

Introducing GeoCPC

A Geo-referenced Climate Policy Conflict Event Dataset¹

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Abstract

This article presents the GeoCPC (Geo-referenced Climate Policy Conflict) Event Dataset. The GeoCPC disaggregates climate policy–related social contention both spatially and temporally. Each event—defined as an instance of organized civic action or protest linked to climate-change mitigation or adaptation policies—includes information on its date, location, actors, motivations, climate policy sector, and event type, allowing it to be merged with other spatial and socio-economic datasets. The first version of the dataset covers 3,489 events across ten countries that have pledged to achieve carbon neutrality by 2050, spanning the period 2018–2024. This article first outlines the rationale for constructing the dataset and describes the data collection, coding procedures, and inclusion criteria. Second, it presents basic descriptive statistics summarizing the distribution of events across time, space, and policy domains. Third, it provides an illustrative application linking GeoCPC to external spatial data on energy infrastructure, showing that protest activity occurs more frequently in areas hosting operational renewable energy facilities, rather than in regions with high greenhouse gas emissions. The GeoCPC dataset offers a new empirical foundation for analyzing the societal dimensions of decarbonization, enabling researchers to study the geography, timing, and drivers of social contention surrounding the global transition to carbon neutrality.

Keywords

Climate change, carbon neutrality, social conflict, events data, georeferencing, protest

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Introduction

In recent years, a growing number of episodes around the world have demonstrated that climate-change mitigation policies, while indispensable for achieving carbon neutrality, can also become powerful sources of social contention. In late 2018, large-scale demonstrations erupted along the Champs-Élysées in Paris after the French government’s attempt to raise fuel taxes to curb carbon emissions. The so-called *gilets jaunes* movement, led largely by low-income drivers and young workers, escalated into violent clashes with police, leaving hundreds injured and prompting President Macron to withdraw the policy and issue a public apology (The New Yorker 2018). In the United Kingdom, Extinction Rebellion (XR) staged coordinated protests in London’s financial district in 2021, targeting major banks such as Barclays and HSBC for financing fossil-fuel projects. Activists blocked entrances and spray-painted slogans like “Stop Funding Climate Chaos,” calling on the financial sector to divest from carbon-intensive industries (The Guardian 2023). Similar contention has also emerged in South Korea, where hundreds of fishing boats staged a maritime parade in 2022 to protest the construction of offshore wind farms near Yeosu, claiming that the renewable-energy project threatened marine ecosystems and local livelihoods (Maeil Business 2022).

Despite their differing motivations and national contexts, these incidents share a common feature: conflicts sparked by the implementation of climate and carbon-neutrality policies. As governments across the globe announce ambitious targets—South Korea, for instance, aims to cut greenhouse-gas emissions by 40 percent from 2018 levels by 2030 and to reach net-zero by 2050—the transition toward a low-carbon economy has become both an opportunity for sustainable development and a new source of socio-economic tension. Changes required by carbon neutrality in energy systems, industrial structures, and everyday life inevitably reshape the distribution of social costs and benefits, generating grievances among those who bear a disproportionate share of the burdens. Studies by the Korean Ministry of Trade, Industry and Energy estimate that the scheduled closure of 30 coal-fired power plants by 2034 will eliminate approximately 8,000 jobs, with temporary and contract-based workers most severely affected. Such uneven impacts are likely to intensify as mitigation policies accelerate.

Yet systematic data enabling researchers to examine these emerging forms of *climate policy conflict* remain scarce. Previous discussions of ‘just transition’ or ‘climate justice’ have provided valuable normative insights and qualitative case studies, but few efforts have transformed these fragmented observations into a consistent, quantitative, and spatially explicit framework. Existing global event datasets—such as ACLED or UCDP GED—largely capture violent conflict and protest in developing regions and are ill-suited for analyzing policy-related contention in advanced industrial societies (Raleigh et al., 2010; Sundberg & Melander, 2013). Consequently, the mechanisms linking climate policy, social inequality, and collective action are still poorly understood, particularly in spatial and temporal terms.

To address this gap, we introduce the GeoCPC (Geo-referenced Climate Policy Conflict Event) Dataset, which systematically records protest and conflict events associated with climate-change mitigation and adaptation policies. GeoCPC compiles and geocodes information on six categories of collective action—violent protest, non-violent demonstration, strike or boycott, petition or appeal, signature campaign, and public statement—across an initial sample of ten countries that have pledged to achieve carbon neutrality by 2050: South Korea, Japan, the United States, Canada, the United Kingdom, Ireland, Spain, France, South Africa, and Australia. Each event entry includes temporal and geographic identifiers, actor types, motivations, and

casualty data, linked with contextual information on relevant policy sectors. The first version of the dataset covers January 2018 through December 2024.

By offering fine-grained spatial and temporal data, GeoCPC enables researchers to identify the evolving patterns of contention surrounding climate policies, evaluate the socio-economic vulnerabilities of affected communities, and explore the complex interplay between environmental change, governance, and collective action. The dataset thus provides a new empirical foundation for studying the societal dimensions of the net-zero transition. The remainder of this article outlines the rationale for constructing the dataset, details the data-collection and coding procedures, presents some descriptive statistics, and concludes with an illustrative analysis of the spatial distribution of climate-related protest events.

Why a new dataset?

The accelerating global response to climate change has produced an expanding array of mitigation and adaptation policies, yet these very efforts have also triggered new and complex forms of social conflict. As awareness of climate risks spreads, the implementation of low-carbon transition measures—such as carbon taxation, renewable energy development, and fossil-fuel phaseouts—has generated friction among governments, industries, and local communities. Research has documented that fiscal and environmental policies designed to curb emissions can simultaneously constrain economic growth, exacerbate inequality, and create both domestic and transnational tensions (Gilmore & Buhaug 2021). Studies of Mexico’s large-scale wind power development (Garza 2019) and Australia’s coal seam gas and wind energy projects (Hindmarsh 2010; Hindmarsh & Aildoust 2019; Colvin 2020) demonstrate how government-led green initiatives have intensified local grievances and distributive conflicts. Likewise, urban climate mitigation programs in North and South America and Asia have been shown to deepen spatial and social inequalities (Anguelovski et al. 2016).

In South Korea, similar patterns have emerged. Case-based studies have documented conflicts surrounding renewable-energy deployment, emission-reduction policies, and the restructuring of carbon-intensive industries (Choo et al. 2010). These studies emphasize that diverse stakeholders—central and local governments, businesses, labor unions, and civil society—enter into conflict as they perceive the gains and losses of transition differently. Actors’ interests and policy preferences often vary by sector, occupation, and region, thereby producing new social cleavages layered upon existing ones such as class and regional inequality (Yoon 2009; Colvin 2020; Gaikwad et al. 2022).

Despite the growing literature on “just transition” and environmental governance, most existing research remains limited to single cases or small samples. Quantitative and spatially explicit analyses of where, why, and between whom such climate-related conflicts occur remain scarce. Only a handful of studies, such as Temper et al. (2020), have attempted to map the geographic distribution of social contention related to fossil-fuel or low-carbon projects, finding that even renewable energy initiatives—especially hydropower—can generate significant local opposition. Yet no dataset currently exists that systematically integrates information on the actors, policy sectors, and locations of conflicts arising from climate policy implementation.

Existing event datasets such as the Armed Conflict Location and Event Data Project (ACLED; Raleigh et al., 2010) and the Social Conflict Analysis Database (SCAD; Salehyan et al., 2012)

have made major contributions to the study of political violence and civil unrest. Both ACLED and SCAD provide detailed information on riots and peaceful protest events, making them invaluable for research on contentious politics and conflict diffusion. However, these datasets are not designed to capture the broader spectrum of civic activism associated with climate change, which includes not only demonstrations but also strikes, boycotts, petitions, and appeals. These forms of collective action play a central role in contemporary climate politics, where opposition or support for carbon-neutral policies often manifests through nonviolent, organized civic engagement rather than violent confrontation. Moreover, because ACLED and SCAD were developed primarily for the study of political violence, they do not include information linking each event to specific domains of climate or carbon-neutral policy—such as energy transition, industrial transformation, buildings, transportation, agriculture and fisheries, waste management, or carbon absorption and removal.

Unlike existing event datasets, GeoCPC codes every event according to its associated climate policy sector and underlying motivation, allowing researchers to distinguish, for instance, between protests against offshore wind farms (energy transition) and demonstrations opposing the construction of medical-waste incineration facilities (waste management). This sector-based coding framework enables systematic analysis of how different policy arenas generate distinct forms of civic contention during the net-zero transition.

Recent analyses of global climate activism (Jones & Youngs 2024) further underscore the growing importance of subnational protest dynamics and citizen mobilization as decisive factors shaping the political feasibility of the net-zero transition. Yet without systematically coded, geo-referenced data that capture these diverse forms of civic activism, it remains difficult to evaluate how climate-related contention evolves over time and space. To fill this gap, the GeoCPC (Geo-referenced Climate Policy Conflict) dataset provides the first comprehensive, spatially coded record of protest and conflict events directly linked to climate-change mitigation and adaptation policies across multiple countries. By incorporating event-level details on actor types, policy domains, and motivations, GeoCPC enables researchers to analyze the distribution, frequency, and escalation of social contention surrounding the carbon-neutral transition—beyond what existing political-violence datasets allow.

Concepts and Coding Criteria

The GeoCPC project defines *climate policy conflict* as a situation in which “at least two actors hold opposing positions and engage in contention or tension over the implementation of carbon-neutrality measures or related social issues” (Kwon 2016, 95). Each observation in the GeoCPC dataset represents a distinct event—a temporally and spatially bounded occurrence of social contention arising from climate policy debates or implementation processes. Events are recorded at the date–location level and may occur either offline (0) or online (1).

GeoCPC data are derived from a number of secondary information sources, including press accounts from local and national newspapers, NGO and civil society reports, governmental documents, and other data projects on protest events. Events are included only when the source clearly identifies a climate- or carbon-neutrality-related issue, specifies a discernible location and date, and involves at least one organized actor engaging in contention, advocacy, or mobilization. In most cases, this involves a clear interaction between two identifiable parties—an initiating actor and a target—such as citizens protesting against a government policy or labor

unions contesting industrial restructuring. However, events led by a single actor—such as environmental organizations holding peaceful demonstrations or awareness campaigns without a specific target—are also included if they publicly express a position or demand related to climate or carbon-neutral policy. The dataset excludes isolated opinion statements or symbolic gestures that lack an element of organized collective action.

Each event record contains detailed information on its type, actors, policy sector, motivation, scale, and consequences. The dataset includes both conventional street-level protests and non-confrontational forms of civic engagement such as petitions, boycotts, and online campaigns—forms of action that have become increasingly salient in contemporary climate politics. The basic unit of observation and key coding variables are summarized below.

Event Type

Events are categorized into six mutually exclusive types according to the form of collective action:

- 1) Violent protest — demonstrations involving physical clashes, property damage, or direct confrontation.
- 2) Non-violent protest — marches, rallies, or sit-ins conducted peacefully.
- 3) Strike or boycott — collective work stoppages or consumer boycotts targeting climate or energy policies.
- 4) Petition or appeal — formal requests or appeals submitted to authorities.
- 5) Signature campaign — organized efforts to gather signatures in support of or against a climate policy.
- 6) Public statement or declaration — joint announcements, press conferences, or resolutions issued by organized actors.

This typology reflects the need to capture a broad range of civic activism beyond the riot–protest dichotomy.

Actors

Each event involves at least one initiating actor (Actor 1) and, where applicable, a corresponding target (Actor 2). Actor categories include:

- 1) Central government (including public agencies).
- 2) Local government.
- 3) Political party.
- 4) Large corporation.
- 5) Small and medium-sized company.
- 6) Self-employed.
- 7) Energy-sector workers.
- 8) Non-energy-sector workers.
- 9) Farmers and fishers.
- 10) Civic organizations and NGOs.
- 11) Students
- 12) Others (including unemployed and extra-parliamentary groups).

This actor-centered coding allows researchers to trace interactional dynamics between different social groups—e.g., fishers protesting against offshore wind development (Actor 1 =

farmers/fishers; Actor 2 = central government)—while also accommodating single-actor events such as NGOs staging climate awareness campaigns.

Policy Sector

A distinctive feature of GeoCPC is that each event is linked to a specific domain of carbon-neutral policy, corresponding to national decarbonization strategies in the sampled countries. These sectors reflect the key areas in which governments pursue emission reductions and structural transitions—such as shifting energy systems away from fossil fuels, improving industrial energy efficiency, promoting low-emission transportation, enhancing building performance, advancing sustainable agriculture and fisheries, strengthening waste recycling, and expanding natural or technological carbon sinks. The dataset identifies seven principal sectors plus an additional “other” category:

- 1) Energy transition.
- 2) Industry.
- 3) Buildings.
- 4) Transportation.
- 5) Agriculture and fisheries.
- 6) Waste management.
- 7) Carbon absorption and removal.
- 8) Other.

This classification enables analysis of how different policy arenas generate distinct types of conflict. For example, protests against offshore wind farms are coded as *energy transition*, while demonstrations opposing the construction of medical-waste incineration facilities are coded as *waste management*.

Motivation

The variable *motivation* captures the primary reason behind Actor 1’s participation or opposition. Eight categories are distinguished:

- 1) Pursuing or raising greenhouse gas (GHG) reduction targets.
- 2) Opposing or lowering GHG reduction targets.
- 3) Environmental protection.
- 4) Economic loss or cost burden.
- 5) Job insecurity.
- 6) Violation of residential or livelihood rights.
- 7) Opposition to corruption or illegal practices
- 8) Other.

This allows for systematic comparison of whether contention is driven by normative concerns (e.g., environmental protection) or distributive grievances (e.g., job loss, economic burden).

Scale and Impact

The *size* variable records the approximate number of participants, categorized into six intervals (1; 2–10; 11–100; 101–500; 501–1,000; 1,001 or more). The dataset also codes the number of *injuries* and *deaths* directly associated with the event. Most events are non-violent, but recording casualties allows for tracking rare instances of escalation.

Spatial and Temporal Precision

Each event includes precise latitude and longitude coordinates corresponding to the location of occurrence. Events lacking specific spatial references (e.g., online activism) are coded as missing for location. All events are recorded with a specific date (YYYY/MM/DD). Multi-day events are recorded as separate daily observations when demonstrations or disputes continue over consecutive days at the same location. Each daily entry is assigned a unique record but shares a common event identifier, allowing users to trace the duration and continuity of a single episode over time.

GeoCPC provides a systematic and fine-grained record of social contention surrounding climate and carbon-neutral policies. By linking each event to specific policy sectors, motivations, and georeferenced locations, the dataset allows for nuanced analyses of when, where, and why conflicts emerge during the low-carbon transition. Its structure facilitates cross-national comparison, spatial mapping, and the integration of quantitative and qualitative research on climate-related social dynamics.

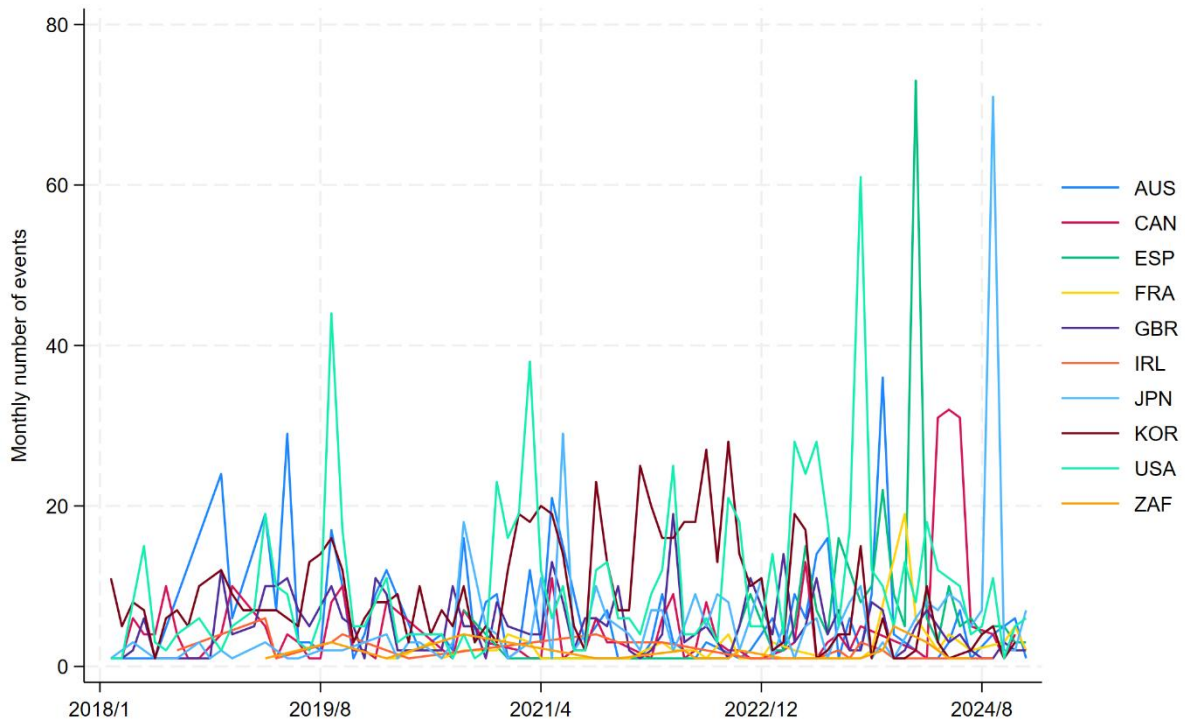


Figure 1. Monthly number of GeoCPC events across ten countries, 2018–2024.

Brief Descriptive Statistics

Figure 1 presents the monthly distribution of all recorded GeoCPC events across the ten countries included in the dataset. The figure aggregates six types of collective action—violent and nonviolent protests, strikes or boycotts, petitions or appeals, signature campaigns, and public statements—to show overall temporal dynamics of climate-related contention between January 2018 and December 2024.

Across the entire period, the United States recorded the largest number of events (823), followed by South Korea (752) and Australia (404). At the lower end, South Africa (36) and Ireland (44) show relatively limited activity. The country–month combination with the single highest number of recorded events was Spain in February 2024, when widespread tractor protests by farmers erupted nationwide. These demonstrations expressed discontent over rising production costs, severe drought conditions, and EU environmental policies—particularly pesticide-reduction rules—framed by some groups as burdens imposed by the European Green Deal.

Despite substantial cross-national and temporal variation, the overall trend indicates a steady increase in climate policy–related contention over time. The number of recorded events rose from fewer than 300 in 2018 to nearly 700 in 2023, reflecting the growing salience of climate-related contention. This upward trajectory suggests that as governments have expanded or accelerated carbon-neutral policy implementation, public mobilization—both supportive and oppositional—has become increasingly frequent and visible.

Table 1. Distribution of GeoCPC events by type and initiating actor, 2018–2024.

Event Type	Freq. %	Actor 1	Freq. %
Violent protest	23 0.66%	Central government	7 0.20%
Non-violent protest	2,822 80.88%	Local government	90 2.58%
Strike or boycott	12 0.34%	Political party	41 1.18%
Petition or appeal	275 7.88%	Large corporation	17 0.49%
Signature campaign	38 1.09%	Small and medium-sized company	6 0.17%
Public statement	319 9.14%	Self-employed	2 0.06%
Total	3,489 100.00%	Energy-sector workers	30 0.86%
		Non-energy-sector workers	15 0.43%
		Farmers and fishers	119 3.41%
		Civic organizations	2,265 64.92%
		Students	255 7.31%
		Others	642 18.40%
		Total	3,489 100.00%

Following the temporal overview in Figure 1, Tables 1 and 2 summarize the distribution of events by type, actor, policy sector, and motivation. Table 1 reveals that nonviolent

demonstrations dominate the dataset, accounting for more than four-fifths (80.9%) of all recorded events, while violent protests constitute less than one percent. This pattern reflects the largely civic and organized nature of climate-related contention, where participants rely on peaceful collective action rather than coercive tactics.

In terms of the initiating participants (Actor 1), civic organizations and NGOs represent by far the largest share of initiating actors (64.9%), followed by students (7.3%) and farmers and fishers (3.4%). This indicates that civil society groups and younger generations have played a leading role in articulating both demands for and objections to carbon-neutral policies. The relative absence of government and corporate actors as primary initiators further suggests that most climate-related contention arises from societal bottom-up mobilization, not institutional disputes.

Table 2. Distribution of GeoCPC events by policy sector and motivation, 2018–2024.

Policy Sector	Freq. %	Motivation	Freq. %
Energy transition	1,702 48.78%	Pursuing GHG reduction targets	1,779 50.99%
Industry	1,071 30.70%	Opposing GHG reduction targets	9 0.26%
Buildings	49 1.40%	Environmental protection	457 13.10%
Transportation	75 2.15%	Economic loss or cost burden	362 10.38%
Agriculture and fisheries	135 3.87%	Job insecurity	27 0.77%
Waste management	226 6.48%	Violation of livelihood rights	586 16.80%
Carbon absorption/removal	71 2.03%	Opposition to corruption or illegality	32 0.92%
Other	160 4.59%	Other	237 6.79%
Total	3,489 100.00%	Total	3,489 100.00%

The issue structure of these events also reveals important variation (see Table 2). Nearly half (48.8%) of all incidents are associated with the energy transition sector, highlighting that changes in energy production—from fossil fuels to renewables—are the most frequent triggers of civic activism. Industrial transformation accounts for another third (30.7%), followed by waste management (6.5%), agriculture and fisheries (3.9%), and transportation (2.1%). The prominence of energy and industrial sectors underscores that conflicts around decarbonization are tightly linked to structural shifts in production, employment, and the environmental consequences of energy transition at the local level.

Motivational patterns further clarify the nature of climate-related contention. A majority of recorded events (51%) are associated with pursuing or raising GHG reduction targets, reflecting widespread support for the objectives of decarbonization and climate action. Only 0.26% of cases explicitly oppose such targets, suggesting that resistance to the principle of carbon neutrality itself is extremely rare. Instead, protests are primarily driven by concerns

over violations of livelihood rights (16.8%), environmental and ecosystem protection (13.1%), and economic loss or cost burdens (10.4%). These findings indicate that civic contention over climate policy stems less from denial of decarbonization goals and more from conflicts regarding distributional justice and procedural fairness in implementing those goals. In short, the path to net-zero is not widely contested in principle but in practice—over who bears the costs, who benefits, and how the transition is managed across different social and economic groups.

Illustrative Data Application

To illustrate how GeoCPC can be integrated with external spatial datasets, this study investigates whether the presence of energy infrastructure affects the occurrence of climate-policy protests. The analysis focuses on violent and non-violent protest events, as these forms of collective action most directly capture societal contention over the implementation of carbon-neutral policies.

Table 3. Summary Statistics for Dependent and Explanatory Variables

Variable	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>				
Protests	0.070	0.788	0.000	62.000
<i>Explanatory variables</i>				
Hydro _{io}	0.141	0.801	0.000	18.000
Solar _{io}	3.464	9.454	0.000	164.000
Wind _{io}	0.684	4.153	0.000	126.000
Nuclear _{io}	0.029	0.317	0.000	10.000
Coal plant _{io}	0.102	0.804	0.000	40.000
Oil/Gas plant _{io}	0.507	2.164	0.000	61.000
Hydro _{uc}	0.001	0.029	0.000	1.000
Solar _{uc}	0.324	1.282	0.000	45.000
Wind _{uc}	0.050	0.411	0.000	23.000
Nuclear _{uc}	0.002	0.061	0.000	4.000
Coal plant _{uc}	0.001	0.044	0.000	3.000
Oil/Gas plant _{uc}	0.027	0.370	0.000	17.000
Log(GHG emission)	10.793	5.296	0.000	19.676
Log(Population)	10.393	1.673	0.000	16.129
Capital city	0.024	0.152	0.000	1.000
Relative deprivation	75.269	28.230	0.000	100.000

Note: Subscripts *io* and *uc* denote facilities that are *in operation* and *under construction*, respectively.

The unit of analysis is the second administrative level—year (roughly corresponding to counties or cities). For each administrative unit and year, the dependent variable measures the number of GeoCPC protest events recorded in that unit and year.

The key explanatory variables capture the presence of energy infrastructure within each administrative boundary. Using data from the Global Energy Monitor (GEM 2025), we count the number of facilities either in operation or under construction for six energy types—hydro, solar, wind, nuclear, coal, and oil/gas plants—yielding twelve distinct indicators in total. These variables reflect both the established and emerging footprints of energy systems that may influence local perceptions of environmental risk, distributive fairness, and livelihood disruption.

Several controls are included to account for environmental, demographic, and socio-economic conditions. Annual greenhouse gas (GHG) emissions at the administrative level are drawn from Climate TRACE (2025), aggregated from gridded data (metric tonnes of CO₂-equivalent) and expressed in natural logarithms. Population size is derived from the Gridded Population of the World (GPW) (CIESIN 2018) dataset, summed by administrative area and log-transformed. To capture socio-economic inequality, we incorporate the Global Gridded Relative Deprivation Index (GRDI) (CIESIN 2022), using the mean deprivation score (0–100) within each administrative unit and year, where higher values indicate greater relative deprivation.

To estimate the relationship between energy infrastructure and protest frequency, we employ a Poisson regression model with country fixed effects, using robust standard errors clustered at the administrative level. This specification adjusts for unobserved heterogeneity across countries. Table 3 provides summary statistics for all variables used in the analysis.

Table 4 reports the results of Poisson regression models estimating the relationship between energy infrastructure and the frequency of environmental protests. Model 1 includes facilities that are in operation, while Model 2 considers those under construction. In Model 1, protest activity is not driven by traditional fossil-fuel infrastructure but rather by the expansion of renewable energy facilities. Both *Solar* and *Wind* power installations show significant positive associations with the number of protest events. This finding indicates that opposition often emerges not against carbon-intensive plants, but against renewable projects themselves—often due to concerns over local land use, visual intrusion, or perceived procedural injustice. The result implies that as the energy transition deepens, the number of local protests may increase rather than decline, reflecting tensions between global decarbonization goals and local acceptability.

In Model 2, which examines facilities under construction, the coefficients for *Nuclear* and *Coal plant* are positive and significant, showing that large-scale or controversial projects tend to trigger contention during the construction phase. By contrast, renewable projects under construction show no statistically significant relationship with protest incidence, suggesting that early opposition is concentrated in high-risk or high-visibility sectors.

Among the control variables, *Population* size has a strong positive effect, confirming that protests are more frequent in densely populated areas. *Capital city* status also increases protest frequency, underscoring the centrality of metropolitan areas in climate activism. *Relative deprivation* is negatively associated with protest occurrence, suggesting that poorer or more deprived areas may lack the organizational capacity for mobilization. Interestingly, *GHG*

emission is statistically insignificant, indicating that the level of greenhouse gas emissions in a region is not what drives contention. Instead, protest activity appears more closely linked to the presence and expansion of renewable energy installations—the visible material symbols of the energy transition itself.

Table 4. Poisson Model of Climate-policy Protests

	(1)	(2)
	<i>In Operation</i>	<i>Under Construction</i>
Hydro	0.043 (0.040)	-0.597 (0.322)
Solar	0.010 (0.003)***	0.001 (0.035)
Wind	0.008 (0.004)*	0.012 (0.037)
Nuclear	0.005 (0.048)	1.020 (0.151)***
Coal plant	-0.065 (0.064)	1.010 (0.412)*
Oil/Gas plant	-0.038 (0.020)	-0.083 (0.068)
Log(GHG emission)	-0.012 (0.022)	-0.018 (0.022)
Log(Population)	0.711 (0.106)***	0.722 (0.108)***
Capital city	1.139 (0.350)**	1.109 (0.357)**
Relative deprivation	-0.014 (0.004)***	-0.011 (0.004)**
Constant	-9.230 (1.232)***	-9.339 (1.219)***
Country Fixed effects	√	
Log-likelihood	-5,471.15	-5,500.35
Observations	25,580	25,580
Number of administrative units	6,395	6,395
Number of countries	10	10

Robust standard errors clustered on administrative area in parenthesis.

* p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests)

Overall, these results highlight the spatial and structural paradox of climate-policy contention. While renewable energy expansion is essential for achieving carbon neutrality, it can simultaneously generate new forms of local resistance. The GeoCPC dataset thus helps uncover how decarbonization efforts—intended to mitigate global climate risks—can produce localized conflicts over fairness, participation, and environmental governance.

Conclusion

This article has introduced the GeoCPC Dataset, a new cross-national, event-level resource for analyzing the social dynamics of climate policy implementation. By systematically coding protest and conflict events related to mitigation and adaptation measures, GeoCPC provides an empirical foundation for studying how the global pursuit of carbon neutrality interacts with local governance, economic restructuring, and civic mobilization. The dataset captures not only traditional protests but also petitions, boycotts, and public statements—forms of civic action that have become increasingly central in contemporary environmental politics.

The descriptive and illustrative analyses yield two main insights. First, most contention over carbon-neutral policies is nonviolent and civic in nature, led primarily by civil society organizations, students, and local communities rather than by governments or corporations. Nearly half of all recorded events concern energy transition issues, showing that changes in energy production have become the principal arena of social conflict in the low-carbon transition. While direct opposition to decarbonization goals is rare, disputes frequently arise over distributional fairness and procedural legitimacy—how burdens are shared, how decisions are made, and whose livelihoods are affected.

Second, the analysis demonstrates that protests are not concentrated around fossil-fuel infrastructure but often emerge near renewable energy facilities such as solar and wind plants already in operation. This finding suggests that as the energy transition accelerates, local opposition may grow rather than diminish, reflecting the complex realities of implementing climate policies. Notably, greenhouse gas emissions themselves do not predict protest frequency, implying that contention stems less from emission intensity than from the visible and localized impacts of renewable energy expansion. In short, the politics of carbon neutrality unfold not only around the causes of climate change but also around the measures taken to address it.

Beyond these findings, GeoCPC contributes to the broader research agenda on the societal dimensions of decarbonization. Its spatially disaggregated structure allows scholars to explore the subnational geography of climate conflict, the diffusion of protest across regions, and the socio-economic correlates of environmental contention. The dataset is fully compatible with other global resources such as Climate TRACE, the Global Energy Monitor, and gridded socio-economic datasets, facilitating integrated analyses of climate, infrastructure, and inequality.

It is our hope that the GeoCPC dataset will serve as a foundation for future research on just transition and environmental governance, as well as a practical tool for policymakers seeking to anticipate and manage the social consequences of climate policy. By illuminating how efforts to achieve carbon neutrality can generate new arenas of contestation, GeoCPC helps bridge the gap between global climate ambition and local social realities—advancing both academic understanding and policy relevance in the study of climate governance.

References

- Anguelovski, Isabelle, Linda Shi, Eric K. Chu & Daniel Gallagher (2016) “Equity impacts of urban land use planning for climate adaptation: Critical perspectives from the Global North and South.” *Journal of Planning Education and Research* 36(3): 333–348.
- Center For International Earth Science Information Network (CIESIN) (2018). *Gridded Population of the World, Version 4 (GPWv4): Population Count, Revision 11* (Version 4.11). Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). Available at: <https://doi.org/10.7927/H4JW8BX5> [accessed 5 August 2025].
- Center for International Earth Science Information Network (CIESIN) (2022). Documentation for the Global Gridded Relative Deprivation Index (GRDI), Version 1. Palisades, New York: NASA Socioeconomic Data and Applications Center (SEDAC). Available at: <https://doi.org/10.7927/xwf1-k532> [accessed 5 August 2025].
- Climate TRACE (2025), *Climate TRACE Emissions Inventory v4.6.0*, Available at: <https://climatetrace.org> [accessed 5 August 2025]
- Colvin, R.M. (2020) “Social identity in the energy transition: An analysis of the ‘Stop Adani Convoy’ to explore social-political conflict in Australia.” *Energy Research & Social Science* 66: 1–12.
- Gaikwad, Nikhar, Federica Genovese & Dustin Tingley (2022) “Creating climate coalitions: Mass preferences for compensating vulnerability in the world’s two largest democracies.” *American Political Science Review*: 1–19.
- Garza, Jorge Hinojosa (2019) “Troubled winds from the South: The impact of large-scale wind energy projects on indigenous communities in Oaxaca.” Master’s Thesis in Environmental Studies and Sustainability Science, Lund University.
- Gilmore, Elisabeth A. & Halvard Buhaug (2021) “Climate mitigation policies and the potential pathways to conflict: Outlining a research agenda.” *WIREs Climate Change* 12(5). Available at: <https://doi.org/10.1002/wcc.722>.
- Global Energy Monitor (2024). *Global Energy Monitor Databases*. Covina, CA. Available at: <https://globalenergymonitor.org> [accessed 5 August 2025]
- Guardian (2023) “Climate activists guilty of smashing Barclays HQ windows spared jail.” 27 January. Available at: <https://www.theguardian.com/world/2023/jan/27/climate-activists-guilty-smashing-barclays-hq-windows-escape-jail> (accessed 6 October 2025).
- Hindmarsh, Richard (2010) “Wind farms and community engagement in Australia: A critical analysis for policy learning.” *East Asian Science, Technology and Society: An International Journal* 4: 541–563.
- Hindmarsh, Richard & Sara Alidoust (2019) “Rethinking Australian CSG transitions in participatory contexts of local social conflict, community engagement, and shifts towards cleaner energy.” *Energy Policy* 132: 272–282.
- Jones, Erin & Richard Youngs (2024) “Civic activism in an intensifying climate crisis.” Carnegie Endowment for International Peace. Available at: <https://carnegieendowment.org/research/2024/12/climate-change-protest-activism-green-transition?lang=en>.
- New Yorker (2018) “The complicated politics of the Gilets Jaunes movement.” 4 December. Available at: <https://www.newyorker.com/news/news-desk/the-complicated-politics-of-the-gilets-jaunes-movement> (accessed 6 October 2025).
- Raleigh, C., Linke, A., Hegre, H. & Karlsen, J. (2010) “Introducing ACLED: An armed conflict location and event dataset—Special data feature.” *Journal of Peace Research* 47(5): 651–660. Available at: <https://doi.org/10.1177/0022343310378914>.
- Salehyan, I., Hendrix, C.S., Hamner, J., Case, C., Linebarger, C., Stull, E. & Williams, J.

- (2012) “Social conflict in Africa: A new database.” *International Interactions* 38(4): 503–511. Available at: <https://doi.org/10.1080/03050629.2012.697426>.
- Sundberg R & Melander E (2013) “Introducing the UCDP Georeferenced Event Dataset.” *Journal of Peace Research* 50(4): 523–532
- Temper, Leah, Sofia Avila, Daniela Del Bene, Jennifer Gobby, Nicolas Kosoy, Philippe Le Billon, Joan Martinez-Alier, Patricia Perkins, Brototi Roy, Arnim Scheidel & Mariana Walter (2020) “Movements shaping climate futures: A systematic mapping of protests against fossil fuel and low-carbon energy projects.” *Environmental Research Letters* 15(12): 1–23.

Korean References

- 권혁주(Kwon, Hyuk-joo) (2016) “한국의 사회갈등과 사회통합 방안: 사회구조적 관점에서.” 『행정논총』 54(2): 93–116.
- 매일경제(Maeil Business) (2022) “해양풍력 난개발 오죽하면 어선 600척 시위 나서겠나 [사설].” 『매일경제』 (2월 10일).
- 윤순진(Yoon, Soon-jin) (2009) “기후변화 대응을 둘러싼 사회 갈등 예방과 완화를 위한 거버넌스의 모색.” 『국정관리연구』 4(2): 125–160.
- 추장민, 한상운, 이정석, 백승아(Choo, Jang-min, Han, Sang-woon, Lee, Jung-seok & Baek, Seung-ah) (2010) 기후변화와 사회통합에 관한 정책과제개발 연구. 정책보고서 2010-09, 환경정책평가연구원.