirically and theoretically. First, it reviews the role of public financial institutions in climate change policies as well as the tasks of the EIB in the EU. It then questions the extent and effectiveness of the bank’s reorientation by examining examples of its recent practices.

The remaining chapters in Part I investigate the role and impact of non-state actors. Thus, Sandra Eckert looks at the role of *business and private finance*, employing concepts developed in the international political economy literature to shed light on the instrumental, structural and discursive power of corporate actors in the development of policy. Empirically, she begins with the importance of engagement by business (non-financial sectors), before highlighting the significance of increased involvement of the financial sector with regards to climate change. Among other examples, the EU’s fraught attempt to develop and implement a ‘green taxonomy’ to inform investment decisions is critically examined.

Next, Louisa Parks, Donatella della Porta and Martin Portos highlight the importance of European *civil society*. The existing literature has distinguished between NGOs employing more ‘insider’ strategies closely related to official EU decision-making processes and social movements involved in more ‘outsider’ strategies (see also Berny and Moore 2021). The chapter notes that while action across both types has influenced particular EU decisions, movements such as Fridays for Future and Extinction Rebellion question whether steady accumulation of marginal gains can be relied upon to deliver net zero emission by mid-century, let alone wider environmental and social goals. The mobilization of new sets of actors in a campaign for a Green New Deal for Europe is also highlighted.

Alongside supranational and national actors, *cities* have an important role to play at the subnational level, in terms of adaptation to climate impacts as well as emission reduction. Importantly, they are able to shape climate policy, not just implement it. In her chapter Kristine Kern notes that while effort sharing is negotiated between Member States, the level of ambition for regions and cities is often decided by local authorities. Overall, Kern argues that the level of climate policy ambition among EU municipalities is rising, although subject to ‘leader-laggard’ dynamics. As well as these dynamics, Kern also outlines the relationship of local-level policymaking with EU institutions, through EU-initiated networks such as the Covenant of Mayors.

Part I concludes with an investigation of the growing phenomenon of climate litigation, and the role of an increasingly recognized category of climate actor: *courts of law*. Marcin Stoczkiewicz notes that while it is not the role of courts to shape EU public policy, in practice

they determine the meaning of legal norms in the judicial process that has a significant impact on how public policy is implemented. The chapter highlights key judgments that have been made that significantly affect, or have potential to affect, the rights and obligations of stakeholders in climate policy, both at the level of the EU and its Member States.

Part II: Core Dynamics Shaping EU Policy

John Vogler begins Part II by highlighting what might be termed the ‘outside-in’ dynamic, i.e. the *influence of the global regime on EU policy*, but also the EU’s attempts, in turn, to shape them (an ‘inside-out’ dynamic) (Jordan and Gravey 2021: 361). As noted above, the global climate regime, specifically the UNFCCC, has profoundly influenced the development of EU policies. In terms of specific policy innovations, Vogler notes that the best example is the ETS. He recounts the EU’s subsequent attempts to extend its policy approach to trading to activities such as international transport that operate well beyond its borders, and the international opposition and tensions between the Commission and Member States that have hampered this.

EU climate policy has also been shaped by the dynamic relationships between *energy security, environmental and climate security* issues. These relationships are described by Richard Youngs and Olivia Lazard who underline how the EU has begun to build climate factors into its core foreign and security, and to some extent trade, policies. Yet, moves in this direction remain halting and selective, and the EU has conspicuously failed to complement external climate policy with policies to tackle wider ecological degradation that undermines overall planetary security. Weaknesses in the EU’s approach are seen to derive in particular from a narrow understanding of geo-economics, which overrides the potential for more strategic geopolitical engagement on climate, and from prioritization of immediate, short-term energy security.

Another dynamic factor shaping EU action has been the broader, globalized, economic landscape. Oscar Fitch-Roy and Ian Bailey look specifically at *green growth and competitiveness* considerations. Since the early 1970s, EU policy discourse has emphasized ‘win-win’ narratives in which pro-environmental action contributes to growth and addressing inconsistencies in the internal market. Indeed, the EGD explicitly linked increased climate policy ambition with economic growth; the subsequent COVID-19 pandemic further strengthened talk of a ‘green recovery’. To explore the dynamics of complementarity and tension between economy and environment, their chapter scrutinizes three key areas of the EU’s strategic approach to climate policy: the circular economy, renewable energy development and the so-called New Consumer Agenda.

Following these largely external factors, the next chapter by Paul Tobin, Diarmuid Torney, and Katja Biedenkopf turns to the more ‘inside-out’ dynamics related to EU climate policy *leadership*. In a context shaped by the aftermath of COVID-19 and adoption of the EGD, their chapter discusses what European climate leadership looks like and what it could become. The authors begin by conceptualizing leadership, offering a conceptual innovation in questioning the commonly held assumption that climate leadership is necessarily normatively positive. They then run through various examples of EU leadership domestically and in international climate negotiations, taking stock of the EU’s performance at the 2021 Glasgow COP, as well as analysing the external climate governance more widely.

Part III: The Main Policy Instruments and Modes of Governance

Taking as its point of departure the centrality of the energy sector in achieving decarbonization goals, Michèle Knodt's chapter introduces the range of policy instruments and 'governance configurations' by which EU emission reduction goals can in principle be achieved, featuring differing emphases on conventional standard-setting policies and measures and carbon pricing through market-based instruments. The emergence and subsequent evolution of the 'energy and climate nexus' in EU policy is traced, from the 2015 Energy Union to the European Green Deal. The dilemmas faced by the Commission in trying to steer the decarbonization of Member States so that overall emission reduction targets can be met by 2030, and the risks that the emerging policy mix lacks coherence and effectiveness, are elaborated.

In the following chapter, Seita Romppanen highlights some of the governance tools that have traditionally sat at the heart of EU's climate policy: *effort sharing*, based on emission reduction *targets and timetables* to achieve them. She demonstrates that the development of the concept of effort sharing among Member States has been absolutely key to the evolution of EU's climate law and policy, in the context of the need to develop the additional measures necessary to achieve an EU-wide emission reduction targets, alongside what eventually became the key instrument, the EU ETS. Her chapter begins by sketching the history of effort sharing, with its built-in concept of solidarity through differentiated emission reduction obligations among Member States. Together with the ETS and the various land use (LULUCF) sectors, effort sharing is seen to be key to the implementation of the EU's commitments under the Paris Agreement. Romppanen details the Effort Sharing Regulation, its evolving links with LULUCF, and concludes with reflections on the sector's future role.

Next, Jørgen Wettestad introduces the *carbon border adjustment mechanism* (CBAM) as what might be regarded as a new external 'arm' of the EU ETS, mainly designed to address carbon leakage, the situation in which production is transferred to countries with less emission constraining regulation to avoid higher costs. After a brief recapping of the origins and development of the ETS, the focus then shifts to the CBAM idea which, Wettestad shows, is far from new. The chapter documents the development of the concept in EU debates, going back to the initial development of the 'regime' for allocating free allowances under the ETS. It then moves on to discuss more systematically the development of positions of key EU institutions, Member States and non-state actors – and how these shaped the evolution of the CBAM. Wettestad concludes with an assessment of prospects for the Mechanism in the light of recent geo-political developments in the world economy, and in Ukraine.

Another example of policy innovation has been the integration and mainstreaming of climate priorities into the EU budget. Katharina Rietig and Claire Dupont begin with a recapitulation of how the EU has championed the integration of climate change objectives into other policy areas through *Climate Policy Integration* (CPI). CPI emerged in the 2000s especially in the areas of energy, agriculture and transport policy as well as in the form of climate mainstreaming into the EU budget from 2014 onwards. Their chapter traces the origins of CPI from the mother concept of Environmental Policy Integration (Dupont and Jordan 2021), through various EU flagship policies which seek to integrate climate objectives, including the EU budget. They discuss the purpose of CPI as central cross-cutting policy objective that goes beyond single-purpose climate policies, as well as and the factors and framework conditions that determine its effectiveness.

In the next chapter, Jon Birger Skjærseth and Per Ove Eikeland look at key policy outputs in the area of clean energy research and innovation. While so-called ‘pull’ policies, to support renewables or establish carbon pricing, have received significant scholarly attention, the EU’s low-carbon technology ‘push’ policies, which seek to leverage private investments by reducing the costs and risks to private investors, remain largely unexplored. In 2008, the EU adopted a Strategic Energy Technology Plan (SET Plan) to improve a hitherto fragmented approach to funding, by focusing on a number of promising technologies. The EU has also joined the international Mission Innovation adopted alongside the Paris Agreement, while the 2018 Governance Regulation defined how the Member States are to address energy-related research and innovation. Latterly, the EGD has aimed to link to innovation. The chapter examines these developments from the perspectives of multilevel governance and policy integration and coordination.

Part IV: Barriers to More Ambitious Action in Particular Sectors

Part IV examines the so-called ‘hard to abate’ sectors that policymakers will have to address more determinedly if the EU is to deliver on its long-term mitigation goals. Each chapter sets out to identify the reasons that emissions in these sectors have proved hard to abate, the policy tools that might in principle address them, and offers an assessment of the prospects of EU policy delivering decarbonization.

Alan Matthews analyses the *food and agriculture* sector, beginning with a discussion of trends in emissions from farming and related land use sectors. His survey of options to decarbonize concentrates on possible reforms of the Common Agricultural Policy but also the promotion of individual dietary change. The proposed revamping of climate policy architecture through the ‘Fit for 55’ package, and creation of a combined agriculture and land use pillar with its own reduction targets, are identified as potentially significant developments.

Tomas Wyns and Gauri Khandekar address the challenges facing the so-called *energy intensive industries* such as steel and cement manufacturing. After outlining key trends in terms of sectoral emissions and energy use, they set out the innovative technologies and other options to achieve carbon neutrality, addressing levels of technological readiness and capital intensity, general and specific barriers to decarbonizing these industries. Then they address current and emerging EU policies promoting industrial transition, and discuss the prospects for a fundamental transition in the industries in a wider, international context.

The last of the ‘hard to abate’ sectors covered in this Part is *transport*, which is examined by Helene Dyrhaug and Tim Rayner. Despite steadily tightening standards for individual vehicles, the growth in road traffic especially, spurred by the EU’s own liberalization and Single Market agendas, has led to rising GHG emissions, and the link between transport growth and emissions growth has not been broken. Dyrhaug and Rayner first discuss EU sustainable mobility strategies since the 1990s, and outline different emission reduction options across the principal transport modes. In assessing the prospects for long-term decarbonization, the chapter highlights a range of barriers to progress.

Part V: New and Ongoing Challenges

Although climate policy has developed its own distinct rhythms and procedures, it nonetheless exhibits many of the well-known weaknesses of EU-level action. For example, policy

implementation remains an ongoing problem; the overall progress in achieving mitigation and adaptation goals has been uneven; and emissions have not been brought down as rapidly as long-term targets demand. By 2020, net EU emissions (including international aviation and removals from natural carbon sinks) were down almost 26 per cent on 1990 levels, with data showing that 80 per cent of the cuts came from the heat and power sector, while road transport emissions continued to rise (EEA 2021a; 2021b).

Achieving net-zero by 2050 (and climate resilience in a similar time frame) will, however, require a radical and potentially costly overhaul of the EU's current systems, which will have profound and wide-ranging implications for its Member States and the world beyond. Hence, acute challenges to policy coherence and effectiveness lie ahead, in a Union that remains polarized between more and less environmentally conscious Member States, apparently more susceptible to populism, faced with a less predictable international system, and under pressure to recover quickly from the economic effects of the COVID-19 pandemic (von Homeyer et al. 2021).

Against this backdrop, Part V of the book examines some of the new and ongoing challenges confronting EU policymakers. Prominent among these is how to move towards the delivery of *negative emissions*, increasingly recognized as an integral part of the EU's plans to achieve net zero. The prospects for carbon dioxide removal (CDR) technologies are presented by Felix Schenuit and Oliver Geden. With the agreement of EU institutions to integrate climate neutrality by 2050 into the European Climate Law, the importance of 'sinks' and their enhancement has been thrown into sharper focus. Schenuit and Geden highlight the emergence of different positions in the debate about the introduction of CDR, and the interests underpinning them. Having traced how CDR found its way onto the political agenda, the authors explore what role it might play in EU climate policymaking in the medium to long term.

The momentous decision of the United Kingdom to exit the EU – *Brexit* – dealt a significant blow to the political integration process, and presented a challenge for EU climate and energy policy, where the UK had historically been an influential and often progressive actor. Recapitulating the short but turbulent story of Brexit, Brendan Moore's chapter looks at its concrete impacts on the EU's internal climate policy, in particular on the development of the ETS, as well as the change it inevitably implies for UK domestic policy and politics. It analyses the shifting positions and coalitions in the Council of Ministers and the European Parliament in the context of the UK's departure, and how the European Commission has responded.

Rainer Quitzow, Germán Bersalli, Johan Lilliestam and Andrea Prontera analyze the way crises can be turned into climate policy opportunities. Since the financial crisis of 2008, the EU has developed a more activist role in the financing of investments in low-carbon assets, promoting a so-called *Green Recovery*; a development that has continued in the wake of COVID-19. It has developed a more activist approach to industrial policy as well as financing, and latterly attempted to support fossil-fuel dependent regions using the Just Transition Mechanism. Quitzow et al. take stock of this evolving role, asking how it has been reshaped, and with what implications for ambition on climate and energy policy.

Another challenge centres on the relationship between climate protection and trade. Natalie Dobson explores how the law of the World Trade Organization relates to EU unilaterally adopted climate measures that affect international partners. Drawing on selected examples, she first considers the dynamics of the trade–climate nexus, which are intrinsic to the EU's ambitious and outward-looking climate agenda. The chapter then turns to structural obstacles contained in relevant substantive obligations under the General Agreement on Tariffs and

Trade (GATT) and the General Agreement on Trade in Services (GATS), whose rules often lack recognition for climate policy objectives. Faced with a challenge under trade law, Dobson suggests the course that the EU would likely take, and asks whether the tensions between trade and climate need to be so inherent.

Finally, Chapter 26 (in Part VI) brings the book to a conclusion, taking stock of what we have learned from the preceding chapters, and using them to inform an assessment of the EU's prospects for turning its increasing climate ambitions into reality, in the context of the serious headwinds as they manifested themselves in mid-2022.

NOTE

1. In the event, the EU comfortably met this set of related targets, although the performance of individual Member States showed considerable variation (EEA 2021a).

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