

Report on recommendations for transformative EU climate governance

Deliverable 5.5

Jana Gheuens, Sebastian Oberthür (VUB)

Benjamin Görlach, Leon Martini, Flora Dicke (Ecologic Institute)

Maarten de Vries (CE Delft)

WP 5

July 2024

Document information

Project name:	4i-TRACTION
Project title:	Transformative Policies for a Climate-neutral European Union (4i-TRACTION)
Project number:	101003884
Duration	June 2021 – September 2024
Deliverable:	D5.5: Report on recommendations on EU transformative climate governance
Work Package:	WP5: Governance for a climate-neutral EU
Work Package leader:	Vrije Universiteit Brussel (VUB)
Task:	Task 5.4 Proposals and priority policy recommendations for governance reform
Responsible author(s):	Jana Gheuens, Sebastian Oberthür, VUB; Benjamin Görlach, Leon Martini, Flora Dicke, Ecologic Institute; Maarten de Vries, CE Delft
Peer reviewed by / on	Reviewer 1: Joseph Earsom; Catholic University of Lille; 05/24 Reviewer 2: Harm Rienks, Vira Addriyati Achmad; Wageningen University & Research (WUR); 05/24
Planned delivery date:	30/04/24
Actual delivery date:	03/07/24

Dissemination level of this report

PU	Public
----	--------

Suggested citation

Gheuens, Jana et al. (2024): Report on recommendations for transformative EU climate governance. VUB; Brussels.

Acknowledgements

The authors would like to thank the commentators and reviewers of this report, in particular the team at Ecologic Institute, and the participants of an expert workshop for their excellent feedback on the findings.

The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

Reproduction is authorised provided the source is acknowledged.

Disclaimer



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101003884.

Content

List of tables	5
Abbreviations	5
Executive summary	6
1. Introduction.....	9
2. Substantive governance: Transformative mix of policy avenues	10
2.1 Background: Existing EU policy mix	10
2.2 Transformative use of policy paradigms.....	12
2.2.1 Paradigm or “pure” policy mix?	12
2.2.2 Policy implications of the paradigm mix.....	14
2.2.3 Sequencing of the paradigm mix.....	14
3. Procedural climate governance.....	19
3.1 Transformative potential of procedural governance mechanisms	20
3.2 Policy recommendations	22
3.2.1 Strengthening public participation and stakeholder dialogues	22
3.2.2 Facilitate evidence-based policymaking	24
3.2.3 Integration of climate and social considerations in policy planning and implementation	26
4. Connecting the policy paradigms and procedural governance	27
5. Conclusion	30
6. References	32

List of tables

Table 1: Overview of policy paradigms.....12
 Table 2: Overview of procedural governance functions and relevant case studies.....21
 Table 3: Key procedural governance functions and their link to the different paradigms and the paradigm mix..28

Abbreviations

CPI	Climate Policy Integration
ESAB-CC	European Scientific Advisory Board on Climate Change
ETS	Emissions Trading System
GHG	Greenhouse Gas
LULUCF	Land Use, Land Use Change and Forestry
MLCED	Multilevel Climate and Energy Dialogue
NECP	National Energy and Climate Plan

Executive summary

The EU's transition to climate neutrality requires ambitious climate measures and a transformation from "policy as usual" (Duwe, 2022; Oberthür et al., 2023). This necessitates taking substantive climate governance measures such as ambitious, farsighted emission reduction targets and the measures to implement them. It also includes adopting procedural climate governance measures like frameworks, instruments and institutions that shape the decision-making process (Moore et al., 2023). In doing so, the EU should transform what it is doing and how it is doing it.

The 4i-Traction project aims to analyse these two components of transformative EU climate governance. Previous work in the project has investigated different substantive pathways to climate neutrality by identifying four policy paradigms: Green Economic Liberalism, Green Industrial Policy, Directed Transition, and Sufficiency and Degrowth (Görlach et al., 2024). Each of these paradigms expresses a different view on the nature of the problem that climate policy is meant to address, and hence, the required solutions. For instance, the Green Economic Liberalism policy paradigm views climate change as the result of market failures that can be solved by implementing market corrections such as pricing carbon. In comparison, the Sufficiency and Degrowth policy paradigm sees climate change as originating from social structures that promote unsustainable lifestyle habits that can only be addressed by rethinking the structure of the EU economy and society.

Additionally, the 4i-TRACTION project has examined the different functions of procedural governance, and has assessed the policy design, quality of implementation and policy resilience of eight specific climate governance mechanisms such as the European Scientific Advisory Board on Climate Change (ESAB-CC), the Multilevel Climate and Energy Dialogues (MLCEDs), and access to justice (Gheuens & Moore, 2024). These relate to procedural governance functions like planning, access to justice, decision-making, participation, monitoring and evaluation and expert advice. Based on these two areas of research, this report aims at formulating recommendations for future transformative EU climate policymaking.

Concerning **substantive climate governance**, EU climate policymaking in the past has been guided by various paradigms that each view the drivers of the climate crisis and the corresponding solutions in a different way, resulting in a mix of policy instruments. The 4i-TRACTION assessment of policy paradigms showed that a **mix of elements from the four paradigms** can be desirable over a "pure" policy mix that only uses elements of one paradigm. Each paradigm has its own strengths and weaknesses, and addresses a different aspect of the climate transition. Therefore, combining them could allow policymakers to focus on the strengths of each paradigm and to develop a comprehensive strategy to transition to climate neutrality. The different paradigms can also support and complement one another by improving the conditions climate governance takes place in. For instance, support for innovation can help to provide clean alternatives for fossil technologies, which having a carbon price alone might fail to do. Additionally, carbon pricing might

create resistance if it places a heavy financial burden on households, and targeted support can help overcome this issue. Therefore, using a mix of elements from different paradigms can improve the overall functioning of EU climate governance, and allows it to respond to the complex nature of the climate crisis. Additionally, reorganising the EU climate policy architecture to focus on only one paradigm, instead of the current paradigm mix, will require more political capital, administrative capacity and time that might not be available.

While the desirable elements of the four policy avenues are implemented in parallel to each other, policymakers might choose to **focus on certain elements of the paradigms at different stages** of the transition to climate neutrality. For example, elements of Green Industrial Policy can ensure that clean technologies are developed and reach market maturity. However, once these technologies have reached maturity, a pivot to a Green Economic Liberalism approach can help with their scale-up and to phase out fossil-based technologies. As a result, using the strengths of each policy avenue also requires thinking about when in the transition they should be applied. Therefore, in contrast to the current paradigm mix in EU climate policymaking, this implies a certain directionality concerning the timing and use of different paradigm elements.

Procedural governance has a key role to play in ensuring the success of the mix of policy paradigms. Each policy paradigm emphasises different aspects of procedural governance functions. On the one hand, the more regulatory policy paradigms that give a stronger role to the government – Directed Transition and Sufficiency and Degrowth – place particular attention to functions like planning for climate policy, setting targets and overall policy objectives, and creating guidelines for decision-making. On the other hand, the Green Industrial Policy paradigm stresses the importance of engaging with stakeholders and creating the right conditions for the economic measures to function effectively, for instance, by devoting attention to implementation and enforcement. Because of the mix of elements of the policy avenues, different procedural governance mechanisms should also be included.

These procedural mechanisms can ensure that policies are implemented effectively, and they can give the legislation a certain degree of **legitimacy and credibility** – crucial aspects to make the transition policies a success. Planning can give the mix the directionality it requires, and can set up fossil fuel phase-out timelines. Strengthened public participation and stakeholder engagement can help build the required social momentum and constituency needed for the successful implementation of the legislation. A formal role for expert advice in the policy process can enhance its grounding in the latest available science and help identify gaps in the transition.

Similar to the sequencing of elements of the policy avenues, **sequencing of the corresponding procedural governance mechanisms** is necessary. When elements of Directed Transition play a larger role in creating the directionality of the transition, procedural governance functions such as planning and target-setting are especially important. To create ideal conditions for the development and scale-up of clean technologies as part of the Green Industrial Policy Paradigm, participation of stakeholders will need to be stressed. To ensure the implementation and correct functioning of elements of Green Economic Liberalism, measures will need to be continuously

monitored and evaluated. Due to the societal change required for the elements of Sufficiency and Degrowth, public participation must be present from an early stage to build the necessary social momentum.

Currently, EU climate governance architecture contains procedural governance mechanisms that can take up these roles such as the ESAB-CC, the MLCEDs, and the different planning instruments. However, previous 4i-TRACTION research identified some shortcomings that could hinder their transformative impacts. Therefore, we recommend that policymakers **improve and expand existing procedural governance mechanisms** in the future by **strengthening the timing, the reporting and the follow-up** of participatory modes of governance and evidence-based policymaking. This also entails giving procedural governance mechanisms a clear, formal role in the decision-making process. Moreover, to avoid inconsistencies in the policy mix and to ensure a just transition to climate neutrality, we also urge policymakers to sufficiently **integrate climate and social objectives** in policy planning and implementation. In doing so, procedural governance will play a key role in enabling sufficient societal acceptance for the transition to be successful.

In conclusion, the transition to climate neutrality will require a transformation of the EU including its decision-making processes. The identified paradigms or policy avenues can provide guidance on how to do so and on which approaches can be helpful at different stages of the transition. The green transition will also require broad societal acceptance and legitimacy and credibility to be successful. Expanding and improving elements of procedural governance mechanisms can provide the tools to reach these objectives.

1. Introduction

In the European Green Deal, the EU has committed to becoming a climate-neutral society by 2050. Reaching net-zero greenhouse gas (GHG) emissions – balancing residual emissions with negative emissions that are removed from the atmosphere – requires a transformation of the EU's economy towards more sustainable practices, and as such, a comprehensive and ambitious climate governance architecture (Duwe, 2022; Oberthür et al., 2023). The required climate action is often characterised as “transformative” due to its depth, scope, and speed (Fazey et al. 2018; Görlach et al. 2022). It implies a break from “policy as usual” and necessitates significant efforts in all sectors of society at a rapid speed. Due to the far-reaching nature of transformative policies, it is important that different stakeholders and citizens are involved in the decision-making process. This can ensure the legitimacy of the policy decisions and create stronger support for the policy measures.

Therefore, the required transformative policymaking includes both setting ambitious, farsighted emission reduction targets and taking measures to implement them – substantive climate governance – and creating frameworks, instruments and institutions that support substantive governance by shaping related decision-making processes – procedural climate governance (Moore et al., 2023). **Substantive climate governance** consists of instruments such as the Effort Sharing Regulation, the Renewable Energy Directive, or the Regulation on the CO₂ emission performance standards for new passenger cars that directly aim to reduce the EU's greenhouse gas (GHG) emissions by, for instance, containing emission reduction targets, energy efficiency standards or target shares of renewable energy. **Procedural climate governance** aims to shape the climate decision-making process by carrying out several governance functions, such as providing access to justice, setting guidelines for decision-making, providing expert advice, ensuring implementation and enforcement, monitoring and evaluating policies, including stakeholders, guiding strategic planning and the process of target-setting. Procedural governance instruments include the European Scientific Advisory Board on Climate Change (ESAB-CC), and the National Energy and Climate Plans (NECPs) that were embedded in the European Climate Law and the Regulation on the Governance of the Energy Union and Climate Action (Governance Regulation).

These two categories of climate governance are intertwined and partly overlap, but they can be distinguished based on their functions, and both are needed to transform EU climate policy (Moore et al., 2023). Substantive governance is necessary to directly reduce GHG emissions, and procedural governance to manage the policy process, monitor and evaluate existing legislation, and integrate scientific advice and a variety of stakeholders in the decision-making. Therefore, without one, the EU's transformation would lack in impact or in efficiency and legitimacy. Moreover, substantive governance measures often include at least some procedural elements. For example, the EU Emissions Trading System (ETS) that serves to reduce emissions from sectors such as energy generation and energy-intensive industries, also includes requirements for regular evaluations.

The 4i-TRACTION project aims to analyse these different components of transformative EU climate governance. Previous work has investigated different substantive pathways to climate-neutrality by identifying four policy paradigms: Green Economic Liberalism, Green Industrial Policy, Directed Transition, and Sufficiency and Degrowth (Görlach et al., 2024). Each of these paradigms expresses a different view on the nature of the problem that climate policy is meant to address, and hence, the required solutions. For instance, viewing climate change as the result of market failures that can be solved by implementing market corrections (Green Economic Liberalism) suggests very different solutions than when it is seen as originating from social structures that promote unsustainable lifestyle habits (Sufficiency and Degrowth).

Additionally, the 4i-TRACTION project has examined the different functions of procedural governance, and specific climate governance mechanisms such as the ESAB-CC, the Multilevel Climate and Energy Dialogues (MLCEDs), public participation and the NECPs, access to justice, the social dimension of EU climate policy planning instruments, climate investment monitoring, stakeholder participating and infrastructure planning, and climate policy integration (Gheuens & Moore, 2024). These relate to procedural governance functions like planning, access to justice, decision-making, participation, monitoring and evaluation and expert advice.

This report sets out to formulate policy recommendations for transformative EU climate governance on both the substantive and procedural level based on this previous work. It will first discuss the identified policy avenues and how they can guide future EU climate policymaking. Second, it details how procedural climate governance mechanisms can create societal acceptance for transformative climate policies and how they can increase their legitimacy and credibility. Lastly, the report draws overarching conclusions for the future of EU climate policymaking.

2. Substantive governance: Transformative mix of policy avenues

2.1 Background: Existing EU policy mix

In the three decades of EU climate policymaking since the 1990s, the EU has employed a variety of instruments in its policy mix to achieve its emission reduction objectives (Dupont et al. 2024; Oberthür and Von Homeyer 2023). Scholars have generally divided these substantive policy instruments into three categories: (1) regulatory; (2) economic; and (3) informational instruments. **Regulatory** instruments use a 'command-and-control' approach to coerce actors into more climate-friendly behaviour (Oberthür and Von Homeyer 2023). Good examples of these are emission targets, standards, and prohibitions. In contrast, **economic** instruments try to set incentives to steer the behaviour of market actors. For example, putting a price on carbon in an emissions trading system could incentivize actors to reduce their emissions, and subsidies could

encourage climate-friendly actions. **Informational** instruments guide behaviour by providing information and creating awareness, through the use of, e.g., product labelling and campaigns.

When the EU first began to develop climate legislation in the 1990s, it mostly used informational instruments and voluntary agreements – for instance, with carmakers to improve vehicle efficiency (Dupont et al. 2024; Oberthür and Von Homeyer 2023). In the early 2000s, it added economic instruments such as the EU ETS to its policy mix, and later in the decade also more regulatory instruments as part of the 2020 Climate and Energy Package that aimed to reduce the EU's GHG emissions with 20% by 2020. For example, with the Effort Sharing Decision the EU set binding emission targets for Member States, and the CO₂ emission performance standards for new passenger cars obliged carmakers to improve the energy efficiency of their vehicles.

Subsequently, the EU has expanded its use of economic instruments in the late 2010s and early 2020s as it invested more in climate innovation, for instance, by mainstreaming climate into its multi-annual budget for 2021-2027, using a share of revenues of the ETS to support energy modernisation and technological innovation, and dedicating a large part of the COVID-19 Recovery Fund to green measures (Oberthür and Von Homeyer 2023). The European Green Deal and the Fit for 55 Package extended the existing EU ETS to maritime transport and established a new ETS for transport and buildings. At the same time, the EU continued to develop regulatory instruments. The European Climate Law enshrined the 2050 climate neutrality target into law – the first time the EU did so for a long-term objective – and the Land Use, Land Use Change and Forestry (LULUCF) Regulation included binding national targets. Furthermore, new informational instruments, such as the sustainable finance taxonomy to guide investments, served to provide a good knowledge basis for different actors to guide their behaviour.

Therefore, the EU has used a mix of different types of instruments to reach its climate goals in the past. Behind this mix lie different ideas of what is needed to address the climate crisis and concerns about feasibility (Görlach et al., 2024). At times, certain approaches were more prominent in the EU climate policy mix than others, and policymakers preferred the use of for instance, market-based instruments. However, they never completely pivoted to one kind of instrument, resulting in a complex mix of regulatory, market-based, and informational elements. This complex policy mix is in part a result of competing policy paradigms within and between the EU institutions, the member states, and various civil society actors including business organisations and environmental NGOs.

To better understand how these paradigms and ideas could steer future EU climate policymaking, the 4I-TRACTION project has identified four policy paradigms that can structure decision-making: (1) Green Economic Liberalism; (2) Green Industrial Policy; (3) Directed Transition; and (4) Sufficiency and Degrowth (Görlach et al., 2024). These consist of ideas of policy design and of what climate policy ideally should look like (for an overview see Table). Prior research showed that these paradigms have influenced EU climate policy to different degrees. In what follows, the report gives a brief overview of the policy avenues and their elements, before discussing how

they could guide the EU’s procedural governance system to most effectively contribute to the transition to climate neutrality in the future.

Table 1: Overview of policy paradigms.

	Green Economic Liberalism (GEL)	Green Industrial Policy (GIP)	Directed Transition (DT)	Sufficiency & Degrowth (S&D)
Primary intervention mechanism	Correct market failures	Direct and accelerate technological change	Provide certainty of emission reductions	Facilitate lifestyle change
Main criteria for instrument selection	(Static) efficiency Cost-effectiveness	Dynamic efficiency; environmental effectiveness	Environmental effectiveness	Environmental, intra-, and inter-generational justice Conviviality
Main instruments	Market-based instruments, carbon pricing	Investments, standards, innovation support	Direct regulation through bans, standards, quotas, targets, carbon budgets, and planning tools	Participatory and inclusive governance, bans, taxes, behavioural change
Political theory of change	Climate action at lowest cost generates political acceptance	Coalition building, create and mobilise constituencies	Political legitimacy of interventions derived from climate targets	Policies to change societal norms and values

Source: Görlach et al. 2024

2.2 Transformative use of policy paradigms

2.2.1 Paradigm or “pure” policy mix?

The varying policy paradigms might seem to conflict with each other as they view the nature of the climate crisis and hence solutions to solve it very differently (Görlach et al., 2024). For example, the Green Economic Liberalism and Sufficiency and Degrowth paradigms have a radically different view on the role of markets and the private sector in the green transition. One posits that the climate crisis can be addressed by correcting market failures and internalising external costs, while the other directly challenges economic growth and market-based solutions as it deems them incompatible with planetary boundaries.

As such, one could argue that for EU climate governance to be transformative in the future, it should adhere to one paradigm rather than employing all of them as it has done so far. Each paradigm has its own vision of how the EU should reach climate neutrality, what constitutes transformative action, and who should be involved. Therefore, adhering to one paradigm or policy avenue could reduce inconsistencies in the EU climate architecture.

However, none of the policy paradigms can be seen as more 'right' than the others as they depart from different assumptions on what can be seen as the nature of the climate crisis (Görlach et al., 2024). Depending on what is assumed to be the root cause of the problem – e.g., market failures or economic growth itself – the paradigms can be judged differently on their sufficiency.

Moreover, 4i-TRACTION's previous assessment of the different policy paradigms did not find that one of them might be better suited to address all aspects of the transition than the others. Transitioning to climate neutrality entails addressing different aspects of society from varying angles. Due to the strengths and weaknesses of the different paradigms, they each have their own element of the transition they might be better equipped to deal with. For example, Green Economic Liberalism can enhance the competitiveness of fossil-free technologies by putting a price on carbon, whereas Directed Transition can give direction to the transition and introduce a level of urgency.

Additionally, reorganising the EU climate policy architecture from a mix of policy paradigms to one specific one, will require a lot of political capital, administrative capacity and time that given the urgency of the climate crisis, is not there.

The different paradigms can also support and complement one another by improving the conditions climate governance takes place in. For instance, support for innovation can help with providing clean alternatives for fossil technologies, which having a carbon price alone might fail to do. Additionally, carbon pricing might create resistance if it places a high burden on households, and targeted support can help overcome it. Therefore, using a mix of elements of different paradigms can improve their functioning.

These findings align with prior research on policy mixes that has shown that there is not one type of policy instrument that can alone result in the necessary changes, but that rather for the transition to climate neutrality, a mix of different types is more desirable (Kivimaa and Kern 2016; Markard and Rosenbloom 2020). Furthermore, in the past, inconsistencies due to the use of different types of policy instruments have not occurred frequently, and when they did emerge, they were generally addressed in revisions of the relevant policies (Oberthür and Von Homeyer 2023). For instance, the regulatory instrument of setting targets for renewable energy in the Renewable Energy Directive could conflict with the functioning of the ETS as the uptake of renewable energy could lower the price of ETS allowances and hence reduce the ETS' effectiveness (Anke and Möst 2021). Partly in response, the market stability reserve was added as a mechanism within the EU ETS to counterbalance any downward pressure on the price of allowances resulting from other climate measures (Oberthür and Von Homeyer 2023).

Therefore, using a combination of policy paradigms to achieve climate neutrality might be more desirable than using a “pure” policy mix following the logic of one policy paradigm (Görlach et al., 2024). Nevertheless, this does not entail continuing “policy as usual”. In the past, the mix of paradigms seemed to be the result of the preferences and priorities of policymakers rather than part of directed strategy. Political actors with different interests have tried to influence the decision-making to their benefit (Markard and Rosenbloom 2020). For instance, environmental NGOs and renewable energy producers might push for renewable energy targets, while other industry actors might prefer the ETS to reduce emissions.

To ensure a more consistent policy mix in the future and to transform European economy and society in the most efficient way, this report recommends greater directionality and strategic thinking about which instruments are needed both in the short term and in the long term for the transition. This involves selecting elements of the policy avenues where they are best suited. In what follows, we offer some concrete policy recommendations.

2.2.2 Policy implications of the paradigm mix

Our policy recommendations are based on using a mix of policy paradigms where they are most relevant and necessary (Görlach et al., 2024). The transition to climate neutrality requires interventions such as improving the efficiency of existing technologies, developing new fossil-free technologies, and phasing out inefficient fossil-fuel technologies, as well as reducing consumption. Not all policy paradigms are as capable to deliver these interventions, and hence, the paradigm mix will have to play into their strengths. E.g., the Directed Transition paradigm is well-suited to set timelines for the phase-out of polluting technologies, and the Green Industrial Policy Paradigm is equipped to stimulate innovation in new climate-friendly technologies.

The paradigm mix largely entails furthering existing approaches but in a more deliberate way. For example, carbon pricing can only work if green technologies are available and competitively priced, and if supporting infrastructure is in place. Moreover, greater directionality concerning the spending of the revenues of carbon pricing can also ensure that negative social consequences are mitigated, for instance, by using it to support vulnerable households. Likewise, setting emission reduction or phase out targets can give direction to EU climate policy and provide clarity to consumers and businesses. Yet using economic instruments may still be the main driver to achieve these phase-out targets, avoid a lock-in of inefficient technologies at an early stage, and undermining the profitability of existing (fossil-based) assets. Therefore, employing a mix of policy avenues can create the right conditions for the EU transition to climate neutrality to be successful.

2.2.3 Sequencing of the paradigm mix

In the ideal policy mix, the elements of the different policy paradigms are implemented in parallel to each other. However, the different stages of the transition require different intervention types,

and policymakers might hence choose to stress certain elements over others at varying points in the EU's transition to climate neutrality (Görlach et al., 2024).

For example, elements of Green Industrial Policy and Directed Transition can play a large role at the start of the transition to help develop technological alternatives and to provide the necessary direction via for instance, planning exercises (Görlach et al., 2024). Moreover, Directed Transition can deliver phaseout timelines for sectors and fossil-fuel technologies, and tools to monitor progress towards the climate neutrality objective throughout the transition. Subsequently, Green Economic Liberalism elements can be strengthened to first help scale up clean technologies and then help to phase out fossil-fuel ones. Where alternative technologies are not available, where their potential has been exhausted, and/or where a shift in consumption patterns might be necessary, climate policy may need to resort to elements of Sufficiency and Degrowth by reducing demand or changing lifestyles. This often implies cultural shifts or behavioural changes such as changing diet or mobility patterns, that might take a while to develop and mature. Moreover, the EU has very little experience with such policy approaches, and first needs to develop some basic literacy around them, a language for addressing them, and citizens that are prepared to accept such types of interventions. As such, elements of Sufficiency and Degrowth have to be present throughout the EU's transition to climate neutrality.

In what follows, we will discuss the strengths of each paradigm and their role in the EU transition to climate neutrality.

1.1.1.1 Green Economic Liberalism

The Green Economic Liberalism paradigm posits that the climate crisis is the result of market failure as externalities related to greenhouse gas emissions and other forms of emissions are not reflected in prices (Görlach et al., 2024). As such, to address climate change, these market failures need to be rectified and a price should be put on the external costs. Good examples of policy instruments that fit this paradigm are economic instruments such as carbon pricing through the EU ETS.

Green Economic Liberalism has been a prominent feature of EU climate policy in the past as the EU ETS has been a cornerstone of the EU climate policy architecture since 2005. Moreover, the paradigm continues to be important in the present. Two additional policy instruments included in the Fit For 55 Package, the Carbon Border Adjustment Mechanism (CBAM) and the ETS 2 for transport and buildings employ a similar logic. The CBAM serves to ensure the correct functioning of the ETS by levelling the playing field with producers that want to export to the EU from third countries through imposing a levee related to the carbon content of their goods. The ETS 2 expands the use of the ETS to additional sectors.

In the transformative policy paradigm mix, elements of the Green Economic Liberalism should **assist with the scale-up of new climate-neutral technologies and with the phase out of fossil-based technologies** (Görlach et al., 2024). By internalising the costs of polluting

activities – e.g., putting a price on carbon emissions, Green Economic Liberalism instruments can ensure the competitiveness of green technologies and help with their deployment.

Ensuring Green Economic Liberalism measures can effectively function requires **political commitment** (Görlach et al., 2024). The **carbon price** has to be **sufficiently high** as to deter investments in fossil-based economic activities, and the policy instruments have to be stringent enough. The history of the EU ETS shows how important these elements are for it to function effectively. In different revisions the instrument evolved from allocating almost all emissions for free, to auctioning them off but with an imbalance between demand and supply of allowances resulting in a low carbon price, to creating an instrument to ensure the price stays high enough, and in the Fit for 55 revisions, to effectively zero emissions for the ETS sectors by 2040 (Flachsland et al. 2020). Future applications of carbon pricing – e.g., ETS 2 for transport and buildings – should learn from this history and avoid past mistakes. Considering political sensitivities concerning these new areas and hesitance to increase fuel prices, the application of Green Economic Liberalism approaches should ideally be **embedded into other paradigms that pay attention to the social and other implications of climate policies** (e.g., Green Industrial Policy and Sufficiency and Degrowth).

1.1.1.2 Green Industrial Policy

Green Industrial Policy seeks to mobilise market forces but, in contrast to Green Economic Liberalism, it views the climate crisis as more complex and not only the result of market failure (Görlach et al., 2024). Path dependencies, infrastructure, and the social costs of the transition also play a role. As such, Green Industrial Policy posits that market-based measures need to be complemented by strong and direct government action to help steer the transition. This includes supporting innovation and investment through for instance the use of informational and funding instruments. In this policy avenue, the public and private sector work hand-in-hand to create support for climate action by increasing the availability and accessibility of clean technologies, improve consumer choices and create winners from the transition.

The ideas behind this policy avenue gained importance in the 2010s (Oberthür and Von Homeyer 2023). The 2018 Innovation Fund was an important first step towards a stronger government role in steering industrial decarbonisation, and the Just Transition Fund and Modernisation Fund are also good examples of the Green Industrial Policy Avenue. Other, more recent, measures include the Net Zero Industry Act that serves to increase the competitiveness of net-zero technologies and remove barriers to their scale-up, or the Sustainable Finance Taxonomy that defines criteria for assessing which economic activities are in line with 2050 climate neutrality objective.

Green Industrial Policy instruments should be used to provide **support for innovation** where needed and to **stimulate investments**, and in doing so provide 'carrots' for the solutions that support the transition (Görlach et al., 2024). In doing so, they can facilitate the development of new climate-neutral technologies and the required infrastructure. Key to these types of efforts, is that they need to happen in a strategic way, and offer support where most needed. Green

Industrial Policy activities can take the form of accelerating advancements through public investments and overcoming barriers to private investment, but also of simplifying administrative procedures and speeding up permitting.

Additionally, a crucial part of the Green Industrial Policy Paradigm is the cooperation between the public and the private sector, and the creation and mobilisation of constituencies (Görlach et al., 2024). **Institutionalised relationships between the government and different stakeholders should be developed** to help provide support for the transition in the long term (Finnegan 2022). This also entails compensating those who are expected to experience losses due to the transition and actively building a support base for the required measures. As such, an active partnership between different public and private stakeholders should be encouraged.

1.1.1.3 Directed transition

The Directed Transition paradigm employs a regulatory, command-and-control approach (Görlach et al., 2024). It starts from a sense of urgency, and posits that market-based measures are ineffective due to the political infeasibility of high carbon prices soon enough and their inability to create the right conditions for them to be successful. Therefore, the Directed Transition policy avenue dedicates a large role to government to steer the transition in the desired direction through regulatory instruments. This approach requires more planning in terms of which goals need to be achieved when, and of coordination between different stakeholders and sectors. As the government has a large role in deciding what the future should look like, there is less space for technological openness in comparison to the two previous policy avenues.

There are many examples of the Directed Transition paradigm in the history of EU climate policy and some of the EU's key instruments follow this approach. The Effort Sharing Decision/Regulation has set binding emission reduction targets for Member States since 2009, and Regulations on the CO₂ emission performance standards for new passenger cars, vans, and heavy-duty vehicles have attempted to reduce the vehicle GHG emissions after a voluntary agreement with carmakers failed to deliver. A crucial element of the European Green Deal and reaching climate neutrality, is the CO₂ emission performance standard of 0g CO₂/km by 2035 for new cars and vans – effectively a ban on internal combustion engine vehicles – to ensure a clean fleet by 2050. More examples of instruments that fit the Directed Transition paradigm are: the Ecodesign Directive that establishes minimum energy efficiency standards for energy-related appliances; the Energy Efficiency Directive setting national energy efficiency targets, and the Energy Performance of Buildings Directive that tackles emissions of the building sector.

Concerning the use of elements of the Directed Transition paradigm in the future EU climate policy mix, **transformative – ambitious and farsighted – targets** are required to dictate the speed of the transition and to create expectations of the pathway to be taken. Concerning economy-wide emission reductions, this guidance is largely in place already due to the presence of the 2030 and 2050 objectives. At the time of writing, the discussion on the 2040 target has just opened with the Commission Communication presenting a 90% reduction – following the advice of the

European Scientific Advisory Board on Climate Change (ESAB-CC) on the most ambitious and feasible target (European Commission 2024).

However, concerning the **strategic direction of the sectoral level**, more should be done. So far, only the car sector has a clear phase-out date of fossil fuel-based technologies – the 0 g CO₂/km standard by 2035 as mandated by the 2023 Regulation on the CO₂ emission performance standards of cars. This target gives a clear signal to carmakers, investors and consumers regarding the shift to electric vehicles, and can hence help them anticipate it and make the transition. Additionally, the accompanying Alternative Fuels Infrastructure Directive will assist with the roll-out of sufficient charging infrastructure. Therefore, the legislation provides guidance on what needs to happen and support concerning the necessary infrastructure and technologies.

Given that the transition to climate neutrality requires significant efforts from all economic sectors, the EU should **develop guidance on which sector needs to do what to allow for planning of where more innovation or different infrastructure is needed** (Görlach et al., 2024; Kampman et al., 2024). Transitioning to different, more sustainable energy sources, for instance, goes hand-in-hand with rethinking energy infrastructure. Measures on the EU level that facilitate things such as permitting processes, and interconnectedness as part of broader strategy are key to making the transition work. This also pertains to sectors that are outside of the focus on industrial policy such as agriculture. In doing so, it can facilitate the **integration of climate objectives into all economic sectors** and coordinate the transition to climate neutrality across them. Furthermore, having the strategic guidance in place will allow for the efficient use of elements of the Green Industrial Policy and Green Economic Liberalism paradigms.

1.1.1.4 Sufficiency and Degrowth

The Sufficiency and Degrowth paradigm starts from the argument that economic growth is not compatible with planetary boundaries (Görlach et al., 2024). This policy avenue is centred around the concept of 'sufficiency' meaning to live well enough within the capacity of the Earth. Some proponents argue for degrowth or the deliberate contraction of economic growth, while others focus on reducing only harmful economic activities. Addressing the climate crisis will hence require a transformation of consumption behaviour and lifestyles, social structures and collective norms. Furthermore, the paradigm is quite sceptical of market-based and technological solutions, and is more focused on regulatory and informational instruments.

There are fewer examples of the Sufficiency and Degrowth paradigm in EU climate policy than of the other ones. While there has been attention to social and just transition considerations in some of the EU's instruments such as the Just Transition Fund and the Social Climate Fund, the EU remains focused on economic growth as exemplified by the definition of the European Green Deal as the EU's growth strategy. Additionally, the concept of the circular economy can be seen as part of the Sufficiency and Degrowth paradigm in particular when it is linked to more upstream waste reduction strategies on top of 'reuse and recycle'. In this view, the EU's Circular Economy Action

Plan as part of the European Green Deal can also be seen as a Sufficiency and Degrowth instrument.

Therefore, the EU should **develop measures aimed at reducing emissions by making lifestyle or behavioural changes** where alternative technologies are not available or where their potential has been exhausted (Görlach et al., 2024). For instance, even though vehicles have in principle become more efficient since the 1990s, the emissions of the car sector have consistently gone up, mainly due to growth in transport volumes and a trend towards heavier vehicles (EEA 2022a). Therefore, for the car sector to truly move away from unsustainable practices, a critical discussion on EU mobility is necessary. Even when a full transition to electric vehicles is realised, the materials supporting it are not unlimited, and the increasing electrification needs of the European economy might still warrant a different mobility model than today (EEA 2022a). Similarly, diets centred largely around animal products rather than fruits and vegetables have a significant impact on greenhouse gas emissions (Rieger et al. 2023). Making diets and the corresponding agricultural practices more sustainable can hence contribute to the EU's green transition. Additionally, rethinking the use of materials in a circular economy that stresses more considerate consumption also fits within this policy avenue.

In considering these Sufficiency and Degrowth approaches, the EU should **pay attention to the social aspects of these measures and the just transition**. Transition measures will have large implications for producers and consumers by affecting their source of income, their day-to-day habits, norms and identities. In the past, the failure to adequately reflect on the social and distributional costs of climate measures has resulted in resistance to them (Kögel, 2024). For example, the Yellow Vest movement in France protested against rising fuel prices due to a proposed carbon tax as they felt it was unfair. Therefore, to ensure the acceptance of climate policies, institutions have to be in place that consider different aspects of just transition beyond reactively compensating the losers of the transition for their losses (Crespy and Munta 2023; EEA 2022b).

Social momentum for change and **societal ownership** form a crucial part of this policy avenue as without them the lifestyle and behavioural changes will be difficult, if not impossible, to implement (Görlach et al., 2024). Paying attention to the socio-economic impacts of the transition and designing ways for the public to be engaged in the decision-making can help in this regard.

3. Procedural climate governance

Procedural climate governance forms a key part of the EU's transition to climate neutrality on top of these more substantive policy paradigms (Kulovesi et al. 2024; Moore et al., 2023). It structures the decision-making process for climate measures and in doing so, facilitates the necessary transformative change. Moreover, procedural governance functions touch upon key features of transformative action (Görlach et al., 2022; Moore et al., 2023). It allows backcasting from a long-

term objective, preventing unsustainable path dependencies, and encouraging climate policy integration.

4i-TRACTION research on procedural governance mechanisms has shown that they can enhance the legitimacy and credibility of the decision-making process and output (Kampman et al., 2024; Varis, 2024; Von Homeyer, 2024). Due to the long-term nature of the transition to climate neutrality, climate policy measures must be credible in the eyes of investors, businesses, consumers, and the general public. Without a certain degree of credibility, the relevant actors might not be willing to invest in changes or to accept the proposed pathways. Resistance to the proposed paradigm mix can be mitigated by several procedural governance functions such as including stakeholders and citizens in the decision-making process (participation), monitoring the implementation of policies and evaluating them (monitoring and evaluation), encouraging science-based policymaking (expert advice), and providing avenues for short-, medium- and long-term planning to achieve the goals (planning; see below).

3.1 Transformative potential of procedural governance mechanisms

In recent years, procedural governance instruments have gained traction in the EU's climate policy mix. The European Climate Law and the Governance Regulation include a number of procedural governance mechanisms that serve to govern the decision-making process on the climate transition and define which actors should be involved (Moore et al., 2023). These include setting up multilevel dialogues with different stakeholders and public actors – the Multilevel Climate and Energy Dialogues, obligating Member States to detail their plans for achieving the 2030 climate and energy targets in National Energy and Climate Plans (NECPs), and the creation of a new expert advice body - the European Scientific Advisory Board on Climate Change (ESAB-CC). There have also been provisions on procedural governance in national law, for instance, on climate investment monitoring.

To understand the extent to which procedural governance mechanisms can actively contribute to the EU's transition to climate governance, the 4I-TRACTION project investigated the transformative nature of eight governance mechanisms (Gheuens & Moore, 2024). The case studies were centred around: the European Scientific Advisory Board on Climate Change, the Multilevel Climate and Energy Dialogues, the National Energy and Climate Plans (NECPs), the social dimension of EU climate planning, integrated infrastructure planning, monitoring and evaluation of climate-related investments, access to justice in NECPs, and climate policy integration. They cover six key procedural governance functions: (1) planning; (2) access to justice; (3) participation; (4) monitoring and evaluation; (5) expert advice; and (6) decision-making (for an overview see Table).

Table 2: Overview of procedural governance functions and relevant case studies.

Procedural governance function	Description	Case studies
Planning	Provide short-, medium- and long-term planning for climate policy.	<ul style="list-style-type: none"> Integration of social dimension into climate policy planning instruments (Kögel, 2024); National Energy and Climate Plans (NECPs); Public participation and energy infrastructure planning (Kampman et al., 2024).
Access to justice	Provide judicial access to stakeholders with legal standing	<ul style="list-style-type: none"> Access to justice in the EU's procedural climate governance framework: a case study of the NECPs (Mähönen, 2024)
Participation	Incorporate viewpoints and knowledge from stakeholders.	<ul style="list-style-type: none"> Public participation and NECPs (Von Homeyer et al., 2024); Implementation of Multilevel Climate and Energy Dialogues (MLCEDs, Faber et al., 2024).
Monitoring and evaluation	Monitor the implementation of policies and related environmental data. Evaluate the expected and actual impacts/effectiveness of policy.	<ul style="list-style-type: none"> Climate investment monitoring and evaluation (Humphreys, 2024).
Expert advice	Provide advice on climate science, public policy options and other topics.	<ul style="list-style-type: none"> European Scientific Advisory Board on Climate Change (ESAB-CC, Varis, 2024).
Decision-making	Set guidelines for how decisions are made, including the process.	<ul style="list-style-type: none"> Climate policy integration in the EU (Kulovesi et al., 2024). Implementation of Multilevel Climate and Energy Dialogues (MLCEDs, Faber et al., 2024).

Source: Gheuens & Moore, 2024

The transformative nature of the eight procedural governance mechanisms was assessed using a framework developed by Moore et al. (2023). This framework consists of three criteria: (1) overall effectiveness – the ability of the mechanism to carry out its functions; (2) policy resilience – the extent to which the mechanism can be adapted to changing circumstances; and (3) quality of implementation – the degree of effectiveness of the implementation of the mechanism. These criteria were designed to be relatively broad to allow the case study authors to adjust them to

their cases. They serve to identify the strengths and weaknesses of procedural governance mechanisms concerning their design, their resilience to changing circumstances, and their implementation.

Firstly, the assessment showed that in principle the examined procedural governance mechanisms should be able to carry out their functions, and that the centrality of the climate neutrality objective gives them a long-term transformative orientation (Gheuens & Moore, 2024). However, the lack of a formal role of the mechanisms in the policy process can decrease their impact as it hinders the integration of their output into the decision-making. Moreover, policymakers must carefully balance flexibility to allow actors to adapt the mechanisms to their specific needs, and specificity to provide sufficient guidance on how to implement them.

Secondly, the transformative nature of the mechanisms is also affected by insufficient checks and follow-up on their implementation, and resource limitations in terms of data, funding and personnel (Gheuens & Moore, 2024). The mechanisms' impact can also be affected by their timing in policy process, and the transparency surrounding and independence of their functioning.

Thirdly, the mechanisms under investigation should in principle be robust to changing economic and political circumstances without losing sight of the longer-term objective (Gheuens & Moore, 2024). If this will be the case remains to be seen, but permanency and independence could help shield the mechanisms from any political turbulence, while including a wide range of policy options and tools in climate policy planning instruments could increase their resilience as well.

Therefore, the case studies showed that the examined procedural governance mechanisms have the potential for transformative change but that significant barriers exist concerning their implementation that hinder them realising their potential (Gheuens & Moore, 2024). In the following, we give concrete recommendations on the application of procedural governance mechanisms in future EU climate governance, and how their implementation can be improved.

3.2 Policy recommendations

Based on the findings of relevant 4i-TRACTION studies, this section aims at formulating broader policy recommendations for EU climate governance concerning how elements of procedural governance can help increase credibility and societal acceptance of EU climate measures.

3.2.1 Strengthening public participation and stakeholder dialogues

Because the measures required to transform the EU to a low-carbon society are far-reaching and entail changing how the economy is structured and how society is organised, there can be strong contention and backlash against them. To avoid or limit this negative reaction to the transition, public support and societal acceptance of the measures are crucial.

The case studies on procedural governance mechanisms have shown the value of public participation and stakeholder dialogues for creating this acceptance. For instance, including stakeholders in the policy process can give them ownership of the measures and in doing so, ensure their support. Moreover, the engagement of different public and/or stakeholder interests in the decision-making process can improve climate measures as it can optimize the balance between different interests (Kampman et al., 2024; Humphreys, 2024). It brings the concerns and needs of different actors into the policymaking. Additionally, public participation can also raise awareness and increase citizen's political engagement. It allows for a conversation between different groups in society on where to go and how to get there.

Therefore, involving the public and various stakeholders in the climate-related policy process constitutes a crucial aspect of making the transition to climate neutrality work, to create societal ownership of it, and to improve the decided upon measures.

There are provisions on public participation and stakeholder dialogues in EU climate legislation – mainly in the Regulation on the Governance of the Energy Union and Climate Action (Governance Regulation) – but these exhibit shortcomings that hinder their functioning. For instance, research on public participation in the National Energy and Climate Plans (NECPs) process has revealed that issues concerning transparency and independence weaken their accountability and credibility (Von Homeyer et al., 2024). Insufficient transparency makes it difficult to follow-up on the participation process, and lack of independence reduces their standing for the participants and wider public. Moreover, their insufficient integration in the policy process limits the take-up of the results of the participation process. Similarly, the Governance Regulation introduced Multilevel Climate and Energy Dialogues (MLCEDs) that serve to engage a wide range of stakeholders into the decision-making process, but they have rarely been well implemented (Faber et al., 2024). Their scope tends to be rather limited and Member States' reporting on them seems to be flawed.

Therefore, to enhance future EU climate measures and ensure their societal acceptance, there is a clear demand to engage citizens and stakeholders in the policymaking process in various formats. This requires **strengthening current practices concerning public participation and stakeholder dialogues**, and potentially applying them to a broad range of policy areas such as energy infrastructure planning. This entails creating more opportunities for different actors to engage in discussions on policy measures and their implementation.

An important aspect of this concerns the **timing** of these consultations. To maximize their impact, they should **happen early enough in the policy process to impact policy formulation**, and they have to ideally **be followed-up at a later stage** as well (Von Homeyer et al., 2024). Consultations that happen at an early stage might be able to steer the direction of the measures or what is planned, while at a later stage, participants can give more concrete feedback on the policies or plans on the table. Therefore, including participation mechanisms in different phases of the decision-making process can help maximize its impact.

Concerning the design of the participatory mechanisms, **clear standards for different formats of participation should be put in place** to more guide policymakers on how to best engage

the public and/or stakeholders (Kampman et al., 2024). Different national contexts including decision-making practices, and varying types of interventions might warrant different forms of participatory mechanisms and the engagement of different stakeholders. These can range from co-creation exercises to designing online consultation platforms. As such, precise specifications on how to implement the most appropriate form of participation can ensure a certain degree of quality across them. Additionally, clearer specifications of these mechanisms and their goals could also increase their standing and give them more weight in the policy process (Faber et al., 2024).

A key shortcoming of current participatory processes is a lack of **follow-up** by the Commission (Faber et al., 2024). Strengthening the standards for participation mechanisms can also help in this regard. They should entail more concrete requirements for the reporting on the mechanisms, and for the consideration of the outputs of the mechanisms into the policy process. This would enable the Commission to more closely follow-up on the participation and stakeholder exercises, and help with the identification of best practices and peer-learning between the Member States. In doing so, a stronger follow-up procedure can improve the implementation of participation mechanisms.

Therefore, there is a need to engage different actors ranging from civilians to different stakeholders in the decision-making to improve the acceptance of the transformative measures required for the transition. Participatory practices and stakeholder dialogues could provide opportunities to do so. However, this acceptance depends largely on the way the various actors are engaged. As such, to maximize their potential, policymakers should clarify when in the policy process they take place, which format is best suited for the issue at hand, and how these practices are checked.

3.2.2 Facilitate evidence-based policymaking

Effective policy design and implementation is reliant on data and scientific knowledge to understand what the issues or gaps are that need to be addressed (Kögel, 2024). Such evidence-based policymaking can ensure that the measures taken address the issues at hand and avoid or limit the influence of more short-term pressures (Majcen 2017). Therefore, it plays a crucial role in the long-term planning needed for the transition to climate neutrality. Moreover, incorporating scientific advice in the decision-making process can also increase the legitimacy of climate policies. As such, there is a demand for **evidence-based policymaking**. This concerns not only integrating scientific advice in the policy process but also ensuring sufficient data and adequate reporting to evaluate the climate policy measures on.

3.2.2.1 Scientific advisory bodies

Scientific advice can support policymaking by providing the best available knowledge to policymakers (Varis, 2024). Almost all Member States have a climate advisory body in place ranging from independent scientific bodies to stakeholder consultation platforms that at times

also include government officials (Evans and Duwe 2021). They are usually tasked with monitoring climate action, providing recommendations or advice for future legislation, and/or bringing together different stakeholders and civil society. Additionally, the European Climate Law established the ESAB-CC at the European level – an independent body that provides scientific knowledge and recommendations on climate change, and that assesses EU legislation and its implementation. It also engages with various stakeholders to improve climate change awareness.

To maximise the impact of these European and national advisory bodies, the EU and national policymakers should **clarify their role in the policy process and the timing of their advice** (Varis, 2024). Having a formal role in the policy process could avoid their advice being side-lined or disregarded, and would allow the advisory bodies to fully perform their functions. A formal role could also give clarity on when in the policy process the advisory bodies are consulted. If an advisory body is designed to give advice, it will have to be integrated early enough in the policy process to have an impact, whereas more of a “watchdog” advisory body will come in at a later stage. The integration of these advisory bodies into climate policymaking also concerns requirements for policymakers to show how they have responded to the advice which could improve the transparency and accountability of the decision-making process.

3.2.2.2 Data and reporting requirements

Even though many of the procedural governance mechanisms have reporting requirements, shortcomings impact their functioning (Faber et al., 2024; Von Homeyer et al., 2024). Gaps in the reported information and lack of accessibility of the reports can negatively impact the mechanisms’ transparency. For instance, currently not all Member States report sufficiently on aspects of the MLCEDs such as their scope and who is involved (Faber et al., 2024). This complicates checking their implementation, comparing them with each other, and identifying good practices. As transparency is important for accountability, insufficient transparency can reduce mechanisms’ credibility, and could hence have the opposite effect on societal support than intended. Moreover, inadequate reports complicate the evaluation of the mechanisms as it results in missing data (Faber et al., 2024; Von Homeyer et al., 2024).

Issues of transparency, evaluation, and implementing due to ineffective reporting should be addressed by **providing more guidance to Member States on what to include in their reports and by strengthening follow-up procedures** (Faber et al., 2024; Von Homeyer et al., 2024). The Commission should do more to clarify and enforce the already existing reporting requirements by for instance, asking Member States for more information when necessary and rejecting insufficient reports (Faber et al., 2024). Stricter content requirements of reports could also facilitate comparisons between them and exchanges of good practices, and a more comprehensive approach that integrates different planning instruments and considerations (Kögel, 2024).

Therefore, evidence-based policymaking can improve the legitimacy of EU climate policies and facilitate effective policymaking. In the EU’s transition to climate neutrality, scientific advice should

be formally incorporated in the decision-making process in a timely manner, and Member States' reports on measures they have taken or are planning to take should be of sufficient quality.

3.2.3 Integration of climate and social considerations in policy planning and implementation

Achieving climate neutrality requires a transformation of the EU's society and economy. To do so, **climate objectives should be integrated in all decision-making processes** to avoid inconsistencies. It also requires collaboration and coordination across different decision-making levels and relevant stakeholders (Kulovesi et al., 2024). This ensures that climate change is not seen as an isolated issue.

Additionally, the **transition to climate neutrality should be a just transition** that pays attention to the social aspects of transforming the EU economy and society (Kögel, 2024). The newly founded Social Climate Fund could offer a starting point, but its scope would have to be expanded beyond transport and energy poverty to become transformative. This can ensure that costs and benefits are distributed equitably, and that the needs of different groups are recognised in the policy process. In doing so, integrating social considerations in the decision-making can increase social acceptance for the transformative measures.

As such, policymakers should **strengthen the consideration of climate and social objectives** in policy planning, and in the implementation of measures across policy areas and policy levels. Doing so can help avoid inconsistencies in the EU's transition and reduce any negative socio-economic impacts. This includes clarifying criteria to assess climate policy integration (CPI; Kulovesi et al., 2024). For instance, while CPI is mentioned in the European Climate Law, it does not provide detailed specification on how to assess it. It also relates to developing a common understanding of what the social dimension of climate policy planning entails, for example paying attention to fairness in energy access and use, creation jobs, training programmes, and distributional effects (Kögel, 2024).

Moreover, there is room to **strengthen climate policy mainstreaming, improve the integration of social objectives** in the policy process, including in EU planning instruments, and **better align social considerations** across different instruments. More coordination between different policy areas and policy levels can ensure a common understanding of what these climate and social objectives entail, and how they can play a role in policy planning, and subsequently implementation, and monitoring and enforcement. A unified approach could also broaden the definition of these principles. For instance, currently the social dimension of the energy transition is focused mainly on energy poverty, including a wider array of social aspects in the definition could hence allow for a more comprehensive tackling of social issues across different climate policy planning instruments (Kögel, 2024).

Additionally, **strengthened follow-up procedures** can improve the application of these objectives (Kulovesi et al., 2024). Stricter requirements for the Commission to screen all relevant

measures on the extent to which they are aligned with the climate neutrality objective should be put in place.

Furthermore, strengthened participation and evidence-based decision-making can help improve the integration of climate and social objectives in policymaking, and vice versa. When giving recommendations or evaluating legislation, advisory bodies can assess legislation on its climate and socio-economic consequences. Additionally, including a wide range of stakeholders and even the public into the decision-making process can make sure different voices are heard and can help avoid the concentration of costs and benefits on a small number of actors. For example, the presence of environmental NGOs and civil society actors could stimulate the uptake of climate objectives. Doing so could screen existing and future legislation on any inconsistencies with the just and green transition to climate neutrality.

4. Connecting the policy paradigms and procedural governance

As the prior 4i-TRACTION research showed, substantive climate governance in the form of a policy paradigm mix, and procedural governance mechanisms are vital for the EU transition to climate neutrality. While the paradigm mix includes regulatory, economic and informational instruments that directly reduce emissions, procedural instruments give them credibility and legitimacy and increase their efficiency.

Each of the four policy paradigms emphasises different aspects of procedural governance functions. On the one hand, the more regulatory policy paradigms that give a stronger role to the government – Directed Transition and Sufficiency and Degrowth – place particular attention to functions like planning for climate policy, target-setting and overall policy objectives, and creating guidelines for decision-making. On the other hand, the Green Industrial Policy avenues stress the importance of engaging with stakeholders and creating the right conditions for the economic measures to function effectively, for instance, by devoting attention to implementation and enforcement. Therefore, for the policy mix to be successful, a mix of mechanisms that fulfil different procedural governance functions seems necessary. The different procedural mechanisms can ensure that policies are implemented effectively, and they can improve the legitimacy and credibility of legislation – crucial aspects to make the transition a success.

While all procedural governance functions can in some way contribute to and support the transition, a few deserve particular attention (see Table). All the highlighted procedural governance functions are connected to one or more of the policy paradigms, and the mix of paradigms.

Table 3: Key procedural governance functions and their link to the different paradigms and the paradigm mix.

Procedural governance function	Policy paradigm	Connection between procedural governance function and policy paradigm
Planning and target-setting	Directed Transition	Set short-and long-term objectives and provide phase-out timelines.
	Green Industrial Policy	Provide certainty for investors and enable innovation.
	Paradigm Mix	Provide direction to the mix and ensure efficient sequencing of the elements.
Participation	Green Industrial Policy	Provide avenues for cooperation between private and public actors, and in doing so, enable innovation.
	Sufficiency and Degrowth	Provide citizens with ownership of the policy measures, and build social momentum for the required lifestyle and behavioural changes.
	Paradigm Mix	Ensure concerns and needs varying societal groups are heard, and create a societal conversation about the transition.
Expert advice	Directed Transition	Give guidance on targets and timelines of the transition.
	Paradigm Mix	Give guidance on direction and speed transition, help identify strengths of each policy paradigm, help avoid inconsistencies in the mix, and provide legitimacy.
Monitoring and evaluation, and implementation and enforcement	Green Economic Liberalism	Ensure a sufficiently high carbon price.
	Directed Transition	Ensure policy objectives are achieved at the desired pace.
	Paradigm Mix	Ensure the policy mix consistently draws upon the strengths of each paradigm, and take corrective measures if it fails to do so.

Source see text

First, **planning** for the short-, medium-, and long-term and **target-setting** form core parts of the Directed Transition paradigm, and can give the paradigm mix the directionality it requires. Planning can ensure the use of the strengths of each paradigm at the ideal stages of the transition,

and the creation of the right conditions for climate neutrality. Together with target-setting, it can set the pace of the transition, and identify phase-out timelines for polluting activities. Additionally, long-term strategies and planning tools can provide clarity and certainty for investors which can stimulate innovation as part of Green Industrial Policy.

Second, **strengthened participation** can increase the effectiveness and acceptance of the policy measures. A distinction needs to be made between public participation of citizens and dialogues and consultations with stakeholders, even though they can both give participants a sense of ownership of the measures and in doing so secure their support. Stakeholder dialogues can assist elements of the Green Industrial Policy paradigm. As discussed above, cooperation between private and public actors forms a crucial part of this paradigm to get everyone on board with the transition and to make the necessary investments in innovation. For instance, without the support of carmakers shifting to electric vehicles will be difficult and might create a lot of resistance. Public participation constitutes a core aspect of the Sufficiency and Degrowth paradigm. Building the social momentum necessary to implement the lifestyle and behavioural changes will take time and requires consistent involvement of citizens in the decision-making process. The measures cannot be adopted in a top-down approach without creating significant resistance. Additionally, the inclusion of citizens in the policymaking process can ensure their varying concerns and needs are heard and in doing so, strengthen the social aspects of the transition. Moreover, both stakeholder dialogues as well as public participation can play a role in shaping the overall paradigm mix. They can help identify priorities for different groups, and create a conversation about the role of people and stakeholders across society in the transition.

Third, the integration of **expert advice** in the policy process can improve the effectiveness and legitimacy of the paradigm mix. It can give guidance on the direction and the speed of the transition, as, for instance, the ESAB-CC has done with its 90-95% target recommendation for 2040. Doing so also relates to the Directed Transition paradigm and the setting of targets and planning that form key parts of it. Additionally, expert advice can help identify the strengths of the policy paradigms, avoid inconsistencies between them, and create ideal conditions for the measure to complement each other. Additionally, experts can assist with evaluation of the paradigm mix, and recommend adjustments if necessary, or to stay up-to-date with the latest available science. Overall, they can also provide a certain degree of legitimacy to the decision-making process that can help garner support.

Fourth, there needs to be sufficient **monitoring and evaluation**, and **implementation and enforcement** to ensure the effectiveness of the paradigm mix and its correct implementation. While relevant for all policy paradigms and the overall mix, these procedural governance functions are especially important for the Green Economic Liberalism and Directed Transition paradigms. Concerning the former, the functions can help ensure the carbon price is sufficiently high to have an effect, and that companies failing to comply are faced with repercussions. For the latter paradigm, monitoring and evaluation, and implementation and enforcement play a role in making sure the policy objectives are achieved at the desired pace. For the overall paradigm mix, these procedural governance mechanisms also relate to setting clear guidelines for reporting that allow

the Commission to follow-up on progress and take action in case of insufficiencies. For instance, by taking measures if the expansion of the electricity grid or the roll-out of new post-fossil infrastructure (such as green H₂, Carbon Capture and Storage or synthetic fuels) is significantly behind schedule, and threatens to jeopardise the feasibility of decarbonisation strategies in other sectors. Additionally, clear standards can also allow comparisons and the identification of best practices. This ensures the policy mix consistently plays into the strengths of each policy paradigm, and that appropriate measures are taken if this not the case.

Similar to the sequencing of elements of the policy paradigms, sequencing of the corresponding procedural governance mechanisms is also necessary. When elements of Directed Transition play a larger role in creating the directionality of the transition, procedural governance functions such as planning and target-setting are especially important. To create ideal conditions for the development and scale-up of clean technologies as part of the Green Industrial Policy Paradigm, participation of stakeholders will need to be stressed. To ensure the implementation and correct functioning of elements of Green Economic Liberalism, social support measures need to be in place to protect vulnerable groups from changing prices. Due to the societal change required for the elements of Sufficiency and Degrowth, public participation must be present from an early stage to build the necessary social momentum.

5. Conclusion

Transformative climate policy requires a change from 'policy as usual' in what the EU is doing and how it is doing it. Substantive and procedural governance are two sides of the same coin, and without one of them, the transition to climate neutrality would lack in impact or in efficiency. Therefore, future EU climate policy geared at achieving climate neutrality must improve both to be successful.

Concerning substantive governance, in the past, EU climate policymaking has been guided by various paradigms that each view the drivers of the climate crisis and the corresponding solutions in a different way. This resulted in a mix of policy instruments including market-based measures, investment policies, and regulatory measures. Such a mix can be beneficial for EU climate policy architecture as it allows policymakers to make use of the strengths of each of the paradigms.

Therefore, the 4i-TRACTION project recommends the continuation of a mix of elements of paradigms but in a more intentional way. Different stages of the transition require different types of interventions. For instance, it makes more sense to use a Directed Transition approach to give guidance on the direction and speed of the EU green transition, and elements from the Green Industrial Policy paradigm to encourage the necessary investments in clean technologies. Having a direction or overall vision on the paradigm mix ensures that at each stage of the transition the most appropriate elements are put in place and that the ideal conditions for their functioning are created. This will result in an efficient transition to climate neutrality that avoids inconsistencies as much as possible.

Procedural governance mechanisms can help design this mix and set priorities for it. A crucial part of this is to set up sufficient public participation mechanisms. If done correctly, they can create conversation across society about the transition to climate neutrality and in doing so, strong public ownership of the measures, which could serve as counterpoint to any potential climate backlash. Other engagement mechanisms such as stakeholder dialogues can similarly generate ownership and give direction. Additionally, instruments that facilitate evidence-based policymaking such as expert advisory bodies and data and reporting requirements can assist with identifying which instrument is the most suited at a given time, with setting an appropriate speed for the transition, and with detecting any gaps in the transition and defining measures to address them. Moreover, the integration of climate and social considerations in policy planning and implementation instruments could avoid inconsistencies in the transition and make sure it is a “just” one.

Currently, EU climate governance architecture contains procedural governance mechanisms that can take up these roles such as the ESAB-CC, the MLCEDs, and the different planning instruments. However, previous 4i-TRACTION research identified some shortcomings that could hinder their transformative impacts (Gheuens & Moore, 2024). Therefore, the 4i-TRACTION project recommends that policymakers improve procedural governance mechanisms in the future by clarifying their timing in the policy process, and by strengthening and streamlining their reporting requirement and follow-up procedures. Moreover, to properly integrate climate objectives and social consideration in policy planning and implementation, the project urges policymakers to design clear criteria to assess climate policy integration, and to develop a common understanding of the social dimension of climate policy.

These recommendations can enforce each other. For example, strengthened participation and expert advice can facilitate the climate policy mainstreaming and the integration of social considerations. A stronger alignment on the social dimension of the green transition can also strengthen reporting as more streamlined data may become available. However, there can also be trade-offs considering for instance, the speed of the transition and the administrative burden it places on different actors. Strengthening and streamlining already existing requirements might give more clarity on what is expected and can give more guidance to Member States concerning implementation. As such, it constitutes an important first step towards transforming the policy process.

In conclusion, the transition to climate neutrality will require a transformation of the EU including its climate decision-making process. The identified policy paradigms can provide guidance on how to do so and on which approaches can be helpful at different stages of the transition. The green transition will also require broad societal acceptance and a certain degree of legitimacy and credibility to be successful. Improving and expanding elements of procedural governance mechanisms can provide the tools to reach these objectives.

6. References

- Anke, C., & Möst, D. (2021). The Expansion of RES and the EU ETS – Valuable Addition or Conflicting Instruments? *Energy Policy*, *150*, 112125. doi:10.1016/j.enpol.2020.112125.
- Crespy, A., & Munta, M. (2023). Lost in Transition? Social Justice and the Politics of the EU Green Transition. *Transfer: European Review of Labour and Research*, *29* (2), 235–51. doi:10.1177/10242589231173072.
- Dupont, C., Moore, B., Boasson, E.L., Gravey, V., Jordan, A., Kivimaa, P., Kulovesi, K., et al. (2024). Three Decades of EU Climate Policy: Racing toward Climate Neutrality? *WIREs Climate Change*, *15*(1), e863. doi:10.1002/wcc.863.
- Duwe, M. (2022). Making EU climate governance fit for net zero. An analysis of the current landscape of relevant EU climate policy processes and recommendations for alignment with the climate neutrality objective. Scientific opinion paper. Dessau-Roßlau: Federal Environment Agency (Umweltbundesamt).
- EEA. (2022a). *Decarbonising Road Transport: The Role of Vehicles, Fuels and Transport Demand*. LU: Publications Office. <https://data.europa.eu/doi/10.2800/68902> (July 28, 2022).
- EEA. (2022b). *Transforming Europe's Food System: Assessing the EU Policy Mix*. LU: Publications Office. <https://data.europa.eu/doi/10.2800/295264> (April 4, 2024).
- European Commission. (2024). *Europe's 2040 Climate Target and Path to Climate Neutrality by 2050 Building a Sustainable, Just and Prosperous Society*. Strasbourg: European Commission. Communication from the Commission to the Council and the European Parliament.
- Evans, N., & Duwe, M. (2021). *Climate Governance Systems in Europe: The Role of National Advisory Bodies*. Berlin; Paris: Ecologic Institute; IDDRI.
- Faber, R., Kocher, D., & Duwe, M. (2024). *Fostering transformative climate governance? The potential of multilevel climate and energy dialogues. A criteria-based assessment of Member States reports under Article 11 of the Governance Regulation*. Ecologic Institute.
- Fazey, I., Moug, P., Allen, S., Beckmann, K., Blackwood, D., Bonaventura, M., Burnett, K., Danson, M., Falconer, R., Gagnon, A. S., Harkness, R., Hodgson, A., Holm, L., Irvine, K. N., Low, R., Lyon, C., Moss, A., Moran, C., Naylor, L., ... Wolstenholme, R. (2018). Transformation in a changing climate: A research agenda. *Climate and Development*, *10* (3), 197–217. <https://doi.org/10.1080/17565529.2017.1301864>
- Finnegan, J. (2022). Institutions, Climate Change, and the Foundations of Long-Term Policymaking. *Comparative Political Studies*, 001041402110474. doi:10.1177/00104140211047416.
- Flachsland, C., Pahle, M., Burtraw, D., Edenhofer, O., Elkerbout, M., Fischer, C., Tietjen, O., & Zetterberg, L. (2020). How to Avoid History Repeating Itself: The Case for an EU Emissions Trading System (EU ETS) Price Floor Revisited. *Climate Policy*, *20*(1), 133–42. doi:10.1080/14693062.2019.1682494.
- Gheuens, J. (2023). Putting on the Brakes: The Shortsightedness of EU Car Decarbonization Policies. *npj Climate Action*, *2*(1), 3. doi:10.1038/s44168-023-00038-5.
- Gheuens, J., & Moore, B. (2024). *Assessing procedural climate governance in the European Union*. 4i-TRACTION Deliverable 5.3. Vrije Universiteit Brussel; Brussels.
- Görlach, B., Hilke, A., Kampmann, B., Kulovesi, K., Moore, B., & Wyns, T. (2022). *Transformative climate policies: A conceptual framing of the 4i's*. 4i-TRACTION Deliverable D 1.1. Ecologic Institute; Berlin.
- Görlach, B. et al. (2024). *Integrated assessment of the policy avenues for transformative climate policies*. 4i-TRACTION Deliverable 4.3. Ecologic Institut, Berlin.

- Humphreys, C. (2024). *Monitoring and evaluating climate investments in the EU: Conceptual framework and case studies*. Institute for Climate Economics.
- Kampman, B., Nauta, M., & van den Toorn, E. (2024). *Stakeholder participation in infrastructure projects*. CE Delft.
- Kögel, N. (2024). *Policy integration: Enhancing the social dimension in climate policy planning instruments in the EU*. Ecologic Institute.
- Kulovesi, K., Lehtilä, S., Hocksell, T., & Löther, N. (2024). *Climate policy integration*. University of Eastern Finland.
- Kivimaa, P., and Kern, F. (2016). Creative Destruction or Mere Niche Support? Innovation Policy Mixes for Sustainability Transitions. *Research Policy*, 45(1), 205–17. doi:10.1016/j.respol.2015.09.008.
- Kulovesi, K., Oberthür, S., Van Asselt, H., and Savaresi, A. (2024). The European Climate Law: Strengthening EU Procedural Climate Governance?, *Journal of Environmental Law*, 36(1), 23–42. doi:10.1093/jel/eqad034.
- Jordan, A., and Moore, B. (2020). Voluntary Action: The Governance of Car Emissions. In *Durable by Design?: Policy Feedback in a Changing Climate*, Cambridge: Cambridge University Press, 158–84. doi:10.1017/9781108779869.010.
- Majcen, Š. (2017). Evidence Based Policy Making in the European Union: The Role of the Scientific Community. *Environmental Science and Pollution Research*, 24(9), 7869–71. doi:10.1007/s11356-016-6247-7.
- Markard, J., and Rosenbloom, D. (2020). Political Conflict and Climate Policy: The European Emissions Trading System as a Trojan Horse for the Low-Carbon Transition?, *Climate Policy*, 20(9), 1092–1111. doi:10.1080/14693062.2020.1763901.
- Mähönen, M. (2024). *Access to justice in the EU's procedural climate governance framework: A case study of the NECPs*. University of Eastern Finland.
- Moore, B., Oberthür, S., Duwe, M., Kögel, N., Evans, N., von Homeyer, I., Kulovesi, K., Kampman, B., Hilke, A., Mähönen, M., & Varis, K. (2023). *Transformative procedural climate governance: Mechanisms, functions, and assessment criteria*. 4i-TRACTION Deliverable 5.1. Vrije Universiteit Brussel.
- Oberthür, S., Moore, B., von Homeyer, I., Söbech, O., Boasson, E. L., Dupont, C., Hough, A., Kulovesi, K., Parks, L., Peeters, M., Savaresi, A., & Torney, D. (2023). *Towards an EU climate governance framework to deliver on the European Green Deal*. Brussels School of Governance.
- Oberthür, S., & Von Homeyer, I. (2023). From Emissions Trading to the European Green Deal: The Evolution of the Climate Policy Mix and Climate Policy Integration in the EU. *Journal of European Public Policy*, 30(3), 445–68. doi:10.1080/13501763.2022.2120528.
- Rieger, J., Freund, F., Offermann, F., Geibel, I., & Gocht, A. (2023). From Fork to Farm: Impacts of More Sustainable Diets in the EU -27 on the Agricultural Sector. *Journal of Agricultural Economics*, 74(3), 764–84. doi:10.1111/1477-9552.12530.
- Varis, K. (2024). *The European Scientific Advisory Board on Climate Change*. University of Eastern Finland.
- von Homeyer, I., Oberthür, S., & Flekkøy, O. G. (2024). *Public participation in the formulation of National Energy and Climate Plans under the Governance Regulation*. Vrije Universiteit Brussel.

About the project

4i-TRACTION – innovation, investment, infrastructure and sector integration:
TRANSformative policies for a ClimaTe-neutral European UnION

To achieve climate neutrality by 2050, EU policy will have to be reoriented – from incremental towards structural change. As expressed in the European Green Deal, the challenge is to initiate the necessary transformation to climate neutrality in the coming years, while enhancing competitiveness, productivity, employment.

To mobilise the creative, financial and political resources, the EU also needs a governance framework that facilitates cross-sectoral policy integration and that allows citizens, public and private stakeholders to participate in the process and to own the results. The 4i-TRACTION project analyses how this can be done.

Project partners



BRUSSELS
SCHOOL OF
GOVERNANCE



UNIVERSITY OF
EASTERN FINLAND



WAGENINGEN
UNIVERSITY & RESEARCH



rede
research group in energy,
innovation and environment



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement **No. 101003884**.