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TECHNICAL ARTICLE

The Invisible Drivers of Carbon Governance: NGO Network Mobilization and Policy Advocacy Strategies

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ABSTRACT

This article develops a mechanism-based account of how nongovernmental organizations (NGOs) seek to convert network relationships into policy influence across climate-governance venues. It treats climate governance as the broad analytical domain and decarbonisation policy as one important subset. A structured review codes 24 peer-reviewed publications from the three most recent complete publication years available at the search cut-off, 2023–2025. The synthesis separates structural network properties, organizational capabilities, and relational qualities; records multiple advocacy mechanisms and policy outcomes; and distinguishes empirical evidence from contextual benchmarks. The reviewed publications most often discuss information and framing and coalition brokerage, but their codes overlap and do not estimate comparative effectiveness. Five China-focused publications provide scope-conditioned, theory-generating observations rather than a test of a general hierarchy effect. Only one core empirical study offers direct process evidence on implementation, and none estimates a comparable causal effect on compliance, investment, or emissions. Six propositions specify units, predictors, outcomes, moderators, and observations that would count against them. The article positions embedded network advocacy as an incremental contribution: its main addition is a conversion and feedback logic that links changing advocacy portfolios to policy stages, while recognizing risks of selective access, dependence, and co-optation.

KEYWORDS NGO, Carbon governance, Network mobilisation, Policy advocacy, Climate governance, Policy networks

1. Introduction

Climate governance is organised across overlapping arenas that include national governments, cities, firms, courts, research organisations, civil-society networks, and international institutions. Polycentric governance research describes this distribution of authority, while also showing that multiple venues can increase fragmentation, coordination costs, and inequality in access (Ostrom 2010; Kellner *et al.* 2024; Tobin *et al.* 2024b; Widerberg *et al.* 2024). NGOs often work across these arenas, but their presence does not by itself demonstrate influence. The analytical question is when relationships, capabilities, and advocacy practices are associated with observable changes in policy processes or outcomes.

NGOs can contribute by producing or translating knowledge, brokering coalitions, mobilising legal and procedural rights, monitoring implementation, and communicating climate problems to different audiences. These activities draw on distinct attributes. Structural network properties include tie diversity, brokerage opportunities, and repeated connections; organisational capabilities include expertise, staff, and information production; relational qualities include credibility, trust, and access. They may reinforce one another, but they are not interchangeable. This distinction helps

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explain why visibility or resources alone are insufficient measures of policy influence (Burt 2004; Keck and Sikkink 1998; Kagan 2024; Shyrokykh *et al.* 2023).

Recent scholarship has substantially deepened understanding of these mechanisms. Studies of climate justice show how moral and distributive frames can widen public engagement (Gulliver *et al.* 2023; Ogunbode *et al.* 2024). Research on youth mobilisation demonstrates measurable effects on political attention and public concern (Brehm and Gruhl 2024; Fabel *et al.* 2025), while work on radical-flank dynamics finds that disruptive action can increase support for more moderate climate organisations under some conditions (Ostarek *et al.* 2024). At the same time, legal scholarship shows that NGO litigation matters through participation rights, procedural obligations, signalling, and reputational effects, not only through courtroom victories (Abbot and Lee 2024; Barritt 2024; Fisher 2025). These findings point toward a common mechanism: influence depends on converting a resource or signal generated in one venue into a form that can travel to another.

Three analytical gaps motivate the article. First, studies often examine protest, litigation, framing, networking, or partnership separately, although advocacy portfolios can combine them. Second, network properties and organisational capacities are not always linked to explicit outcome sequences. Third, the evidence spans different institutional contexts and actor types. Work on China examines expertise, policy access, and organisational learning, while other studies address legal participation, coalitions, and public mobilisation (Zhang 2024; Wang 2025; Lu and Zhu 2025). These studies are not treated as equivalent tests. The framework specifies a common sequence that can be examined without treating their outcomes as commensurable.

The article asks how NGOs mobilise networks in climate governance, through which mechanisms network-related attributes may be converted into policy influence, and how institutional conditions shape advocacy portfolios across policy stages. It uses a structured, theory-oriented review rather than a meta-analysis or probability sample. Its descriptive counts characterize the included publications only. The article then develops a mechanism-based interpretation and identifies propositions for future testing. China is treated as a bounded application of the framework, not as the basis for a general claim about hierarchical systems.

The central argument is that advocacy involves a sequence of conversions. Structural network properties and organisational capabilities create opportunities; credibility, trust, and repeated access affect whether claims are received; information and framing, coalition brokerage, legal mobilisation, and symbolic mobilisation activate those conditions; and institutional settings shape which outcomes are attainable. Embedded, disruptive, and hybrid pathways describe portfolios rather than fixed organisation types. Figure 1 shows where institutional openness, issue salience, and implementation capacity may moderate the sequence, and how implementation learning can feed back into later network relations and strategy.

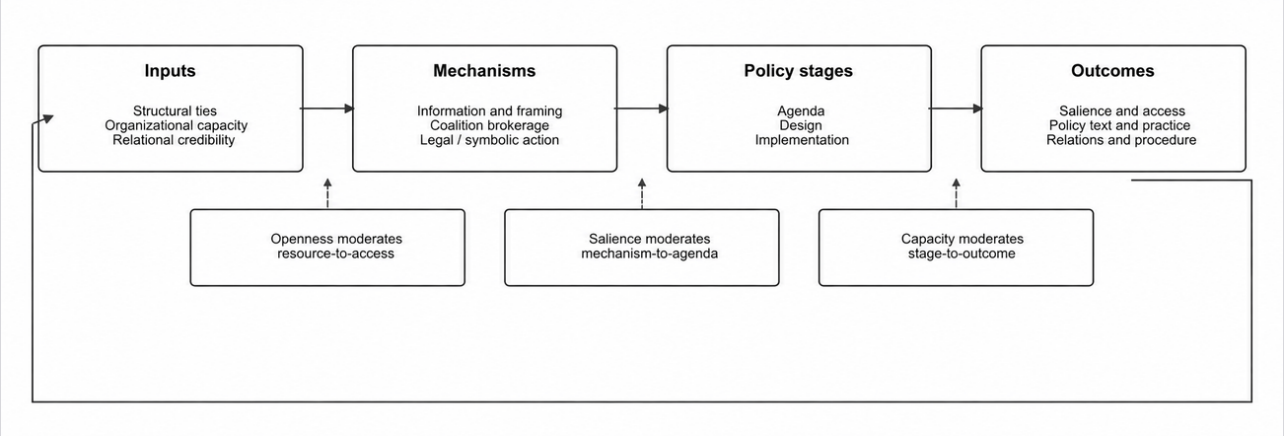

Figure 1. Conversion and feedback framework for NGO advocacy across climate policy stages

The framework's incremental contribution is its conversion and sequencing logic. Existing theories explain important components: insider–outsider accounts distinguish access strategies, advocacy-coalition theory addresses belief-based coalitions, transnational network scholarship explains cross-border ties and information exchange, and policy-entrepreneurship approaches explain coupling around policy windows. Embedded network advocacy connects these components across policy stages and treats feedback from implementation as a reason to revise later portfolios. It does not claim that the component mechanisms are new or that the review establishes causal effects. Figure 1 presents this bounded contribution.

2. Analytical framework

2.1. Climate governance as a multi-level process

Climate governance is the umbrella term used here for institutions and processes that address mitigation, adaptation, climate-related development, and associated distributional concerns. Decarbonisation governance is a narrower subset concerned with reducing greenhouse-gas emissions and managing the transition of energy, transport, industry, finance, and land use. The reviewed literature includes both domains, so the article does not use climate governance as a synonym for the entire field. Policy instruments, litigation, implementation arrangements, consultation, and informal partnerships are included when they bear on climate-policy decisions (Kern *et al.* 2024; Tobin *et al.* 2024a).

The advantage of a multi-level conception is analytical precision about where NGO influence can occur. NGOs may have little control over final legislative adoption but considerable influence over agenda access, evidence standards, consultation procedures, local pilots, or the legitimacy of competing policy frames. These intermediate outcomes are not trivial. They can shape the feasible set of later policy choices. Brusseel, Raeymaeckers, and Verschuere (2025), reviewing advocacy-effectiveness research in nonprofit studies, similarly argue for multidimensional outcome measurement rather than a binary success-failure coding. For climate governance this is particularly important because many policy changes are incremental, nested within broader regulatory regimes, and implemented over long time horizons.

Polycentricity also creates coordination demand. Kern et al. (2024) show that transnational municipal networks evolve over time rather than functioning as fixed structures, while Widerberg (2024) demonstrates that state orchestration can remain central even within ostensibly polycentric arrangements. The implication is that NGOs cannot be assumed to benefit automatically from additional venues. A larger opportunity structure can also produce duplication, competition for attention, and strategic overload. Brokerage becomes valuable when an NGO can reduce these frictions by connecting actors, translating priorities, or moving information between levels that use different institutional languages.

2.2. Network resources and mobilisation

Network mobilisation refers to the deliberate activation and maintenance of relationships through which an NGO can exchange information, coordinate activity, obtain expertise, or approach decision venues. Network position is not measured as a centrality score in this review. It is used only as a conceptual description of relational location where a source documents it. Observed indicators include tie diversity, brokerage roles, repeated interaction, and cross-level or cross-sector links. Direct lobbying is coded by its function within information translation or coalition brokerage; monitoring and implementation partnerships are recorded as activities and outcomes rather than assumed to be stand-alone mechanisms.

Three attributes are distinguished. Structural network properties describe the pattern of ties, such as diversity, brokerage, and embeddedness. Organisational capabilities include expertise, staff, data production, legal knowledge, and the capacity to translate information for a target venue. Relational

qualities include credibility, trust, and repeated access, which may develop through prior interaction. These dimensions create opportunities but do not guarantee policy uptake. A dense network may circulate information without changing policy, and an expert organisation may lack access to the venue where a decision is made. Figure 1 therefore separates inputs, mechanisms, policy stages, and outcomes.

Network resources are also stage-dependent. During agenda setting, broad ties can amplify salience and diversify the audiences exposed to a claim. During policy design, smaller trust-based networks may be more consequential because the relevant tasks involve technical detail and iterative negotiation. During implementation, local monitoring, industry links, legal expertise, and administrative relationships become more important. Treating network structure as dynamic rather than fixed therefore avoids a common inferential mistake: assuming that the network that creates attention is necessarily the network that delivers implementation.

2.3. Advocacy mechanisms and venue choice

Four mechanisms recur across the recent literature and build on established accounts of framing, transnational advocacy, contentious politics, and movement strategy (Benford and Snow 2000; Keck and Sikkink 1998; Tilly 2008; Pulver 2023). Information politics produces evidence, policy analysis, disclosure tools, and interpretive frames. Coalition brokerage connects actors whose capabilities are complementary but whose preferences or organisational routines are not automatically aligned. Legal mobilisation uses procedural rights, litigation, administrative review, and the threat of adjudication to alter obligations and bargaining positions. Symbolic mobilisation uses protest, moral claims, naming strategies, and visible performances to change issue salience and reputational incentives. These mechanisms are analytically distinct, but effective campaigns frequently combine them.

Venue choice is central because mechanisms have different conversion rates across arenas. Kagan (2024) shows that nonprofit advocacy can be better understood when strategies are linked to the venues in which decisions are made. Expertise has high value in bureaucratic and standards-setting venues. Participation law becomes powerful when NGOs can mobilise it outside the courtroom as well as within it (Abbot and Lee 2024). Moral and justice frames can activate broader publics, but their effect depends on audience fit and political context (Gulliver *et al.* 2023; Rawlyk and Willness 2025). Symbolic mobilisation can shift media and electoral attention, yet policy uptake still depends on institutions capable of transforming that attention into proposals and implementation routines (Fabel *et al.* 2025; Thomas-Walters *et al.* 2025).

This venue-mechanism fit clarifies why the same NGO may appear conciliatory in one arena and confrontational in another without necessarily changing its substantive goals. Strategy should be interpreted as adaptation to the institutional task. An organisation can litigate to create procedural leverage, publish expert reports to define a feasible policy option, and cooperate with regulators to translate the resulting obligation into administrative practice. The analytical object is therefore the portfolio and sequence of actions, not the ideological label attached to a single tactic.

2.4. Embedded, disruptive, and hybrid pathways

Insider–outsider accounts explain differences in access and public contestation but can make repertoires appear mutually exclusive. Advocacy-coalition theory emphasizes shared beliefs and policy learning, while multiple-streams scholarship explains how policy entrepreneurs couple problems and solutions during windows of opportunity (Sabatier and Jenkins-Smith 1993; Kingdon 2011). Transnational advocacy research and structural-hole theory explain cross-border ties, information exchange, and brokerage (Burt 2004; Keck and Sikkink 1998). Venue-based approaches clarify where nonprofit advocacy occurs (Kagan 2024). Embedded network advocacy builds on these accounts by specifying how a portfolio can change across agenda setting, policy design, and

implementation, and how implementation feedback can alter subsequent strategy. Table 1 summarizes the distinction.

Table 1. Positioning embedded network advocacy in adjacent frameworks

Adjacent approach	What it explains	Incremental addition of this framework
Insider–outsider strategies	Differences in venue access and public contestation	Tracks portfolio shifts across stages and the conditions linking attention to policy uptake
Advocacy-coalition theory	Belief alignment, coalition structure, and policy learning	Specifies NGO-level mechanisms and observable conversion links within and across coalitions
Transnational advocacy and brokerage	Cross-border ties, information exchange, and bridging positions	Separates network structure from organizational capacity and relational credibility
Multiple streams and policy entrepreneurship	Coupling problems and proposals during policy windows	Adds a stage-specific outcome chain and feedback from implementation to later strategy
Venue-based advocacy	Where organizations intervene and which decision arenas they target	Explains how mechanisms can be sequenced across venues rather than assigned as fixed tactics
Embedded network advocacy	Synthesis of access, brokerage, framing, legal action, and public mobilisation	A bounded framework for testing conversion, moderators, and feedback; not a claim that component concepts are new

Embedded, disruptive, and hybrid pathways are analytical descriptions of advocacy portfolios. Embedded activity relies on repeated access, expertise, consultation, and coalition maintenance. Disruptive activity raises public, procedural, or reputational costs when agendas are closed or inertia is strong. Hybrid activity links these repertoires, for example when public attention is followed by technical proposals or when legal action opens a procedural route for administrative response. Neither pathway is uniformly superior. Embedded participation can narrow agendas or create dependence; disruption can raise attention without producing policy uptake. Evidence on protest and radical-flank effects similarly indicates context-dependent outcomes (Jarke-Neuert *et al.* 2023; Badullovich *et al.* 2024; Ostarek *et al.* 2024).

Table 1 compares the proposed framework with adjacent approaches. The distinction is intended to make the theoretical contribution precise: the contribution is not a new label for insider and outsider tactics, but an explicit, stage-linked account of conversion, feedback, and observable outcomes.

3. Research design and empirical strategy

3.1. Evidence architecture and scope

The evidence is organised in three layers. The core review contains 24 peer-reviewed publications dated 2023–2025. This window covers the three most recent complete publication years at the search cut-off of 28 September 2026; partial-year 2026 publications, including Yu et al. (2026) and Li and Farid (2026), are used only as contextual updates. The corpus was assembled through targeted cross-publisher scholarly searches, DOI and publisher-page checks, and backward and forward citation searches. Representative terms combined climate or climate governance with environmental NGO, civil society, network, advocacy, framing, coalition, litigation, protest, policy access, and China. The full search strings and date are recorded in the supplement. Searches were run on 28 September 2026. Representative combinations were ‘climate governance OR climate governance’ with ‘environmental NGO OR civil society’ and ‘advocacy OR network’; ‘climate litigation NGO OR environmental organisation policy legal mobilisation’; and ‘environmental NGO China climate policy advocacy policy networks’. Additional searches paired climate justice, framing, coalition brokerage, protest,

and policy access with the governance terms. DOI records, publisher pages, and cited-by and reference lists were checked to confirm publication year, peer-review status, and relevance. The 2023–2025 boundary is a reproducible calendar rule: it captures three complete years without mixing a partially observed 2026 into the sample. It is not a claim that this period marks a theoretical break or represents all recent work.

Eligibility required an English-language peer-reviewed journal article published in 2023–2025 that addressed climate policy, climate-related governance, or an advocacy mechanism relevant to the framework. Empirical NGO studies were eligible, as were adjacent studies of movements, public opinion, legal processes, intergovernmental coalitions, business, or governance when they provided contextual evidence on a mechanism or outcome. These actor types are separately coded and are not counted as NGO evidence. Duplicate versions were consolidated at the article level. The full 24-item included inventory is supplied. Historical retrieval totals and record-level exclusion counts were not retained, so this is reported as a structured review rather than a PRISMA-compliant systematic search; no screening flow counts are inferred. Figure 2 shows the auditable evidence architecture. Sources were excluded from the core when they were editorials, reports, dissertations, non-English publications, or journal articles without a substantive link to climate governance or one of the specified advocacy mechanisms and outcomes. An adjacent study was retained only when it clarified a mechanism or an outcome boundary; its actor class remains visible in the coding. Selection prioritized relevance to the framework and coverage across policy stages, actor types, mechanisms, and institutional settings. It did not seek a statistically representative sample, and findings are not weighted by journal prestige, sample size, or study design. The search log preserves representative query language and known screening stages, while the absence of archived result exports prevents retrospective reconstruction of a record-by-record exclusion flow.

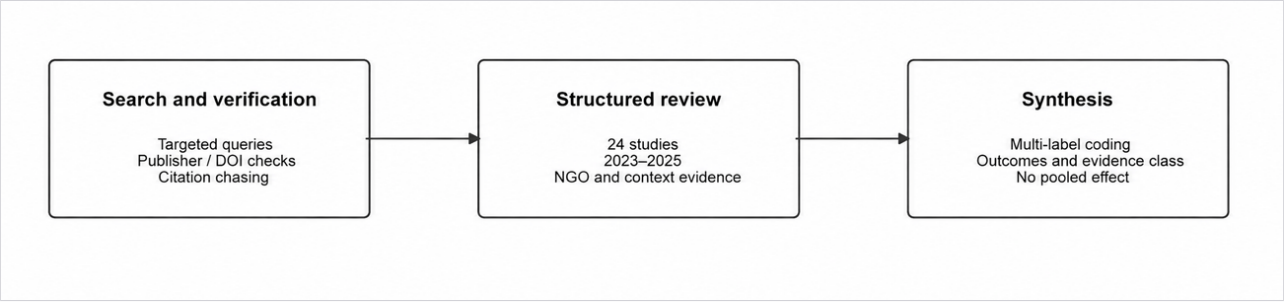

Figure 2. Evidence architecture and scope of the structured review

The 16 observations in the second layer are illustrative mechanism observations, not a conventional comparative case sample. They were selected to cover the four mechanisms, agenda, design, and implementation stages, and variation in institutional setting and actor type. The unit is stated separately for every observation because it ranges from an organisation or campaign episode to a legal process, network, or public-opinion study. Eleven observations draw directly on publications in the 24-item corpus; five provide contextual benchmarks or adjacent mechanism evidence. The third layer consists of external contextual benchmarks from UNEP climate-litigation reports, Climate Action Network's public profile, and Yu et al.'s (2026) compilation of Chinese climate-policy documents. These sources describe institutional scale; they do not independently validate NGO influence or the proposed causal sequence. The selection aim was to examine how mechanisms appear in different contexts, not to select cases because they confirmed the proposed framework. Each observation has an explicit unit and source, and only attributes documented by that source are coded. The observations are not independent in a statistical sense: some derive from the core publications, and others describe the same broad institutional setting from a different evidentiary angle. They therefore illustrate mechanism boundaries and evidence limits rather than provide a

second denominator for the publication-level results. Mixed-actor or non-NGO observations remain contextual in all substantive claims.

3.2. Coding, harmonisation, and descriptive tests

Each included publication was coded on separate dimensions: publication year; stated scope; locations of empirical observations; actor class; study design; analytical method; data source; causal-identification strength; advocacy mechanisms; and outcomes. Study design was not treated as interchangeable with analytical method or data source. A source could receive multiple mechanism and outcome codes. Information and framing covers knowledge production, disclosure, and interpretive work; coalition brokerage covers coordination across actors or venues; legal mobilisation covers litigation and procedural rights; symbolic mobilisation covers protest and public or reputational signals. Direct lobbying, monitoring, service provision, and implementation partnerships are coded by the function they serve and by the policy stage, not forced into a fifth mechanism. A separate primary code is retained only for sensitivity checks. A mechanism is a documented activity or process linking an actor's action to an intermediate policy-relevant response; it is not simply an organisational attribute. An outcome is separately coded as a condition the source examines, whether or not the mechanism appears to cause it. This rule avoids treating an NGO's expertise as an advocacy tactic or treating a court judgment as proof of implementation. Direct lobbying, for example, is coded as information translation when the source focuses on supplying evidence to a decision venue, or as brokerage when it organises coordination among actors. Monitoring is coded as an activity, while verified administrative response is an outcome. Financial leverage and capacity building are likewise resources or supporting activities unless the source documents a distinct mechanism and outcome.

One author performed the initial coding and a second-pass consistency audit against the included publications and source metadata. No independent second coder was available, so intercoder reliability and a kappa statistic are not claimed. Ambiguous cases were resolved using the dominant documented function in the source, while all other documented mechanisms were retained as secondary codes. For example, a litigation article receives a legal code and may also receive information or brokerage codes when the publication documents disclosure or coalition work. Among 23 publications with at least one mechanism code, the initial primary assignments are information/framing 9, brokerage 8, legal mobilisation 3, and symbolic mobilisation 3. Under the recorded alternative assignments, the counts are 9, 10, 1, and 3; the leading primary category changes. The main results therefore rely on multi-label coding, and no single-mechanism ranking is treated as stable. One-at-a-time recoding is reported in the replication files. The primary-code rule is applied only when one mechanism is the publication's central analytical focus or carries the most sustained process evidence. Where two mechanisms are equally central, the primary code follows the mechanism most directly tied to the reported outcome; the other remains in the multi-label set. A second plausible assignment is recorded where reasonable readers could disagree. This procedure makes interpretive choices inspectable but does not eliminate subjectivity. The initial and alternative counts show that even a one-paper reassignment can change the leading category. For that reason, the paper does not rely on primary-code percentages to rank mechanisms, and conclusions are checked against the multi-label pattern and the outcome matrix.

Outcomes use a stable five-part taxonomy: agenda and salience (A); discourse, representation, or legitimacy (D); policy design or adoption (P); implementation or administrative practice (I); and relational or procedural access (R). An outcome is recorded when it is analysed or synthesized in the source, not merely named as a future research priority. Evidence strength is classified separately as causal design, association, process evidence, or synthesis/context. This allows the review to distinguish an outcome category from the strength of evidence about that outcome. Table 2 reports the multi-coded mechanism-by-outcome matrix; the accompanying workbook also lists the evidence tier and source for every code. The matrix is a measure of co-occurrence in the same publication, not

evidence that a given mechanism produced a given outcome. It also permits a study to discuss several outcomes without asserting that each was achieved. The resulting profile is intentionally asymmetric: procedural and relational access is frequently discussed, policy design appears in a smaller group, and implementation codes are uncommon. For implementation, the distinction between a review that identifies the outcome domain and an empirical article that follows administrative practice is retained in the workbook. This additional evidence tier prevents a high cell count based on broad review coverage from being mistaken for multiple direct observations of implementation change.

Table 2. Mechanism-by-outcome matrix for the 24 included publications

Mechanism	A	D	P	I	R	N
Information and framing	6	11	8	2	14	16
Coalition brokerage	2	5	10	2	14	14
Legal mobilization	0	1	4	1	4	4
Symbolic mobilization	4	6	1	1	6	7

Note. Codes overlap. A, agenda and salience; D, discourse, representation, or legitimacy; P, policy design or adoption; I, implementation or administrative practice; R, relational or procedural access. The I column includes review coverage; only one core empirical publication provides direct process evidence on implementation, and none estimates a comparable causal implementation effect.

3.3. Evidence appraisal, contextual benchmarks, and reproducibility

Because the corpus combines experiments, observational studies, qualitative process accounts, legal analyses, and reviews, no common numerical risk-of-bias score was imposed. Instead, the coding records causal identification, temporal ordering, outcome operationalization, data source, and process-tracing or triangulation evidence as separate descriptors. The review gives each publication equal weight only in descriptive counts and does not pool effect sizes. Figure 2 and the supplementary workbook report the 24 included records, complete study-level codes, 16 illustrative observations, search protocol, codebook, source map, and figure data. External benchmarks are kept analytically separate: litigation totals indicate reported case counts, CAN reports membership scale, and Yu et al. describe government policy documents. None measures NGO access or policy influence. The evidence appraisal is question-specific rather than a single quality score. A causal-design label is reserved for studies with a defined outcome and a comparison, experimental manipulation, or credible quasi-experimental strategy. Association denotes a measured relationship without a design that resolves the main alternative explanations. Process evidence requires temporal ordering and source material that documents relevant steps, but it does not by itself rule out rival causes. Synthesis/context describes a review, conceptual analysis, official benchmark, or source used to define the wider setting. For all empirical studies, the coding also records whether outcomes are explicitly operationalized, whether evidence comes from more than one source, and whether a temporal sequence is observable. These fields make the limits comparable without implying that a survey experiment is a better tool than process tracing for every research question.

4. Empirical evidence from recent scholarship

4.1. Composition of the included publications and geographic coverage

The included corpus contains four publications from 2023, ten from 2024, and ten from 2025. These counts describe the composition of the purposively assembled sample; they do not demonstrate growth in the research field. The window ends in 2025 because it is the latest complete three-year period at the cut-off date; 2026 publications are cited as contextual updates but not mixed into the core denominator.

Geographic scope and empirical location are coded separately. Figure 3 counts only explicitly identified regions in which observations were collected or analysed, and permits multiple regions per publication. Global-scope reviews or studies without a specified observation geography are not assigned to a region. The figure therefore describes known locations in this sample and cannot establish the field-wide representation of any region or the Global South.

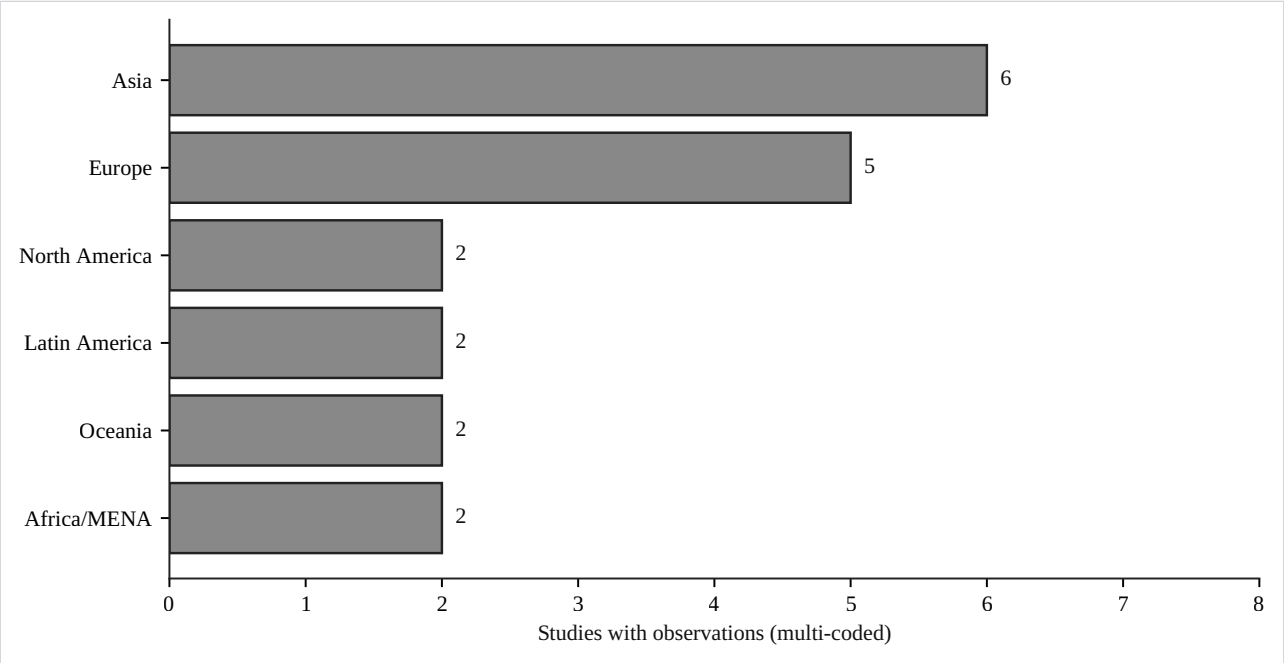

Figure 3. Geographic locations of empirical observations in the included publications

Note. Multi-region coding is permitted. Global scope and unspecified locations are not treated as observed regions.

Five core publications focus specifically on China: one legal-process study, one study of NGO policy networks, one China-focused climate and social-inclusion synthesis, one NGO-litigation comparison, and one comparison of local advocacy coalitions. Their actor types and designs differ. The China subset is consequently treated as a small, scope-conditioned body of evidence, not as a representative national sample or a test of a general relationship between hierarchy and advocacy effectiveness.

4.2. Methodological composition and what it permits us to claim

Figure 4 groups study designs into qualitative or process studies, reviews or conceptual analyses, quantitative observational or network studies, legal or socio-legal studies, and experimental or quasi-experimental studies. It reports evidence class and analytical method separately. Exact study-design labels, analytical methods, and data sources are recorded as distinct variables in the workbook. These descriptive dimensions do not imply that one design is inherently stronger across all research questions.

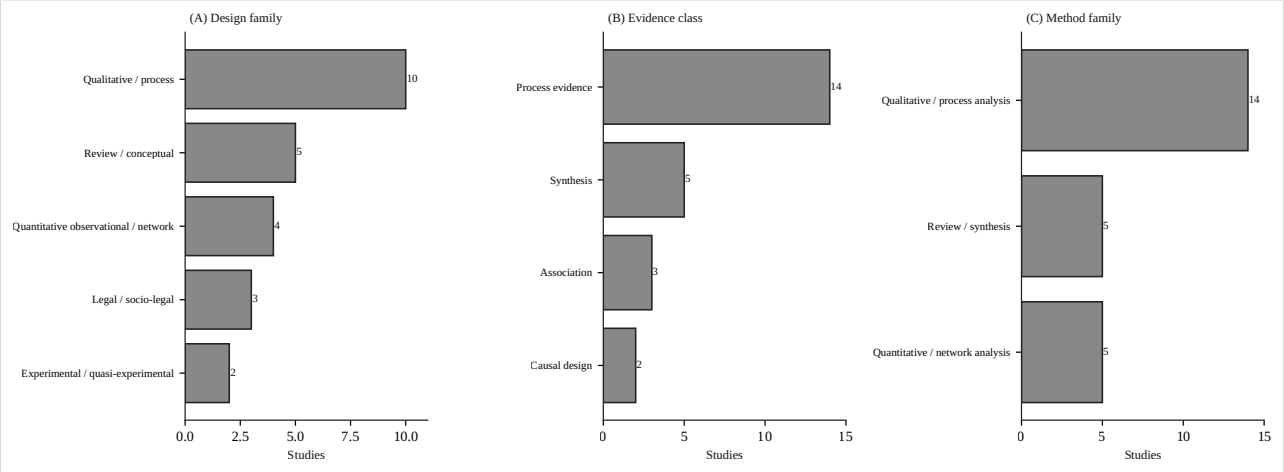

Figure 4. Study design, analytical method, and evidence class

The strongest causal identification in the corpus comes from studies of message or protest effects on public opinion, voting, political attention, and media behavior. For example, Ballew et al. (2025) test climate messages across countries, while Fabel et al. (2025) analyse protest and electoral outcomes in Germany. These designs inform mechanisms related to communication and symbolic action, but they do not estimate the effect of NGO advocacy on policy implementation or emissions.

Qualitative and legal studies are more suited to identifying sequences and institutional mechanisms. Abbot and Lee (2024) trace NGO use of participation law under the Aarhus Convention; Zhang (2024) examines how expertise and policy networks shape access in China; and Li (2025b) compares two NGO-initiated climate cases. These sources support process descriptions, not a common ranking of policy effectiveness. Review articles and governance studies provide context and are tagged accordingly.

Implementation remains the weakest part of the evidence chain. Three publications discuss implementation as an outcome domain, but only one core empirical study provides direct process evidence about administrative practice; none estimates a comparable causal effect on compliance, investment, or emissions. Agenda, discourse, and procedural outcomes are more frequently observable in the available material. Figure 4 and the implementation evidence field make this difference explicit. This asymmetry matters for interpretation. An observed media or agenda response can be measured over a short interval, whereas implementation may depend on budgets, administrative capacity, enforcement, firm decisions, local coordination, and changes in political leadership. Evidence that a proposed policy entered a document does not show that agencies implemented it, that regulated actors complied, or that emissions changed. The review therefore treats implementation as a separate outcome and reports both its frequency and its evidentiary basis. This is a description of what the included publications establish, not proof that NGO advocacy has no implementation effects.

4.3. Strategy portfolios and the China comparison

Multi-label coding identifies information and framing in 16 publications, coalition brokerage in 14, legal mobilisation in four, and symbolic mobilisation in seven. Counts overlap because one publication may document several mechanisms. They describe what the included publications analyse, not the frequency or effectiveness of NGO tactics in the world. Figure 5 reports the same multi-label measure for the full corpus and the China-focused subset. The co-occurrence matrix shows how often each mechanism appears alongside agenda, discourse, policy-design, implementation, and relational-access outcomes. Information and framing are associated in the coding with all five outcome domains, while brokerage is commonly discussed alongside policy

design and access. Symbolic mobilisation appears more often with agenda and discourse than with implementation. These are descriptive patterns in publication content. Because a cell can reflect a review's synthesis or a qualitative process account as well as an empirical estimate, the matrix cannot be read as a comparative test of predictive power. It is useful for identifying which mechanism–outcome links deserve better-designed follow-up research.

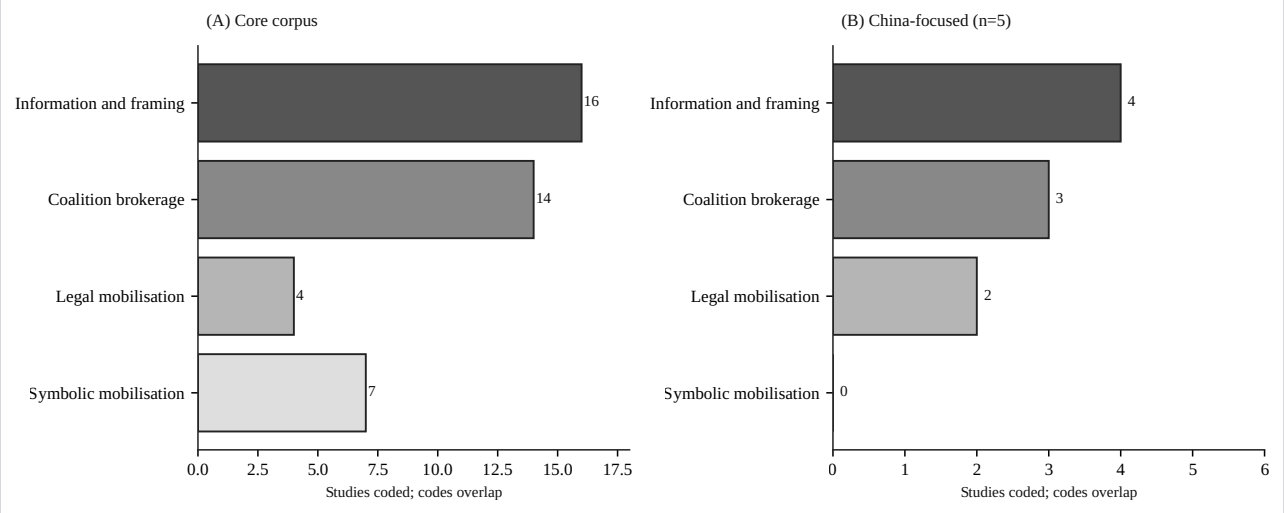

Figure 5. Multi-label advocacy mechanisms in the core corpus and China-focused publications

In the five China-focused publications, information and framing appear in four, coalition brokerage in three, and legal mobilisation in two; symbolic mobilisation is not coded in this small subset. This absence is a feature of the selected literature, not evidence that symbolic action is absent from Chinese environmental politics. The data cannot establish that hierarchical systems systematically favor one portfolio. At most, the subset generates a proposition for comparative research across multiple political systems.

The China publications document different parts of the sequence. Zhang (2024) traces expertise and policy-network access; Li (2025b) examines institutional conditions in two legal cases; Wang (2025) compares coalition processes in four cities; Zhu (2023) provides legal context; and Yang and Walker (2024) frame just transition and social inclusion. Their units and evidence classes differ, so these findings are presented as bounded observations rather than pooled evidence of a hierarchy effect.

Legal mobilisation can combine procedural pressure with information and brokerage, but the coding records these functions separately when a source documents them. Zhu (2023) provides institutional context, while Li (2025b) traces two NGO-initiated cases. Neither source supports a general causal estimate. The broader legal literature likewise points to access, disclosure, and administrative response as distinct outcomes rather than a single win–loss measure.

Table 2 reports the number of publications that connect each mechanism to each outcome category. Cells are descriptive co-coding counts; they do not show effect sizes, direction, or causal strength.

4.4. From visibility to outcomes: where evidence is strongest and weakest

Visibility and policy conversion are distinct outcomes. Studies of protest and communication identify changes in public concern, message response, media attention, or political behavior, but these intermediate outcomes are not equivalent to policy-text change. Rawlyk and Willness (2025) examine adaptive climate communication; Liu and Kuang (2024) analyse framing and emotional responses; and Fabel et al. (2025) estimate protest-related political outcomes. The reviewed evidence is consistent with a translation hypothesis, but does not compare the relative effectiveness of

advocacy portfolios. The reviewed studies do not share an outcome metric, observation period, or counterfactual. A change in public concern, a new consultation opportunity, a revised policy text, and verified compliance are qualitatively different endpoints. They are ordered in the framework because they may occur at different stages, not because every advocacy episode moves through them in sequence. Some efforts end at visibility; others enter a venue without producing a textual change; still others may affect administration without generating broad attention. Any claim about conversion must therefore identify the endpoint and the temporal link that is observed.

Justice framing can connect climate policy to distributional concerns. Gulliver et al. (2023) document how Australian environmental NGOs frame climate justice, while Ogunbode et al. (2024) find an association between climate-justice beliefs and climate action or policy support across 11 countries. Fabre et al. (2025) estimate public support for global redistributive and climate policies; their unit is public preferences rather than NGO campaigns. These studies address different units and outcomes. They show why framing may matter, but do not establish a common NGO effect or a direct route from public support to durable policy change.

Communication with decision makers adds another potential link. Ettinger et al. (2025) review climate and health communication to policy makers, and Pavenstädt and Rödder (2024) examine how climate movements negotiate evidence-based and political narratives. These studies inform a theoretical account of translation across audiences. They do not show that every translated message is adopted or implemented.

The implementation gap is both empirical and causal. Administrative routines, market conditions, political turnover, and policy feedback can mediate or confound the relationship between advocacy and implementation. Longitudinal network measures, comparison units, administrative data, and credible quasi-experimental designs would be needed to identify such effects. The present review records implementation evidence separately rather than inferring it from agenda or design outcomes.

4.5. Evidence gaps and limits of inference

Four gaps recur in the coded publications. First, implementation evidence is sparse. Second, network evolution is often invoked but rarely measured across policy stages; Kern et al. (2024) offer an exception by tracing municipal-network change. Third, comparative evidence remains uneven across regions. Latin American partnership research and a Tunisia-focused study widen the evidence base, but this purposive sample cannot support a field-wide claim about Global South representation (Tosun *et al.* 2024; Ben Youssef 2024). Kalatzi Pantera (2025) examines global integration and environmental mobilisation, adding a relevant macro-level context while leaving the organisation-to-policy conversion sequence for direct study.

Fourth, climate governance overlaps with biodiversity, development, trade, public health, energy security, and social inclusion. Oelschläger and Kim (2024) examine climate-biodiversity framing, Ferré et al. (2025) study coalitions around development and renewable energy, and Hrabanski and Le Coq (2025) analyse agricultural framing at COP27. These studies illustrate contested issue boundaries; their actors are not all NGOs.

A final gap concerns representation in global institutions. Marquardt et al. (2024) document unequal speaking and listening relations in youth representation at climate conferences, while Zhao (2024) examines legitimacy claims associated with non-state deliberation. Ruiz-Campillo and Bueno Rubial (2025) trace agenda development by the G77 and China negotiating bloc, an intergovernmental comparator rather than an NGO case. Presence, access, and influence remain distinct outcomes and are coded separately.

5. Illustrative mechanism observations

5.1. Transnational coalition brokerage

Climate Action Network (CAN) illustrates the scale of an umbrella network. Its public profile reports more than 2,500 member organisations across more than 130 countries (Climate Action Network, n.d.). This is an organisation-reported membership benchmark, not an influence measure. The size of a network alone does not show whether its members coordinate across policy stages or whether their proposals affect policy decisions.

The partnership study by Tosun et al. (2024) analyses 195 Latin American NGOs across 21 countries and finds that partnership choices vary with institutional and organisational conditions. This observation illustrates brokerage under heterogeneity, but does not estimate a universal effect of network participation. The full set of 16 observations and their units, actor classes, mechanisms, outcomes, and source limits are listed in Table 3 and the accompanying matrix.

Table 3. Illustrative observations, actor classes, and evidence limits

Observation and unit	Actor class	Documented mechanism	Evidence boundary
Climate Action Network; umbrella network	NGO network	Coalition brokerage	Membership profile establishes scale, not policy influence
Fridays for Future Germany; movement and protest episodes	Social movement	Symbolic mobilisation	Causal estimates concern voting, attention, and media outcomes
Latin American partnerships; 195 NGOs in 21 countries	NGO population	Coalition brokerage	Partnership choices are not an average effectiveness estimate
Aarhus participation; legal and advocacy process	Environmental NGOs	Legal mobilisation; information	Process evidence does not yield a common policy effect
Greenovation Hub; organization-level policy-network process	Environmental NGO	Information and framing; brokerage	One case; network centrality is not measured in this review
Friends of Nature; two climate-litigation cases	Environmental NGO	Legal mobilisation; information; brokerage	Two cases support bounded process claims only
Four Chinese city policy processes	Mixed coalitions	Coalition brokerage; information	Implementation evidence is limited and the unit is not an NGO alone

Note. These observations have different units and are not treated as equivalent comparative cases. Actor class and evidence limitation are reported explicitly.

Polycentric governance does not remove the state or other powerful actors. Widerberg (2024) examines state orchestration, while Tobin et al. (2024a) document business participation in climate governance. These are contextual studies, not NGO evidence. They show why advocacy across venues takes place within unequal distributions of authority, expertise, and implementation capacity.

5.2. Youth mobilisation, symbolic escalation, and radical-flank effects

Fridays for Future is a decentralized social movement, not an NGO, and is included only as contextual evidence on symbolic mobilisation. Fabel et al. (2025) analyse nearly 4,000 German protests and estimate effects on voting, politician attention, and media behavior. Nisbett and Spaiser (2023) discuss the moral power and institutional limits of youth activism. These findings concern movement outcomes; they should not be read as direct estimates of NGO influence.

Symbolic action can alter the interpretive environment, but public response is heterogeneous. Brehm and Gruhl (2024) report increased climate concern following strikes and civil disobedience in Germany; Badullovich et al. (2024) examine how public perceptions of protest relate to climate-action

support; Gan et al. (2024) assess whether the age and gender of climate protesters shape public support; Jarke-Neuert et al. (2023) analyse collective-action dynamics. Together, these studies motivate conditional expectations rather than a presumption that visibility produces policy uptake.

Evidence on radical-flank effects points to possible complementarity between disruptive and moderate actors. Ostarek et al. (2024) report increased public support for moderate organisations following radical protest. Thomas-Walters et al. (2025) review activism research and find that public-opinion and media outcomes are more commonly established than direct policy or emissions effects. The evidence therefore supports a distinction between attention and policy conversion, while leaving the conversion sequence open to stronger tests.

5.3. Legal mobilisation as pressure and institutional translation

UNEP reports provide discrete benchmarks for the scale of climate litigation. The 2017 global review identified 884 cases; the 2020 status review reported at least 1,550 cases as of 1 July 2020; the 2023 review counted 2,180 cases as of 31 December 2022; and the 2025 review reported 3,099 cases as of 30 June 2025 (United Nations Environment Programme and Columbia University 2017; United Nations Environment Programme and Sabin Center for Climate Change Law 2021; United Nations Environment Programme 2023; United Nations Environment Programme 2025). Figure 6 displays these as edition-specific bars, not a harmonized growth series. Coverage, databases, and case-identification practices differ across editions, and the totals do not identify NGO-initiated cases or advocacy effects.

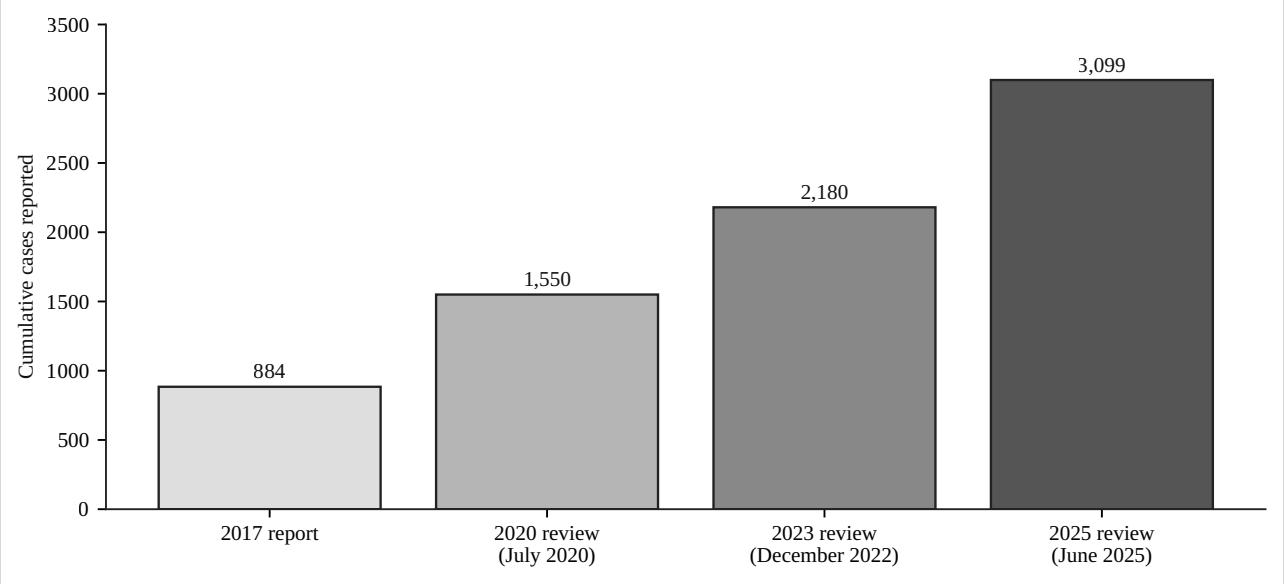

Figure 6. UNEP climate-litigation benchmarks reported in successive publications

Note. Each bar is a source-specific cumulative count. Jurisdictional coverage and case-identification practices vary by edition; the bars should not be interpreted as a harmonized longitudinal growth rate. Sources: UNEP and Columbia University (2017); UNEP and Sabin Center for Climate Change Law (2021); UNEP (2023, 2025).

Legal mobilisation may matter beyond the judgment. Abbot and Lee (2024) show how NGOs use participation rights under the Aarhus Convention; Barritt (2024), Whittaker (2023), and Pieraccini (2024) examine environmental rights, information, and public-interest procedures. These studies support a sequence of possible outcomes, including admissibility, disclosure, procedural access, administrative response, and policy change. Each step requires separate evidence.

Katz et al. (2025) describe transnational legal-clinic collaboration, while Fisher (2025) examines public-law narratives in climate cases. In China, Zhu (2023) provides legal context and Li (2025b)

compares two NGO-initiated cases. Clinics and legal processes are not assumed to be NGOs. Across these sources, litigation can serve more than one function, so multiple codes are retained where the publication documents information or brokerage alongside legal action.

A useful legal-outcome sequence distinguishes filing and admissibility, information disclosure, procedural access, administrative response, norm clarification, reputational effects, negotiated settlement, and downstream policy change. Comparative work should not reduce these outcomes to a single win–loss indicator because standing rules, remedies, and court–agency relations differ across jurisdictions.

5.4. China as a bounded application

The China-focused publications offer a useful setting in which to examine advocacy under administrative hierarchy, but the evidence base is small and heterogeneous. Zhang (2024) traces expertise and policy-network access; Li (2025b) compares two NGO-initiated cases; Wang (2025) examines local coalition processes; Zhu (2023) provides legal context; Yang and Walker (2024) discuss just transition and social inclusion. These sources do not form a common comparative test of political hierarchy or advocacy success. Their value here is theory generation and identification of mechanisms for future research.

Yu et al. (2026) identify 26,057 climate-related policy documents issued in China from 2000 to 2022: 1,938 national, 14,193 provincial, and 9,926 municipal documents. Figure 7 reproduces this government-document distribution as context for the scale of the policy system. The dataset does not measure NGO brokerage, access, or influence. It indicates that policy authority and outputs are distributed across levels, which may create translation demands; whether NGOs meet those demands is a separate empirical question.

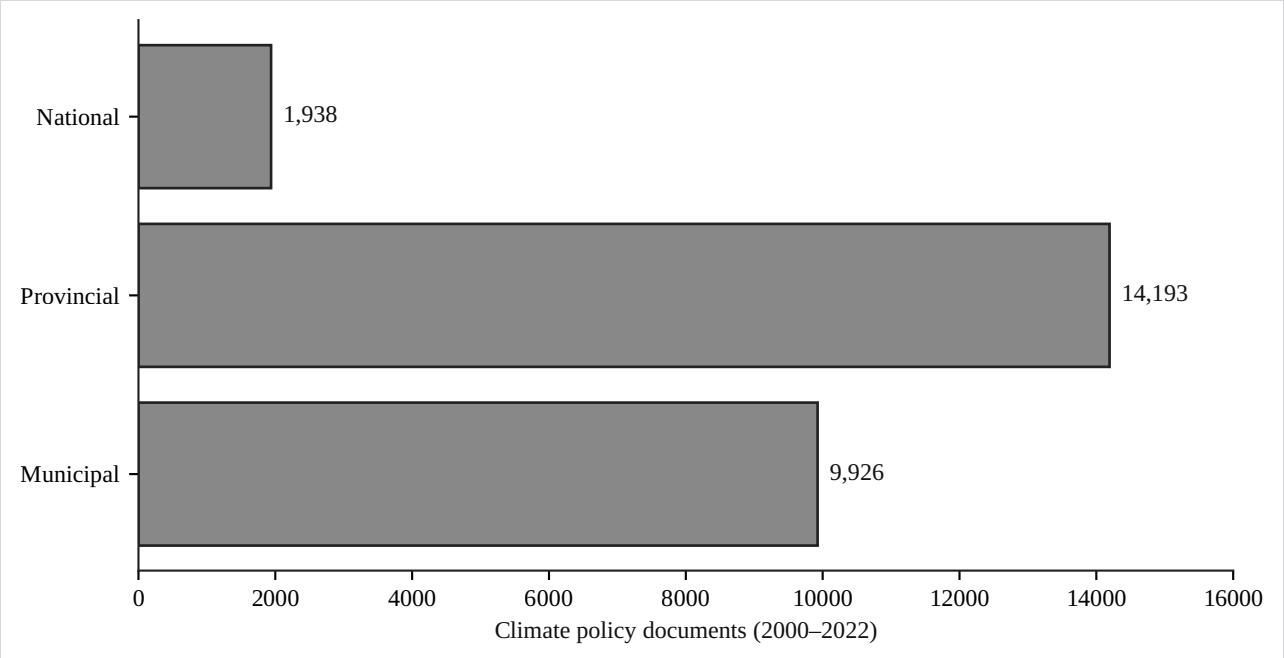

Figure 7. Climate-policy documents by government level in China, 2000–2022

Note. The bars report counts in Yu et al. (2026), n = 26,057. The same study identifies 19,609 mitigation and 6,448 adaptation documents. These counts describe government policy documents, not NGO activity or influence.

Legal action offers a further bounded observation. Zhu (2023) describes the institutional context for climate litigation in China, and Li (2025b) traces two cases initiated by Friends of Nature. These sources suggest that institutional adaptation may shape the effects of litigation, but they cannot

establish how all Chinese NGOs use law or how legal strategies compare with public mobilisation across political systems.

Li and Farid (2026) provide a post-window example of transnational policy entrepreneurship around the Belt and Road Initiative. It is treated as contextual evidence, not included in the 24-publication corpus. Such work may extend advocacy across domestic policy networks, international standards, corporate governance, and finance, but the strength and consequences of these links require direct study.

Embedded access can support translation and repeated interaction, but it can also produce dependence, selective access, professionalization, agenda narrowing, or co-optation. These are potential trade-offs, not secondary qualifications. The framework therefore treats expertise and brokerage as possible resources whose effects depend on accountability, access conditions, and opportunities for public scrutiny. The China observations generate a hypothesis for comparison with other hierarchical or semi-authoritarian settings; they do not confirm a general hierarchy effect. These risks can also alter the evidence that researchers observe. Organisations with stable access may be more visible in policy documents and interviews, while groups excluded from consultation may leave fewer records. Professionalization can improve the technical quality of submissions while shifting accountability away from affected communities. Legal action can clarify procedure and also expose organisations to resource costs or political constraints. A comparative design should therefore record who gained access, who remained absent, the conditions attached to participation, and whether organisations retained the capacity to contest implementation. These are potential moderators and countervailing outcomes, not reasons to presume either success or failure.

Table 3 presents selected mechanism observations to illustrate how the framework distinguishes NGO evidence from movement, public-authority, business, and other contextual evidence. The full 16-observation coding matrix is supplied in the data workbook.

6. Discussion: conversion and feedback in embedded network advocacy

The structured review supports a bounded theoretical synthesis. Structural ties and organisational capabilities may create opportunities; credibility and repeated access may shape reception; advocacy mechanisms can activate these attributes; and institutional conditions shape which outcomes are attainable. The review documents these elements unevenly and does not establish a common causal effect. Its theoretical contribution lies in linking them as a sequence that can be observed and falsified across policy stages.

The four mechanism categories identify different functions. Information and framing address evidence and interpretation; coalition brokerage coordinates complementary actors; legal mobilisation activates rights and procedural obligations; symbolic mobilisation changes salience or reputational incentives. Direct lobbying, monitoring, service provision, financial resources, and implementation partnerships remain analytically important. They are coded by the function they perform and the stage at which they operate, rather than assumed to be mutually exclusive advocacy mechanisms.

The evidence is consistent with a sequencing expectation: public or legal pressure may reopen an agenda, while technical translation, coalition coordination, and administrative relationships may be relevant during design and implementation. This is a theoretical inference, not a tested ranking of strategies. The order can vary. A campaign may begin with policy access and later require public contestation, or implementation feedback may reopen an agenda. Figure 1 includes this feedback loop and locates moderators at specific links in the proposed sequence.

Framing research clarifies one part of the sequence. Justice frames can connect climate policy to distributional concerns (Gulliver *et al.* 2023; Ogunbode *et al.* 2024), while audience-sensitive communication can make claims legible across venues (Rawlyk and Willness 2025). These sources suggest pathways for translation; the review does not show that a frame is adopted simply because it is resonant or technically clear.

A polycentric system can expand access while increasing coordination costs and inequality. NGOs, businesses, public authorities, and movements enter these venues with different resources and mandates (Kern *et al.* 2024; Tobin *et al.* 2024a; Widerberg *et al.* 2024). A central implication is therefore conditional: added venues create opportunities only when actors can navigate their boundaries and when institutional arrangements permit information, participation, and feedback to travel.

Future empirical work can test conversion as a sequence: whether access is gained, whether NGO evidence or frames are taken up, whether coalition membership or procedural rules change, whether policy text is revised, and whether implementation follows. Longitudinal and comparative designs should measure each link and identify where the chain breaks. This approach avoids treating visibility, access, adoption, and implementation as interchangeable outcomes.

Table 4 translates the synthesis into six falsifiable propositions. Each specifies a unit, predictor, outcome, moderator, and observation that would count against it; the propositions are hypotheses for future research, not results established by this review.

Table 4. Falsifiable propositions for future comparative research

Proposition and unit	Predictor, outcome, moderator, and falsifying observation
P1. Brokerage and access. Unit: NGO–venue engagement.	Predictor: brokerage across otherwise weakly connected actors. Outcome: cross-venue access and policy input. Moderator: governance fragmentation. Falsifier: brokerage is unrelated to access after organizational capacity and issue salience are considered.
P2. Expertise translation. Unit: NGO policy submission.	Predictor: expertise translated into venue-specific options. Outcome: documented uptake in policy text or design. Moderator: repeated access. Falsifier: uptake is no more frequent with repeated access or translation than without them.
P3. Salience conversion. Unit: campaign episode.	Predictor: symbolic pressure. Outcome: agenda attention followed by a formal proposal or rule. Moderator: presence of an institutional translator. Falsifier: attention does not predict proposal formation even where a translator has access.
P4. Legal spillover. Unit: NGO-initiated legal process.	Predictor: litigation or procedural-rights use. Outcome: disclosure, access, administrative response, or policy change. Moderator: institutional receptivity and available remedies. Falsifier: no intermediate outcome changes relative to comparable non-litigated processes.
P5. Hierarchy-conditioned portfolio. Unit: advocacy episode across institutional systems.	Predictor: relative use of expertise, brokerage, legal action, and public mobilisation. Outcome: policy design or implementation. Moderator: institutional openness and issue-level access. Falsifier: the proposed portfolio difference is absent across comparable hierarchical and open settings.
P6. Implementation bottleneck. Unit: local implementation process.	Predictor: NGO monitoring plus administrative or local-network ties. Outcome: verified administrative practice or compliance. Moderator: subnational capacity and data access. Falsifier: implementation outcomes do not differ when monitoring and administrative ties are jointly present.

7. Bounded implications for China and comparative research

The China-focused evidence suggests several questions for institutional design, but it does not establish the effectiveness or feasibility of particular reforms. The following implications are inferences from the framework and should be evaluated against local political conditions, organisational autonomy, and potential unintended effects. Recommendations are consequently framed as questions for evaluation rather than a prescribed institutional package. Access arrangements can be assessed by whether they broaden whose knowledge is considered, create traceable feedback, and allow a response to implementation evidence. Data access can be assessed by

timeliness, usability, and whether independent verification is possible. Legal channels can be assessed by remedies and downstream administrative action. Cross-sector platforms can be assessed by representation and influence over agenda setting. Communication practices can be assessed for both comprehension and whether distributional concerns remain visible. Such evaluation would connect institutional design to observable outcomes while accounting for political feasibility and unintended effects.

Regular participation and access to policy data could support repeated interaction and independent assessment of implementation. These arrangements would be meaningful only if participants receive feedback on how evidence was used and can raise concerns about delivery. Repeated access can also privilege established organisations and increase dependence on gatekeepers; transparent selection, plural representation, and public reporting may reduce those risks.

Legal and procedural channels may help clarify obligations, improve access to information, or surface implementation gaps. The review does not justify expanding litigation as a universal strategy. Procedural use should be assessed for its effects on administrative response, access to remedies, organisational risk, and the capacity of affected communities to participate.

Cross-sector convening may reduce fragmentation where technical standards, local practice, industry decisions, and community concerns intersect. It can also amplify resource asymmetries or give well-funded actors disproportionate influence. Any such platform would require transparent membership, disclosure of interests, and a route for less-resourced groups to shape agendas.

Adaptive communication can connect decarbonisation to health, energy security, employment, affordability, industrial change, and community resilience (Ettinger *et al.* 2025; Rawlyk and Willness 2025). This is a framework-derived implication, not a measured policy effect. Communication should preserve distributional conflict and uncertainty where they are relevant rather than narrowing messages to what institutions already find acceptable.

A central institutional risk is decorative participation: organisations may be invited to consult without data access, feedback, procedural standing, or a route to policy revision. At the same time, increasing access can create selective inclusion, professionalization, and co-optation. Future evaluations should therefore examine both policy conversion and organisational autonomy, including who is excluded and whether implementation concerns can be raised safely.

8. Conclusion

This article develops an incremental, mechanism-based framework for examining how NGO advocacy may be converted into policy influence across climate-governance venues. It distinguishes structural network properties, organisational capabilities, and relational qualities; treats mechanisms as multi-coded functions; and separates agenda, discourse, policy design, implementation, and access outcomes. Its main theoretical addition is the sequencing and feedback logic linking changing advocacy portfolios to policy stages.

The 24-publication corpus is purposively assembled and heterogeneous. Its descriptive counts characterize the included sources only. Information and framing and coalition brokerage appear frequently in the multi-label coding, while the five China-focused publications provide a narrow set of theory-generating observations. The evidence is strongest for agenda, discourse, process, and procedural outcomes. Only one core empirical publication offers direct implementation-process evidence, and none estimates a comparable causal effect on compliance, investment, or emissions.

Embedded, disruptive, and hybrid pathways describe different portfolio configurations rather than organisation types or universally effective strategies. Embedded activity may facilitate policy translation but can narrow agendas or create dependence. Disruptive action can raise salience without changing rules. Hybrid portfolios may link the two, but their relative effects remain a hypothesis because studies use different units and outcome measures.

The review identifies priorities for future evidence: retain complete retrieval records; use independent coding where feasible; measure networks over time; compare multiple outcome stages; and include a wider set of geographic and institutional settings. Longitudinal, quasi-experimental, and carefully traced process designs are especially important for implementation and causal attribution.

The China evidence is best treated as a bounded application. It is consistent with the possibility that expertise, brokerage, and calibrated legal action matter under particular access conditions, but five publications cannot establish a general hierarchy effect. More broadly, embedded network advocacy is a framework for testing how relationships and capabilities travel through institutions, including where translation fails and where access carries costs.

Declarations

Author contributions. Yang Guo: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing; Yu Zhou: Methodology, Data curation, Visualization, Validation, Writing – original draft, Writing – review & editing; Donghao Duan: Conceptualization, Supervision, Project administration, Funding acquisition, Validation, Writing – review & editing. All authors read and approved the final manuscript.

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Conflicts of interest. The authors have no competing interests to declare.

Data availability. The included publications, study-level codes, search protocol, classification rules, 16 illustrative observations, external benchmarks, outcome matrix, figure data, and analysis scripts are provided in the accompanying supplementary files. All benchmarks are linked to their public or peer-reviewed sources. The review uses published materials and publicly available organisational or policy information and did not involve human participants. Historical record-level screening totals were not retained; this limitation is disclosed in the methods, and no excluded-record counts are inferred.

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References

Abbot, Carolyn; Lee, Maria (2024) 'NGOs Shaping Public Participation Through Law: The Aarhus Convention and Legal Mobilisation', *Journal of Environmental Law*, 36(1), pp. 85-106. Available at: https://doi.org/10.1093/jel/eqad030

Badullovich, N.; Tucker, D.; Amoako, R.; Ansah, P.; Davis, B.; Horoszko, U.; Zakiyyah, H.; Maibach, E. (2024) 'How does public perception of climate protest influence support for climate action?', *npj Climate Action*, 3(1). Available at: https://doi.org/10.1038/s44168-023-00096-9

Ballew, Matthew T.; Thomas-Walters, Laura; Goldberg, Matthew H.; Verner, Marija; Lu, Jessica; Marshall, John; Rosenthal, Seth A.; Leiserowitz, Anthony (2025) 'Climate change messages can promote support for climate action globally', *Global Environmental Change*, 90, pp. 102951. Available at: https://doi.org/10.1016/j.gloenvcha.2024.102951

Barritt, Emily (2024) 'The Aarhus Convention and the Latent Right to a Healthy Environment', *Journal of Environmental Law*, 36(1), pp. 67-84. Available at: https://doi.org/10.1093/jel/eqae003

Ben Youssef, Adel (2024) 'The role of NGOs in climate policies: The case of Tunisia', *Journal of Economic Behavior & Organization*, 220, pp. 388-401. Available at: https://doi.org/10.1016/j.jebo.2024.02.016

Benford, Robert D.; Snow, David A. (2000) 'Framing Processes and Social Movements: An Overview and Assessment', *Annual Review of Sociology*, 26(1), pp. 611-639. Available at: https://doi.org/10.1146/annurev.soc.26.1.611

Brehm, Johannes; Gruhl, Henri (2024) 'Increase in concerns about climate change following climate strikes and civil disobedience in Germany', *Nature Communications*, 15(1). Available at: https://doi.org/10.1038/s41467-024-46477-4

Brusseel, Aaron; Raeymaeckers, Peter; Verschuere, Bram (2025) 'Conceptualizing Policy Advocacy Effectiveness in NPO Research: A Scoping Review of Criteria and Indicators', *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 36(1), pp. 60-72. Available at: https://doi.org/10.1007/s11266-024-00692-1

Burt, Ronald S. (2004) 'Structural Holes and Good Ideas', *American Journal of Sociology*, 110(2), pp. 349-399. Available at: https://doi.org/10.1086/421787

Climate Action Network (no date) 'About CAN'. Available at: https://climatenetwork.org/overview/

Ettinger, Joshua; Fine, Julia; Thier, Kathryn; Badullovich, Nicholas; Kotcher, John; Maibach, Edward (2025) 'Communicating with policy makers about climate change, health, and their intersection: a scoping review', *The Lancet Planetary Health*, 9(1), pp. e53-e61. Available at: https://doi.org/10.1016/s2542-5196(24)00307-3

Fabel, Marc; Flückiger, Matthias; Ludwig, Markus; Rainer, Helmut; Waldinger, Maria; Wichert, Sebastian (2025) 'The relationship between the youth-led Fridays for Future climate movement and voting, politician and media behaviour in Germany', *Nature Human Behaviour*, 9(3), pp. 481-495. Available at: https://doi.org/10.1038/s41562-024-02075-4

Fabre, Adrien; Douenne, Thomas; Mattauch, Linus (2025) 'Majority support for global redistributive and climate policies', *Nature Human Behaviour*, 9(8), pp. 1583-1594. Available at: https://doi.org/10.1038/s41562-025-02175-9

Ferré, Nathalie; Weller, Clara; Buzogány, Aron (2025) 'The development/renewable energy nexus in Georgia and Tunisia: Coalitions of support and opposition to EU energy policies', *International Environmental Agreements: Politics, Law and Economics*, 25(2), pp. 247-265. Available at: https://doi.org/10.1007/s10784-025-09668-y

Fisher, Elizabeth (2025) 'Telling Meaningful Stories About Climate Change and Public Law', *Journal of Environmental Law*, 37(1), pp. 1-22. Available at: https://doi.org/10.1093/jel/eqae028

Gan, Yu Shuang; Hayes, Sylvia; Whitmarsh, Lorraine (2024) 'The Greta Effect: Is there more public support for climate protesters who are young and female?', *Environmental Science & Policy*, 162, pp. 103924. Available at: https://doi.org/10.1016/j.envsci.2024.103924

Gulliver, Robyn E.; Vachette, Astrid; Boddington, Sarah (2023) 'How Australian environmental non-governmental organisations frame and enact climate justice', *npj Climate Action*, 2(1). Available at: https://doi.org/10.1038/s44168-023-00049-2

Hrabanski, Marie; Le Coq, Jean-François (2025) 'Agriculture at COP27: Antagonistic Political Framing and Fragmentation of Agricultural Issues Within Climate Negotiations and Beyond', *Global Environmental Politics*, 25(2), pp. 141-164. Available at: https://doi.org/10.1162/glep_a_00778

Jarke-Neuert, Johannes; Perino, Grischa; Schwickert, Henrike (2023) 'Free riding in climate protests', *Nature Climate Change*, 13(11), pp. 1197-1202. Available at: https://doi.org/10.1038/s41558-023-01833-y

Kagan, Jennifer A. (2024) 'A venue-based approach to understanding advocacy by environmental nonprofits', *Nonprofit Management and Leadership*, 34(3), pp. 545-566. Available at: https://doi.org/10.1002/nml.21583

Kalatzi Pantera, Dafni (2025) 'Does global integration foster environmental mobilization? The effect of global norms on environmental movement participation', *Environmental Politics*, 34(4), pp. 670-693. Available at: https://doi.org/10.1080/09644016.2024.2386800

Katz, Leanna; Dominguez, Andrea Mariana; Brenninkmeijer, Mees; Bourgeois, Oscar; Yücel, Narain; Blas Rodriguez, Nadia Alitu; Pebe Muñoz, Luis Alejandro; Livia Riquero, Gianella Mariana; Arbelaez, Carla; Cohen, Ilana (2025) 'Transnational Legal Clinic Collaboration: A Force in Global Climate Litigation', *Transnational Environmental Law*, 14(2), pp. 266-284. Available at: https://doi.org/10.1017/s2047102525000044

Keck, M. E., and Sikkink, K. (1998) 'Activists beyond borders: Advocacy networks in international politics', *Cornell University Press*.

Kellner, Elke; Petrovics, Daniel; Huitema, Dave (2024) 'Polycentric Climate Governance: The State, Local Action, Democratic Preferences, and Power—Emerging Insights and a Research Agenda', *Global Environmental Politics*, 24(3), pp. 24-47. Available at: https://doi.org/10.1162/glep_a_00753

Kern, Kristine; Eckersley, Peter; Kochskämper, Elisa; Haupt, Wolfgang (2024) 'Unpacking Polycentric Climate Governance: Tracing the Evolution of Transnational Municipal Networks over Time', *Global Environmental Politics*, 24(3), pp. 121-143. Available at: https://doi.org/10.1162/glep_a_00754

Kingdon, J. W. (2011) 'Agendas, alternatives, and public policies (3rd ed.)', *Longman*.

Li, Zhidan; Yaakop, Mohd Rizal (2025a) 'Engaging non-governmental organizations in global climate governance: a systematic review of journal publications from 2014 to 2024', *Frontiers in Political Science*, 7. Available at: https://doi.org/10.3389/fpos.2025.1604680

Li, Zirong (2025b) 'What determines the success of NGO-Initiated climate litigation in China?—A comparative study of two China cases', *International Environmental Agreements: Politics, Law and Economics*. Available at: https://doi.org/10.1007/s10784-025-09688-8

Li, Hui; Farid, May (2026) 'NGOs as policy entrepreneurs: transnational advocacy and policy influence in greening the Belt and Road Initiative', *Journal of Chinese Governance*, 11(2), pp. 292-316. Available at: https://doi.org/10.1080/23812346.2025.2544371

Liu, Shujun; Kuang, Kai (2024) 'The role of emotions in climate change communication: Examining the effects of strategy and issue framing on emotional responses and online climate action intentions', *Current Psychology*. Available at: https://doi.org/10.1007/s12144-024-06346-1

Lu, Jian; Zhu, Zi (2025) 'Organisational Learning, Environmental NGOs, and Policy Advocacy in China', *Asian Studies Review*, 49(2), pp. 344-365. Available at: https://doi.org/10.1080/10357823.2024.2378715

Marquardt, Jens; Lövbrand, Eva; Buhre, Frida (2024) 'The Politics of Youth Representation at Climate Change Conferences: Who Speaks, Who Is Spoken of, and Who Listens?', *Global Environmental Politics*, 24(2), pp. 19-45. Available at: https://doi.org/10.1162/glep_a_00736

Nisbett, Nicole; Spaiser, Viktoria (2023) 'Moral power of youth activists – Transforming international climate Politics?', *Global Environmental Change*, 82, pp. 102717. Available at: https://doi.org/10.1016/j.gloenvcha.2023.102717

Oelschläger, Lucie Maj; Kim, Rakhyun E. (2024) 'Do NGOs recognise the climate-biodiversity nexus? Insights from 107 climate NGOs in Germany', *Discover Sustainability*, 5(1). Available at: https://doi.org/10.1007/s43621-024-00284-5

Ogunbode, Charles A.; Doran, Rouven; Ayanian, Arin H.; Park, Joonha; Utsugi, Akira; van den Broek, Karlijn L.; Ghorayeb, Jihane; Aquino, Sibele D.; Lins, Samuel; Aruta, John J. B. R.; Reyes, Marc E. S.; Zick, Andreas; Clayton, Susan (2024) 'Climate justice beliefs related to climate action and policy support around the world', *Nature Climate Change*, 14(11), pp. 1144-1150. Available at: https://doi.org/10.1038/s41558-024-02168-y

Ostarek, Markus; Simpson, Brent; Rogers, Cathy; Ozden, James (2024) 'Radical climate protests linked to increases in public support for moderate organizations', *Nature Sustainability*, 7(12), pp. 1626-1632. Available at: https://doi.org/10.1038/s41893-024-01444-1

Ostrom, Elinor (2010) 'Polycentric systems for coping with collective action and global environmental change', *Global Environmental Change*, 20(4), pp. 550-557. Available at: https://doi.org/10.1016/j.gloenvcha.2010.07.004

Pavenstädt, Christopher N.; Rödder, Simone (2024) 'Between evidence first and political fight – understanding dynamics of (de-)politicization in US climate movements' future narratives', *Environmental Politics*, 33(6), pp. 1065-1086. Available at: https://doi.org/10.1080/09644016.2024.2324710

Pieraccini, Margherita (2024) 'The Public Interest in Environmental Decision-Making: A Pragmatist Turn', *Journal of Environmental Law*, 36(3), pp. 363-383. Available at: https://doi.org/10.1093/jel/eqae026

Pulver, Simone (2023) 'Corporate concessions: Opportunity or liability for climate advocacy groups?', *Global Environmental Change*, 81, pp. 102689. Available at: https://doi.org/10.1016/j.gloenvcha.2023.102689

Rawlyk, Madelyn; Willness, Chelsea (2025) 'Toward adaptive climate communication and an expanded frame theory: lessons from environmental organizations', *Sustainability Science*, 20(6), pp. 2177-2193. Available at: https://doi.org/10.1007/s11625-025-01685-9

Ruiz-Campillo, Xira; Rubial, María del Pilar Bueno (2025) 'Adaptation in the UNFCCC: how the G77 & China shaped the agenda', *International Environmental Agreements: Politics, Law and Economics*, 25(3), pp. 489-510. Available at: https://doi.org/10.1007/s10784-025-09681-1

Sabatier, P. A., and Jenkins-Smith, H. C. (1993) 'Policy change and learning: An advocacy coalition approach', *Westview Press*.

Shyrokykh, Karina; Dellmuth, Lisa; Funk, Elisa (2023) 'Managing networks: Cohesion and fluidity in EU climate cooperation with European neighbours', *European Union Politics*, 24(3), pp. 539-558. Available at: https://doi.org/10.1177/14651165231152836

Thomas-Walters, Laura; Scheuch, Eric G; Ong, Abby; Goldberg, Matthew H (2025) 'The impacts of climate activism', *Current Opinion in Behavioral Sciences*, 63, pp. 101498. Available at: https://doi.org/10.1016/j.cobeha.2025.101498

Tilly, C. (2008) 'Contentious performances', *Cambridge University Press*.

Tobin, Paul; Duit, Andreas; Kelly, Niall; Kelly, Ciara (2024a) 'Exploring the Role of Businesses in Polycentric Climate Governance with Large-N Data Sets', *Global Environmental Politics*, 24(3), pp. 168-190. Available at: https://doi.org/10.1162/glep_a_00757

Tobin, Paul; Huitema, Dave; Kellner, Elke (2024b) 'The Empirical Realities of Polycentric Climate Governance: Introduction to the Special Issue', *Global Environmental Politics*, 24(3), pp. 1-23. Available at: https://doi.org/10.1162/glep_a_00758

Tosun, Jale; Levario Saad, Emiliano (2023a) 'Adapted to Climate Change? Issue Portfolios of Environmental Nongovernmental Organizations in the Americas', *Nonprofit and Voluntary Sector Quarterly*, 52(4), pp. 917-951. Available at: https://doi.org/10.1177/08997640221146962

Tosun, Jale; Saad, Emiliano Levario; Glückler, Johannes; Irigoyen Rios, Alejandra; Lehmann, Rosa (2023b) 'Country-Specific Participation Patterns in Transnational Governance Initiatives on Sustainability: Preliminary Insights and Research Agenda', *Global Challenges*, 7(8). Available at: https://doi.org/10.1002/gch2.202300012

Tosun, Jale; Levario Saad, Emiliano; Gutiérrez, Denise (2024) 'Participating in Polycentric Climate Governance: The Partnership Choices of Latin American NGOs', *Global Environmental Politics*, 24(3), pp. 144-167. Available at: https://doi.org/10.1162/glep_a_00752

United Nations Environment Programme, and Columbia University (2017) 'The status of climate change litigation: A global review', *United Nations Environment Programme*. Available at: https://wedocs.unep.org/handle/20.500.11822/20767

United Nations Environment Programme, and Sabin Center for Climate Change Law (2021) 'Global climate litigation report: 2020 status review', *United Nations Environment Programme*. Available at: https://www.unep.org/resources/report/global-climate-litigation-report-2020-status-review

United Nations Environment Programme (2023) *Global Climate Litigation Report: 2023 Status Review*. United Nations Environment Programme. Available at: https://doi.org/10.59117/20.500.11822/43008

United Nations Environment Programme (2025) 'Global climate litigation report: 2025 status review', *United Nations Environment Programme*.

Wang, Dongping (2025) 'Advocating Under Hierarchy: Comparing Climate Advocacy Coalitions in China's Local Policy Processes', *Journal of Comparative Policy Analysis: Research and Practice*, 27(3), pp. 265-284. Available at: https://doi.org/10.1080/13876988.2025.2469210

Whittaker, Sean (2023) 'Exploring a Right to Submit Environmental Information Under International Environmental Law', *Journal of Environmental Law*, 35(3), pp. 401-418. Available at: https://doi.org/10.1093/jel/eqad025

Widerberg, Oscar; Bäckstrand, Karin; Lövbrand, Eva; Marquardt, Jens; Nasiritousi, Naghmeh (2024) 'A Cautionary Tale for Polycentric Climate Governance: Sweden's Roles in Orchestrating Decarbonization', *Global Environmental Politics*, 24(3), pp. 100-120. Available at: https://doi.org/10.1162/glep_a_00750

Yang, Lichao; Walker, Robert (2024) 'China and Climate Change: Just Transition and Social Inclusion', *Social Inclusion*, 12. Available at: https://doi.org/10.17645/si.8050

Yu, Lu; Sun, Keyao; Huang, Han; Deng, Weifeng; Tan, Rong (2026) 'Climate policy landscape and networks in China from 2000 to 2022', *Climate Policy*, 26(4), pp. 583-599. Available at: https://doi.org/10.1080/14693062.2025.2521485

Zhang, Hao (2024) 'NGO strategy, policy networks, and climate policymaking process in China', *Frontiers in Political Science*, 6. Available at: https://doi.org/10.3389/fpos.2024.1331663

Zhao, Bi (2024) 'Granting legitimacy from non-state actor deliberation: An example of women's groups at the United Nations Framework Convention on Climate Change', *Environmental Policy and Governance*, 34(3), pp. 236-255. Available at: https://doi.org/10.1002/eet.2074

Zhu, Mingzhe (2023) 'Climate Litigation in a 'Developmental State': The Case of China', *Chinese Journal of Environmental Law*, 7(2), pp. 200-213. Available at: https://doi.org/10.1163/24686042-12340105

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