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Germany's Federal Climate Change Act

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ABSTRACT

Despite significant renewable energy expansion in the past, Germany has encountered difficulties in meeting its national greenhouse gas emission targets. In response, Germany adopted the Federal Climate Change Act (CCA) in 2019. We analyze the state of climate governance in Germany before the CCA, the main design elements of the CCA, and assess the potential of the CCA to change German climate governance. Drawing on policy integration theory and 26 semi-structured interviews with senior policymakers and stakeholders, we find that German climate governance before the CCA was only moderately integrated. The sectoral emission targets legislated by the CCA make climate change mitigation a priority sector goal in non-energy sectors, and CCA provisions for monitoring, assessing and implementing policy reforms promise to enhance alignment of instruments with targets over time. Overall, the CCA advances a multi- rather than cross-sector climate governance, failing to advance coordination across sectors and ministries.


KEYWORDS Germany; climate policy; climate governance; policy integration; Climate Change Act

1. Introduction

To achieve net-zero greenhouse gas (GHG) emissions by 2050 as envisaged by the European Union (EU) (European Commission 2021), governments must actively plan, implement, coordinate, monitor, evaluate and reform climate policies across several sectors (IPCC 2014). To succeed, states need institutional capacities to coordinate policy-making across economic sectors, to build consensus and mediate conflicting interests, and to strategically plan and implement climate policy over long-time horizons (Dubash 2021). This challenge has inspired a new research agenda analyzing how states organize climate governance via existing and new state institutions (Averchenkova *et al.* 2017, Finnegan 2019, Eskander and Fankhauser 2020).

This research on Varieties of Climate Governance (VOCG), which is advanced in this special issue, describes the institutional mechanisms by which states orchestrate climate change politics (Dubash 2021). We contribute to this research agenda in two ways. First, we explore how parts of the VOCG

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 Supplemental data for this article can be accessed [here](#).

framework (Dubash 2021) can be operationalized using policy integration (PI) theory (Candel and Biesbroek 2016, Candel 2021) that describes how a governance system can address a cross-cutting policy-problem, here climate change (Candel and Biesbroek 2016). Second, we analyze key elements of German climate change governance, contributing both to the literature on German climate governance and to the development of the VOEG research agenda.

We specifically focus on the institutional reform introduced by Germany's Federal Climate Change Act (CCA) in 2019 (Bundestag, 2019), which was amended in 2021 (Bundestag 2021). Climate change acts are an important avenue through which states aim to advance the coordination of climate change policy across different sectors and society (Torney 2019, Averchenkova *et al.* 2021, Matti *et al.* 2021, Lockwood 2021a, 2021b). We ask: What was the state of climate governance in Germany prior to the introduction of the CCA in 2019? Why did this institutional reform happen? What are its key elements? What is the CCA's potential for changing future climate governance in Germany?

We adapt PI theory to the field of climate policy because such a climate policy integration (CPI) framework offers specific theoretical expectations of how the institutional changes introduced by the German CCA can enhance coordination across sectors, mediate conflicts and advance consensus on climate change policy, and enable strategic governance across time (Dubash 2021). In particular, we draw on PI theory as developed by Candel (2021) and Candel and Biesbroek (2016), who distinguish the degree to which policy integration is achieved in the dimension of (i) problem perception and policy frames, (ii) engagement of subsystem actors, (iii) sectoral policy goals, and (iv) policy instruments.

We substantiate our empirical analysis with evidence collected in 26 interviews with high-level German policy makers and experts across public administration, academia and think tanks, and industry conducted between Nov. 2019 and June 2021 (see Supplementary Information). This evidence allows us to diagnose the state of CPI up to 2019 and to evaluate the potential of the CCA to change it. We followed a semi-structured guideline designed to extract information about patterns of institutional change in Germany's climate governance over the past three decades.

In terms of scope, we focus specifically on how executive government institutions – in particular federal ministries and the formal and informal rules governing their interactions – contribute to or impede CPI, while acknowledging the important role of federal parliament, courts, different levels of governance (e.g. EU, states, and municipalities), and interest groups and experts. As federal ministries develop executive decisions, prepare

legislation for the Federal Parliament, and have oversight over the implementing federal agencies, they play a particularly prominent role in German climate governance (Meckling and Nahm 2018).

In [Section 2](#), we outline our theoretical CPI framework and show how it operationalizes key elements of the VO CG framework. In [Section 3](#) we argue that a lack of policy integration prior to the CCA in 2019 has hampered the attainment of national emission reduction targets. [Section 4](#) identifies legal, economic and political factors leading to the adoption of the CCA and describes its main design features. [Section 5](#) assesses whether, and how, the CCA has the potential to enhance CPI in Germany. We show that the CCA advances the integration of policy goals and policy instruments but lacks provisions to further enhance coordination among subsystem actors. [Section 6](#) offers a discussion of the broader implications of our analysis for theory development in the VO CG research program and for research on CCAs.

2. Theoretical framework: climate policy integration

PI theory, as developed by Candel and Biesbroek (2016) and Candel (2021), helps operationalize parts of the VO CG framework because it offers indicators for the degree of policy integration of a cross-cutting policy project, such as climate change mitigation, within the overall governance system. Previous work on CPI theory has analyzed how climate governance systems are aligned towards achieving GHG emission reduction as well as on the processes that lead to such alignment (van Asselt, Perrson, and Rayner 2015, Dupont 2015, Tosun and Lang 2017). We add to this work by operationalizing CPI across the four different levels proposed by Candel and Biesbroek's policy integration theory. This enables a detailed understanding of how institutional changes affect national climate governance.

From the perspective of the VO CG framework, PI theory is particularly useful for operationalizing the degree to which climate policy is *coordinated* across different sectors and the ability of institutions to enhance such coordination. Moreover, PI theory can also help analyze the other dimensions of the VO CG: it offers indicators that can describe how institutions contribute to *mediating conflict and building consensus* on climate change, such as the integration of mitigation targets with sector governance goals. Moreover, it enables the operationalization of *strategy setting* by specifying indicators that describe the consistency of policy pathways, long-term goals, and the overall framing of climate policy.

Table 1. Empirical manifestations of low, moderate, and high degrees of integration of policy frames, subsystem involvement, integration of policy goals, and integration of policy instruments.

Degree of integration Dimension of integration	Low	Moderately low	Moderately high	High
Policy frame	Mitigation framed as narrow 'environmental issue'	Cross-cutting nature of mitigation somewhat acknowledged	Cross-cutting nature of mitigation recognized, but need for integrated cross-government approach not acknowledged	Cross-government approach widely acknowledged
Subsystem involvement	Only one leading climate policy entrepreneur, (e.g. environmental ministry) with potential obstruction by other actors	Few interactions between ministries with primary responsibility remaining with leading policy entrepreneur	Frequent and institutionalized exchange across ministries with formal responsibilities assigned to all relevant ministries	All relevant ministries highly involved in climate policymaking, frequent interaction and close coordination among key ministries
Policy goals	Climate change mitigation goals not considered among sectoral goals	Mitigation considered in sectoral goals, but not prioritized	Mitigation considered one priority goal in sectoral policy making, goal conflicts persist	Emission reduction prioritized and all other sector goals aligned
Policy instruments	No climate policies and/or (cross) sectoral policies that conflict with mitigation	Some adjustment of (cross)sectoral policy mix, but only weak climate policies	Existence of strong (cross)sectoral climate policies although these may be insufficient to meet emission reduction goals	Policy instruments sufficiently strong to meet emission reduction goals

2.1. Empirical manifestation of climate policy integration

Following and adapting Candel and Biesbroek (2016), we draw on four CPI dimensions for analysis (Table 1). The first dimension, *policy frame* describes the degree to which mitigation is recognized as a cross-cutting policy problem requiring a holistic governance approach. In instances of low integration, we expect mitigation to be commonly understood as a narrow 'environmental topic' falling under the jurisdiction of only one actor (e.g. in Germany, the Environmental Ministry or *Bundesumweltministerium*, BMU). Increasing degrees of integration describe instances in which a broader range of actors – here specifically federal ministries responsible for certain sectors – perceive climate change as a cross-sectoral challenge.

From the VOCC perspective, a broad recognition of climate mitigation as a cross-sectoral policy project would establish the foundations for strong policy coordination. It can also be an indicator of the presence of political consensus.

The second dimension, *subsystem involvement* describes the degree to which relevant actors are actively engaged in climate politics. We operationalize it as the number of relevant federal ministries actively and formally involved in climate policymaking, and the frequency of their interactions. In instances of low subsystem involvement, there would be only one climate policy entrepreneur (e.g. the BMU) and interministerial coordination processes would be superficial, while other ministries might even obstruct climate mitigation efforts. The spectrum from moderately low to high integration is measured by the number of additional ministries regularly involved and by the extent of their coordination among each other. From the VOCC perspective, focusing on subsystem integration enables analysis of how institutional structures influence coordination across subsystems. Moreover, a high degree of subsystem integration indicates political support from these subsystems.

In the third dimension, we analyze the sectoral *integration of mitigation goals with pre-existing sector goals*, such as competitiveness, jobs, or energy security. We evaluate whether mitigation is considered a sectoral policy objective at all and whether it is prioritized in the case of conflicts with other goals. Low goal integration refers to a situation where emission reduction targets are largely ignored. In cases of moderately low levels of integration, GHG emission reduction is added as a low priority objective. Moderately high integration would elevate climate change mitigation among the top-level objectives, yet possibly competing with other conflicting objectives. High integration requires mitigation to be the top-priority target in a sector, with all other objectives aligned with it. Analyzing the effect of institutional structures on goal integration helps understand policy coordination and political conflicts. Moreover, aligning sector goals with emission reduction targets is important for any long-term strategy to achieve net-zero emissions.

Finally, the integration of *policy instruments* refers to the degree to which policy instruments can ensure the attainment of mitigation targets. We define situations of low policy instrument integration as instances in which there are no climate policies and in which existing sectoral policies may even conflict with mitigation objectives (e.g. fossil subsidies). Moderately low integration involves some adjustment of sector policies (at least eliminating major conflicting policies) and the implementation of weak climate policies. A moderately high degree of integration requires significant climate policies, even if the overall instrument mix may not yet ensure that emission reduction targets are met. A high degree of integration is characterized by a policy

mix that likely ensures attainment of emission reduction targets. From the perspective of the VOEG framework, policy instrument integration is an indicator of success in coordination and the building of political consensus. Moreover, the consistency of policy instruments with emission reduction targets is a key indicator for a successful long-term climate strategy.

3. Climate policy integration in Germany before the Federal Climate Change Act

This section examines the state of climate policy integration in Germany before the adoption of the Climate Change Act (CCA) in 2019. We demonstrate that policy integration was moderately high in most dimensions, except goal and policy instrument integration in the transport, buildings, and agricultural sector.

3.1. Policy frame

In 2019, climate policy frame integration was moderately high because most ministries perceived climate change as a topic on which they needed to position themselves, yet there was no universal acknowledgement of climate policy requiring an integrated cross-government approach. Shortly after climate change emerged on the German political agenda in the 1980s, the federal parliament launched so-called Enquête-Commissions (1990, 1994) investigating this novel policy problem. The commission yielded a consensual cross-party assessment of climate change as a serious policy problem (Altenhof 2002). However, only few members of parliament understood climate change as a cross-sectoral governance challenge, while the majority regarded it as a confined ‘environmental problem’ (interview 14).

Broader recognition of climate policy as a cross-sectoral issue materialized in 2007, when the German government adopted its first climate policy package, the Integrated Energy and Climate Package (*Integriertes Energie- und Klimaprogramm*, IEKP) comprising mainly energy policies. This perception expanded further with Germany’s 2016 adoption of its Climate Action Plan 2050, which specified a net zero GHG target for the entire economy and introduced sector-specific mitigation targets for 2030.

As of 2019, most ministries recognized climate change as a cross-cutting problem. For example, the previously reluctant transport ministry had set up internal units dealing with climate policy and recognized the need for at least partial electrification of fuels (interview 23). Yet, it remained reluctant to engage in cooperation with other ministries in preparing important climate policy packages, such as the Climate Protection Package 2030 (interviews 5, 6).

3.2. Subsystem involvement

In 2019, subsystem involvement was between moderately low *and* high, because all ministries had formal responsibilities in reducing emissions, but coordination across ministries remained infrequent and superficial.

Up to 2007, The BMU was the only ministry that substantially advanced climate policy (14, 3). Key government ministerial units dealing with climate policy were located within the BMU. In 2010, the energy sector became more involved, when the government introduced its Energy Concept, a set of renewable energy and energy efficiency goals. A small team of five to six high-levels officials from both the BMU and the Federal Ministry for Economic Affairs and Energy (*Bundesministerium für Wirtschaft und Energie*, BMWi) developed this concept in direct coordination (13, 14). Subsystem integration increased further in 2016, when the government adopted its Climate Protection Plan 2050 (*Klimaschutzplan 2050*). The document specified sector-specific emissions targets for the year 2030 as a result of a broad interministerial bargaining process (19). However, these obligations were only executive decisions and not enshrined in legislative acts. This inter-ministerial negotiation process and the adoption of sector-specific mitigation targets led to a moderately low degree of subsystem integration across all sectors.

In 2019, subsystem involvement progressed slightly towards moderately high. The climate cabinet established institutionalizing exchange between all relevant ministries to jointly prepare a major domestic climate policy reform (*Klimaschutzprogramm 2030*).

3.3. Goal integration

The integration of policy goals in 2019 was moderately high for the energy sector, where emission reduction was increasingly prioritized among other policy goals and moderately low for all other sectors, in which climate policy was not prioritized.

In the energy sector, mitigation has increasingly become one sector priority and has sometimes been prioritized over other goals, such as cost-effectiveness. One key indicator is the costly expansion of renewable energies in the 2010s (Joas *et al.* 2016, interview 6). Another one is the coal exit adopted in 2019 – suggested by a corporatist multi-stakeholder coal commission, for which the government committed billions to end coal production. However, climate change mitigation never became the top priority towards which all other sectoral goals were aligned. For example, proposals of the BMWi to adopt strict distance rules for wind power plants would have severely restricted the possibility of expanding wind farms as required by long-term climate targets (Wehrmann 2019).

In the transport, industry, and building sectors, mitigation did not become a priority. Here, goal integration increased from low to moderately low when the government formally defined climate change mitigation as a policy priority with the adoption of the Energy Concept in 2010 and the 2016 introduction of the sectoral mitigation targets for 2030. Many interviewees emphasized that introducing the 2030 sector-targets via the Climate Protection Plan 2050 had strengthened the integration of policy goals (6, 7, 12, 13, 14, 16, 21). At the same time, climate policy-oriented debates started to emerge beyond the energy sector, particularly in the transport (*Verkehrswende*), industry (*Industriewende*), and agricultural sectors (*Agrarwende*).

However, the transport and interior ministry (building sector) and industry units at the BMWi remained reluctant to prioritize climate policy. For example, the transport and interior ministry did not support the introduction of carbon pricing and other ambitious climate policies during the policy process leading up to the Climate Protection Package 2030 in 2019. They only supported policies that impose few costs and that are compatible with other sector goals (interviews 5, 6). This reluctance to prioritize climate policy and the lack of initiative to advance ambitious climate policies suggests that goal integration remained moderately low in non-energy sectors.

3.4. Policy instrument integration

As of 2019, policy instrument integration was moderately high for the energy sector because strong policies (e.g. renewables support, EU ETS, and coal exit) were implemented; it remained moderately low in all other sectors.

As of 2019, the integration of policy instruments with long-term mitigation targets was neither low nor high. Many climate policy instruments existed but the existing policy-packages were repeatedly found incompatible with Germany's emission reduction targets. Throughout the 2010s, the existing climate policy instruments were projected to be insufficient to meet the emission reduction goal in 2020. This goal was eventually achieved, but only due to the measures adopted to contain the spread of COVID-19 (BMU 2013, Umweltbundesamt 2020, Expertenrat 2021a).

The exact degree of policy instrument integration varied across sectors. While GHG emissions between the years 2000 and 2019 declined in absolute terms in the energy-, buildings-, and waste-sector, they remained practically flat in transport, industry, and agriculture (Figure 1; UBA 2021). This reflects the varying levels of stringency in climate-related policies: In energy, the renewable support scheme and the EU-ETS proved very effective. In buildings, some energy efficiency policies have been implemented (UBA 2020). In transport and agriculture, the existing policies could not

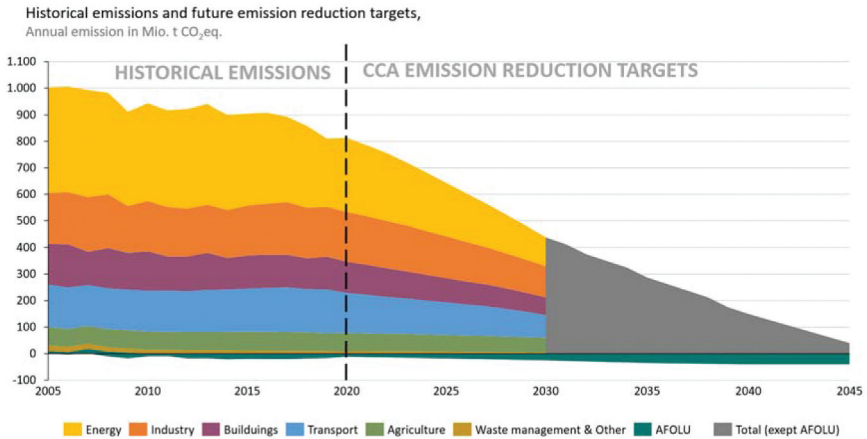


Figure 1. Historical GHG emissions and future GHG emission reduction targets. From 2020, the figure displays annual emission reduction targets as specified in the revised German climate change law passed in 2021. Data source: Bundes-Klimaschutzgesetz (2019) and Bundestag (2021)

drive down emissions (UBA 2021b). Hence, we consider the degree of policy integration to be moderately low in transport and agriculture and moderately high in energy – with buildings and industry in between.

3.5. Political dynamics behind limited policy integration

The limited degree of goal and instrument integration in the buildings, transport and agricultural sector reflects the political conditions in these domains. At least until 2019, many key actors in the transport ministry, the ministry of the interior (partly responsible for building), and the agricultural ministry did not recognize mitigation as a cross-cutting governance problem (14). For example, the transport ministry and the ministry of the interior hesitated in developing substantial climate change measures in the preparation for the Climate Protection Plan 2030 in 2019 (11).

Policy decisions of political actors are often driven by public demand and interest group preferences (Hughes and Urpelainen 2015). In this case, the reluctance of the ministry of the interior, the agriculture ministry, and the transport ministries to prioritize emission reduction and to initiate ambitious climate policies was likely driven by limited public demand among voters and industry opposition towards strong climate action.

All three ministries have been governed by ministers from the conservative CDU/CSU parties during the 2010s. These parties have largely opposed ambitious climate policies, such as a ban on fossil cars or substantial carbon

taxes because the majority of their voter base does not support such measures. Although voters from most German political parties generally support the energy transition (Renn/Wolf et al., 2020), voters of the CDU tend to be less concerned about climate change than the German average and more opposed to ambitious instruments like carbon taxes, performance standards, ban on fossil cars, or electric vehicle subsidies (Levi 2021, Wolf et al. 2021).

Limited climate policy integration was also driven by the focus of the ministries on the interests of their sectoral constituencies, especially the German car industry. Federal ministries led by conservative party ministers, and particularly the transport ministry, considered themselves responsible for protecting their constituencies in the context of corporatist sector governance structures (Meckling and Nahm 2018, pp. 5, 6, 7). The association of German car manufacturers VDA successfully lobbied Germany to oppose strict emission performance standards in the EU, which resulted in larger cars – primarily sold by German manufacturers – being allowed higher emissions (Reh 2018, Mildenerger 2020).

Variation in these two political conditions – voter demand and industry stance – can partly explain the different degree of climate policy integration in the energy sector compared to the transport or buildings sector. Public support for climate policy instruments in the energy sector was much higher than support for policy instruments in the buildings or transport sector. Especially, renewable energy subsidies have been very popular among German voters – even conservative ones – while taxes on fuels for heating or mobility sparked much controversy (Levi 2021, Wolf et al. 2021, Pahle et al. 2021). Moreover, a renewable energy niche market was created in the 1990s to enable the German exit from nuclear power. This led to the creation of effective renewable lobby organizations supporting climate policies in the energy sector. These feedback dynamics contributed to achieving a moderately high goal integration and instrument integration in the energy sector, while the degree of integration remained moderately low in other sectors (Stefes 2020, interview 3).

4. The Federal Climate Change Act

The moderate degrees of policy integration correspond to Germany's difficulties in achieving its climate change mitigation targets. Germany missed its national emission reduction target in 2005 and narrowly met its emission reduction target in 2020, but likely only because of the measures to control infections by COVID-19 (Hein and Graichen 2021). To increase Germany's future ability to meet its climate targets, the Federal Climate Change Act (CCA) was formulated and adopted in 2019 and reformed in 2021. Its objectives are to legislate national GHG reduction targets in line with the Paris Agreement and to ensure compliance with them (Bundestag, 2019). For this purpose, the CCA legislated several

institutional reforms, including a policy adjustment mechanism and an independent expert advisory body, making it the most important institutional reform in the history of German climate governance.

4.1. The emergence of the Federal Climate Change Act in 2019 and its 2021 reform

One key factor motivating the German government to reform its climate governance was the adoption of legally binding emission goals by 2030 under the EU Effort Sharing legislation (EU 2018). With emissions projections indicating that Germany was not on track to meet these targets, pressure mounted to implement domestic climate policy reform (Agora 2018).

This political pressure was further amplified by political and economic developments. In 2018 and 2019, public opinion and industry positions on climate policy shifted significantly. Public support for ambitious climate policies like carbon pricing had long been modest, and climate change was far from being a priority issue for most Germans (Forschungsgruppe Wahlen 2020, Levi 2021). This changed in late 2018, when the Fridays for Future movement fostered an intense societal debate about climate politics. As a consequence, the majority of the German population considered climate change the single most important policy issue in Germany for the first time ever in 2019 (Forschungsgruppe Wahlen 2020). At the same time, the Green Party achieved a 21% vote share in the 2019 spring EU Parliament elections and was temporarily leading in federal polls, raising the prospect of a Green party Chancellor.

Besides shifts in public opinion, in 2018 the German Industry Association published a report arguing that ambitious unilateral climate policy would not harm the German economy, signaling a major shift from its previous emphasis on concerns over competitiveness (BDI 2018). Volkswagen, Germany's largest car manufacturer, announced in spring 2019 that it would re-orient its strategy towards electric vehicles in response to the diesel scandal and tightening regulations.

Anticipating the changes in EU law as well as the already mounting political and economic demand for climate policy, in 2017 the new German government agreed in its coalition treaty to pass a new law 'to achieve 2030 climate goals' (CDU, CSU and SPD 2017). To coordinate and catalyze this process, the Chancellery convened a 'Climate Cabinet' (*Klimakabinett*) in 2019, bringing together ministers from the ministries of the environment, economics, finance, transport, agriculture, and the interior. Four meetings were held at ministerial level, preceded by state secretary meetings and an intense staff-level interministerial coordination process (21). Several interviewed policy makers regarded the Climate Cabinet as

effective in putting climate change on the agenda in the different ministries and in enabling efficient interministerial coordination (6, 8, 14, 21). In September 2019, the coalition parties agreed to the Federal Climate Change Act and to a new Climate Protection Package 2030 (CPP; *Klimaschutzprogramm 2030*) comprising a novel carbon pricing system for transport and heating and other climate policies.

In spring 2021, the EU agreed to ratchet up its 2030 emission reduction target as part of its Green Deal Agenda (EU 2021). This required Germany and other member states to ratchet up their domestic climate targets accordingly. In addition, in April 2021, Germany's Federal Constitutional Court ruled parts of the CCA unconstitutional arguing that the relatively lenient emission reduction targets until 2030 would place disproportional burden for emission reductions on younger people and future generations (BVerfG 2021). The German government tabled a reform proposal for the CCA within weeks of the ruling, and Federal Parliament and Council adopted the CCA reform in June 2021. The reform mandated, among other smaller adjustments, that a net-zero GHG target should be achieved by 2045 and introduced more ambitious aggregate intermediate goals for 2030 and 2040.

4.2. The content of the Federal Climate Change Act

The CCA legislates a federal net GHG emission reduction target of at least 65% (first version of CCA: 55%) by 2030 compared to 1990, translating Germany's responsibilities under the existing (European Parliament 2018, European Commission 2020) and expected adjustments of the EU's Effort Sharing Regulation into national law. The CCA also legislates annual and sectoral emission reduction targets (2020–2030) for industry, building, transport, agriculture, and waste management. The sectoral targets had already been established by executive decision in the *Klimaschutzplan 2050* in 2016 but were not legislated by Federal Parliament until the CCA. It is worth noting that these sector targets were not set based on cost-effectiveness considerations (24). The government can flexibly adjust these sector targets in due course if aggregate emission reduction is maintained.

The CCA also requires the federal government to monitor emission levels and to adjust its policy mix to ensure the legally required emission reduction. It legislates Climate Protection Programs (*Klimaschutzprogramme*, CPP) as the main forward-looking policy planning instrument. It also introduces so-called instant programs (*Sofortprogramme*, IP) as primary backward-looking policy adjustment mechanisms. The IPs must be formulated and adopted in case GHG emissions exceed the sectoral emission reduction limit. Both CPP and IP

are embedded in the broader Climate Protection Plan (*Klimaschutzplan*), which is a long-term strategy document containing emission reduction targets required by EU law and the Paris Agreement (Albrecht 2020).

The CCA also requires an impact assessment to be conducted before implementing a CPP. The government must consult with subnational jurisdictions, business, civil society, and government scientific advisory councils when preparing a new CPP.

The CCA introduces an obligatory emission monitoring mechanism in which sectoral emissions are reviewed annually and compared to the sectoral emission reduction targets. On March 15 each year, the Federal Environmental Protection Agency publishes an estimate of the previous year's emissions, which is reviewed by the newly created Expert Advisory Council. If a sector's emissions exceed the sectoral emission budget, the federal ministry responsible for this sector must propose an IP within three months. After the 2021 reform, the CCA also requires the Expert Advisory Council to publish a biannual report on historical and future GHG trends, and on the effectiveness of policy instruments.

In 2021, the IP mechanism was triggered for the first time after the building sector exceeded its sector emission target. The ministries of the interior and for the economy prepared an IP proposal whose assumptions were reviewed by the Expert Advisory Council, who found it to be insufficient to achieve the required emission reductions (Expertenrat für Klimafragen 2021b). Subsequently, the federal government will negotiate with all relevant stakeholders and may propose legislation to implement the IP or another suitable policy update. There is no legal requirement to adopt the IP.

5. Analysis of the Federal Climate Change Act from a climate policy integration perspective

In this section, we assess the potential of the institutional reforms specified in the CCA to advance CPI in Germany and analyze how they may influence the dynamics of German climate change politics. Our assessment is based on the analysis of the document and 26 interviews with high-level German policy makers and experts.

5.1 The CCA does indirectly advance recognition of climate policy as cross-sectoral project

The CCA does not explicitly frame climate policy as a cross-cutting issue. However, it indirectly advances the recognition of climate change as a cross-sectoral governance challenge by introducing a net-zero GHG

emission target for 2045. Specifying such an ambitious economy-wide goal can increase awareness of climate change as a cross-sectoral challenge.

However, by disaggregating the national emission reduction goal into sector goals and by making each ministry individually responsible for delivering an IP when sectoral goals are missed, the CCA strengthens *multi*-sector governance. A *cross*-sectoral approach, in contrast, requires prioritizing cross-sectoral policy instruments (e.g. carbon pricing) and sector coordination mechanisms in devising policy updates. Both are missing in the CCA. We thus conclude that the CCA consolidates the pre-existing moderately high degree of integration and does not lead to a universal recognition of the cross-sectoral nature of climate policy in Germany.

5.2 The sectoral targets and sector-specific responsibilities consolidate subsystem involvement

By assigning a formal mandate for sector-specific climate policymaking to all relevant ministries and by requiring them to propose instant policy updates when sector emission targets are missed, the CCA consolidates a moderately-high degree of subsystem actor involvement.

As noted in [Section 3.2](#), subsystem involvement had already progressed to a moderately high degree before the CCA because sectoral emission targets have been introduced by the Climate Protection Plan 2050. However, the formal legislation on these targets through the CCA likely increases their legitimacy and durability. Moreover, the highly ambitious emission reduction targets introduced by the CCA reform, combined with the IP responsibilities, incentivize ministries to enhance their climate policy activity. However, since the CCA requires each ministry to develop IPs independently and does not require interministerial coordination, it falls short of significantly advancing coordination among subsystems.

5.3 The ambitious sectoral emission reduction goals conflict with existing sector goals

As previously noted, the legislation of the CCA likely increased the legitimacy and durability of sector targets relative to their previous status as executive cabinet decisions. We therefore conclude that the CCA elevated goal integration from a moderately low to a moderately high degree in all sectors except the energy sector, which had attained this level already before the introduction of the CCA ([Section 3.3](#)).

Establishing mitigation as a formal sector policy objective can contribute to overcoming the gridlock that defined climate politics in the 2010s. For example, the sectoral targets provide leverage for ministerial units

advocating stronger climate change policy who earlier had to follow the directives of reluctant ministers (21). One indicator for the existence of such a mechanism is the increased climate policy activity across ministries after sectoral emission targets were first introduced (6). Moreover, the CCA increases accountability by raising the costs of non-compliance for ministers who fail to meet sectoral targets (Bromley-Trujillo and Poe 2020).

One limitation of the CCA is that it does not adjust the already-existing non-climate sector goals. Therefore, goal conflicts between the enhanced climate targets and pre-existing sector policy objects persist. For example, the existing targets for the deployment of renewable energies, electric vehicles, and building retrofit rates are considered inadequate to deliver the necessary emission reduction specified in the CCA (Fischer and Kube 2020b, Holzapfel and Kriener 2021; interview 7). Moreover, several German states require new onshore wind plants to have a strict minimum distance from existing settlements, which is incompatible with the renewable energy targets and the emission goals in the energy sector (Fischer and Kube 2020a).

The incompatibility between climate targets and other sector goals is problematic from a mitigation perspective because the CCA does not require ministries to prioritize mitigation over other goals. The CCA advances goal integration to a moderately high degree by legislating sectoral emission reduction goals. However, it falls short of ensuring a high degree of goal integration because it does not require emission reduction to be prioritized relative to other sectoral goals.

5.4 Monitoring requirements, mandatory impact assessments, and instant policy reform mechanisms strengthen policy instrument integration

The first version of the CCA in 2019 was adopted together with the CPP 2030 to ensure that the goals specified in the CCA are backed up by substantive policies. However, government-mandated impact assessments projected that the policies adopted in the CPP would fail to meet the CCA's 2030 targets (Prognos *et al.* 2020, Umweltbundesamt 2020). Policy instrument integration thus remained below a high degree.

In the short term, the 2021 CCA widens the gap between increasingly ambitious policy goals and unadjusted policy instruments. In the transport sector, for example, the first version of the CCA required transport emission to decrease to 95 Mt CO₂e annually by 2030. However, the policy instruments adopted in the CPP 2030 have been projected to lead to annual emission of 128 CO₂e Mt CO₂e by 2030, leaving a projected gap of 33 Mt CO₂e. With the CCA reform, now 85 Mt CO₂e are envisioned for 2030, thus widening the ambition gap to 43 Mt CO₂e (Umweltbundesamt 2020).

However, the CCA's institutional provisions are designed to enhance policy integration over time, such as through the annual emissions review and IP mechanisms (see [Section 4](#)). In fact, one interviewee reported that the IP provision was added to the CCA because the Chancellery was dissatisfied with the policy instrument proposals it received from ministries in the preparation of the CPP 2030. Anticipating an inadequate instrument mix, the Chancellery pushed for a mechanism that would strengthen the consistency of existing sectoral policies with mitigation targets gradually over time (11). Moreover, the CCA requires an obligatory impact assessment for all forthcoming CPPs and the newly introduced Expert Advisory Council is asked to publish a bi-annual report on the effectiveness of policy instruments. These provisions increase transparency over the degree to which policy instruments are consistent with emission reduction goals and thereby ministerial accountability.

The enhanced ministerial accountability for meeting emission reduction targets may also increase public salience of emission reduction goals and the policy instruments necessary to achieve them. In the past, many Germans were generally supporting climate change mitigation but opposing the most ambitious climate policy instruments, making policy instrument integration politically difficult. A higher salience of whether policy instruments are sufficient to meet climate goals might improve the political conditions for increasing climate policy integration.

Likewise, the stricter institutional provisions to ensure climate policy integration may signal a higher degree of climate policy credibility for industry. As stricter future climate policies are becoming more likely, industry actors might adjust their investment accordingly. This may further mitigate industry opposition and thus facilitate future policy integration.

Limitations remain, however. The IP mechanism is only triggered after emissions have exceeded sector goals: it ignores projected future failure to meet mid-term or long-term emission targets. As of 2021, both the transport and the building sector are projected not to meet even half of the necessary emission reduction by 2030 (Prognos *et al.* 2020, Umweltbundesamt 2020). Yet, the transport sector has been exempted from the IP mechanism in 2021 because of temporary emission reductions induced by the COVID-19-lockdowns (Expertenrat für Klimafragen 2021a). Moreover, while the CCA requires ministries to *propose* an IP reform and the government to *discuss* that proposal, it does not require the government to *implement* it. Thus, the CCA does not guarantee goal attainment.. Finally, the IP mechanism does not advance coordination and careful planning across ministries. Overall, we conclude that the CCA leads to a moderately high degree of policy instrument integration in all sectors.

5.5 Summary

Table 2 summarizes our assessment of the contribution of the CCA's institutional reform to enhancing German CPI. We find the CCA to consolidate a moderately high degree of integration in all four dimensions. It does little to advance policy integration in the framing and subsystem integration dimensions, where the degree of integration has already been moderately high in 2019. However, the CCA enhances goal and policy instrument integration from moderately low to moderately high degrees in all sectors except energy, where that degree had already been achieved previously.

6. Discussion and Conclusion

In this article, we analyze (i) the state of climate policy integration in Germany before the CCA in 2019, (ii) the factors contributing to the introduction of the CCA, and (iii) its main contents. We also assess (iv) the CCA's potential for advancing CPI. We show that before the CCA, climate policy integration in Germany was moderate. The projected inability to meet the 2020 and 2030 targets contributed to the adoption of the CCA. The CCA establishes new institutions that address CPI, such as legislated sectoral emission targets, an Expert Advisory Council, a Climate Policy Program, an Instant Policy Update mechanism, obligatory impact assessments, and a stakeholder consultation mechanism. Yet despite these extensive reforms, the CCA does not lead to a high degree of climate policy integration. It advances the integration of policy instruments and policy goals in the non-energy sectors but contributes less to advancing subsystem integration or a shared recognition of climate policy as a cross-cutting governance challenge.

This case study of the German Climate Change Act also entails important lessons for CPI and varieties of climate governance more broadly.

Political institutions can increase political *coordination* either through multi-sectoral or cross-sectoral governance. Germany has chosen the multi-sectoral path. It has adopted annual emission reduction targets for each individual industrial sector and created an instant policy update mechanism in which each ministry is responsible for proposing policy reforms if emission exceeds the sectoral budget. This improves subsystem involvement and elevates climate change mitigation to a priority goal in each sector. However, it also risks that goals and instruments will not be well coordinated across sectors. Similar dynamics can be seen in India, where sector logics determine the dynamics of climate politics (Pillai and Dubash 2021). Countries at early stages of developing climate institutions, such as Australia, where subsystem

Table 2. The contribution of the Climate Change Act to policy integration.

Dimension of integration	Expected effect of CCA	Explanation
Policy frame	<i>Little</i> (moderately high integration)	<ul style="list-style-type: none"> ● Introduces new net-zero GHG goal in 2045
Subsystem involvement	<i>Little to none</i> (moderately high integration)	<ul style="list-style-type: none"> ● Assigns formal responsibilities for sector emission management to individual ministries ● No coordination between ministries for the preparation of IPs formally required
Policy goals	<i>Significant</i> (moderately high integration in all sectors)	<ul style="list-style-type: none"> ● Legislates emission reduction as priority sector goal ● Does not require ministries to prioritize emission reduction over other sector goals or ensure coherence with other sector goals
Policy instruments	<i>Significant</i> (moderately high integration)	<ul style="list-style-type: none"> ● Short-term dissonance between goals and instruments with CCA reform ● Annual review and instant adjustment program (IP) might increase instrument consistency over time ● Obligatory ex-ante impact assessment and bi-annual review by EExpert Advisory Council ● Does not guarantee consistency of instruments with goals

involvement is still low and neither multi-sectoral nor cross-sectoral governance structures are in place (MacNeil 2021), still have a choice in deploying multi- or cross-sectoral institutions in the future.

The German case also demonstrates how political institutions can *mediate conflicts* and advance *political consensus* on climate policy in different dimensions. The early Enquête Commission helped build a widely shared perception of climate change as a serious policy issue, while the coal commission and the climate cabinet brought key stakeholders together to reach consensus on major policy reforms. While the CCA does not advance a shared perception of climate change as a cross-sectoral governance challenge, it reaffirms consensus on the overall emission reduction targets, similar to the CCA in the UK (Averchenkova *et al.* 2021). Moreover, the introduction of annual emission reduction goals in the CCA may increase the salience of meeting or missing these goals and may help to build public support for policies necessary to achieve these goals. Institutional mechanisms fostering consensus may be particularly important for countries with strong political polarization such as the United States (Mildenberger 2021). However, it appears implausible to transfer specific German institutions, such as the Enquête commission or a corporatist coal commission, to, for example, the US context.

Finally, political institutions can *strategically* lock in long-term goals. Legislating emission reduction targets actually opened up legal pathways for challenging them, and the Constitutional Court ruling in 2021 prompted an immediate ratcheting up of targets by the governing coalition. The CCA also introduced mandatory impact assessments and instant policy update requirements that could support the ratcheting-up of climate policy instruments. In our case, the German government increased the ambition level of emission reduction targets without, so far, delivering equally ambitious policy instruments. This mirrors the situation in the UK where the CCA increased the gap between goals and policy instruments (Averchenkova *et al.* 2021). While this can be seen as case of ‘all talk little action’ (Lamb *et al.* 2020), it can also be regarded as a strategic mechanism for sequencing goals and instruments: Governments unable to forge agreement on ambitious instruments in the short term may instead organize consensus on goals, and institutionalize mechanisms such as mandatory impact assessments, policy update requirements, and independent expert advisory councils that change future political pay-offs by making non-integration of policies and targets transparent. This might support medium-term and long-term agenda-setting and policy reforms leading to a ratcheting up of climate ambition over time. Moreover, the strict requirements for impact assessment and policy updating may signal industry groups that emission reduction is more serious and thereby incentivizes investment in low-emission technology (Meckling 2018).

In terms of theory development, we found the indicators offered by PI theory (as developed by Candel and Biesbroek 2016) helpful for evaluating how national institutional features affect political processes and decisions. However, there are also limitations to our analysis and to using the PI framework. Most importantly, our evaluation of the CCA draws on perceptions of key policy makers and data available 21 months after it was adopted. Hence, our evaluation of the CCA constitutes a preliminary assessment that needs to be revisited after it has been in effect for several years. Moreover, we found PI theory to be particularly useful for assessing the interaction of political actors within government. However, it appears to be less suitable for analyzing political dynamics regarding the formation of public opinion or the influence of interest groups.

Finally, our analysis cannot determine whether high degrees of political integration are necessary, or sufficient, to achieve ambitious emission reduction targets. There may be instances where countries with low levels of CPI still achieve significant emission reduction, e.g. due to rapid reduction of low-carbon technology costs induced by other countries' climate policies. However, for the case of Germany, moderate degrees of CPI in the past have correlated with difficulties in achieving emission targets. Institutional mechanisms like those specified in the CCA promise to gradually enhance climate policy integration and might therefore help Germany – as well as other countries – to achieve emission reductions in line with the Paris Agreement.

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