

Choosing Who to Foot the Bill: Distributional Politics of Green Energy Transition in Germany and the UK

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Abstract

Green energy transition is inherently a distributional phenomenon. The government can shape how the costs and benefits of this transition are allocated among society and the market in a variety of ways. I refer to these interventions as distributive strategies, which include economization, redistribution, and compensation. Variations in the use of these strategies can have a significant impact on the spread of the costs and benefits of green energy transition i) between consumers-producers, ii) among consumers, and iii) between consumers-taxpayers. For instance, in Germany, the transition disproportionately benefitted renewable energy producers in comparison to the UK due to insufficient economization. Additionally, excessive redistribution in Germany led to an imbalance in burden-sharing, favoring industry at the expense of other renewable energy consumers, such as households—something less pronounced in the UK. Finally, Germany's comprehensive compensation schemes spread the costs of the transition more broadly than in the UK. Such cross-case variations raise critical questions about the equity of green energy transition: Why are the costs and benefits distributed disproportionately in one country but not in another? What compromises its fairness? And what determines the use of strategies that dictate distributional outcomes? This research seeks to answer these questions by studying the green energy transition in two countries frequently examined in the comparative political economy literature: Germany and the UK. By situating partisan politics, electoral dynamics, and interest group dynamics within a framework akin to public choice analysis, the study explores the interplay between political parties, renewable energy consumers and producers, and taxpayers. In addition, I demonstrate how contingent dynamics associated with these variables affected the cross-case differences in outcomes.

Keywords: Green energy transition, distributional politics, public policy, energy policy, renewables, comparative political economy, Germany, United Kingdom

I. Introduction

Green energy transition is inherently distributional: It imposes short-term costs on renewable energy consumers, while benefitting renewable energy producers. However, the government can shape how costs and benefits are allocated through different distributive strategies. To illustrate, it can use cost-effective policy instruments that maximize clean energy generation at minimal cost. In this way, it can reduce wealth transfer from consumers to producers. The government can also reallocate the burden-sharing of the transition among consumers. Furthermore, it can also shape the distribution of energy transition expenses between renewable energy consumers vs. taxpayers by deciding how it is financed—either passing costs directly onto consumers via bills or using tax revenues.

These are three distributive strategies which I refer to as economization, redistribution, and compensation respectively.

These strategies affect how transition costs and benefits are distributed i) between consumers-producers, ii) among consumers, and iii) between consumers-taxpayers. For instance, insufficient economization in Germany benefitted renewable energy producers disproportionately at the expense of consumers. By contrast, the UK's stronger focus on economization better protected consumers. In terms of redistribution, generous exemptions granted to industry in Germany shifted more of the transition's costs onto households and small- and medium-sized enterprises (SMEs), whereas UK did not offer such generous exemptions. Finally, although both countries primarily financed the transition through electricity bills, they also used the state budget to alleviate burden on consumers: Especially in Germany where compensation strategy was used more comprehensively, the cost of green energy transition began to be spread more broadly.

These cross-case variations raise critical questions about equity in green energy transition: Why are its costs and benefits disproportionately distributed in one country, but not the other? What compromises fairness in the transition? And what shapes the strategies that dictate distributional outcomes? These questions are especially relevant given the transition's potential to provoke social conflict: Indeed, while climate policies promise long-term returns for all on a planet at risk, their short-term costs may concentrate disproportionately upon certain groups. The 2018 *Gilets Jaunes* protests in France illustrate this dynamic, as thousands opposed a fuel tax burdening commuters. Such reactions demonstrate that actors are not necessarily willing to shoulder costs, hindering public support for environmental policies. The government has the option to ignore distributional oppositions, but doing so can pose electoral risks. From a policy standpoint, the government also bears a responsibility to design policies that benefit public interest best.

This paper aims to investigate the questions above through a comparative analysis of Germany and the UK. Although both countries have achieved nearly identical renewable energy targets, they pursued markedly different distributive strategies to do so. Many factors drive these differences such as natural endowments. However, instead of focusing on obvious and structural factors, I offer a more dynamic account by employing a framework akin to public choice analysis at the intersection of the political parties, renewable energy consumers and producers, and taxpayers: I hypothesize that Germany and the UK adopted distributive strategies differently due to variations in i) the partisan orientation of the ruling governments, and ii) organized interests of consumer/producer groups in question.

This study finds substantial support for the framework's explanatory power: In Germany, economization was weaker compared to the UK due to unfavorable conditions such as a relatively strong renewable energy producer group that resisted the economical use of financial resources, and party alignments that favored producer interests.

Redistribution was more extensive in Germany, where a strongly organized industry and a political system that prioritized industrial interests over those of non-privileged consumers generated favorable conditions. In contrast, British industry had less policy influence, and an anti-redistribution stance in the UK political system further limited efforts to shift transition costs onto households and other non-privileged groups.

Unlike Germany, the UK barely shifted the cost of its energy transition to taxpayers through compensation. Here, more specific public choice dynamics also played a role—for example, German governments' intent to relieve the non-exempt SMEs, and UK

governments' reluctance to use the state budget for policy interventions, including green policies.

In some cases, however, this framework provides only limited insight into why distributive strategies diverge across the two countries. Its explanatory strength varies across distributive strategies: Differences in partisan orientation and organized interests account well for the cross-case variation in redistribution, but their explanatory power is weaker in the cases of economization and compensation. Where public choice dynamics provide limited leverage, I incorporate an alternative explanation highlighting contingent dynamics. Unlike partisan orientation, contingent dynamics do not inherently align parties with consumers, producers, or taxpayers. Instead, they may lead parties to temporarily align electoral interests with these groups, or prompt organized interests to mobilize or demobilize in ways that diverge from their usual stance. As a result, contingent dynamics can generate an artificial bias in favor of a specific distributive strategy—independent of partisan orientation or organized interests.

These dynamics may involve several factors such as co-opting the opposition, expediency, new funding sources, miscalculation, popular demand, or interdependency between distributive strategies. In Germany, for instance, the ambitious energy transition—pursued despite high costs—was sustained by co-opting industry with exemptions from policy burdens, which might otherwise have posed strong pressure for economization. Similarly, in the adoption of compensatory schemes, contingent dynamics—such as carbon tax revenues, sequencing of strategies, or energy crisis—proved more decisive than conventional public choice dynamics. While the main analysis concentrates on public choice dynamics, it also makes frequent reference to contingent dynamics where relevant.

The next section presents the theoretical framework. The subsequent section outlines the research methodology. Section four presents the cross-case differences in detail. Sections five through seven analyze each distributive strategy, explaining the contrasting approaches of Germany and the UK. The conclusion summarizes the findings and reflects on their political economy and policy implications.

II. Theoretical Framework

Previous research

Scholars have extensively studied the distributional politics of energy transition. Much of this research focuses on the negative influence of carbon-intensive industries on climate policies (Anger, Böhringer and Oberndorfer, 2008, Harrison, 2012, Cao, 2012, Hughes and Urpelainen, 2015, Harrison, 2015, Stokes, 2015, Downie, 2017, Mildemberger, 2020). Some studies also explore the power of green energy sectors in shaping climate policies (Michaelowa, 2005; Cheon and Urpelainen, 2013).

Within the broader literature of energy justice (e.g., Carley and Konisky, 2020), scholars emphasize the social equity perspective, particularly how the burden of climate mitigation spreads across income groups (Neuhoff et. al., 2013, Farrell and Lyons, 2015, Frondel et. al., 2015, Grover and Daniels, 2017, Mastropietro, 2019, Lamb, et al., 2020 and Böhringer et. al., 2022). In the same vein, some scholars examine the cost of energy transition for consumers as a factor shaping policy design (Finon and Perez, 2007, Grösche and Schröder, 2014). The literature also investigates distributional politics through different lenses such as political institutions (Finnegan, 2022).

This paper advances the existing scholarship by introducing a theoretical framework that offers an integrated approach to distributional politics in the energy transition: This framework conceptualizes identifiable patterns through the government shapes the costs and benefits of the energy transition as distributive strategies. The framework contributes to the study of distributional politics in two ways. First, it enables the observation of multidimensional nature of distributional politics, highlighting key actors and associated payoff structures in policy-making. Analytically this helps identify potential venues of social conflict as policymakers navigate the contentious nature of the energy transition. Second, the framework demonstrates how distributional politics can turn into a powerful policy intervention in the hands of the government, especially in choosing who to foot the bill in green energy transition.

A further strength of the distributive strategies framework lies in its explanatory power. Its process-oriented approach shows how particular distributional outcomes result from successive and calculated but sometimes contingent public policy dynamics in which some parties could advance their interests, whereas others fail to act. Using the framework helps trace distributional outcomes to resource structures of competing groups, their access to information, and capacity for action.

Finally, this research makes a substantive contribution to the comparative political economy literature examining the environmental policies of Germany and the UK (Mitchell and Connor, 2004, Nolden, 2013, Hall, Foxon, and Bolton, 2015, and Četković and Buzogány, 2016). By explaining cross-case differences through varying public choice dynamics, this study adds a fresh perspective on alternative pathways to green energy transition within this body of work.

Distributive strategies: Redistribution, compensation, and economization

To construct a taxonomy of distributive strategies, I utilize conventional terminology from the distributional politics literature (see, e.g., Bossert and Fleurbaey, 1996, Bradley, David, et al., 2003, Iversen and Soskice, 2009, and Thewissen, 2014): While almost every public policy has distributive impacts, the government sometimes intervenes to adjust these impacts. Redistribution denotes such interventions that relocate policy costs or benefits from one socio-economic group to another. Compensation, on the other hand, involves policies reimbursing socio-economic groups that incur losses during policy implementation with the help of state budget.

I also add economization as a separate strategy, since it also shapes distribution outcomes among consumer and producer groups. In essence, economization entails employing cost-effective policy instruments that promote renewables while imposing the least economic burden on electricity consumers. Finally, I consider ignoring (Lindvall, 2017) as a latent strategy, reflecting status quo outcomes the government does not rectify. However, given its implicit presence in my research, I mostly focus on the other three distributive strategies.

While measuring costs and benefits in the energy transition, I exclusively refer to financial transactions in electricity bills used to support renewable energy. Otherwise, broader cost-benefit implications are more complex and multidimensional. Also, in the temporal dimension, this research focuses on short-term economic implications of the green energy transition rather than long-term considerations—such as the merit-order

effect or the anticipated affordability of renewables¹. I justify this scope with the myopic nature of policymaking, which incentivizes policymakers to focus on the short-term costs of the transition rather than its long-term returns.

A public policy perspective: Political parties and competing interest groups

At any t point of an energy transition, the government is likely to employ a combination of distributive strategies, producing varied payoff structures for renewable electricity consumers and producers—that also correspond to distinct segments of the tax base (see *Appendix D*). What explains a country's adoption of a specific configuration of distributive strategies during its energy transition? This is a convoluted question to elucidate given multiple causal mechanisms at play: To tackle this, I employ a parsimonious explanatory framework, partially grounded in public choice analysis. In public choice, the government is often seen as a broker among actors competing to shape policy outcomes.² In my own framework, however, I treat the government as a non-unitary entity made up of parties with varying partisan orientation: Parties often face dilemmas over distributing the cost and benefits of energy transition. I study political parties' support for a particular distributive strategy as a function of that strategy's distributional effects on distinct consumer, producer, and taxpayer groups within their electoral constituencies and broader political base.

To operationalize this framework, I focus on two key variables: i) partisan orientation and ii) organized interests. Following the logic in conventional left-right spectrum, I operationalize partisanship as conventional leanings of governing political parties to align with specific consumer or producer groups—e.g., a pro-business political party aligning with producers. I also examine the role of organized interests associated with renewable energy consumers, producers, and taxpayers, referring to their capacity—including latent—to mobilize and influence policy outcomes. These dimensions of public choice are closely intertwined but still analytically distinct. Considering their likely interaction, I do not specifically isolate their individual empirical effects. Therefore, the empirical analysis presented in the paper should be interpreted as a holistic assessment.

In some cases, the explanatory power of these two variables—which I frequently cluster under the label of public choice dynamics for ease of reference—may be limited. This is because their relatively stable nature may not match the variability of phenomena under investigation. Thus, I also turn to additional explanatory variables that can possibly mediate and interact with partisan orientation and organized interests, focusing on contingent dynamics. Unlike partisan shifts, contingent dynamics do not make parties inherently pro-consumer, producer or taxpayer. Rather they may cause parties to tentatively align electoral interests with these groups (e.g., high energy efficiency making policy makers complacent about excessive policy costs against consumers interests). Similarly, contingent dynamics may affect organized interests by prompting groups to unusually mobilize for or demobilize against a distributive strategy they would back or resist under normal circumstances (e.g., lack of opposition due to side payments or cooptation).

Studying contingent dynamics broadly—as a residual category encompassing various factors influencing policymakers—enables a comprehensive account of dynamics shaping distributive strategies. At the same time, juxtaposing them with public choice

¹ TRAX 024

² On public choice and green energy transition, see, e.g., Gawel et al., 2014.

dynamics allows studying distributive strategies through competing/rival explanations. In many cases, contingent and structural factors—such as resource endowments—likely remain primary drivers of distributive strategies. However, my analysis demonstrates the explanatory value of public choice dynamics, offering a more dynamic account of distributive strategies.

III. Methodology

Data

The empirical foundation of this study is built on extensive qualitative data collection, including i) 65 semi-structured interviews with knowledgeable people from business, politics, and non-governmental organizations (NGOs) and ii) a systematic investigation of two core data sources—news coverage and parliamentary documents. I cite interview data anonymously, with a full list of interviewees provided in *Appendix II*. For news coverage, I utilized the *Nexis Uni* database.³ To assess political party stances, I relied on parliamentary documents in the German Bundestag's data source *DIP*⁴ and the British Parliament Westminster's digital library *Hansard*⁵. I further supplemented these sources with data from academic and gray literature.

Additional details on these data sources are available in Transparency Appendix (TRAX), which houses raw empirical data in a publicly accessible repository.⁶ The paper frequently references TRAX in footnotes:⁷ Using TRAX enables deployment of rich qualitative data while preserving context and empirical grounding.⁸

Empirical strategy

The paper's empirical strategy is based on using data for both theory-building and theory-testing, but for different purposes:⁹ For theory-building, I use case study data to develop a taxonomy of distributive strategies, which then informs the collection of relevant observational data. This data is subsequently tested against external theoretical frameworks, primarily based on public choice theory dynamics.

My empirical strategy leverages the cross-case variation between Germany and the UK within a comparative case study design. When conditions are insufficiently comparable, I supplement the analysis with counterfactual reasoning.¹⁰ Germany and the UK offer comparable cases: Both achieved similar renewable energy targets but through contrasting strategies. Their political and economic structures also vary in public choice dynamics—the core explanatory variable.

Below, I outline observable implications by configuring favorable conditions for each strategy with respect to partisan orientation and organized interests. These conditions

³ TRAX 003

⁴ Das Dokumentations- und Informationssystem für Parlamentsmaterialien, dip.bundestag.de/

⁵ Hansard, hansard.parliament.uk/

⁶ Hecan, Mehmet, 2025, "Choosing Who to Foot the Bill: Distributional Politics of Green Energy Transition in Germany and the UK", <https://doi.org/10.7910/DVN/XRPULI>, Harvard Dataverse.

⁷ See: Cambridge University Press, 2024, "Annotation for Transparent Inquiry", <https://www.cambridge.org/core/services/authors/annotation-for-transparent-inquiry-ati>.

⁸ See Jacobs et al. 2021.

⁹ To avoid the bias of theory-testing on the same cases used for theory-building, Geddes, 1996.

¹⁰ See TRAX 164

also inform my theoretical expectations which are derived a priori.¹¹ Then, in the empirical sections that follow, I demonstrate how the cases of Germany and the UK approximate these conditions. If distributive strategies are shaped by public choice dynamics, we should observe meaningful cross-country differences in partisan orientation and organized interests. A surplus of favorable conditions in a case where a distributive strategy is stronger suggests a stronger explanatory power for public choice dynamics, whereas a lack of difference or a deficit of favorable conditions indicates weaker attribution. For instance, if economization is weaker in Germany than in the UK, the ideal conditions for economization should also be less pronounced in Germany. I apply the same logic to redistribution and compensation. The empirical sections tabulate these conditions in detail.

Also, while the main text narrates the empirical analysis, *Appendix III* reconstructs the tabulated conditions in the empirical sections through a Bayesian framework, which I also use as a shadow causal identification strategy. Rather than offering a formal application of Bayesianism, the objective of this appendix is to show how the weight of accumulated evidence distributes across my arguments. This allows me to provide a cumulative inference about the plausibility of public choice dynamics in explaining distributive strategies. At the same time, the appendix highlights empirical domains where public choice dynamics appear weak, pointing instead to alternative explanations such as contingent dynamics. Ultimately, organizing the evidence this way enhances the transparency of my empirical strategy.

Economization

For economization, the primary policy choice dilemma for political parties lies in striking a balance between consumer and producer interests: A typical energy transition imposes short-term costs on renewable electricity consumers, while benefitting producers. Considering these dynamics, it is possible to configure favorable conditions for economization as follows:

Table 1. Configuration of Favorable Conditions for Economization

Partisan orientation	Organized interests	
i) favoring consumers over producers	ii) powerful for consumers	iii) limited for producers

Redistribution

Unlike economization, redistribution concerns only costs and their allocation among consumer groups. Here, the central policy dilemma for political parties is to ensure the fairness of energy transition while spreading its burden across society. A strong industry—seeking exemption from subsidy costs—is likely to advocate for less burden-sharing through redistribution, whereas other non-exempt consumer groups like households or SMEs may resist covering the tab left by the industry. Taking these dynamics into account, it is possible to configure favorable conditions for redistribution as follows:

¹¹ Here, for the sake of parsimony, I employ a linear configuration of theoretical expectations based on distributional outcomes. Otherwise, actors' interests could be defined in multiple ways.

Table 2. Configuration of Favorable Conditions for Redistribution

Partisanship	Organized interests	
i) favoring industrial consumers over non-exempt consumers	ii) powerful for industrial consumers	iii) limited for non-exempt consumers

Compensation

Promoting renewables can have regressive effects, as subsidy charges are reflected in electricity bills at a flat rate—regardless of income and revenue. Compensation schemes whose financing draws on progressive taxation can counterbalance these effects. If the organized interests of consumer groups demanding progressive financing are powerful and the partisanship of the government is favorable to defending their interests, then compensation is more likely. Since such schemes rely on public funds, the organization and taxpayers’ interests and their political representation are also critical. Given these dynamics, it is possible to configure favorable conditions for compensation as follows:

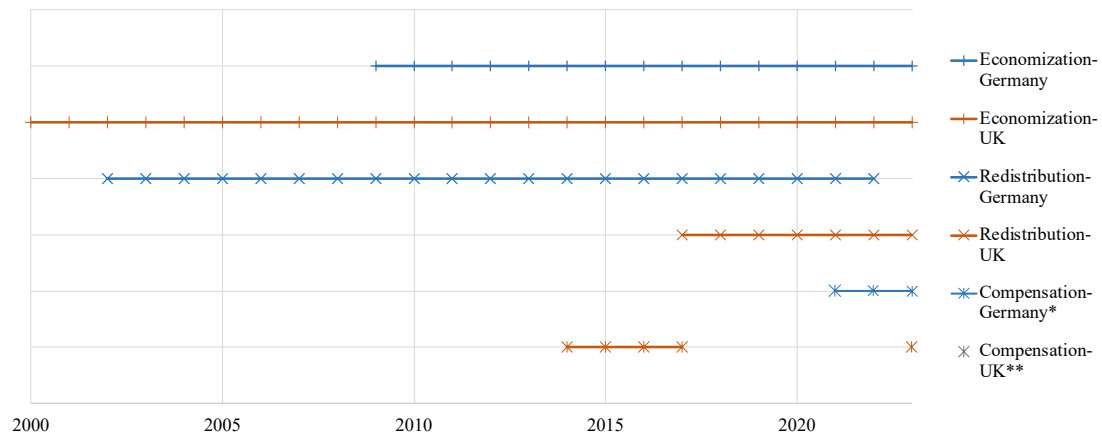
Table 1. Configuration of Favorable Conditions for Compensation

Partisanship	Organized interests	
i) favoring renewable energy consumers over taxpayers	ii) powerful for renewable energy consumers	iii) limited for taxpayers

IV. Temporal variations and associated payoff structures in cross-case differences

The trajectories of green transition in Germany and the UK display distinct combinations of distributive strategies. One notable difference lies in economization: Although the UK began its transition later, it was quick to adopt cost-effective measures to curb policy costs. In contrast, Germany’ economization efforts primarily developed in response to escalating policy expenses from 2009 onward. Redistribution also diverged notably: It defined the German transition from the early 2000s, whereas the UK did not implement it until 2016.. Finally, both countries introduced compensation schemes recently, but the UK’s was short-lived—limited to 2022—while Germany introduced them as a long-term policy. Figure 1 below highlights variations in the temporal dimension of distributive strategies. Variations also exist in the extent of implementation of these strategies, which are explored in the following sections.

Figure 1. Use of Distributive Strategies over Years in Germany and UK



*The compensations in 2021 and 2022 were partial.

**The UK compensations during 2014-2017 were specifically given the EIIIs.

The configuration of these varied strategies had significant distributional implications i) between consumer and producer groups, ii) among different consumer groups,¹² and iii) between consumers and taxpayers. In Germany, the limited success in economization pitted the interests of consumers against those of producers. Redistribution further skewed the burden among consumers, favoring industry while overburdening non-privileged consumer groups. Another imbalance concerned whether the energy transition costs were confined to the narrower base of renewable energy consumers or spread across taxpayers. Despite its high energy transition costs, introduction of comprehensive compensation schemes ultimately made Germany's transition more progressive (Table 4). The following sections link cross-case differences in these strategies to variations in public choice dynamics.

Table 4. Balance between Consumer-Producer Groups and among Consumer Groups

	Consumers-Producers Balance	Within-Consumers Balance	Consumers-Taxpayers Balance
Germany	Imbalanced to the favor of producers	-Industry privileged generously -Non-privileged* consumer groups overburdened**	Imbalanced to the interests of consumers
The UK	Imbalanced to the favor of consumers***	-Industry privileged moderately - Non-privileged* consumer groups protected	Imbalanced to the interests of taxpayers
	*Households, non-exempt commercial users **Though compensation schemes have alleviated the overburden recently ***Though there is improvement in the balance over time, especially starting in the late 2000s		

¹² For a discussion see Chang et al., 2010.

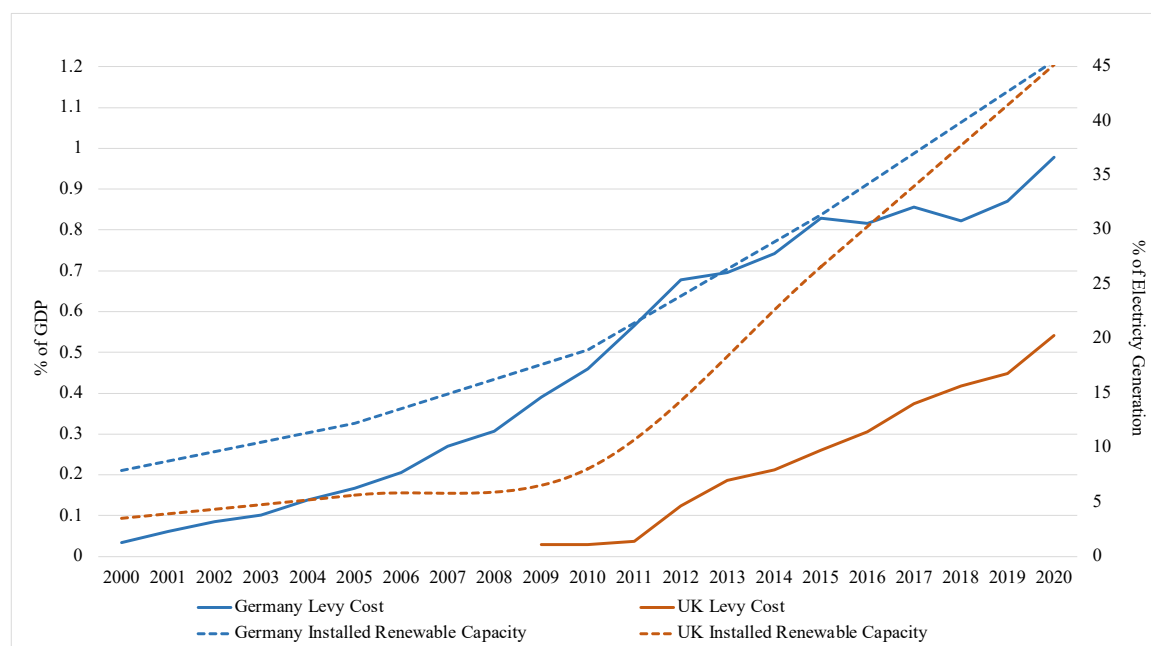
V. Economizing green energy transition

Overspending characterized the German energy transition.¹³ Compared to the UK, Germany spent more relative to its installed renewables capacity. The UK's resource endowment contributed to its cost-effective promotion of renewables, especially onshore and offshore wind. Even accounting for this,¹⁴ overspending remained a persistent issue in Germany. Germany began promoting renewables when technologies were expensive and relied on feed-in tariff, prioritizing rapid deployment over cost-efficiency. In contrast, the UK accelerated its transition in the late 2000s, when technologies were cheaper. It also employed market-based support mechanisms which prioritized economization over acceleration. As a result, the UK achieved similar levels in renewable generation at a lower cost (Table 5). Relative indicators show that Germany spent nearly 1% of GDP, while the UK spent just over 0.5% to reach ~45% renewable electricity generation (Figure 2).

Table 5. Comparative Levy Costs over Years in Million Euros

	2010	2015	2020
Germany Levy cost	12,789.60	25,089.72	30,297.84
UK levy Cost	598.81	6,898.16	11,505.36
Source: Author's own compilation, see TRAX 160			

Figure 1. Cost of Environmental Subsidies in Relative Terms



Why did the two countries adopt different policy instruments and timelines in their energy transitions? Answering this question is key to explaining their divergent

¹³ TRAX 001

¹⁴ TRAX 004

experiences in economization. In public choice dynamics, economization is more likely when ruling partisan orientation favors renewable energy consumers over producers and/or when these consumers have stronger organized interests (table 1). These favorable conditions existed in both countries but were stronger in the UK. The table 6 summarizes these differences.

*Table 6. Cross-case Differences in Favorable Conditions for Economization**

	Partisan orientation	Organized interests	
	favoring consumers over producers	powerful for consumers	limited for producers
Germany	Moderate	Strong	Weak
UK	Strong	Weak	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

The main difference between Germany and the UK lies in the partisan orientation of their governments: Though both had moderately pro-consumer stances, this was stronger in the UK. Electoral dynamics played a crucial role, as government composition changes led to fluctuations in political support for the green transition. Nevertheless, attributing the differences in their economization experiences solely to electoral dynamics would be reductive: Beyond electoral cycles, Germany and the UK exhibited ideological and structural differences embedded in their political systems, shaping their distinct pro-consumer and pro-producer tendencies.

At first glance, German and British governments did not differ fundamentally in economic ideology: Both held moderately right-leaning, centrist positions, with British governments leaning marginally further.¹⁵ Their cost-conscious approach to government spending fostered a pro-consumer policy stance by prioritizing energy affordability for both industrial and household consumers.¹⁶ Their environmental outlooks were also similar, with both governments maintaining a strong pro-environment orientation potentially conducive to a pro-producer stance. However, various dynamics compromised their conventional policy stances: In Germany, for instance, the prominence of green industrial policy tilted the energy transition in favor of renewable energy producers, whereas in the UK, energy poverty concerns reinforced a pro-consumer stance.¹⁷ Overall, these partisan differences shaped the trajectory of economization in the two countries.

Additionally disparities in organized interests help explain the diverging paths of economization in Germany and the UK: Germany had a solid renewable energy sector capable of resisting cost-cutting measures—unlike the case in the UK. Counterintuitively, consumers that could resist an expensive energy transition was stronger in Germany, due

¹⁵ TRAX 165.

¹⁶ TRAX 007

¹⁷ TRAX 052

to its strong industrial base. However, potential industry opposition was neutralized through cooptation—a contingency dynamic.

There were also other contingent dynamics that could facilitate or undermine economization—such as energy efficiency, social safety net, miscalculations, and cooptation. While these dynamics did not necessarily make governments more pro-producer, they contributed to an anti-consumer bias by reducing policymakers’ sensitivity to costs. These dynamics were present in both countries but only slightly more prevalent in Germany, thus offering little explanatory value for their divergent economization paths.

Partisan orientation: Pro-producer vs. pro-consumer, and long-term shifts

In Germany, the green transition enjoyed varying levels of support under different coalition governments over the past three decades: CDU/CSU-FDP (1991-1998, 2009-2013), SPD-Greens (1998-2005), CDU/CSU-SPD (2005-2009, 2013-2021) and SPD-Greens-FDP (2021-2025). Understandably, it gained peak momentum when the SPD and the Greens forged a coalition in 1998. They enacted an ambitious law called *Erneuerbare-Energien-Gesetz* (EEG) in 2000. While building on its predecessor *Stromeinspeisungsgesetz* in core principles, the EEG removed installation caps¹⁸ and provided full cost coverage for renewable energy producers, enhancing investment security.¹⁹

However, regardless of alternating coalition dynamics, close ties between the thriving green energy sector and parties strengthened the pro-producer stance in the German political system.²⁰ Notably, a pro-business CDU/CSU-FDP government introduced the 1991 *Electricity Feed-in Law (Stromeinspeisungsgesetz)*²¹—a hallmark of Germany’s transition. Backbenchers from both CDU and SPD, with ties to the renewables sector—especially hydropower—initiated the law.²² Throughout the 1990s, the Kohl governments kept the law despite the opposition from Federation of German Industries (BDI) which advocated for a voluntary and “less costly” approach.²³

For German political parties, a solid green sector generated political incentives to overlook the economic dimension of energy transition, viewing it as an extension of a broader industrial policy. As the green sector thrived, political parties increasingly aligned themselves with their interests.²⁴ Public and political support for the green sector remained strong through the early 2010s when the costs were relatively low: Before losing their ground to Chinese firms, German companies dominated the global photovoltaics market. This also applied to wind turbine manufacturers, some of which remained leading players in the global market.

This pro-producer bias in the political system made cost-cutting efforts difficult. This demonstrated itself when the federal government (CDU/CSU-FDP) faced opposition from the federal states (*Länder*) while attempting to cut solar subsidies—amid falling global costs in the early 2010s. The government accused the opposition parties Greens,

¹⁸ Anonymous interviewee data, TRAX 011.

¹⁹ TRAX 012

²⁰ TRAX 166

²¹ See: IEA, “Electricity Feed-In Law of 1991 (“Stromeinspeisungsgesetz”)” March 14, 2014, <https://www.iea.org/policies/3477-electricity-feed-in-law-of-1991-stromeinspeisungsgesetz>.

²² TRAX 166TRAX

²³ TRAX 008

²⁴ TRAX 166TRAX

SPD, and Die Linke of pursuing a clientelist policy that prioritized the particularistic interests of the renewable energy sector over the public.²⁵ However, even the CDU/CSU-led states resisted the proposed cuts.²⁶ In some cases, intra-party factions also worked to the interests of renewable energy producers. For instance, in 2009 the solar sector was able to avert subsidy reductions from two CDU and SPD parliamentarians closely tied to the sector—despite pressure from the CDU’s economic wing.²⁷

On the other hand, the strong pro-producer stance in German politics cannot be explained by partisan shifts alone; contingent dynamics, such as popular demand for green policies, also played a decisive role. Unlike green industrial policy, popular support for green policies did not necessarily make parties more pro-producer. However, it led to a bias in favor of renewable energy producers: To deliver on-demand green policies, parties relied on the sector, reinforcing their alignment with producer interests.

This is not surprising considering Germany’s long-standing green movement dating back to the anti-nuclear protests of the 1970s. Today, one-fifth of Greenpeace’s global members are in Germany.²⁸ The Greens also held a presence in parliament since the 1980s, representing the environmental movement and prompting centrifugal competition among centrist parties for the “green votes”: By the late 2000s, the green politics became increasingly mainstream, with environmentally-minded voters constituting a substantial electoral base contested by major parties.²⁹ Overall, green ideals permeated the German political spectrum, with most parties³⁰ integrating them into their programs.

While partisan shifts and contingent dynamics strengthened the pro-producer stance in Germany, several factors weakened its pro-consumer stance. Notably, energy poverty remained a relatively underdeveloped notion compared to the UK, where it was a prominent policy concern.³¹ This limited salience potentially contributed to a weaker pro-consumer stance among German political parties, leading the governments to downplay the cost dimension of the energy transition.

Other contingent dynamics—such as efficiency, social safety net and socio-economic level—may also generate a bias at the expense of consumers: As an advanced industrialized country, Germany performed well in these areas, reducing the political cost of maintaining a costly energy transition at the expense of low-income consumers.³² To illustrate, German households paid one of the highest electricity prices in Europe, but the overall costs were not high, partially due to better energy efficiency.^{33,34} In a political landscape closely aligned with industrial interests, the affordability of energy for energy-intensive industries was a far greater concern. However—as detailed below—the 2003 political compromise exempting industry largely alleviated these concerns, ultimately securing German industry one of the cheapest electricity prices in Europe.³⁵

²⁵ TRAX 168, 188

²⁶ TRAX 020

²⁷ TRAX 019

²⁸ TRAX 169

²⁹ Anonymous interviewee data

³⁰ Excluding Alternative für Deutschland.

³¹ TRAX 115, 116

³² TRAX 171, 170, and 172

³³ Anonymous interviewee data, TRAX 171.

³⁴ This dynamic helps explain the case but lacks discriminatory power for cross-case comparison, see TRAX 186.

³⁵ TRAX 122

The reasons above lowered the political cost of an expensive energy transition for German governments: Beginning in the 1990s, the focus was on accelerating deployment rather than containing costs. To this end, Germany preferred a relatively more interventionist policy instrument called *feed-in-tariff* and did not enforce stringent measures to restrain costs. It also started promoting renewables early when their technologies were expensive. Germany's early foray into renewables made it a European leader. This also helped develop a global market that benefited other countries, but it came at a price for domestic consumers.³⁶

On the other hand, the energy transition did not unfold as a seamlessly rationalistic process with clear foresight of policymakers: At times, insufficient economization stemmed from miscalculations unrelated to partisan dynamics. For instance, when the Kohl government introduced the groundbreaking *feed-in tariff*, they did not anticipate its popular adoption.³⁷ By the end of their tenure, concerns about rising subsidy costs were already emerging.³⁸ Later statements from policy-makers also underscored these miscalculations—such as Environment Minister Jürgen Trittin's infamous claim that renewable subsidies would cost citizens only “a cup of cappuccino” per month, which proved inaccurate.³⁹ Similarly, early 2000s predictions that EEG costs would remain moderate by 2015—i.e., under €10 billion—mostly failed.⁴⁰

Unlike Germany, the UK experienced less variations in government composition due to its electoral system favoring one-party rule. Over the past three decades, government compositions included the Labour's governments (1997-2010), the Conservative-Liberal Democrat coalition government (2010-2015) and then successive Conservative governments through the 2024 elections. The partisan orientation of these governments did not show notable differences in balancing producer and consumer interests. However, one departure from the Germany governments was the UK governments' firmer ideological commitment to cost-consciousness.⁴¹ Given these differences, stronger pro-green electoral incentives were technically needed to compromise their conventional policy positions—but such incentives were even weaker in the UK. As a result, ruling parties rarely deviated from affordability: When weighing the ecological returns of the energy transition against its short-term economic costs, they prioritized the latter to the benefits of consumers, thus reinforcing a pro-consumer stance.

The UK's proactive approach to cost control contrasted with Germany's mostly reactive response to rising subsidy costs in the early 2010s: Germany introduced “growth corridors” to limit installations while also setting *ad hoc* fiscal targets—such as 3.5¢ per kWh—which were not legally mandated.⁴² In contrast to Germany's quantitative approach, the UK's budgetary approach promoted renewables only within predetermined fiscal limits.

It would be inaccurate to claim that political demand for green policies was absent in the UK. Margaret Thatcher was the first “major world” leader to publicly acknowledge climate change. Unlike in other free-market economies like the US, Australia and Canada,

³⁶ TRAX 002, anonymous interviewees data.

³⁷ Anonymous interviewee data, TRAX 187

³⁸ TRAX 009

³⁹ TRAX 006

⁴⁰ TRAX 006

⁴¹ Anonymous interviewee data, TRAX 007

⁴² TRAX 046

a strong alliance of conservative ideology and fossil fuel interests did not exist strongly in the UK. Over time, environmental issues gained political salience, culminating in the UK's *Climate Change Act* in 2008—the first of its kind among major European countries. Nevertheless, as different from Germany, this support for green policies did not translate into a strong bias in favor of producers: Electoral incentives were not strong enough to justify the political cost of an expensive energy transition. Instead, ruling center parties prioritized low-cost promotion of renewables for consumers, over fast deployment.

Unlike Germany, the UK also lacked strong political incentives—like a sizable renewable energy sector—to dislodge the conventional policy of the ruling parties. In addition, the salience of energy poverty encouraged the British policy-makers to pay closer attention to the financial implications of energy transition for consumers. The UK's entrenched “value for money” ethos further led governments to favor cost-control instruments like auctioning. Thus, instead of adopting feed-in tariffs—effective for rapid deployment but potentially costlier—the Labour governments implemented market-based tools like the *Non-Fossil Fuel Obligation* (1997) and *Renewable Obligation* (2002): These instruments were slower in scaling up renewables but were better suited—at least in theory—to curb costs and avoid over-subsidization.⁴³

Some British policymakers acknowledged these instruments' inadequacy in deployment, raising concerns about noncompliance with the EU's 10% renewable target for 2010. This also prompted occasional calls to adopt Germany's feed-in tariff during the 2000s.⁴⁴ Though resistant for years, Labour finally adopted the feed-in tariff in 2010—but only after finding that using *Renewable Obligation* for microgeneration incurred excessive administrative costs.⁴⁵

The Cameron government (2010-2015) largely maintained Labour's approach: Yet, the Conservatives were, by default, even more cost-averse. They sought to dismantle the feed-in tariff, designating it an “ill-designed policy”. Ultimately, the coalition dynamics forced deference to the Liberal Democrats—similar to Germany's SPD-Green coalition.⁴⁶ In 2012, for instance, when Chancellor George Osborne proposed up to 25% cuts to onshore wind subsidies⁴⁷ Energy Secretary Ed Davey countered with a 10% cut, resulting in a compromise.⁴⁸ That said, compared to the German Greens, the Liberal Democrats had limited influence: they were at best a substitute for a strong green party: The British Green Party was only marginally represented in the parliament due to the majoritarian electoral system⁴⁹ which sidelined smaller parties and reduced centrifugal competition for green votes—unlike in Germany. Moreover, both parties shared ideological affinity for market-orientated policies: A year into office, they introduced “Levy Control Framework” to rein in public expenditures funded through electricity bills and preempt runaway costs.

The Liberal Democrats' moderating influence also lasted only one term. By the end of the coalition, the Conservatives propagated a shift to a low-cost energy transition if elected alone.⁵⁰ Indeed, after winning a majority in the 2015 election, they rolled back some

⁴³ TRAX 041

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*

⁴⁶ Anonymous interviewee data, TRAX 041

⁴⁷ Also partially driven by the Tory backbenchers who opposed wind turbines—i.e., NIMBYSM.

⁴⁸ TRAX 043

⁴⁹ TRAX 049

⁵⁰ TRAX 044

subsidy schemes: With a single-party government and fewer institutional constraints, it was easier for Conservatives to cut renewable subsidies than for a typical German coalition government within a federal system.

Organized interests

Severe subsidy cuts hit most renewable energy producers across Europe in the early 2010s, but UK producers were in a much weaker position than their German counterparts to resist them.⁵¹ This reflected disparities in organized interests shaping each country's divergent economization path: While not matching traditional industries, Germany's renewables sector had considerable institutional clout.⁵² By 2010, it employed nearly 400,000 people—up from 120,000 in the early 2000s—and generated substantial turnover.⁵³ Germany's decentralized transition, backed by 600+ citizen cooperatives and 80,000 individuals⁵⁴, further strengthened renewable producers.

German renewable producers at times used sectoral leverage to influence policy: For instance, in the late 1990s, when the Kohl government proposed capping renewables to appease utility companies unwilling to purchase expensive wind-generated electricity, the sector mobilized thousands outside the Bundestag, delaying the plan.⁵⁵ Likewise, in the early 2010s, the German Solar Association (*Bundesverband Solarwirtschaft*) weaponized mass protests to resist severe subsidy cuts.⁵⁶ The effectiveness of contentious politics in securing concessions is debatable, but it demonstrates the sector's ability to defend its interests.

Additionally, through investments in long-term, lucrative feed-in-tariff contracts, thousands of German citizens and farmers became stakeholders in the energy transition.⁵⁷ During the third Merkel government with the SPD (2013-2017), this unique structure of the German energy transition clashed with transition to cost-reduction measures such as auctioning, which favored big investors.⁵⁸ Associations representing energy cooperatives, such as *Bündnis Bürgerenergie*, primarily opposed auctions and lobbied for exemptions.⁵⁹ In response, authorities offered privileges such as awarding cooperatives the highest auction price and exempting certain “citizen energy” projects from auctions—under 750 kW, and up to 6 MW for solar and 18 MW for wind.⁶⁰ Despite repeated market-oriented reforms, Germany's system retained some features that supported a diverse range of actors, whereas this was not the case in the UK.⁶¹ The producer influence in Germany contributed to a more fragmented support structure—sometimes at the expense of competitiveness and consumer interests.⁶²

⁵¹ TRAX 185

⁵² Anonymous interviewee data

⁵³ TRAX 027, TRAX 028

⁵⁴ TRAX 031.

⁵⁵ TRAX 025, TRAX 010

⁵⁶ TRAX 026.

⁵⁷ TRAX 029

⁵⁸ See, Leiren and Reimer, 2018, anonymous interviewee data.

⁵⁹ TRAX 192, anonymous interview data.

⁶⁰ TRAX 193

⁶¹ TRAX 193

⁶² TRAX 191

On the flip side, the organized interests of electricity consumers—especially industry—could have counterbalanced the expensive energy transition. However, a 2003 cross-party compromise co-opted industry by exempting it from renewable subsidy charges, effectively suppressing a major force for economization. The preceding concerns of energy-intensive industries like aluminum over rising policy costs prompted this compromise.⁶³ Pro-business opposition parties CDU/CSU and FDP were also critical of the subsidies.⁶⁴ Similarly, SPD’s economic wing, led by Minister Wolfgang Clement, pushed to abolish subsidies, arguing they harmed the German industrial base.⁶⁵ However, the SPD’s coalition partner, the Greens objected to rollbacks, leading to a deadlock that would be later resolved through a *de facto* political pact: In exchange for a green light for the ambitious but costly EEG, energy-intensive industries received exemptions from certain subsidy costs. Once industry was placated, the incentives for German policy-makers to economize the energy transition largely faded. This pact—which also enjoyed broader support beyond the coalition, i.e., CDU/CSU and FDP—became a defining feature of the German energy transition under the following coalition governments, diverting the focus from cost efficiency. Counterfactually, had public choice dynamics regarding industry been fully operative, Germany’s economization trajectory would likely have been stronger.

The UK’s renewable sector lacked the clout of Germany’s. Had British renewable producers been more influential, they might have shaped policy in their favor, undermining economization. Despite some wind industry, the green sector in the UK remained modest.⁶⁶ Germany’s renewable sector experienced setbacks but retained substantial economic weight:⁶⁷ At its peak, it employed 0.5% of the national workforce.⁶⁸ In contrast, the UK sector peaked below 0.2%, with employment growing from 31,700 in 2009 to 131,400 in 2017.⁶⁹

Community energy—the hallmark of Germany’s democratized transition—was also less prominent in the UK: In 2012, it accounted for only about 10% of renewable energy generation, compared to roughly 40% in Germany.⁷⁰ In practice, this translated into a narrower electoral base with vested interests in renewables⁷¹, making subsidy cuts politically less costly for British policymakers. Indeed, retrenchment policies stumbled upon less resistance. Except for the partial success of onshore wind, the UK renewable energy producers largely failed to prevent cuts. In 2011, for instance, the solar industry’s campaign “Cut Do not Kill” could not stop drastic subsidy reductions.⁷²

⁶³ Anonymous interviewee data, TRAX 014.

⁶⁴ TRAX 015

⁶⁵ TRAX 016

⁶⁶ TRAX 053

⁶⁷ TRAX 054

⁶⁸ TRAX 054, also TRAX 178

⁶⁹ TRAX 056, also TRAX 178

⁷⁰ TRAX 051, also TRAX 179

⁷¹ Anonymous interviewee data

⁷² TRAX 050

VI. Redistributing the cost among consumer groups

It is a common practice to entitle energy-intensive industries (the EIIs hereafter) with certain privileges. Both German and UK governments did so by exempting the EIIs from some renewable surcharges.⁷³ Because the EIIs took on less burden, non-privileged/non-exempt renewable electricity consumers—mostly SMEs and households—had to shoulder more costs. These exemptions thus had a redistributive effect.⁷⁴

Germany frequently resorted to redistribution to relieve industry, offering exemptions that were more prompt, extensive, and generous than those in the UK.⁷⁵ In contrast, British industrial consumers faced stricter exemption criteria.⁷⁶ In the early 2010s, several policymakers acknowledged this disparity and called for intervention.

Why did German EIIs receive more privileges than their British counterparts? One potential explanation is subsidy costs. With higher and escalating costs, Germany had stronger incentives to redistribute the burden. Indeed, the German case suggests a threshold beyond which the EIIs grow more vulnerable to energy costs and demand privileged treatment. In Germany, this threshold was crossed in the early 2000s, while the UK reached a comparable point only in the 2010s when it ramped up renewable investments. In this sense, redistribution is highly contingent on preceding economization dynamics. This dynamic helps explain absolute differences in burden-sharing, but it does not fully account for relative differences—namely, why Germany provided more generous, timely, and comprehensive support.⁷⁷

The logic in public choice dynamics suggests that redistribution is more likely when ruling partisanship favors industrial consumers over non-privileged consumers and/or when industrial consumers have stronger organized interest (table 2). Germany had more favorable conditions that could facilitate redistribution, whereas the UK had fewer. The table 7 below summarizes these differences.

Table 7. Cross-case Differences in Favorable Conditions for Redistribution*

	Partisan orientation	Organized interests	
	favoring industrial consumers over non-exempt consumers	powerful for industrial consumers	limited for non-exempt consumers
Germany	Strong	Strong	Moderate
UK	Weak	Weak	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

The key difference lies in the ruling governments' preference for favoring industrial consumers interests over others, with German governments characterized by a stronger pro-industrial orientation than their British counterparts. This difference also mirrors

⁷³ TRAX 180

⁷⁴ TRAX 059

⁷⁵ TRAX 061

⁷⁶ *Ibid.*

⁷⁷ See TRAX 186

differences in organized interests, especially in the strength of German industrial consumers.

Partisan orientation: Favoring industrial consumers

In Germany, there exists a consensus across political parties that Germany should retain its industrial base and global competitiveness.⁷⁸ Policymakers repeatedly reaffirmed this in Bundestag, portraying industry as a national pride.⁷⁹ While rarely labeled as such, this pro-industrial stance clearly reflects Germany's longstanding industrial policy legacy.⁸⁰

Redistribution also appeared politically justifiable, given strong public support and willingness to pay for green policies.⁸¹ Indeed, despite rising subsidy costs, public backing for the energy transition—reaching around 80%—remained high, suggesting relatively price-inelastic demand. This contingently lessened the political cost of prioritizing industrial interests over households'.⁸²

Although Germany's pro-redistribution stance cut across party lines, it was still shaped by alternating government composition. For example, during the 2003 political pact discussed earlier, the Greens initially opposed redistribution, invoking the *polluter-pays principle* and urging equal burden-sharing by industry.⁸³ They ultimately compromised to secure SPD support. Aside from critiques from the Greens and Die Linke, the Schröder government's redistributive exemptions received broad backing—including from opposition parties the CDU/CSU and FDP.

Over time, the pro-redistribution stance in the German political system grew, reflecting coalition shifts and their partisan agendas. In 2006, the CDU/CSU-SPD government removed the 10% cap—originally introduced by the SPD-Greens to limit the burden on non-privileged consumers⁸⁴—to clear the way for additional industrial exemptions.⁸⁵ The pro-redistribution stance peaked under the subsequent CDU/CSU-FDP government which expanded the exemptions in 2012 to include more companies, notably some SMEs also known as *Mittelstand*: As a result, the number of beneficiary companies rose from ~540 to ~2300.⁸⁶

The decision to carry out energy transition by shifting the costs from the EIIs to other electricity consumers is inherently political, entailing major welfare transfers and intensifying equity issues. In 2013, non-exempt consumers covered 98.7% of EEG expenditures, while using only 78.8% of electricity.⁸⁷ That year, exemptions resulted in a transfer of roughly €5 billion in costs onto households and other non-exempt users.⁸⁸ The 2012 EEG amendment alone added an estimated €2.2 million in burden⁸⁹ (Figure 3). These redistributive effects turned "who pays for the German energy transition" into a political

⁷⁸ TRAX 065.

⁷⁹ TRAX 065

⁸⁰ TRAX 182

⁸¹ TRAX 080, also TRAX 181

⁸² TRAX 080, also TRAX 181. Also, this dynamic helps explain the case but lacks discriminatory power for cross-case comparison, see TRAX 186.

⁸³ TRAX 069

⁸⁴ TRAX 072

⁸⁵ TRAX 072 and TRAX 073.

⁸⁶ TRAX 073, TRAX 103.

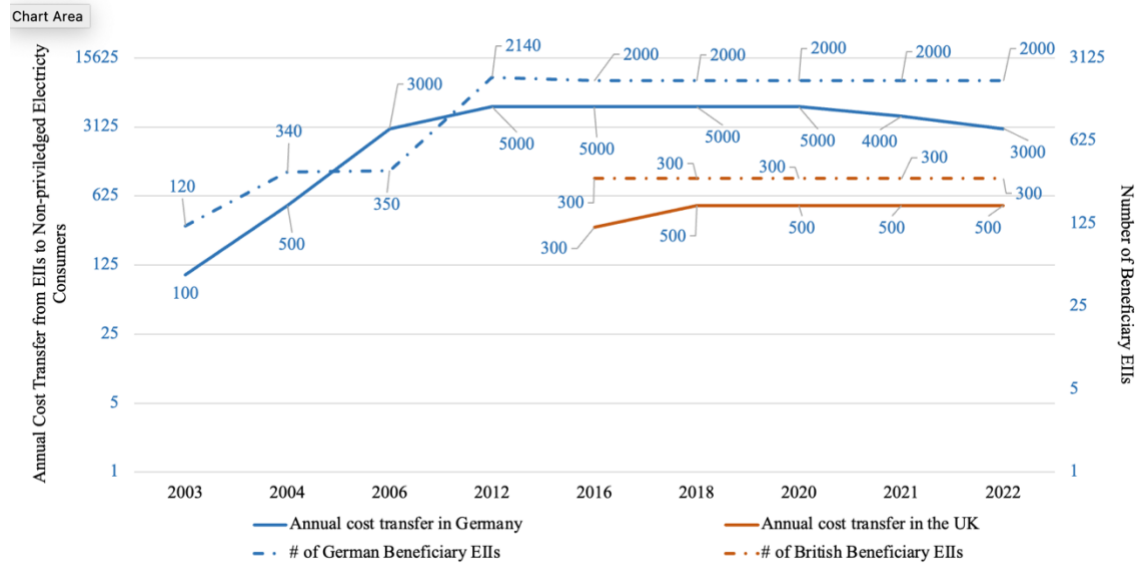
⁸⁷ TRAX 073

⁸⁸ TRAX 073, TRAX 103

⁸⁹ TRAX 073, TRAX 103

issue during the 2013 election campaigns. At one point, *Die Energieintensiven Industrien (EID)*—the association representing German EIIs—was compelled to defend itself, attributing rising electricity prices to unrestrained renewable energy expansion, not industrial exemptions.⁹⁰

Figure 3. Changes in Transfer of Cost from EIIs to Non-Privileged Consumers and # of Beneficiary EIIs



Source: Author's own compilation, see Trax 076 for more details.

In the 2010s, debates over the fairness of Germany's energy transition became polarized. Pro-market parties CDU/CSU and FDP framed the issue as a conflict between the particularistic interests of renewable energy producers and the broader public interests of German consumers: However, while advocating for industrial exemptions, CDU/CSU-led governments faced a dilemma: balancing corporate interests with promises of affordability for families.⁹¹ Ultimately, they sided with the industry, defending that receiving industrial support was essential to the energy transition and Germany's economic competitiveness.⁹²

At times, the perception of the energy transition as serving particularistic interests likely contributed to further redistribution as an unintended consequence: For CDU/CSU and FDP, subsidies appeared to benefit the renewable energy sector at the expense of others. Addressing this imbalance was politically challenging—scaling back subsidies risked appearing "anti-green" in a broadly pro-green political environment.⁹³ Instead, granting counter-privileges to industry became a viable way to offset competing particularistic interests within the system.⁹⁴

⁹⁰ TRAX 075.

⁹¹ Around a few tens of euros, TRAX 078

⁹² TRAX 077 and 078

⁹³ TRAX 189, 185

⁹⁴ TRAX 081, 082, 188, 168

In contrast, the Greens⁹⁵ and Die Linke⁹⁶ saw redistribution as a key barrier to an affordable energy transition: While acknowledging the need for some EII exemptions, they strongly opposed excessive use.⁹⁷ The SPD, while in opposition, took a cautious stance consistent with its progressive line of politics.⁹⁸ This changed after it replaced the FDP in the third Merkel government in 2013: Under Sigmar Gabriel's leadership, the SPD aligned more closely with industrial interests.⁹⁹ Gabriel defended the exemptions, arguing that their removal would offer little financial relief to households.¹⁰⁰

Unlike Germany, the partisan orientation of UK governments did not strongly favor industrial interests. When the policy costs of supporting renewables rose in the early 2010s, the coalition government acknowledged the concerns of the EIIs and expressed its commitment to protect the UK's remaining industrial base.¹⁰¹ However, this support remained modest, not matching the level seen in Germany.¹⁰² Some viewed the UK's restrained approach as appropriate—neither excessive nor inadequate.¹⁰³ This stance varied little across political parties, whether Labour, Conservative, or Liberal Democrat.¹⁰⁴

In the British political system, the principle of minimal intervention typically limits government support to industry, offering assistance only in exceptional circumstances and expecting markets to stay competitive on their own.¹⁰⁵ This “*laissez-faire attitude*”¹⁰⁶ contrasts with proactive industrial policies of continental countries like Germany and France. In parliamentary debates, some British policymakers criticized limited and sluggish support for domestic industry.¹⁰⁷ Citing Germany's efforts to protect its industrial base during energy transition,¹⁰⁸ both policymakers and EIIs urged the UK government to ensure a level playfield with European competitors.

The divergent approaches of Germany and the UK became evident when the EU Commission moved to regulate industrial exemptions under its state aid rules: Germany continued granting exemptions despite ongoing investigations and potential infringement of EU regulations. In contrast, the UK, though it considered similar measures as early as 2012, waited for clearance from the Commission first. The British government also acknowledged that the privileges enjoyed by the continental EIIs disadvantaged its own EIIs. However, unlike the German government, it was not complacent about the legal compatibility of such privileges with EU subsidy regulations.¹⁰⁹ Problematising this difference, Prime Minister David Cameron emphasized that the UK would adhere to EU rules. At the Commission, Germany also proactively pursued regulations realigned with its

⁹⁵ TRAX 083, TRAX 072, and TRAX 073

⁹⁶ TRAX 084

⁹⁷ Anonymous interviewee data

⁹⁸ TRAX 159

⁹⁹ See TRAX 078, anonymous interviewee data

¹⁰⁰ TRAX 073 and 087

¹⁰¹ TRAX 093

¹⁰² Anonymous interviewees data

¹⁰³ TRAX 093, anonymous interview data

¹⁰⁴ TRAX 209

¹⁰⁵ TRAX 096, 097, 098, and 099

¹⁰⁶ Anonymous interviewee data

¹⁰⁷ TRAX 098

¹⁰⁸ TRAX 093, 096, 097, 098, 099, and 100

¹⁰⁹ TRAX 098

industry's interests.¹¹⁰ By contrast, the UK usually took a more deferential stance, bandwagoning the Commission.¹¹¹

The UK government also required evidence-based justification from industry to warrant exemptions—as seen in the 2017 review.¹¹² In contrast, the German government distributed exemptions with less stringency.¹¹³ This more permissive approach drew criticism from opposition parties, and even Merkel admitted that some companies were exploiting the privileges.¹¹⁴

The UK could have pursued an aggressive green agenda by redistributing the cost of energy transition from the EIIs to households and other non-privileged commercial electricity users. After all, this was how Germany maintained its ambitious transition without alienating its industry. However, the UK governments did not support redistribution, viewing it as particularistic. During the Conservative-Liberal Democrat coalition, there was a clear stance against achieving energy transition by exempting industry at the expense of other consumers.¹¹⁵ Unlike the German policymakers who prioritized affordability for industry, the primary political concern for the British policymakers was to ensure affordability for all consumer groups.¹¹⁶

Political incentives to maintain an affordable energy transition also shaped policy choices. Electricity prices—quite politicized in the UK¹¹⁷—were a key dynamic here: With millions in fuel poverty,¹¹⁸ affordable energy was a political priority. Price surges in global energy market, as in 2013, heightened these concerns contingently.¹¹⁹ Excessive redistribution would have technically pushed more households into fuel poverty by expanding the portion of energy-related expenses in incomes.¹²⁰ Structurally, it was also difficult to pass on higher costs to British households, some of whom lived in energy-inefficient housing, dating back to the Victorian era.¹²¹

Organized interests

The strong organized interests of German industry certainly contributed to securing policy privileges. Historically, Germany's industrial sector wielded substantial political clout, bolstered by robust associational power. Accounting for over 18% of the national economy—well above European and global averages¹²²—the industry enjoys inherent leverage in economic policymaking.¹²³ This influence makes political parties highly

¹¹⁰ TRAX 102, TRAX 103, and anonymous interviewees data

¹¹¹ TRAX 102

¹¹² For detailed analysis, see TRAX 104

¹¹³ TRAX 105, and anonymous interviewees data

¹¹⁴ TRAX 105

¹¹⁵ TRAX 106

¹¹⁶ TRAX 007

¹¹⁷ TRAX 111

¹¹⁸ TRAX 112

¹¹⁹ TRAX 113. Also, this dynamic helps explain the case but lacks discriminatory power for cross-case comparison, see TRAX 186.

¹²⁰ TRAX 114

¹²¹ This dynamic helps explain the case but lacks discriminatory power for cross-case comparison, see TRAX 186.

¹²² TRAX 183

¹²³ Mostly thanks to influence of industrial lobbies on center parties like CDU/CSU and SPD. Anonymous interviewee data, TRAX 063.

responsive to industrial demands, epitomized by the saying “[in Germany] the industry rules politics, not the other way around.”¹²⁴ That’s why, the government swiftly intervened to shield industrial interests when rising energy transition costs began to strain manufacturers in the early 2000s.

On the other hand, significant opposition to industrial exemptions also came from NGOs like *Greenpeace* and the Federal Association of Consumer Organizations (*vzbv*). *vzbv* argued that most consumers opposed industrial privileges.¹²⁵ The association contended that competitiveness and job losses concerns did not justify excessive industrial benefits, advocating for fairer cost-sharing to maintain public support for the energy transition.¹²⁶ Nonetheless, it remains unclear how effectively German civil society countered the pro-redistribution agenda.

SMEs, particularly the *Mittelstand*, could have mounted organized opposition to the exemptions, as they, like households, bore the financial burden left by the EIIs. However, despite their political prominence, they lacked the influence wielded by larger industries. More crucially—as detailed later—rather than challenging exemptions outright, expediency shaped their stance: The SMEs sought inclusion in the exemptions or advocated abolishing EEG altogether, favoring taxation to fund renewables.¹²⁷ The 2012 amendment to the EEG partially addressed these demands. This contingently undermined potential anti-redistributive dynamics. Otherwise, intuitively speaking, the strong SME presence should have strengthened the anti-redistributive camp. Thus, this is an issue where public choice dynamics offer limited explanatory leverage.

In comparison to their German counterparts, British EIIs received less generous exemptions. This can partly be attributed to the lower cost pressure in the UK’s energy transition, which reduced incentive for EIIs to mobilize for exemptions. This contingency, however, explains only nominal differences in redistribution scale between the two countries. Relatively, British EIIs gained less generous exemptions.

In both countries, the EIIs have amassed their organizational power through distinct bodies—*EID* in Germany and *Energy Intensive Users Group (EIUG)* in the UK. However, *EIUG* held less economic clout, which translated into reduced influence in economic policymaking. In the UK, manufacturing comprises only about 8% of the economy,¹²⁸ with EIIs representing an even smaller share. While UK EIIs directly employ ~210 thousand people and indirectly support ~800 thousand jobs, their German counterparts directly employ ~850 thousand people and indirectly contribute to ~2.5 million jobs.¹²⁹ Even after adjusting for labor market (~33 million in the UK versus ~46 million in Germany), the disparity remains significant.¹³⁰

In the UK, the formation of a strong anti-redistribution stance occurred without significant involvement from non-exempt consumer groups.¹³¹ This was mainly because the cost of energy transition was not high enough to provoke their mobilization:

¹²⁴ This is especially said for auto industry, anonymous interviewee data.

¹²⁵ TRAX 090

¹²⁶ *Ibid.*

¹²⁷ TRAX 194

¹²⁸ TRAX 091

¹²⁹ TRAX 092

¹³⁰ TRAX 092

¹³¹ TRAX 117

Redistribution added ~£40 to German household bills, but only ~£3 in the UK.¹³² In this sense, the contingency of cost dynamics highly mattered. On the other hand, consumer associations like *Citizens Advice* joined the consultation process by the government, opposing any expansion of industrial exemptions.¹³³ Research also suggests that consumer groups in the UK may have slightly better organizational capacity and public perception than their German counterparts.¹³⁴ Still, even if the transition had been more contentious as in Germany,¹³⁵ it remains unclear to what extent the organized interests of non-exempt consumers could have been effective in forcing a cheaper energy transition—especially given the limited success of similar groups in Germany.¹³⁶ However, unlike Germany, the UK lacked a sizable SMEs base in manufacturing sector that could have potentially opposed redistribution in an exclusive exemption regime.¹³⁷ This is a dimension of organized interests where the two countries differ.

VII. Compensation for the growing costs

In their energy transitions, Germany and the UK implemented compensation schemes that varied in scope and duration. Germany implemented comprehensive, long-term compensation, while the UK offered only partial and temporary relief to renewable energy consumers.¹³⁸ These differences can be partly attributed to variations in fiscal capacity and cost pressures. While contingent factors played a major role, I also trace roots of these differences to public choice dynamics.

Like economization and redistribution, compensation has a logic that can be grounded in public choice dynamics: It is more likely when political parties exhibit partisanship favoring renewable energy consumers over general taxpayers, and/or when these consumers possess stronger organized interests (table 3). Though less pronounced than in redistribution, Germany had more favorable conditions for compensation than the UK. The table 8 summarizes these differences.

*Table 8. Cross-case Differences in Favorable Conditions for Compensation**

	Partisan orientation	Organized interests	
	favoring renewable energy consumers over taxpayers	powerful for renewable energy consumers	limited for taxpayers
Germany	Moderate+	Moderate+	Strong
UK	Moderate	Moderate	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

¹³² See TRAX 118.

¹³³ TRAX 119.

¹³⁴ TRAX 120, also for a discussion see, Nessel, 2019.

¹³⁵ Some questions whether this has turned into a big public concern, anonymous interviewee data

¹³⁶ They are weak by structural reasons: Anonymous interviewees data.

¹³⁷ TRAX 194, 199

¹³⁸ Beforehand, the only compensation strategy that the UK used was between 2014-2017, only for the EIIs, TRAX 184,

Although I broadly define partisan orientation between renewable energy consumers and taxpayers, the context of compensation is more delicate: Compensation is typically a last-resort distributive strategy, and among renewable energy consumers it matters most for low- to middle-income households and non-exempt SMEs. Political attention to these groups is therefore particularly consequential. In terms of partisan orientation, UK governments generally prioritized protecting households, while German governments' support for renewable energy consumers focused more on shielding SMEs. Additionally, UK policymakers were less inclined to use the state budget, practically aligning more closely with taxpayer interests. In the same vein, SMEs' organized interests played a key role in securing compensation in Germany—a dynamic largely absent in the UK. In both countries, general consumers and households had limited associational representation, with some NGOs largely advocating consumer rights on their behalf. As to taxpayers, the two countries showed only minor differences.

Partisanship orientation: Rescuing SMEs

After nearly four decades of its energy transition, Germany introduced a compensation scheme in 2021 to alleviate rising electricity costs. Prior to this, there had been already calls for compensation, driven by (i) uncontrollable increases in renewable subsidy costs and (ii) equity concerns—both linked to poor economization and excessive redistribution. Germany's industrial electricity prices were among the highest in Europe. However, when exemptions were counted, German industry enjoyed some of the lowest rates.¹³⁹ Nevertheless, buying off industrial opposition through redistribution exacerbated the burden on non-exempt consumer groups. The 2021 compensation scheme was the government's response to such mounting cost pressures that it had failed to contain.

The Greens were the first political party to propose using the federal budget to finance the energy transition, especially to address growing criticisms against the EEG.¹⁴⁰ Merkel's governments did not support this approach: Fiscally conservative, the CDU/CSU and FDP were not intrinsically conducive to using taxpayer funds to address the distributional challenges of energy transition.¹⁴¹ Instead, they focused on tightening the subsidy regime while expanding redistribution. However, as previously discussed, Germany's economization efforts were sluggish and ineffective: Long-term contracts—20 years—for older, inefficient renewable installations made rapid reductions in subsidy costs unattainable.¹⁴² In the short term, these measures stabilized EEG costs at best rather than lowering them.¹⁴³

In addition, although the CDU/CSU-FDP government had extended the exemption regime to SMEs, the subsequent CDU/CSU-SPD government tightened eligibility under pressure from the EU Commission. As a result, fewer companies qualified for exemptions, making relieving SMEs through expanded redistribution no longer viable. In this context, the CDU/CSU-led coalitions gradually became more open to the idea of helping out businesses with compensation schemes applicable to all electricity consumers as the EU

¹³⁹ TRAX 122

¹⁴⁰ Joined by others as well, TRAX 126

¹⁴¹ TRAX 128

¹⁴² TRAX 129

¹⁴³ TRAX 190, 128

state aid rules barred selective support: By the late 2010s, a political shift toward compensation had emerged,¹⁴⁴ despite earlier resistance rooted in fiscal conservatism.¹⁴⁵

As then Minister for Economic Affairs and Energy, Peter Altmaier, explained, the compensation of EEG sought to reconcile climate mitigation policies with business interests.¹⁴⁶ Also, financing the EEG through carbon taxes and the state budget helped reconcile a growing tension between the two fractions in the German energy transition: those aligned with traditional industry and those prioritizing ecology.¹⁴⁷ The 2003 political pact had previously settled this tension to a certain extent. However, rising energy transition costs and disproportionate burden-sharing placed on non-privileged consumers brought the pact's viability into question. By funding the energy transition through taxation, the government sought to bridge the widening chasm between the two fractions, which had begun to resurface in the early 2010s.¹⁴⁸

Despite political and societal consensus, partisan support for SMEs was a necessary but insufficient condition for implementing compensation: Revenue from the carbon pricing collected in Climate and Transformation Fund (*Klima- und Transformationsfonds*)¹⁴⁹—made compensation schemes possible.¹⁵⁰ Adopting a budget-neutral approach, the government allocated revenues to fund renewable energy subsidies instead of retaining them in the state coffers. In doing so, regressive carbon pricing¹⁵¹ introduced a progressive element into the equally regressive EEG, which imposed equal costs regardless of income.

Expanding the Merkel government's initiative, the SPD-FDP-Greens coalition decided to compensate the EEG fully by 2023. This shift is unsurprising considering equity-oriented parties like the Greens in the government composition. However, this change also came amidst the European energy crisis driven by Russia's invasion of Ukraine,¹⁵² which contingently compelled use of the state budget to make energy affordable.¹⁵³

To summarize, in Germany, compensation strategy was driven by pivotal contingent dynamics, including rising EEG costs, the availability of alternative funding, and the energy crisis. However, its adoption as a long-term policy also reflected public choice dynamics—especially the entrenched political will to protect SMEs. Without this tendency, Germany might not have shown the same commitment to compensation schemes.

A contrast to Germany's approach, the UK implemented compensation briefly and conditionally. As in Germany, the energy crisis—as a contingent political catalyst—prompted the Truss government to introduce the *Energy Bill Relief Scheme*. Launched in October 2022, the scheme pledged to offset green subsidies for two years whenever annual bills exceeded £2,500. Funded through taxation and borrowing, it was projected to save

¹⁴⁴ *Ibid.*

¹⁴⁵ TRAX 128

¹⁴⁶ TRAX 132

¹⁴⁷ TRAX 140

¹⁴⁸ TRAX 140

¹⁴⁹ See TRAX 158

¹⁵⁰ though the initial compensation scheme was supported by the core state budget, see TRAX 158.

¹⁵¹ Due to its disproportionate burden on low-income consumers, TRAX 136

¹⁵² TRAX 139

¹⁵³ TRAX 138

consumers around £150 a year. However, the scheme ended in July 2023 once costs fell below the £2,500 threshold due to improving market conditions.

Like the Germany government, other contingent dynamics influenced the UK approach to compensating energy consumers. One notable one is fiscal capacity, as the government's ability to offer such programs hinges on the budget. Indeed, while the UK's carbon pricing system generated revenue, it was smaller than Germany's, limiting its capacity to fund compensation schemes. Moreover, lower cost pressures also meant weaker political will for compensation.

That said, public choice dynamics also mattered too: Although governments in both countries shared fiscal conservatism, the prevailing partisan orientation in the UK was usually more reluctant to allocate tax revenues for compensation.¹⁵⁴ With their ideological focus on minimizing public spending, the Conservative governments perceived compensation as a burden for the British Treasury and ultimately unsustainable.¹⁵⁵ This was evident during the UK's brief experience with compensation schemes in the early 2010s: Despite announcing a £300 million package in the 2014 budget to cover renewable energy subsidies for EIIs,¹⁵⁶ the UK government offered it only from 2014 to 2017. It ultimately transitioned to German-style redistributive exemptions, citing fiscal and administrative challenges. The Treasury was reluctant to fund renewable energy,¹⁵⁷ with officials acknowledging the difficulty of "getting money out" of it.¹⁵⁸ This was also compounded by the *Deficit Reduction Programme*¹⁵⁹ which crippled the government's earlier plans to provide more relief for the EIIs. Additionally, the cost of compensation schemes rose each year, making maintaining schemes difficult within budgetary constraints.

Budgetary concerns also hindered the UK government's ability to continue the *Energy Bill Relief Scheme* in 2022, despite some political demands to keep green subsidies off electricity bills.¹⁶⁰ Some Conservatives, critical of placing green levies in electricity bills, advocated for using taxation to lower electricity costs.¹⁶¹ The opposition Liberal Democrats also supported using "windfall taxes" to fund green levies.¹⁶² Utility companies, like *Eon*, similarly backed funding levies through general taxation, calling them "a regressive tax".¹⁶³ Despite this pressure, the succeeding Sunak government "slyly" reinstated charges in 2023,¹⁶⁴ after falling energy prices rendered the £2,500 cap obsolete.¹⁶⁵

The UK's stricter use of compensation was understandable given its cost: Varying estimates suggest that scrapping levies could cost the Treasury around £5 billion annually, providing a net relief around £150 per household.¹⁶⁶ Like Germany, the UK raised

¹⁵⁴ TRAX 198

¹⁵⁵ TRAX 145

¹⁵⁶ See: TRAX 143

¹⁵⁷ TRAX 145

¹⁵⁸ TRAX 145

¹⁵⁹ TRAX 147, TRAX 148

¹⁶⁰ TRAX 150

¹⁶¹ TRAX 151

¹⁶² TRAX 150

¹⁶³ *Ibid.*

¹⁶⁴ TRAX 152

¹⁶⁵ *Ibid.*

¹⁶⁶ Based on the 2021 estimations, TRAX 155

substantial revenue from its carbon emissions trading system (ETS): Data from *Office for Budget Responsibility* shows a remarkable revenue growth over years (Table 9). Yet, unlike Germany's budget-neutral model, the UK does not earmark carbon tax revenues, but instead channel them into the general budget.¹⁶⁷ The UK does not avoid climate spending altogether: It funds climate policies through the state budget, to which carbon tax revenues also accrues, but it does not reinvest all carbon tax revenues. A study by *New Economic Foundations* reveals that the UK deployed £5.5 billion of £6.5 billion in carbon tax revenues to emission reduction,¹⁶⁸ whereas continental countries reinvested more, with Germany reaching 100% recycling.¹⁶⁹

Table 9. Carbon tax revenues from ETS*, in £ billion

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
UK [†]	0.6	0.5	0.4	0.3**	0.3	1.6	1.3	1.0	5.8	6	3.5 ^{††}
Germany	0.7	0.9	0.7	0.9	2.2	2.7	2.2	10.8 [#]	11.3 [#]	16	15.7
*Based on both European and UK ETS (Emission Trading Scheme) and German National Emissions Trading System [†] Rounded fiscal year (i.e., 1 April to 31 March) [#] Including national ETS. * **Based on 2019 March outlook, for October 2018 outlook it is 0.4 ^{††} Forecast Source: Own compilation, see TRAX 163											

The UK may face growing pressure to recycle carbon revenues in the future. However, its record on budget neutrality can be questionable. In 2010, for example, the government retained £1 billion from *Carbon Reduction Commitment* in the state coffers to address the deficit, rather than returning it to program participants.¹⁷⁰ Besides, The 2023 decision to lower carbon prices reduced projected ETS revenues, signaling reluctance to adopt strict carbon pricing regime to finance energy transition goals.¹⁷¹ In this sense, not only the availability of funding as a contingent dynamic but also public choice dynamics regarding the use of state budget matter.

Overall, the experiences of Germany and the UK demonstrate a difference in their use of taxpayers' money. It is true that the prevailing fiscal prudence especially under successive Conservative governments¹⁷² contributed to a tighter renewable subsidy regime in the UK, which in turn benefitted electricity consumers thanks to better economization. However, the same approach also produced a stringent compensation regime which constrained progressive financing, ultimately disadvantaging low-income consumers.

A shift in political will remains possible under a government with a different ideological makeup, despite fiscal conservatism shared across major British political parties. Back in 2016, for example, Labour opposed the Conservative government's replacement of compensation schemes for EIIs with redistributive exemptions, citing equity concerns. While in opposition, the party signaled support for compensation.¹⁷³

¹⁶⁷ TRAX 153.

¹⁶⁸ TRAX 153

¹⁶⁹ *Ibid.*

¹⁷⁰ TRAX 154

¹⁷¹ TRAX 163

¹⁷² Anonymous interviewees data

¹⁷³ TRAX 149

Nevertheless, after forming government in 2024, Labour did not revise the policy yet—at least in its first year.

Organized interests

Political demand for compensation was also shaped by organized interests, particularly in civil society. There were persistent calls for progressive financing of energy transition due to its growing burden on non-exempt consumers, especially low-income households. To illustrate, German consumers association *vzbv* advocated for a federal fund financed by corporate and income taxes to replace the *pay-as-you-go* system in the EEG.¹⁷⁴ Public opinion surveys in 2017 also showed support for using taxation.

However, equity concerns were relatively mild, considering the mitigating factors such as low energy poverty and gains from energy efficiency.¹⁷⁵ In practice, compensation schemes primarily targeted SMEs that faced high electricity costs but were excluded from exemptions granted to EIIIs.¹⁷⁶ As the most organized among non-exempt consumer groups, their advocacy played a role in the introduction of compensation schemes.¹⁷⁷ Throughout the 2010s, these businesses frequently circulated the idea of “spreading the EEG costs more widely”: By 2014, sectoral associations such as bakery and textile and consumer groups, gathered tens of thousands of signatures—enough to trigger a mandatory Bundestag review—petitioning for the EEG’s termination in favor of tax-based financing.¹⁷⁸

Other associations, such as the Federal Association of Energy and Water Management (*BDEW*) and the Association of the Chemical Industry (*VCI*), even threatened legal action at the Federal Constitutional Court, arguing that EEG’s financing mechanism resembled the now-defunct coal penny (*Kohlenpfennig*)—a levy introduced in 1974 to subsidize coal-based electricity.¹⁷⁹ Drawing on the Court’s reasoning in overturning *Kohlenpfennig*, they argued that renewables as a public good should be state-funded, not consumer-funded. In the same vein, institutions, including the Federal Environment Agency (*UBA*), IASS, and Agora, proposed alternative financing models that involved full or partial use of tax revenues.¹⁸⁰

The term “taxpayers” is often vague given its broad definition and unclarity regarding how their organized interests look like. In Germany, pressure groups like the Association of Taxpayers-Germany (*Bund der Steuerzahler*) typically opposed additional public debt and tax hikes. However, they endorsed reducing EEG costs through compensation.¹⁸¹ This counterintuitive stance was likely driven by two factors: the contribution of carbon taxes to the state budget and broad societal backing for spreading costs more widely.

In the UK, on the other hand, the lower transition cost meant little pressure from organized interests for compensation. Had the transition costs been as high as in Germany, organized interests might have played a more prominent role. However, key differences

¹⁷⁴ TRAX 126

¹⁷⁵ This dynamic helps explain the case but lacks discriminatory power for cross-case comparison, see TRAX 186.

¹⁷⁶ TRAX 194

¹⁷⁷ Also see TRAX 014

¹⁷⁸ TRAX 124

¹⁷⁹ TRAX 125

¹⁸⁰ This paragraph draws upon TRAX 126

¹⁸¹ TRAX 134

remain: With a smaller industrial base, the UK lacked a strong organized presence of SMEs capable of exerting meaningful pressure for compensation. Without counterfactual reasoning to account for contingent dynamics, it is difficult to gauge the potential impacts of public choice dynamics.

Alternatively, households in the UK could have pushed for compensation, but they did not constitute an organized pressure group. As in Germany, advocacy instead fell to NGOs focused on consumer rights and energy poverty, such as *National Energy Action*,¹⁸² which called for progressive, tax-based financing of the energy transition. Parliamentary working groups also urged stronger safeguards in fuel poverty programs.¹⁸³ However, these efforts did not translate into substantial political pressure. With low subsidy costs and limited redistributive impact, the UK governments had little incentive for compensation.

The UK lacked organized taxpayer representation comparable to Germany's *Bund der Steuerzahler*. Pressure groups like *TaxPayers' Alliance* took no clear stance on compensation. Overall, the organized interests of taxpayers did not play a visible role in shaping compensation policy in either country.

VIII. Concluding remarks: Putting dynamics of public choice in perspective

For policymakers, the politics of green energy transition is essentially the art of balancing competing consumer and producer interests within their political bases. Choosing who to foot the bill is inherently challenging, and if mishandled, it risks social conflict. Against this backdrop, this paper highlights multiple distributional conflicts embedded in the energy transition and the need for policymakers to secure political acceptance of the energy transition by pursuing three key distributive strategies—economization, redistribution, and compensation.

Both Germany and the UK utilized all three distributive strategies, but the conditions enabling each differed across the cases. This research finds varying levels of support for the influence of public choice dynamics in the implementation of these strategies: As detailed in *Appendix III* and in Table 10 below, public choice explanations, such as partisan orientation and organized interests, best account for cross-case differences in redistribution, whereas their explanatory leverage is limited in redistribution and compensation.

Table 10. Summary Table for Bayesian Analysis

	Weight of Evidence (H_n vs. $\neg H_n$)
Economization	Weakly favors H_1
Redistribution	Strongly favors H_2
Compensation	Weakly favors H_3
See appendix III for corresponding hypothesis testing i (H_n vs. $\neg H_n$) in a Bayesian Framework	

Where public choice dynamics provide limited explanatory power, contingency dynamics—like miscalculation, cost pressure, cooptation, fiscal capacity and popular support—offer stronger explanations. As intervening variables, these dynamics also shape how policy-makers and different interest groups engage with each distributive strategy. In

¹⁸² TRAX 156

¹⁸³ TRAX 157

Germany, for instance, industry's potential push for a more economic energy transition was compromised by the 2003 pact. Counterfactually, had public choice dynamics been fully operative, Germany's economization trajectory would likely have been stronger. Similarly, compensation schemes would have been unlikely without the accumulation of carbon tax revenues and the occurrence of the European energy crisis. In this sense, public choice dynamics appear to be an insufficient and only weakly necessary condition for compensation.

Though addressed as a part of contingent dynamics here, it is important to underline the interdependence between distributive strategies as they considerably shape the trajectories of distributive strategies. They do not operate in a stand-alone way: The failure of one in containing distributional spillovers often triggers additional strategies. In Germany, for instance, the failure to economize the energy transition increased reliance on redistribution and, subsequently compensation. In this sense, redistribution and compensation function as strategies supplementary to economization. A hierarchy also exists between redistribution and compensation: Policymakers treat compensation as a last resort after redistribution. This explains why Germany and the UK turned to compensation only after other strategies proved insufficient in containing distributional issues. Their experiences suggest that rising cost of energy transition increases the need for distributive interventions.

Overall, economization emerges as the most critical strategy for managing distributional conflicts. Yet it is also the most difficult to implement, requiring adjustment of many parameters—such as timing, cost estimates, and installation targets. Redistribution, by contrast, is a relatively convenient strategy for addressing such conflicts without burdening the state budget. However, it rests on a problematic logic: Diffuse costs fall on non-exempt consumers while concentrated benefits usually go to industry. It also takes advantage of the fact that those bearing diffuse costs often lack organized representation, making them less informed and less able to oppose these hidden burdens such as households. This raises important equity and ethical implications in public policymaking. Although compensation schemes require state funding and remain politically contentious, their ability to socialize the costs of the energy transition makes them valuable. Moreover, growing carbon tax revenues and political tendency to recycle them enhance feasibility of compensation in the coming years.

The green energy transition is a complex and protracted process. Because it is politically more challenging, policymakers have so far concentrated on promoting renewables rather than full-scale decarbonization. Yet, urgent progress on decarbonization is now required, even amid mounting political and industrial resistance. The distributional politics framework applied here also offers insights into decarbonization efforts: Its distributional implications are likely to be complex, prompting governments to pursue a range of distributive strategies to manage its conflictual nature.

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Appendices

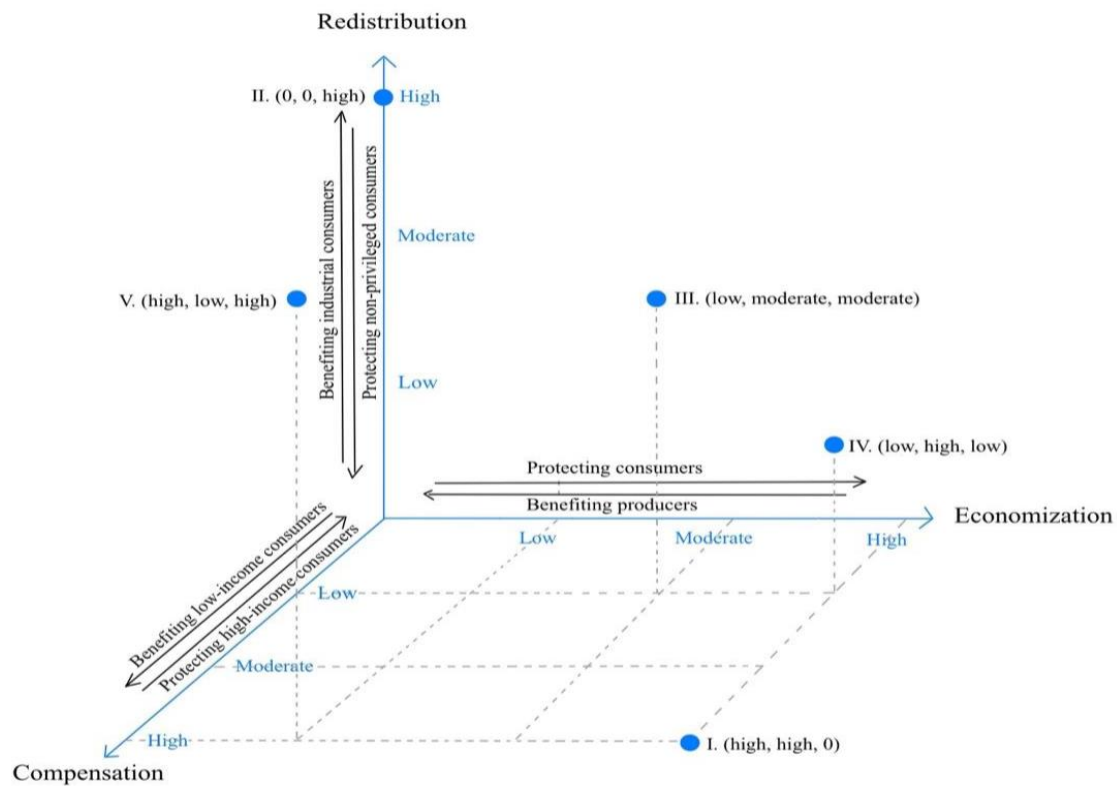
Appendix I – Combination of distributional strategies: Sketching hypothetical scenarios

During an energy transition in a country, the government is likely to employ varied combinations of these three distributional strategies. The configuration of these strategies ultimately results in varied payoffs for electricity consumers and producers. A simplified diagram based on Cartesian-coordinates below illustrates potential combinations in distributive strategies and how they impact different consumer and producer groups —see graph I below. From the information in the main text, we know that high economization benefits electricity consumer groups as this strategy helps promote the most renewable energy sources with the least economic cost for them. With that said, which specific consumer group benefits from high economization is determined mainly by combining this distributive strategy with others. For illustrative purposes, by drawing on hypothetical data, I designate a few points in the diagram to show how different combinations result in different distributional outcomes. For instance, in a scenario in which high economization combines with high compensation and zero redistribution, low-income renewable electricity consumer benefits most —see point I. (high, high, 0). In this scenario, low-income consumers are least burdened as progressive tax revenues cover the costs to a great extent, and the burden of the energy transition is not shifted from industry to other consumer groups via redistribution. In the opposite scenario in which high redistribution combines with a lack of economization and compensation, the same consumer group is burdened most: In addition to lack of relief from tax revenues, this consumer group has to pay more due to insufficient economization. It has also to shoulder an additional economic burden of energy transition which the industry avoids paying for —see point II. (0, 0, high).

However, these distributional strategies rarely come together in such ideal or extreme combinations. They are more likely to appear in moderate combinations such as the one in which there is low compensation due to the government's reluctance to strain the state budget, not a perfect economization due to the impact of particularistic interests of green energy sectors on decision-making processes, and some redistribution due to the power of industry —see point III. (low, moderate, moderate).¹⁸⁴ Depending on alternate combinations of these distributive strategies, it is also possible to designate other reference points in the diagram —see, for instance, point IV. (low, high, low) where economization benefits all electricity consumer groups, whereas energy transition is relatively regressive due to low compensation or point V. (high, low, high), where high compensation makes energy transition relatively progressive for low-income people and high redistribution safeguards industrial interests even though all electricity consumers have to pay more for energy transition than they are supposed to do so due to low economization. In the diagram below, taxpayers are not specifically mentioned, but both renewable electricity consumers and producers also correspond to distinct strata within tax base (e.g., high-income vs low-income consumers in compensation corresponding to associated income brackets in tax base).

Figure 2. Distributional strategies and payoff structures for consumer and producer groups

¹⁸⁴ The order in parentheses represents (compensation, economization, redistribution).



The order in parentheses represents (compensation, economization, redistribution)

Appendix II – List of Interviewees

I would like to specially thank my interviewees for taking their time and sharing their valuable points. Their acknowledgement here does not necessarily mean that they agree with the findings/arguments of this dissertation research.

1. Lisa Grau, *dnr*, November 24, 2020
2. Marlon Nuske, *Bürgerlobby Klimaschutz*, December 1, 2020
3. Arne Fellerman, *BUND*, December 1, 2020
4. Henrik Maatsch, *WWF Deutschland*, December 3, 2020
5. Marco Gutle, *Bündnis Bürgerenergie*, Dec 2, 2020
6. Helena Geißler, *klimaherbst*, December 2, 2020
7. Dr. Joachim Hein, *BDA*, December 7, 2020
8. Milan Elkerbout, *CEPS*, December 4, 2020
9. Dr. Maurizio Vargas, *Greenpeace Germany*, December 11, 2020
10. Prof. Klaus Jacob, *Freie Universität Berlin*, December 7, 2020
11. Dr. Eva Schmid, *German Watch*, December 15, 2020
12. Nils Weil, *Bundesverband Erneuerbare Energie*, December 15, 2020
13. Susanne Jung, *SFV*, December 17, 2020
14. Anna Brehm, *DFWEN*, Dec 17, 2020
15. Mark Wagenhauser, *DFWEN*, Dec 17, 2020
16. Carolin Schenuit, *FÖS*, Dec 17, 2020
17. Malte Kreutzfeldt, *TAZ*, Dec 17, 2020
18. Mirko Moser-Abt, *Bundesverband WindEnergie*, Dec 18, 2020
19. Sandra Weeser, *FDP*, January 4, 2021
20. Sebastian Boie, *Stiftung Offshore-Windenergie*, January 6, 2021
21. Philipp Ellett, *VDA*, Jan 14, 2021
22. Benthe Libner, *CDU*, January 26, 2021
23. Dr. Joachim Pfeiffer, *CDU*, Jan 28, 2021
24. Dr. Lukas Kohler, *FDP*, Feb 3, 2021
25. Marie-Luise Abshagen, *Forum Umwelt & Entwicklung*, February 3, 2021
26. Caterina Brandmayr, *Green Alliance*, May 14, 2021
27. Dr. Simon Evans, *Carbon Brief*, May 12, 2021
28. Ece Ozdemiroglu, *UK Climate Change Committee*, November 26, 2021
29. Ana Musat, *Aldersgate*, September 24, 2021
30. Bob Ward, *Grantham Research Institute on Climate Change and the Environment*, Jun 14, 2021
31. Dr. John Constable, *Renewable Energy Foundation (REF)*, November 29, 2021
32. Jon Ferris, *Delta Energy & Environment*, December 1, 2021
33. Peter Smith, *NEA*, Dec 7, 2021
34. Professor Peter Connor, *Exeter University*, December 3, 2021
35. Richard Warren, *MAKEUK*, December 17, 2021
36. Dr. Simon Cran-Mcgreehin, *ECIU*, December 2, 2021
37. Vipran Srivastava, *OFGEM*, December 10, 2021
38. Prof. Dr. Andrew Watkinson, *British Ecological Society*, May 18, 2021
39. Richard Hall, *Citizens Advice*, Jun 16, 2021
40. Liam Stoker, *UK Solar*, May 5, 2023

41. Mike Landy, *UK Solar Trade Association*, May 9, 2023
42. Prof. Dr. David Toke, University of Aberdeen (formerly), May 10, 2023
43. Joseph Fell, Former MP, *Greens*, May 16 2023
44. Arjan Geveke, *EIUG*, May 23, 2023
45. Andreas Fischer, *German Economic Institute (IW)*, May 26, 2023
46. Henning Herbst, *vzbz*, May 30, 2023
47. Charles Hendry, former Minister, *Conservatives*, May 31, 2023
48. Dustin Benton, *Green Alliance*, May 31, 2023
49. Andy Cox, *Howden Group*, May 31, 2023
50. Stephen Thomas, *Wuppertal Institute*, June 1, 2023
51. Derek Lickorish, *Fuel Poverty Group*, June 6, 2023
52. Diana Casey, *Mineral Products Association*, July 10, 2023
53. Sandra Enkhardt, *PV Magazine*, June 29, 2023
54. Howard Johns, consultant, June 29, 2023
55. Frank Aaskov, *MakeUK*, June 30, 2023
56. Johannes Lackmann, *Westfalenwind*, June 30, 2023
57. Sven Egenter, *Clean Energy Wire*, July 3, 2023
58. Craig Morris, *Klimaschutz im Bundestag*, July 5, 2023
59. Gerd Billen, *vzbz, former MP (SPD)*, July 10, 2023
60. Dr. Chirstopher Kost, *Fraunhofer-Institut für Solare Energiesysteme ISE*, July 17, 2023
61. Prof. Matthew Lockwood, *Essex University*, July 17, 2023
62. Klaus Mindrup, *SPD (former MP)*, July 21, 2023
63. Steve Freeman, *Confederation of Paper Industries*, August 9, 2023
64. James Fotherby, *Aldersgate Group*, September 11, 2023
65. John Parnell, *Lightsource BP*, September 12, 2023

Appendix III - Justification of ordinal values in the tables and Bayesian analysis

In this appendix, I qualitatively justify the values presented in the tables with supporting evidence. A summary is provided here, while detailed evidence can be found in the specific TRAX sections referenced in the text. After justifying the tabulated values, I also conduct a Bayesian analysis to illustrate cumulative inference the collected evidence offers regarding public choice dynamics—such as whether they are weak, moderate, or strong. This Bayesian analysis is based on the same values reported in the tables.

Justification of ordinal values in the tables

In the tables, I use three main interval values, but to capture greater variation I also introduce six additional ones when necessary. In total, there are nine interval values: weak–, weak, weak+, moderate–, moderate, moderate+, strong–, strong, and strong+. In the tables below, which provide the inputs for the Bayesian analysis, I assign values based on public choice explanations while isolating the effects of alternative factors. This approach focuses attention on the impact of public choice dynamics themselves. For example, even if Germany’s strong industrial base temporarily reduced pressure to economize the energy transition due to a contingent event such as the 2003 compromise, I still code Germany as “Strong” in organized interests for economization. In other words, I try to assign values that capture public choice dynamics only without being confounded by contingent developments.

Economization

Table 6. Cross-case Differences in Favorable Conditions for Economization*

	Partisan orientation	Organized interests	
	favoring consumers over producers	powerful for consumers	limited for producers
Germany	Moderate	Strong	Weak
UK	Strong	Weak	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

1. Partisanship orientation favoring consumers over producers

From an ideological perspective on economic policy-making, the two countries show only limited differences. Governments of both the center-left and the center-right prioritized affordable energy, particularly for businesses and “working families”. Still, the data indicates that UK ruling parties assumed a slightly stronger market orientation than their German counterparts (TRAX 196), tilting partisan dynamics somewhat in favor of renewable energy consumers—here I treat market orientation as a favorable proxy indicator of economization. In Germany, on the other hand, partisan orientation leaned more toward producers because of the closer, organic ties between political parties and the

green energy sector at both local and federal levels (TRAX 197, 019, 158, 166, 168, 189). Policy implementations reinforce this interpretation if we view them as shaped by partisan orientation. Subsidy cuts, for instance, proceeded more gradually in Germany due to opposition from multiple political actors at federal and local levels (TRAX 019, 020, 022). Likewise, the continued reliance on feed-in tariffs, rather than more market-oriented instruments such as auctions, reflected partisan preferences favoring producers (TRAX 007). Cost-control measures also reveal a contrast: the UK's introduction of the Levy Control Framework (LCF) demonstrated a clear intent to safeguard consumer interests, whereas Germany's efforts, such as growth corridors, were less strictly implemented (TRAX 046, 001, 006, 007). On the other hand, we also know that economization dynamics are particularly strong in Germany, driven by the political priority of protecting the country's industrial base (TRAX 065, 069, 072, 096, 097, 102, 103, 105). In contrast, in the UK this is counterbalanced by stronger political attention to households (TRAX 096, 098, 099, 106, 114). Overall, these factors lead me to rate Germany as *Moderate* and the UK as *Strong* in terms of *partisan orientation favoring consumers over producers*.

2. Organized interests: Powerful for consumers

The main driver of economization among organized interests lies in industry, which is highly sensitive to energy costs, followed by SMEs and, lastly, households. All these actors can be considered natural forces of economization, as they are logically expected to oppose higher energy costs and prefer a low-cost transition. Germany potentially exhibited a stronger dynamic due to both the size of its powerful industry and its associational strength (TRAX 008, 010, 063, 075, 076, 092, 096). In contrast, the UK's smaller industrial base (TRAX 091, 092) did not generate a comparable force for economization. SMEs, only a small fraction of which benefited from such exemptions, remained skeptical of the transition in Germany. Here again, a cross-country difference appears: SMEs are more numerous and visible in Germany than in the UK (TRAX 199). Households rarely mounted organized opposition, though NGOs concerned with energy poverty and consumer associations monitored developments and voiced affordability concerns (TRAX 111, 113, 114, 115, 116, 090, 156). On this point, Germany and the UK show little divergence. Overall, these factors lead me to rate Germany as *Strong* and the UK as *Weak* in terms of *strong organized interests for consumers*.

3. Organized interests: Limited for producers

The organizational strength of renewable energy producers is higher in Germany than in the UK for several reasons. First, the German green sector is larger, which translates into stronger organizations and greater influence over policy-making (TRAX 25, 026, 027, 028, 029, 053, 054, 056, 051, 191, 192, 193, 194). This is evident in repeated episodes where resistance from the green sector forced the government to moderate, or delay planned rollbacks of support programs. While similar episodes occurred in the UK, they were less frequent and less forceful (TRAX 050). Equally important is the role of energy cooperatives and citizen-led initiatives in Germany, which turned thousands of citizens into direct stakeholders in the energy transition. Under these conditions, rolling back renewable support programs became politically more costly. By contrast, such cooperatives and

bottom-up initiatives were far less common in the UK (TRAX 031, 051). Overall, I rate Germany as *Weak* and the UK as *Strong* in terms of *weak organized interests for producers*.

Redistribution

Table 7. Cross-case Differences in Favorable Conditions for Redistribution*

	Partisan orientation	Organized interests	
	favoring industrial consumers over non-exempt consumers	powerful for industrial consumers	limited for non-exempt consumers
Germany	Strong	Strong	Moderate
UK	Weak	Weak	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

1. Partisan orientation favoring industrial consumers over non-exempt consumers

Partisan orientation favoring industrial consumers—mainly energy-intensive industries benefitting from exemptions—is strong in Germany, reflecting broad cross-party support for the industrial base. In the UK, however, it is weaker, shaped by different traditions in economic and industrial policy-making (TRAX 065, 069, 072, 096, 097, 102, 103, 105, 182). At the same time, partisan orientation protecting non-exempt consumers such as households is somewhat stronger in the UK than in Germany. This is reflected in political statements opposing redistribution, particularly due to its impact on households and concerns such as energy poverty (TRAX 106, 157). As a result, partisan orientation in the UK tilts further against industrial consumers seeking redistributive exemptions. In Germany, redistribution concerns related to households are less salient, though worries about non-exempt SMEs are more prominent¹⁸⁵, even if some SMEs benefit from exemptions (TRAX 111, 113, 114, 115, 116, 090, 156, 126, 132). Overall, I code Germany as *Strong* and the UK as *Weak* in terms of *partisan orientation favoring industrial consumers over non-exempt consumers*.

2. Organized interests: Powerful for exempt industrial consumers

The differences here mirror the partisan orientation favoring industrial consumers. For a systemic analysis, I first examine the size of the manufacturing base in both countries, using it as a proxy for industry influence on economic-policy making. In Germany, the manufacturing share of the economy is above both the world and European Union averages, whereas in the UK it is below these benchmarks (TRAX 091, 092, 096, 098). A more direct comparison comes from energy-intensive industries (EIIs). In the UK, EIIs directly employ approximately 210,000 people and indirectly support around 800,000 jobs. In Germany, EIIs directly employ about 850,000 people and indirectly contribute to

¹⁸⁵ This can be a counterbalancing dynamic, but it is not major in the shadow of industrial concerns.

roughly 2.5 million jobs. Even after adjusting for labor market size differences—~33 million in the UK versus ~46 million in Germany—the disparity remains substantial (TRAX 092). Anecdotal evidence similarly indicates stronger industry influence on economic policy-making in Germany than in the UK (TRAX 063). The traditions of economic-policy making also shape how effectively industry can influence policy channels, linking this structural aspect to the partisan orientation discussed above (TRAX 096). Taken together, I code Germany as **Strong** and the UK as **Weak** in terms of *organized interests: powerful for industrial consumers*.

3. *Organized interests: Limited for non-exempt consumers*

Non-exempt consumers mainly include households and SMEs. Households, for structural reasons, do not form organized interest groups, but their economic concerns are often represented by NGOs focused on energy poverty and consumer rights. In this regard, the UK and Germany show little difference (TRAX 090, 156). By contrast, SMEs, which are more numerous in Germany, is a distinction between the two countries (TRAX 199, 126). Overall, the difference between Germany and the UK remains modest. Accordingly, I code Germany as *Moderate* and the UK as *Strong* in terms of *organized interests: limited for non-exempt consumers*.

Compensation

Table 8. *Cross-case Differences in Favorable Conditions for Compensation**

	Partisan orientation	Organized interests	
	favoring renewable energy consumers over taxpayers	powerful for renewable energy consumers	limited for taxpayers
Germany	Moderate+	Moderate+	Strong
UK	Moderate	Moderate	Strong
	*The expressions in boxes indicate whether such favorable conditions are strongly, moderately, or weakly present in each country case. *A detailed justification of the values is provided in Appendix III.		

1. *Partisan orientation favoring renewable energy consumers over taxpayers*

Although I broadly define partisan orientation between renewable energy consumers and taxpayers, the context of compensation is more delicate. Compensation is typically a last-resort distributive strategy, and among renewable energy consumers it matters most for low- to middle-income households and other non-exempt consumers such as SMEs. Political attention to these groups is therefore particularly consequential. In this respect, differences between Germany and the UK are limited. On the other hand, UK governments tend to prioritize households more (TRAX 106, 111, 113, 114, 115, 116, 157), whereas political concern for SMEs is more deeply rooted in Germany (TRAX 126, 132). Thus, partisan orientations toward compensation reflect different underlying drivers in the two countries. Taxpayer-related dynamics also play a role. Using reliance on the state budget

as a proxy, some divergence emerges: both countries are fiscally conservative, but UK governments are less willing to spend from the state budget than their German counterparts (TRAX 128, 147, 148, 151, 152, 153, 154, 155). This tilts partisan orientation more toward taxpayers in the UK. Overall, I code Germany as *Moderate+* and the UK as *Moderate* in terms of *partisan orientation favoring renewable energy consumers over taxpayers*.

2. *Organized interests: Powerful for renewable energy consumers*

Here, too, the context of renewable energy consumers eligible for compensation is important. These consumers are primarily non-exempt groups such as households and SMEs. Households rarely mount organized opposition, though NGOs focused on energy poverty and consumer associations monitor developments and raise affordability concerns (TRAX 111, 113, 114, 115, 116, 090, 156). In this respect, the two countries show little difference. SMEs, however, present a difference—being more numerous and visible in Germany than in the UK (TRAX , 126, 132, 199). Taken together, I code Germany as *Moderate+* and the UK as *Moderate* in terms of *organized interests: powerful for renewable energy consumers*.

3. *Organized interests: Limited for taxpayers*

As with households, this dimension of organized interests is not particularly prominent. Since taxpayers constitute a broad category overlapping with consumers and producers, it is difficult to define what their organized interests look like. Nonetheless, NGOs representing taxpayer interests exist in Germany (TRAX 134). Overall, however, there is little evidence of a substantial difference between Germany and the UK in this regard. Accordingly, I code both Germany and the UK as *Strong* in terms of *organized interests: limited for taxpayers*.

Bayesian analysis

Bayesian analysis is an emerging method in qualitative research for causal inference (Bennett 2015; Fairfield and Charman 2022). While its numerical applications remain imperfect (Bennett 2015; Zaks 2021) and its qualitative use requires further development, Fairfield and Charman (2025) have recently offered a practical application of it. Their approach primarily employs the Bayesian formula's inferential logic—based on the weight of evidence—rather than its full numerical properties. Using a logarithmic scale, they propose a framework in which evidence is quantified in simple terms and distributed across rival hypotheses (e.g., H vs $\neg H$).

How researchers apply the method is open to interpretation. In this spirit, I adopt a pluralistic understanding of Bayesian analysis (also see Metzger, 2024): its use can be adjusted to the specifics of a project and the ontological requirements of the research question. Drawing on existing applications, I design not *the* but *an* application of Bayesian analysis. While this approach has limitations in terms of external validity, it strengthens internal validity, which is especially valuable for comparative case study designs.

For consistency and parsimony, I adopt a simplified application. While the main text narrates the empirical analysis, this appendix uses Bayesianism as a shadow causal identification strategy. My objective is not to offer a formal application or a rigorous test

of rival hypotheses but to show distribution of evidence in support of public choice dynamics. My interest in Bayesianism thus lies in its utility as an empirical framework for data collection and analysis. This usage fits the ontological nature of my research—i.e., comparative method. This type of Bayesianism is not a formal application but goes beyond its use as a mere “metaphor” (McKeown 1999; Bennett 2015).

I document favorable conditions for each distributive strategy with respect to partisan orientation and organized interests above, and now use those values as inputs for the analysis. The goal is to assess whether or not public choice dynamics offer a good explanation to account for the cross-case differences in distributives strategies. The empirical strategy is as follows: if distributive strategies are driven by public choice dynamics, we should observe meaningful cross-country differences in partisan orientation and organized interests. A surplus of favorable conditions in a case where a distributive strategy is stronger suggests a stronger explanatory power for public choice dynamics; by contrast, a lack of difference or a deficit of favorable conditions indicates weaker attribution.

Overall, I test three hypotheses (H_1 , H_2 , and H_3) which are derived a priori, as discussed in the main text. Bayesian logic rests on evaluating rival hypotheses given the available evidence. I therefore pair each hypothesis with its natural negation (H_n vs $\neg H_n$). In this respect, I depart from Fairfield and Charman (2022, 2025), who test specified rival hypotheses grounded in established theories, aiming to identify the “best explanation” among them. By contrast, my objective is to assess whether public choice dynamics are themselves a good fit to explain observed cross-case differences. Testing hypotheses against their negations has the advantage of evaluating the empirical strength of an explanation individually, rather than comparatively. In practice, I ask whether observed outcomes would have been the same had the factor in question not existed. If yes, it indicates a null effect; if no, the extent of difference indicates the explanatory strength of that factor. In this application, comparison is still possible, as I test public choice dynamics for different distributive strategies.

Economization

H_1 : *The UK economized its energy transition more than Germany because favorable public policy conditions for economization were stronger in the UK.*

$\neg H_1$: *The UK would have economized its energy transition more than Germany anyway even if favorable public policy conditions for economization had not been stronger in the UK.*

#	Evidence	Weight of Evidence (H_1 vs. $\neg H_1$)
E_1	Difference in <i>partisan orientation favoring consumers over producers</i> (Germany: <i>Moderate</i> vs the UK: <i>Strong</i>)	Moderately favors H_1
E_2	Difference in <i>strong organized interests for consumers</i> (Germany: <i>Strong</i> vs the UK: <i>Weak</i>)	Strongly favors $\neg H_1$
E_3	Difference in <i>weak organized interests for producers</i> (Germany: <i>Weak</i> vs the UK: <i>Strong</i>)	Strongly favors H_1

Cumulative inference

As indicated in the table above, the difference in *partisan orientation favoring consumers over producers* (E_1) is greater in the UK (Germany: Moderate vs the UK: Strong). This evidence is something that can be expected to find when H_1 is true. Yet, as the difference is modest, it favors H_1 moderately. By contrast, the difference in *strong organized interests for consumers* (E_2) is in favor of Germany (Germany: Strong vs the UK: Weak). This is not expected under H_1 and therefore supports $\neg H_1$, with the visible gap between the two countries favoring $\neg H_1$ strongly. Finally, the large difference in *weak organized interests for producers* (E_3) in favor of the UK (Germany: Weak vs the UK: Strong). This evidence favors H_1 strongly.

Overall, the cumulative inference provides only weak support for H_1 . Beyond cumulative inference, it is also useful to examine cases where individual evidence contradicts H_1 (e.g., E_2). In such instances, alternative explanations may provide greater insight. For example, the strong organized interests of consumers in Germany largely stemmed from the industrial sector, which was coopted by the 2003 compromise—as documented in the main text. As a result, the actual dynamics of economization in terms of organized interests if energy consumers weakened, aligning more closely with the impacts suggested by contingent dynamics explanations rather than by public choice dynamics.

Redistribution

H_2 : *Germany redistributed the cost of its energy transition from its EILs to non-privileged consumer groups more than the UK because favorable public policy conditions for redistribution were stronger in Germany.*

$\neg H_2$: *Germany would have redistributed the cost of its energy transition from its EILs to non-privileged consumer groups more than the UK anyway even if favorable public policy conditions for redistribution had not been stronger in Germany.*

#	Evidence	Weight of Evidence (H_2 vs. $\neg H_2$)
E_1	Difference in <i>partisan orientation favoring industrial consumers over non-exempt consumers</i> (Germany: <i>Strong</i> vs the UK: <i>Weak</i>)	Strongly favors H_2
E_2	Difference in <i>organized interests: powerful for industrial consumers</i> (Germany: <i>Strong</i> vs the UK: <i>Weak</i>)	Strongly favors H_2
E_3	Difference in <i>organized interests: limited for non-exempt consumers</i> (Germany: <i>Moderate</i> vs the UK: <i>Strong</i>)	Moderately favors $\neg H_2$

Cumulative inference

As indicated in the table above, the difference in *partisan orientation favoring industrial consumers over non-exempt consumers* (E_1) is greater in Germany (Germany: Strong vs the UK: Weak). This evidence is something that can be expected to find when H_2 is true. Yet, the difference is stark, that's why, it favors H_2 strongly. Likewise, the difference in *organized interests: powerful for industrial consumers* (E_2) is in favor of Germany (Germany: Strong vs the UK: Weak). This is again something expected to be observed when H_2 is true. The difference is visible. For this reason, it favors H_2 strongly. Finally, there exists a moderate difference in *organized interests: limited for non-exempt consumers*

(E₃) in favor of the UK (Germany: Moderate vs the UK: Strong). This is not something expected to be observed when **H₂** is true. Thus, it favors $\neg\mathbf{H}_2$ moderately.

Overall, the cumulative inference favors **H₂** moderately to strongly. Beyond cumulative inference, it is also useful to examine cases where individual evidence contradicts **H₂** (e.g., E₃). In such instances, alternative explanations may provide greater insight. For example, the difference in *organized interests: limited for non-exempt consumers* is not something expected to be observed when **H₂** is true. Here, a more detailed process analysis—as discussed in the main text—reveals that SMEs did not always pose an opposition against the redistribution as they themselves sought to be included in exemptions themselves or advocated for alternative solutions like abolishing renewable subsidy charges (i.e., EEG). As a result, the actual dynamics of against redistribution were not very strong in Germany from the perspective of organized interests—aligning more closely with the impacts suggested by contingent dynamics explanations rather than by public choice dynamics.

Compensation

H₃: *Germany compensated its electricity consumers more than the UK because favorable public policy conditions for redistribution were stronger in Germany.*

$\neg\mathbf{H}_3$: *Germany would have compensated its electricity consumers more than the UK anyway even if favorable public policy conditions for redistribution had not been stronger in Germany.*

#	Evidence	Weight of Evidence (H₃ vs. $\neg\mathbf{H}_3$)
E ₁	Difference <i>partisan orientation favoring renewable energy consumers over taxpayers</i> (Germany: Moderate+ vs the UK: Moderate)	Weakly favors H₃
E ₂	Difference in <i>organized interests: powerful for renewable energy consumers</i> (Germany: Moderate+ vs the UK: Moderate)	Weakly favors H₃
E ₃	Difference in <i>organized interests: limited for taxpayers</i> (Germany: Strong vs the UK: Strong)	Does not discriminate between H₃ vs. $\neg\mathbf{H}_3$

Cumulative inference

As indicated in the table above, the difference in *partisan orientation favoring renewable energy consumers over taxpayers* (E₁) is slightly stronger in Germany (Germany: Moderate+ vs the UK: Moderate). This evidence is consistent with **H₃**, but the difference is marginal and therefore provides only weak support for **H₃**. Likewise, the difference in *organized interests: powerful for renewable energy consumers* (E₂) is stronger in Germany (Germany: Moderate+ vs the UK: Moderate). Again, the difference is slight and thus supports **H₃** only weakly. Finally, there does not exist a difference in *organized interests: limited for taxpayers* (E₃) (Germany: Strong vs the UK: Strong). Thus, this evidence does not discriminate between **H₃** vs. $\neg\mathbf{H}_3$.

Overall, the cumulative inference favors **H₃** weakly. When the cumulative inference lends weak support, it is reasonable to consider alternative explanations that may provide greater insight. As discussed in the main text, contingent dynamics—such as the emergence of alternative funding sources and exigencies like energy crisis—play pivotal roles in

offering compensatory schemes. Likewise, closer examination of individual evidence that contradicts H_3 or lacks discriminatory leverage (e.g., E_3) helps explain why observed outcomes diverge from the theoretical expectations of public choice dynamics. The case of Germany's *Bund der Steuerzahler* is illustrative: they supported compensation, partly because several contingency factors shaped their stance, including no or relatively low fiscal burden given rising carbon tax revenues and growing public support for compensation.

Summary, limitations, and further applications

In this analysis, I situate the comparative method within a Bayesian framework to assess whether public choice dynamics adequately explain cross-case differences in the use of distributive strategies. The findings suggest that the explanatory power of public choice dynamics varies across cases. Differences in partisan orientation and organized interests—treated here as dimensions of public choice dynamics—account well for the cross-case variation in redistribution, but their explanatory force is weaker in the cases of economization and compensation (see table below). Where public choice dynamics provide limited explanatory leverage, it is reasonable to consider alternative explanations and to examine why certain dynamics may have been weakened, contrary to theoretical expectations—for instance, Germany's strong industrial sector and its weak economization outcome. From a counterfactual perspective, if public choice dynamics had been fully operative, Germany's economization trajectory would likely have been stronger. Similarly, given the weak impact of public choice dynamics, compensation schemes are unlikely to mature fully without the accumulation of carbon tax revenues and the occurrence of the energy crisis in Europe. In this sense, public choice dynamics appear to be a weakly necessary but insufficient condition for compensation.

Table 10. Summary Table for Bayesian Analysis

	Weight of Evidence (H_n vs. $\neg H_n$)
Economization	Weakly favors H_1
Redistribution	Strongly favors H_2
Compensation	Weakly favors H_3

The application of Bayesianism in this paper is not a formal one that employs its original mathematical properties, but it goes beyond using Bayesianism merely as a “metaphor” for systematic qualitative research (McKeown, 1999; Bennett, 2015). As noted above, the Bayesian method can be applied in different ways. Here, I adopt a simple version that builds on the comparative method. A more fine-grained application could extend this by incorporating detailed analyses of evidence beyond cross-case comparison—for instance, examining whether within-case observations align with theoretical expectations. In this study, I focus exclusively on cross-case differences. Also, an additional Bayesian analysis could be developed to assess the strength of alternative explanations, such as contingent dynamics. An alternative application of Bayesianism could involve refinements such as calculating cumulative inferences by weighting evidence more—for example, while each evidential dimension (partisan orientation, organized interests) may have different causal

impacts, in this analysis they are treated largely as equal for the sake of parsimony. Such refinements could qualify the values presented here.

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