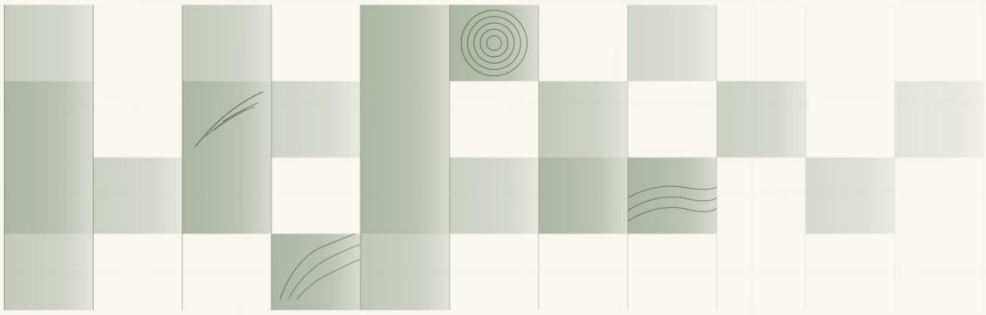
CAPSTONE PROJECT

REPLICABLE VICTORIES

A Strategy Reference Handbook for Global Grassroots Environmental Movements



BASED ON THE GOLDMAN ENVIRONMENTAL PRIZE ARCHIVES, 1993—2026

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Executive Summary

The Goldman Environmental Prize's Treasure: Where This Report Begins

The Goldman Environmental Prize is the world's leading award for grassroots environmental action. For 36 years, it has honored winners from six continents each year while keeping incredibly detailed records on every finalist, including their tactics, opponents, political context, and community resources. The value of building such an archive has long been recognized in business. McKinsey and BCG, for example, built their strategy frameworks on the basis through similar pattern recognition across large-scale case data. That same archive holds immense potential for grassroots movements. This report is the first systematic attempt to decode it, turning over a thousand real campaigns into quantifiable and searchable strategy patterns. Thirty years of front-line wisdom becomes a practical guideline.

The Goldman Environmental Prize has long mastered the first two: empowering activists and compiling an archive of their work. This report builds the bridge to the third — making that wisdom actionable and accessible to every activist who needs it.

Core Deliverable：Recommendation Gene Table

The core output of this report is the **Recommendation Gene Table** in Appendix A. Its logic can be summed up in one sentence: users describe the context of their movement, find the matching entry in the table, and receive the most frequently used strategies from historically similar movements.

Take the most common context in the database as an example. A movement operates under democratic and open political conditions (Q1=1). Its primary adversary is a government agency (Q2=1). The community has moderate livelihood dependence on the threatened resource (Q3=2). The movement is in the escalation and confrontation stage (Q4=2). The database contains exactly 324 cases that match this context. Consulting the Recommendation Gene Table, the five most frequently activated strategies across these 324 movements are:

G03 (Community Organizing) – 100%

G01 (Strategic Litigation) – 80%

G02 (Scientific Evidence) – 75%

G08 (Policy Reform) – 73%

G10 (Health Justice) – 68%

Practitioners can assess their own readiness and priorities against these five recommended genes. If the conditions for certain recommended genes are not yet in place, Chapter 7 provides alternative pathways and condition-building guidance for each gene.

This report offers step-by-step guidance for both front-line practitioners and funders. Chapter 7 lays out a complete operational pathway for activists: diagnosing their current context, consulting the recommended strategies, and assessing implementation conditions. Chapter 8 introduces a five-dimensional scoring framework for funders to evaluate whether applicants have properly assessed their context, grounded their strategy choices in evidence, and thoughtfully appraised implementation conditions. The contextual judgment dimension carries a veto: if an applicant has fundamentally misjudged their own situation, funders should defer support, regardless of scores on other dimensions.

The reliability of this recommendation tool has been validated through three layers of testing: 15 internal winner cases, 10 internal finalist cases, and 6 external independent cases from 2021 to 2024. The results show that the average match rate between the strategies recommended by the Recommendation Gene Table and those actually used stands at 98%.

In the past, these patterns were scattered across individual memories and experiences. This report systematizes them, enabling any activist who clearly identify their own context to make decisions standing on 36 years of global experience.

How the Recommendation Gene Table Is Built

The analytical framework of this report draws on three theoretical traditions. Qualitative Comparative Analysis (QCA) identifies patterns across hundreds of cases. Communities of practice theory explains how practitioner’s knowledge transfers across groups. Memetic theory treats strategies as identifiable, transmissible units of information. Together, they support the core proposition of the framework: a movement's effectiveness comes from the dynamic match between its Strategic Genes and its Contextual Environment.This theoretical foundation is fully elaborated in Section 2.1, Chapter 2.

The framework has two interdependent core elements: Strategic Genes (G01–G12) and the Contextual Environment (Q1–Q4). Strategic Genes form the action toolbox, covering twelve core strategy types including strategic litigation, scientific evidence construction, and

community organizing, each coded 0 or 1 per case. The Contextual Environment describes a movement's operating context: political environment, primary adversary type, the community's livelihood dependence on the threatened resource, and movement stage. The toolbox provides action options; the environment reveals which options have been more frequently activated in similar situations historically. That is the logic behind the Recommendation Gene Table.

Based on this framework, the report follows a three-step process to translate raw archives into usable tools. Step one, cleaning and coding (Chapter 2): organize all 883 records, annotating each case for its Strategic Genes and its Q1–Q4 contextual parameters. Step two, contextual matching (Chapter 5): for each unique Q-value combination, retrieve the corresponding reference set, calculate each strategy's usage frequency, and screen for recommended genes using a 60% threshold. Step three, validation (Chapter 6): validated on 31 independent cases, achieving an average match rate of 98%.

Despite these strengths, this tool identifies two limitations, detailed in Chapters 2 and 9. First, the database contains only successful finalist cases, which introduces survivorship bias. Second, the 0/1 coding cannot capture differences in strategic intensity, meaning the impact of the same strategy may vary across different movements.

Sustainability and Future Extensions

This report is not an endpoint, but the starting point of a continuously growing tool (Chapter 9). It includes a systematic update mechanism: each year, after the Goldman Environmental Prize winners are announced, staff can follow the template in Appendix D to add new cases — a process requiring about ten hours of work. With each new case, the reference sets become richer and the recommendations more reliable.

Beyond routine updates, the report outlines two directions for extending the Recommendation Gene Table: one in breadth, one in depth. In terms of breadth, I recommend building an interactive online tool based on Appendix A, allowing users to input their contextual parameters and receive instant recommendations. In terms of depth, I recommend introducing the framework into workshops through case prediction and comparison exercises, helping activists and funders develop a shared strategic language.

Grassroots environmental movements, at their core, defend the conditions for life itself to continue. This report distills the strategic logic of those who have successfully defended

those conditions — so that those who come next can walk more steadily and move faster. May this living report serve the living cause it seeks to protect.

Conclusion

Victory cannot be replicated. Grassroots movements are not assembly lines. What this report offers is a humble treasury of wisdom: under specific circumstances, certain strategic tools have historically proven effective. Those successful cases do not say, "Do this and you will win." What they say is this: in situations similar to yours, here is how these people thought and acted. Let this living wisdom reach every hand that needs it. Pass it on. Keep it alive.

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Chapter 1 Introduction and Research Foundations

1.1 Research Foundation

Grassroots environmental activists are creating change every day across the world. They have stopped destructive mines, protected the last old-growth forests, and won justice for contaminated communities. Yet these success stories are often treated as isolated events, making it chanllenging for others to build upon them systematically.

To learn from past success, consider the value of having a reliable body of cases to draw from. The Goldman Environmental Prize provides exactly that. Established in 1989 by Richard and Rhoda Goldman, the Prize turned attention to individuals working on the most dangerous front-lines, including community activists, Indigenous leaders, farmers, and lawyers. Before the Prize, most major environmental awards went to scientists, government agencies, or large international organizations.

Over thirty-six years, the Prize has not only vigorously celebrated six winners per year, but also systematically documented each finalist's methods of struggle, the nature of their adversaries, the political context they faced, and the stage of their movement. These archives have grown into one of the most complete records of successful grassroots environmental action available: over 1000 finalist records spanning 1993 to 2026, covering 98 countries.

From the outset, the Prize reflected a simple but powerful belief. Changing the trajectory of environmental destruction depends not on government will or corporate conscience alone, but on ordinary people around the world acting consistently. What such people need, then, is worth considering: not only funding, but also the assurance that their approach is working.

1.2 Research Questions and Deliverable

This study builds on the Goldman Environmental Prize's archives to ask not just what happened, but why it worked—for those still in the fight. The goal is simple: extract practical wisdom from over 34 years of successes and make it usable for future activists.

The core output of this study is the Recommendation Gene Lookup Table in Appendix A, helping activists identify which strategic genes have historically worked in situations similar to theirs. To use it, an activist needs only to determine four contextual parameters for their movement: political environment (Q1), primary adversary type (Q2), community

resource dependence (Q3), and movement stage (Q4). The table then returns the strategic genes that appeared in 60% or more of historically similar cases.

Chapter 7 provides a step-by-step guide on how to use the table, how to interpret its recommendations, and how to assess whether the conditions for activating each recommended gene are in place. At the same time, Chapter 8 provides funders with a lens for assessing projects based on this system.

1.3 Data Overview

The analytical data for this report come from Goldman Environmental Prize selection archives covering 1993 to 2026, encompassing all finalists from each year, both winners and non-winning nominees. Thanks to the Prize Foundation's thirty-four years of systematic archive accumulation, this study assembled over 1000 candidate records covering 650 independent candidates and 34 annual cycles.

Data Cleaning

The raw data was not immediately usable. Data cleaning encountered two categories of issues requiring targeted treatment.

First, 8 historical records had completely missing name fields. The country and strategy data for these candidates were preserved intact, but identity information was lost. Each case was traced back to the original source files and all 8 names were restored through byte level encoding analysis, ensuring every record is traceable to a real individual.

Second, 155 candidates were nominated across multiple years, with strategy records for the same person across different years showing inconsistencies. A union fill principle was applied, using the most complete strategy state across the entire participation history as the analytical basis, avoiding strategy underestimation due to archival year differences.

After these treatments, the final dataset available for analysis contains 883 complete records, all of which have completed systematic coding for 12 strategic genes and 4 contextual dimensions analysis. The 198 winner records received additional rounds of cross-validation to meet the highest accuracy standards.

Contextual Dimensions

Beyond strategic genes, this study also systematically annotated four contextual dimensions (Q1–Q4) for each finalist record. Q1 measures the political environment. Q2 marks the primary adversary type. Q3 records the community's livelihood dependence on the threatened resource. Q4 marks the movement's developmental stage. These four dimensions form the contextual coordinates for each case. They are also the input parameters for using the Recommendation Gene Lookup Table in Appendix A. Their full distribution, historical trends, and strategic implications are analyzed in Chapter 4.

1.4 Key Findings: Three Structural Shifts in the Modern Environmental Movement

Longitudinal analysis of the full dataset reveals three structural shifts in how successful grassroots environmental movements operate.

First, single-strategy movements have nearly disappeared. The vast majority of successful cases combine multiple tactics simultaneously. Legal action runs alongside community mobilization; scientific evidence is coordinated with public exposure; direct action alternates with institutional negotiation. Multi-strategy coordination has become the default paradigm.

Second, government institutions are the primary adversary everywhere. Across all six regions, government bodies rank as the top adversary by a wide margin. Regardless of continent or political environment, activists are up against the same structural opponent: a state that controls permits, holds enforcement power, and sets the policy agenda.

Third, strategic emphasis is shifting from transnational mechanisms toward local embeddedness. Strategies rooted in community conservation and Indigenous sovereignty have grown more common. Meanwhile, transnational G12 (Legal accountability) and other strategies that rely on cross-border mechanisms have declined sharply. These include G5 (Financial leverage) and, in some contexts, strategic litigation that targets foreign courts.

Meanwhile, transnational legal accountability and several other externally oriented strategies have declined sharply. This shift suggests that activists are focusing more on local legal systems and community organizing capacity, a strategy that a growing number of cases have validated.

Each of these shifts is explored in depth in the chapters that follow. The practical results of this study are condensed in Appendix A (Recommendation Gene Lookup Table), where

practitioners can directly query recommended strategic combinations based on their own contextual parameters. Chapter 7 provides specific guidance on how to use it.

Chapter 2 Methodology

This chapter answers a fundamental question: How do you learn from success that has already happened? It walks through the analytical framework and the method behind it — from the three theoretical foundations to the coding process, and from the two-element Gene-context framework to the study's limitations. The goal is not to impress you with methodology, but to give you enough confidence in what follows.

2.1 Theoretical Foundations of the Model

The analytical framework draws on three theoretical traditions: QCA, Community of Practice Theory, and Memetics. Together, they address three questions: what constitutes a regular pattern, how tacit knowledge is transmitted, and how successful tactics can be replicated across contexts. The three build on one another. QCA provides the tools for identifying patterns. Community of Practice Theory explains why knowledge accumulates in communities rather than individuals. Memetics explains how that knowledge propagates as replicable units.

Qualitative Comparative Analysis (QCA). The QCA method (Ragin, 1987) is designed for analyzing causal patterns in medium-sized samples (tens to hundreds of cases). It is particularly suited for multiple conjunctural causation, where different combinations of conditions can produce the same outcome. This study draws on this logic, treating strategic gene combinations as sets of conditions that affect the probability of success. It identifies cross-case regular patterns while retaining case-level contextual differences, rather than pursuing reductionist explanations based on single causal chains.

Community of Practice Theory. The community of practice framework (Wenger, 1998) observes that core knowledge from professional practice often remains tacit, embedded in practitioners' actions and difficult to transmit through formal channels. This study treats Goldman Environmental Prize finalists as a dispersed community of practice spanning 36 years. They may never have met, but together they constitute a repository of knowledge about grassroots environmental action. By systematically coding their collective practice, the study seeks to render tacit knowledge explicit, transforming it into strategic assets that can be transmitted, learned, and replicated.

Memetics. A meme is a unit of information that can be replicated and transmitted within cultural systems, analogous to a biological gene (Dawkins, 1976). This study uses strategic genes as its core unit of analysis, treating each successful tactic as a meme that can be identified, coded, and replicated. The 12 strategic genes are the practical application of this framework. Each gene represents a clearly identifiable action pattern that can be activated or combined in different contexts, forming an adaptive strategic toolkit.

Together, these three theoretical pillars form the core claim of this study: success in grassroots environmental movements is not accidental individual talent, but the result of a dynamic match between identifiable strategic patterns and specific contextual conditions. This claim is testable through historical data and transmissible as a guide for future action.

2.2 Case Selection and Analytical Method

Data Foundation

The data foundation is the Goldman Strategic Gene Database, covering all finalist records from 1993 to 2026: 883 records, including 198 winners and 685 non-winners. This study takes all finalist records as the analytical population, treating advancement to the final nomination round as the operational proxy for successful environmental action.

Why Finalists?

Each year, across six global regions, the Prize conducts multiple rigorous review rounds based on hundreds of nominations submitted by partner institutions, resident experts, and former laureates. Only a very small number reach the final round. Candidates who reach the final round have all produced verifiable environmental impact in real political and social environments. Finalist status is therefore one of the most systematic and reliable records of successful grassroots environmental action currently available.

Winners and Non-Winners

All finalists carry analytical value. Their strategic patterns together form a complete picture of successful grassroots environmental practice. The 198 winners received more intensive coding and multiple rounds of cross-validation, making them the primary source for typical case presentations and context-specific analyses in each chapter. The 685 non-winners expand the sample base and enhance the robustness of the frequency statistics. The distinction is not success versus failure, but two subsets within the same success spectrum

that differ in level of detail. All quantitative analyses use the full 883-record dataset as the standard.

2.3 Two Core Elements: Strategic Genes and Contextual Environment

The central proposition of this framework is that movement success results from a dynamic match between strategic genes and contextual environment. Neither element alone explains why the same strategy performs so differently across contexts.

Strategic Genes (the Toolkit). The 12 strategic genes (G01–G12) constitute the activist's tactical toolkit. They represent the core action patterns that can be identified and replicated in grassroots environmental movements. Chapter 3 provides the full definition, applicability conditions, and typical cases for each gene.

Contextual Environment (the Situation). The four contextual variables (Q1–Q4) describe the internal and external conditions in which activists operate. They determine which strategies are feasible and which face greater resistance or risk. Chapter 4 presents the full distribution, historical trends, and strategic implications of each dimension.

This framework deliberately excludes activist capacity from its scoring system. It answers which strategic tools have historically shown higher activation rates under specific contextual parameters. Whether those tools can be effectively deployed depends on the activist's own capacity — an area that no analytical framework can fully account for. Chapter 7 provides a structured capacity self-assessment tool, allowing users to evaluate the fit between their own conditions and the recommended strategic choices before committing to action.

2.4 Strategic Gene Identification: From Case Materials to Codified Patterns

Before coding the 883 cases for strategic genes, the genes themselves had to be identified. This process was completed in four rounds. From a cognitive logic perspective, the sequence follows a Bayesian style of inductive reasoning: the research begins with theory-guided priors — memetic theory's discrete action patterns, communities of practice theory's tacit knowledge accumulation, and QCA's cross-case pattern recognition — and then revises round by round against the systematic evidence of 883 cases, converging on stable, clearly bounded posterior definitions: the final 12 strategic genes.

Round 1: Open labeling assisted by a large language model (LLM). All 883 case records were fed as structured text into an LLM. Following standardized instructions, the model extracted action strategy labels, each accompanied by a verbatim quote from the case description as supporting evidence. This round produced an initial pool of several hundred candidate labels covering the tactical choices across the entire case set.

Round 2: Pattern integration and semantic harmonization. Labels that were substantively identical were merged. Categories with overlapping boundaries were split or combined. A unified nomenclature was established, distinguishing core strategic actions from supporting activities. After this round, the candidate categories were reduced to fewer than 20.

Rounds 3 and 4: Theoretical testing and empirical stress testing. The validation work was assisted by an LLM, as a single researcher could not code hundreds of cases line by line. Following structured instructions, the model rendered activation judgments with verbatim citations based on the gene definitions and case materials.

Round 3 tested each candidate against three criteria derived from memetic theory: discrete action boundaries, independent codability (measured by inter-model agreement rates), and cross-case replicability (assessed by the geographic, thematic, and stage-based distribution of cases). Candidates that failed any criterion were dropped or merged.

Round 4 conducted stress tests using three types of cases. Boundary tests used cases with minimal strategic intervention to examine the clarity of activation thresholds. Overlap tests used cases that simultaneously activated functionally similar genes to examine the mutual exclusivity of coding boundaries. Counterexample tests used failed cases outside the database to examine whether coding remained independent of movement outcomes. Genes with unstable definitions were revised and retested until all genes yielded stable coding judgments.

It should be noted that LLMs have limitations, including attention bias toward long texts and fluctuating agreement rates for ambiguous definitions. All final gene definitions were reviewed and boundary-corrected by the researcher line by line.

After the four rounds, the 12 strategic genes form a stable, empirically grounded, and theoretically validated coding framework. Full operational definitions, activation criteria, and boundary rules for each gene can be found in Appendix C.

2.5 Coding Process

With the 12 strategic genes identified, this section explains how each case was coded against them. The coding proceeds in three stages.

Stage one: establishing analytical boundaries. All 883 records are treated as successful cases, with no failure control group. This design focuses on identifying patterns of success, not attributing causes of failure.

Stage two: multi-dimensional coding. For each finalist, each of the 12 strategic genes is coded as activated (1) or not (0). Four contextual variables are recorded: Q1 (political environment), Q2 (primary adversary type), Q3 (community livelihood dependence), and Q4 (movement stage). Q1 draws on Freedom House's annual ratings (Free/Partly Free/Not Free), mapped to Democratic/Open, Political Transition, and Authoritarian. This ensures cross-year comparability. Detailed coding criteria are in Appendix C (Coding Manual).

Stage three: pattern identification and cross-analysis. Stage three identifies three types of regular patterns through gene frequency statistics, co-occurrence matrix analysis, and Q-value cross-analysis: (1) which genes are activated at high frequency (core strategies); (2) which genes tend to appear together (strategic combinations); and (3) given a specific Q-value combination, which genes have historically shown higher frequency (context-based recommendation logic).

The coded data matrix feeds directly into the gene frequency statistics in Chapter 3 and the Q-value analysis in Chapter 4. It is then processed through contextual cross-matching in Chapter 5 to generate the Recommendation Gene Table (Appendix A).

2.6 Limitations

The methodological design has two inherent limitations.

First, survivorship bias. The database includes only successful cases that reached the finals, with no failed cases as controls. The study therefore identifies patterns common to successful cases, not sufficient conditions for success. It cannot be used to infer that not using a particular gene will lead to failure.

Second, binary coding limitations. 0/1 coding cannot capture differences in strategy intensity. Two cases that both activate G01 may differ enormously in the scale of litigation and its centrality to the strategy.

These limitations are acknowledged constraints of the design. They do not affect the framework's descriptive power for high-frequency success patterns, but they do suggest that users should exercise contextual judgment when applying recommended strategies, rather than applying them mechanically.

Chapter Summary

This chapter laid out the conceptual and analytical tools behind the framework. The core idea is simple: different situations call for different strategic combinations. The framework does not hand you a ready-made answer, but it does offer a way to ask better questions.

To get there, we built on three theoretical pillars — QCA, communities of practice, and memetics — and introduced two core elements: strategic genes and the contextual environment. The genes were identified through a four-round Bayesian process and coded in three stages. Two limitations — survivorship bias and binary coding — are openly acknowledged, not as flaws, but as boundaries for responsible use.

What follows is a detailed look at the evidence and a step-by-step guide to applying it.

Chapter 3 Strategic Gene Profiles

This chapter looks at the 12 strategic genes distilled from 883 finalist cases. It walks through each gene's activation frequency, where it appears most often, and how it combines with others. (The full definitions and coding rules for each gene are in Appendix C. Here we focus on the patterns.)

The 12 genes fall into three tiers by activation frequency: high (≥60%, six genes), mid (30%–50%, three genes), and low (≤20%, three genes). A lower frequency does not mean less importance. It simply reflects how common that strategy is across regions and cases. Most movements combine multiple genes. The average case activates 6.10 genes.

Table 3-1 Strategic Gene Activation Frequency Overview (883 full dataset, 1993–2026)

Tier	Gene Code	Gene Name	Activated Cases	Activation Rate
High	**G03**	Community Organizing	883	**100.0%**
High	**G01**	Strategic Litigation	743	**84.1%**
High	**G02**	Scientific Evidence	696	**78.8%**
High	**G08**	Policy Reform	617	**69.6%**
High	**G10**	Health Justice	576	**65.2%**
High	**G12**	Transnational Accountability	571	**64.7%**
Mid	**G06**	Exposing Corruption	371	**42.0%**
Mid	**G09**	Community Conservation	325	**36.8%**
Mid	**G04**	Direct Action	286	**32.4%**
Low	**G07**	Indigenous Sovereignty Claims	171	**19.4%**
Low	**G05**	Financial Leverage	111	**12.7%**
Low	**G11**	Alternative Economy	35	**4.0%**

3.1 High-Frequency Strategic Genes (Activation Rate ≥60%)

G03 Community Organizing (100.0%, 883/883)

G03 is the only gene activated in all 883 cases, across all six regions without exception. This is not a coincidence. The Goldman Environmental Prize looks for deep community roots as a precondition for impact. Any case that reaches the finals has, in effect, already done the work of community mobilization.

This means G03 is not a strategy like the others. It is a structural prerequisite. Without organized community support, litigation, advocacy, and science cannot deliver lasting results. Statistically, G03's co-occurrence with any other gene matches that gene's own activation rate. For example, G01 (84.1%), G02 (78.8%), and G08 (69.6%) all operate under G03's 100% coverage.

None of this means community organizing looks the same everywhere. The 883 cases span six continents and 36 years. Forms range from Indigenous tribal councils to urban pollution coalitions, from fishermen's associations to youth climate networks. The diversity is striking. What G03 captures is the common core beneath it all: turning scattered individuals into a political collective that can act. Among the 12 genes, G03 is the only one that does not depend on a specific political environment, legal system, or resource base to be activated.

G01 Strategic Litigation (84.1%, 743/883)

G01 is activated in 84.1% of cases, making litigation the most common tool across the 883 movements. Regional distribution is fairly even. Europe leads at 92.1% (140/152). North America follows at 84.7%, slightly above the dataset average. Africa (82.3%), Asia (82.4%), South and Central America (81.6%), and the Islands and Island Nations (81.0%) all cluster in the middle. Legal pathways have become a standard choice everywhere, no matter the political environment or judicial tradition.

Litigation rarely travels alone. G01 and G02 (Scientific Evidence) move together in 67.6% of cases. G01 and G12 (Transnational Accountability) co-occur at 63.3%. Together, they form a familiar legal combo: science backs the claims, international law widens the net. G01 and G08 (Policy Reform) co-occur at 60.9%, meaning many lawsuits aim not just to stop a single harm, but to rewrite the rules. Among the 286 cases that used G04 (Direct Action), 88.1% also used G01. Direct action and legal pressure work as partners, not substitutes.

Around 2017, G01's annual activation rate began to drop, from a steady level above 85% down to 60%–73% in recent years. The data behind this shift is consistent. Three explanations seem plausible. First, corporations and governments increasingly use SLAPP suits to harass activists, making litigation riskier. Second, judicial independence has weakened in some regions, making legal outcomes harder to predict. Third, as movements gain experience, they see the limits of going to court alone and turn toward broader strategy mixes. These are reasonable explanations at the data level, but they await further research.

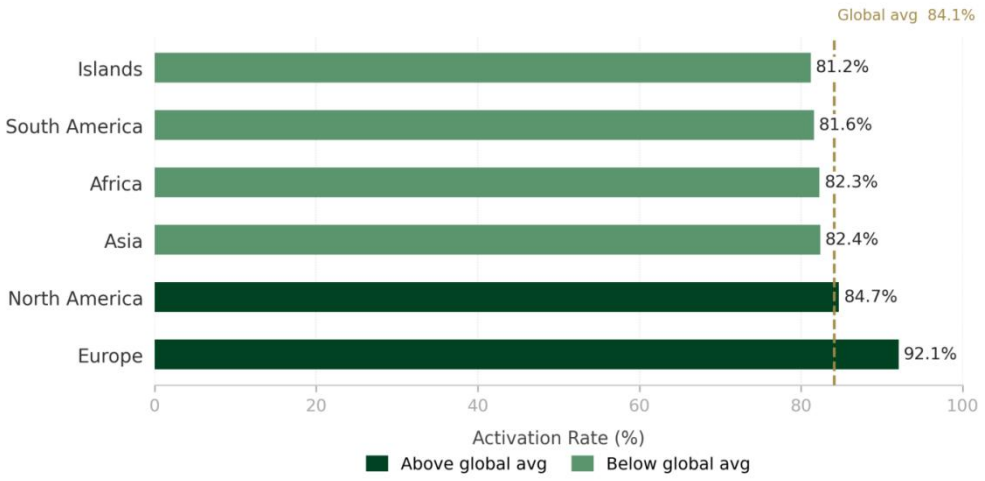


Figure 3-1 G01 (Strategic Litigation) Activation Rate by Region (N = 883)

G02 Scientific Evidence (78.8%, 696/883)

G02 is activated in 78.8% of cases, or roughly four out of five. Regionally, Asia leads at 85.9% (122/142), followed closely by Europe at 82.9% (126/152). South and Central America is the lowest at 73.5% (108/147). Across all six regions, activation stays between 73% and 86%, a relatively narrow range.

Scientific evidence does two things for a movement. First, it feeds litigation, giving G01 a factual backbone. Second, it fuels public communication, turning invisible harm into data people can see and share. That is why G01 and G02 are co-activated in 597 cases (67.6%) — one of the strongest strategic pairs in the entire dataset.

South America stands out with a lower G02 rate (73.5%). One possible reason: some cases there lean more on Indigenous knowledge systems than on Western science. In fact, G07 (Indigenous Sovereignty) peaks in South America at 35.4%, the highest of any region. This hints at a trade-off between the two strategies, though more analysis is needed to be sure.

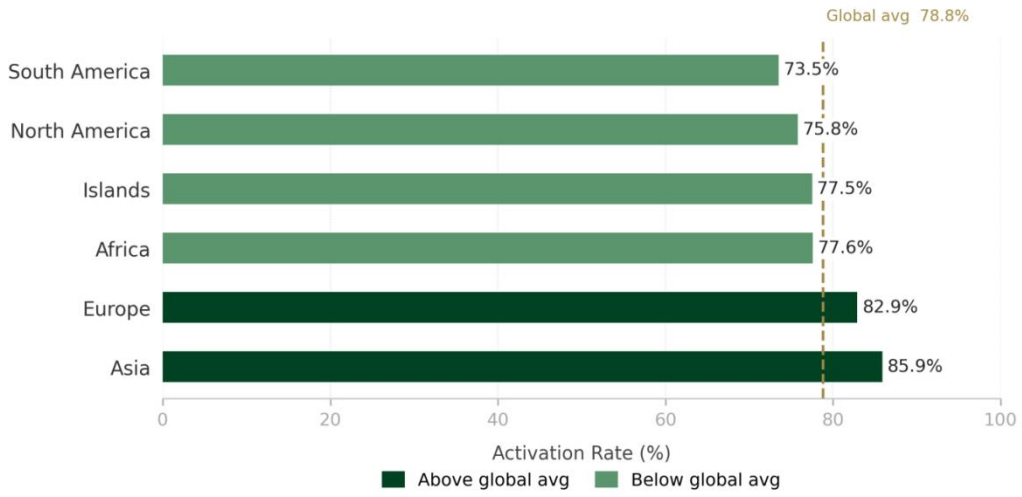


Figure 3-2 G02 (Scientific Evidence) Activation Rate by Region (N = 883)

G08 Policy Reform (69.6%, 617/883)

G08 is activated in 69.6% of cases, with a clear north-south divide. Europe (80.3%, 122/152) and North America (76.4%, 120/157) are significantly higher than Africa (63.3%), South and Central America (63.9%), and the Islands and Island Nations (59.1%). Asia sits in the middle at 74.6%.

Policy reform marks a leap in what a movement tries to achieve. Instead of stopping one project, the goal becomes changing the rules of the game. The higher rates in Europe and North America likely reflect their long legislative advocacy traditions.

G08 travels with two other genes most often. It co-occurs with G01 (Strategic Litigation) at 60.9% and with G12 (Transnational Accountability) at 47.2%. Together, the three form a full legal escalation path: win a case, amplify pressure across borders, then rewrite the rules. G08 and G02 (Scientific Evidence) co-occur at 57.3%, suggesting that solid science often clears the way for policy work.

The lower rates in Africa and the Island Nations likely stem from limited access, not necessarily the will to use policy reform. Where legislative institutions are younger, judiciaries less independent, or the legal profession thinner, the same level of commitment produces fewer structural reform opportunities — not fewer attempts. The gap, in other

words, reflects institutional access more than strategic intent.This interpretation is consistent with broader findings on how institutional context shapes movement strategy choice[1].

The lower rates in Africa and the Island Nations likely stem from limited access. Judicial and legislative resources are harder to reach in those contexts, not necessarily the will to use them.

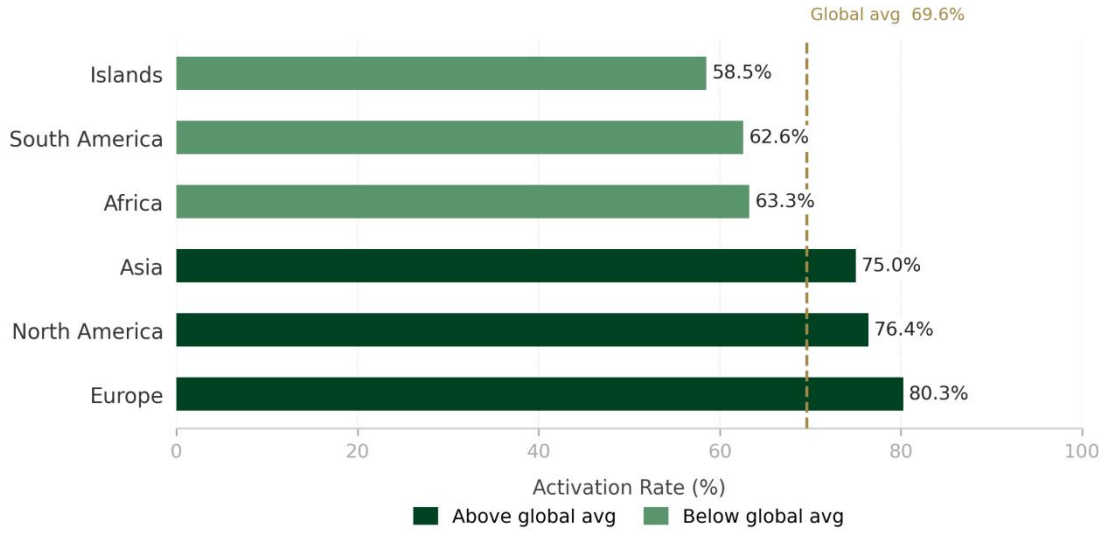


Figure 3-3 G08 (Policy Reform) Activation Rate by Region (N = 883)

G10 Health Justice (65.2%, 576/883)

G10 is activated in 65.2% of cases, but it shows the widest regional variation among high-frequency genes. North America stands out at 79.6% (125/157), well above Africa at 58.5%. The other four regions cluster between 60% and 65%: Islands and Island Nations (64.2%), Asia (63.4%), Europe (62.5%), and South and Central America (61.9%).

G10 and G01 (Strategic Litigation) co-occur at 57.8%. In many cases, health evidence does not just move public opinion. It becomes the backbone of a legal claim.

North America's high rate likely reflects its deep environmental justice tradition. Linking pollution to systemic discrimination in low-income communities and communities of

[1] Sidney Tarrow, Power in Movement: Social Movements and Contentious Politics, 3rd ed. (Cambridge: Cambridge University Press, 2011), chap. 2. Tarrow's concept of "political opportunity structure" directly addresses how the accessibility of institutions — not merely the will of activists — shapes which strategies movements are able to pursue.

color has been a mature advocacy framework there for decades, with the legal and policy language to match. Other regions are still catching up.

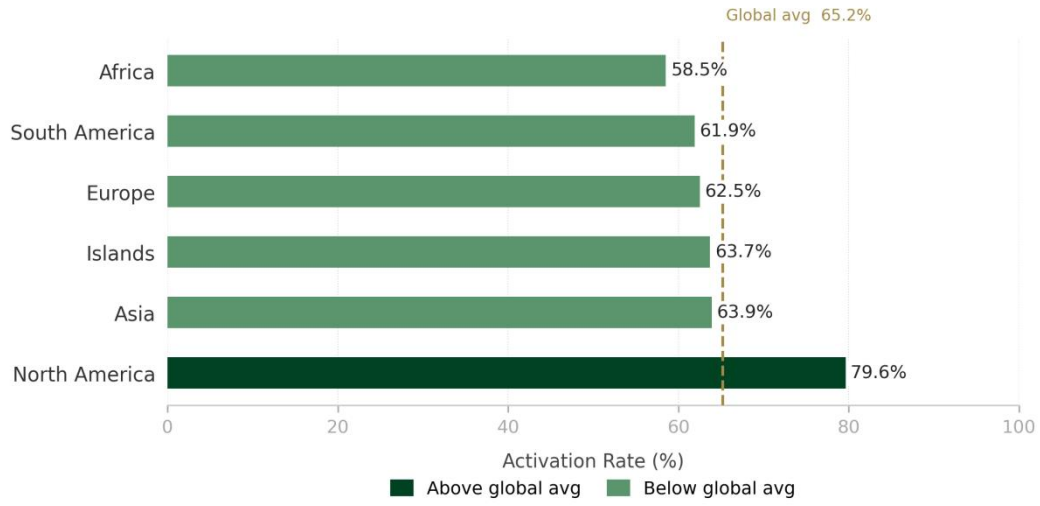


Figure 3-4 G10 (Health Justice) Activation Rate by Region (N = 883)

G12 Transnational Accountability (64.7%, 571/883)

G12 has an overall activation rate of 64.7%, but its regional variation is the most striking among high-frequency genes. Europe (73.7%, 112/152) and South and Central America (73.5%, 108/147) are far above North America (40.8%, 64/157). Africa (69.4%, 102/147), Asia (65.5%), and the Islands and Island Nations (66.4%) fall in the middle.

North America's low rate stands out. One likely explanation is that the well-developed U.S. judicial system encourages activists to rely on domestic mechanisms. Elsewhere, facing scarce judicial resources or political opposition, activists turn to transnational paths instead: international arbitration, investor liability mechanisms, UN human rights frameworks. This suggests that G12 activation rates reflect the accessibility of domestic mechanisms more than any difference in advocacy intent.

Over time, G12 has declined more sharply than any other gene. Its activation rate was 82.1% in 1991–1999, fell to 76.5% in 2000–2009, then to 65.0% in 2010–2019, and dropped further to 32.4% after 2020. This stepwise decline closely tracks the broader retreat of global multilateral mechanisms. International arbitration bodies face rising challenges to their authority. UN human rights frameworks continue to lose enforcement power in some member states. The costs of pursuing transnational accountability have gone up significantly.

A lower activation rate does not necessarily mean lower strategic value. External pressure on this pathway is a more likely explanation than movements voluntarily walking away from it.

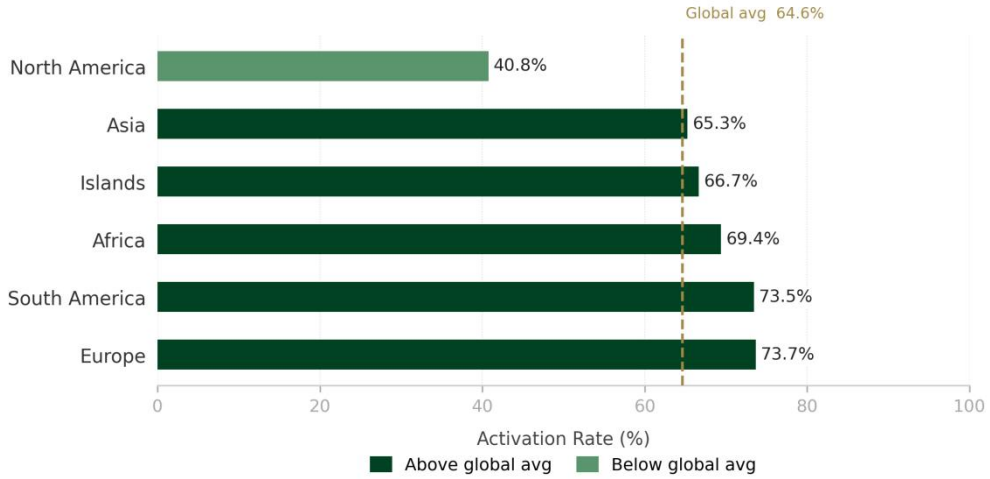


Figure 3-5 G12 (Transnational Accountability) Activation Rate by Region (N = 883)

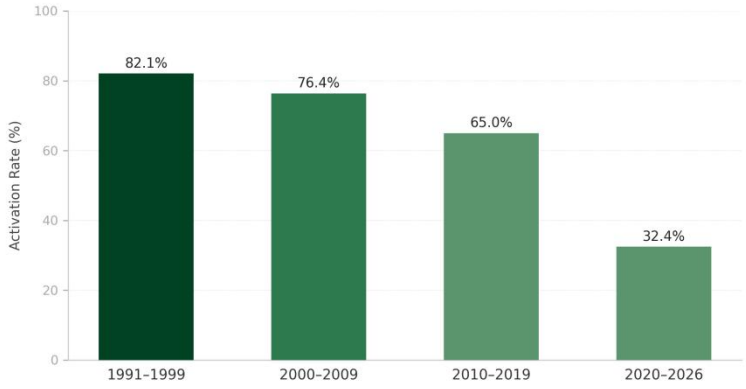


Figure 3-6 G12 (Transnational Accountability) Activation Rate by Decade Period (N = 883)

3.2 Mid-Frequency Strategic Genes (Activation Rate 30%–50%)

G06 Exposing Corruption (42.1%, 371/883)

G06 has an overall activation rate of 42.1%, with the most even regional spread among mid-frequency genes. North America (46.5%) and Europe (47.4%) are at the high end. Asia (43.7%) sits in the middle. Africa (40.8%) and the Islands (38.7%) are a bit lower. South and Central America (34.7%) is the lowest. The gap between the highest and lowest regions is

less than 13 percentage points. This even spread suggests that exposing information works across different regions and political environments. It is not a strategy tied to any one place.

G06 and G01 (Strategic Litigation) co-occur at 39.4%. Exposure actions often work alongside lawsuits. Disclosed documents serve two purposes at once: they shape public opinion and become courtroom evidence. G06 and G08 (Policy Reform) co-occur at 33.5%, suggesting that information disclosure sometimes targets institutional loopholes directly, supplying ammunition for policy advocacy.

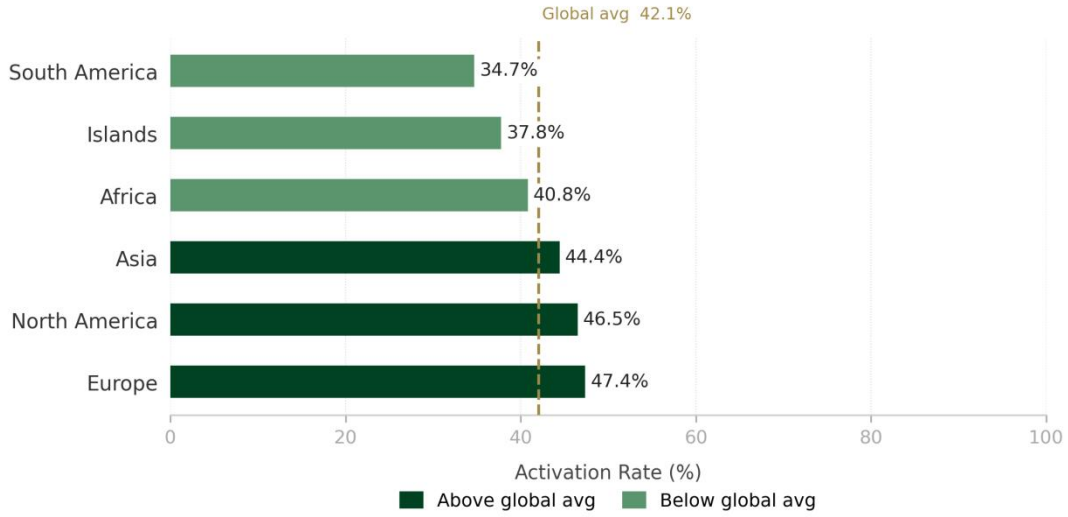


Figure 3-7 G06 (Exposing Corruption) Activation Rate by Region (N = 883)

G09 Community Conservation (36.6%, 325/883)

G09 has an overall activation rate of 36.6%, with notable regional variation. Activation is highest in the Islands and Island Nations (49.3%, 68/138), followed by South and Central America (47.6%, 70/147) and Asia (44.4%, 63/142). Africa (29.3%) and North America (31.8%) fall in the middle. Europe ranks lowest at 20.4% (31/152).

The regional pattern is clear. G09 rates are significantly higher where communities depend materially on specific ecosystems. Island fishers, Amazonian farmers, and Southeast Asian mountain communities have their livelihoods, cultural identity, and social structures tied to particular lands or waters. In these contexts, sovereignty claims and self-governance are direct tools of environmental protection, not stand-ins for external advocacy. Europe's low rate fits the same pattern: land tenure is highly legalized there, and civil society favors rule-based advocacy, as reflected in Europe's high G08 rate (80.3%).

Over time, G09 rose to 46.9% between 2010 and 2019, peaking higher than before or after. This increase may be linked to heightened international policy attention to Indigenous rights and community conservation during that decade. Several institutional milestones lined up: the UN adopted UNDRIP in 2007, establishing FPIC. The 2010 CBD COP10 in Nagoya recognized ICCAs in Aichi Target 11. The 2014 IUCN World Parks Congress in Sydney formally incorporated ICCAs into international policy. Against this backdrop, the rise in G09 closely tracks the timing of international institutional evolution. (See: United Nations, 2007; CBD, 2010; IUCN, 2014)

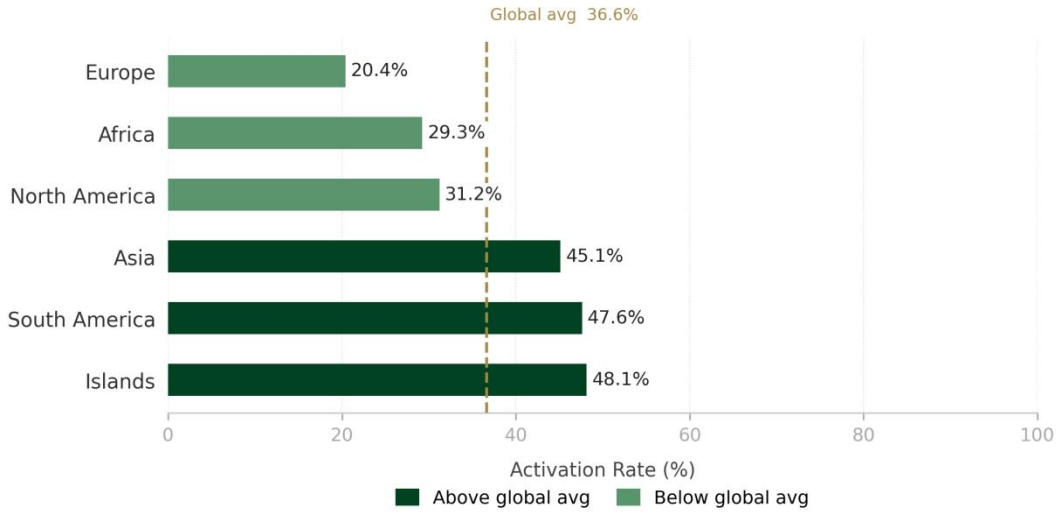


Figure 3-8 G09 (Community Conservation) Activation Rate by Region (N = 883)

G04 Direct Action (32.4%, 286/883)

G04 (Direct Action) has the lowest activation rate among the three mid-frequency genes at 32.4%. Europe leads regionally at 44.1% (67/152), followed by South and Central America (34.7%) and North America (34.4%), both slightly above the dataset average. Rates are lower in the Islands and Island Nations (29.2%), Africa (25.9%), and Asia (25.4%).

Europe's higher G04 activation rate is tied to the region's deep protest culture and relatively strong legal protections for civil assembly rights. In Europe, the legal risks of non-violent direct action—such as occupations, human shields, and road blockades—are relatively manageable. Among the 286 cases that activated G04, 88.1% (252 cases) simultaneously activated G01 (Strategic Litigation). Direct action and litigation almost never appear alone. On-site blockades create time windows; legal means consolidate the gains.

Activation of G04 typically occurs in contexts of urgent physical threat, such as a mine about to break ground, a pipeline being advanced, or imminent forest logging. This time pressure exposes the cyclical limitations of litigation; direct action fills the gap left by legal procedures.

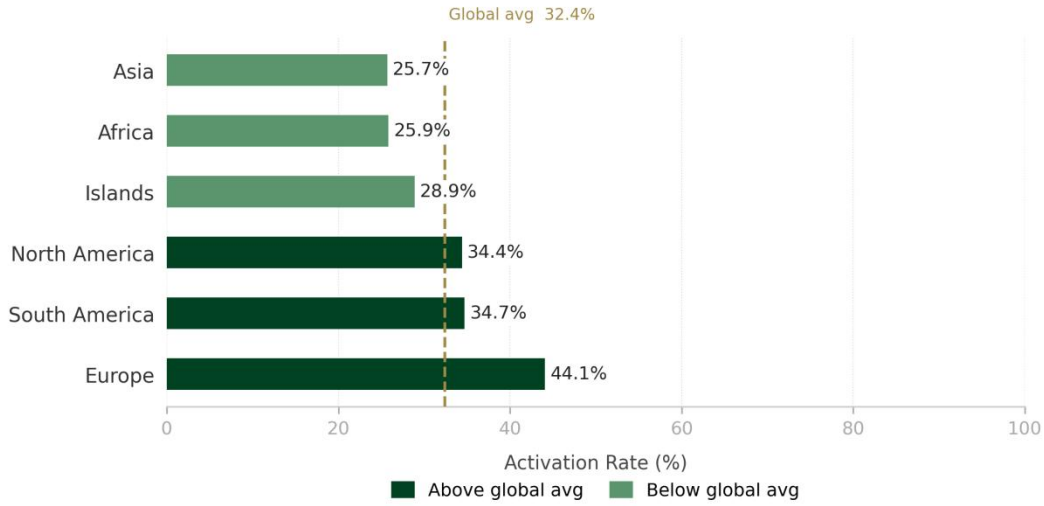


Figure 3-9 G04 (Direct Action) Activation Rate by Region (N = 883)

3.3 Low-Frequency Strategic Genes (Activation Rate ≤20%)

G07 Indigenous Sovereignty (19.4%, 171/883)

G07 has an overall activation rate of 19.4%, the most regionally concentrated of the 12 genes. Rates are significantly higher in South and Central America (35.4%, 52/147), the Islands and Island Nations (27.0%, 37/137), and North America (24.8%, 39/157) than in Africa (8.8%), Asia (14.1%), and Europe (6.6%). This distribution directly mirrors where Indigenous communities actually live. It reflects who the advocates are, not a difference in strategic preference.

G07's low overall frequency alongside its high rates in specific regions makes it a highly targeted gene. When the movement is led by an Indigenous community, sovereignty claims often become a core strategy. In cases without an Indigenous background, this gene is rarely activated.

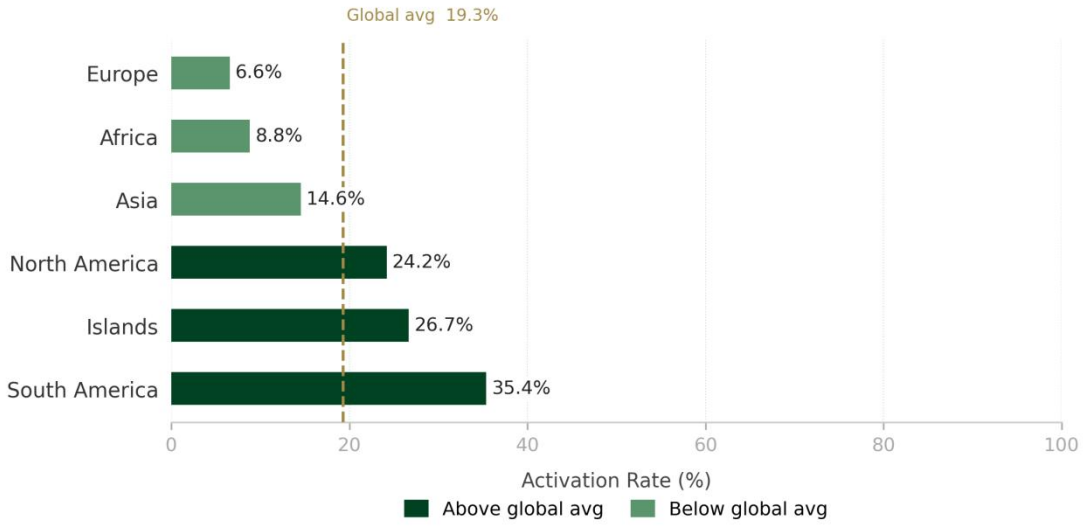


Figure 3-10 G07 (Indigenous Sovereignty Claim) Activation Rate by Region (N = 883)

G05 Financial Leverage (12.7%, 111/883)

G05 has an overall activation rate of 12.7% and shows one of the most even regional distributions across the six regions. North America is highest at 16.6%. Asia is lowest at 9.9%. The remaining regions fall between 11% and 13%. This even spread suggests that financial pressure tactics are not tied to any particular region. Instead, their use depends on specific conditions: funding sources must be identifiable and sensitive enough to reputational risk for divestment campaigns, shareholder resolutions, or supply-chain pressure to become workable.

A low activation rate does not mean low effectiveness. It reflects the high bar for using this strategy. Compared to litigation or direct action, financial pressure requires a deeper understanding of capital markets and investor behavior. It often also depends on transnational networks to build enough momentum. As a result, G05 appears less often in grassroots movements, where resources are typically scarce.

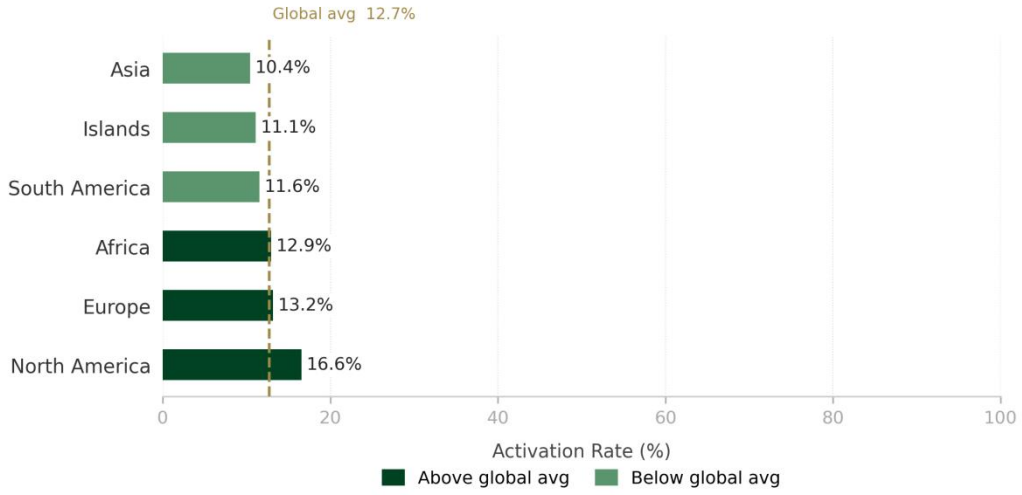


Figure 3-11 G05 (Financial Leverage) Activation Rate by Region (N = 883)

G11 Alternative Economy (4.0%, 35/883)

G11 is the least frequently activated gene in the dataset, at only 4.0% (35/883). South and Central America is highest at 8.2% (12/147). All other regions fall between 1% and 6%, with North America lowest at 1.3%.

The extremely low frequency has structural reasons. Building replicable alternative livelihood models requires ecological viability, economic sustainability, and community acceptance all at once. In resources, time, and capacity, these demands far exceed those of other genes. South and Central America's higher rate likely reflects the long-term accumulation of organic farming, forest-based livelihoods, and ecotourism projects there. That region's movements have simply explored this path more deeply.

From a movement stage perspective, G11 activates in 10.3% of cases that have achieved victory, notably higher than in early or escalating stages. This suggests that alternative economy demonstration tends to emerge only when movements reach a deeper phase of institutionalization.

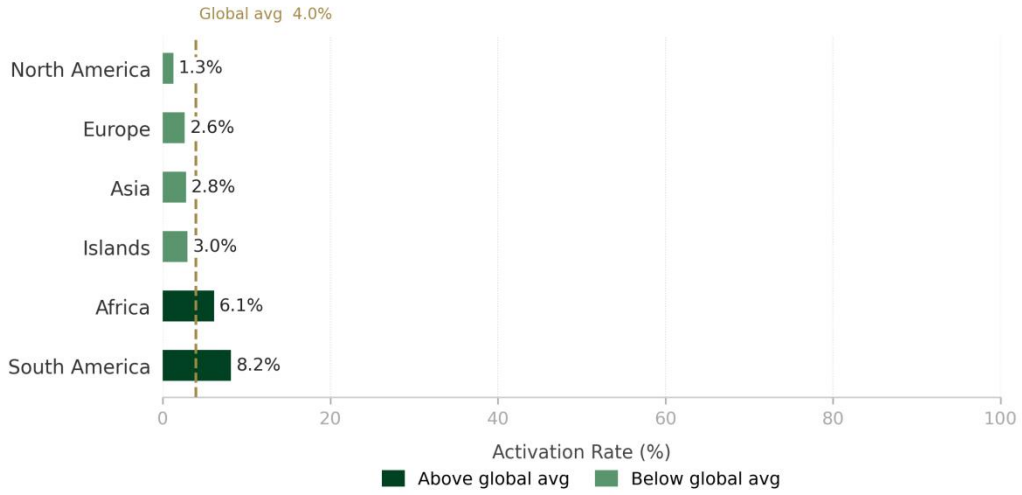


Figure 3-12 G11 (Alternative Economy Demo) Activation Rate by Region (N = 883)

3.4 Gene Combination Characteristics

The core trio. The most common combination across the 883 cases is G01(Strategic Litigation)+ G02(Scientific Evidence) + G03 (Community Organizing), activated together in 597 cases (67.6%). Community organizing builds the foundation. Scientific evidence supplies the facts. Litigation opens the legal path. On top of this core, G08 （Policy Reform） and G12(Transnational Accountability) connect at relatively high frequency, forming a five-gene pathway that covers more cases than any other long combination.

Direct action + litigation: a dual track. G04 (Direct Action) and G01(Strategic Litigation) are tightly bound — 88.1% co-occurrence. Direct action creates pressure on the ground, while litigation locks in the gains in court. The two move forward together; they do not replace each other. Research supports this logic. McCann (2006) argues that direct action and litigation reinforce each other. Street protests set the agenda. Lawsuits turn pressure into binding outcomes. Keck and Sikkink (1998) similarly show that effective movements deploy both accountability and information politics. The high co-occurrence rate in this dataset offers quantitative confirmation.

Low-frequency genes as precision tools. G07(Indigenous Sovereignty) and G11(Alternative Economy) are not simply rare by chance. They show strong regional and stage-based concentration. When they do appear, they typically form tight combinations with multiple other genes. These are not universal tools. They are precision instruments, activated only when the right conditions line up.

From genes to context. The way genes combine is a movement's adaptive response to its context. Political environment, adversary type, community resource dependence, and movement stage together shape which genes appear and how they work together. That is the bridge to Chapter 4, where we move from the genes themselves to the conditions that make them click.

Chapter Summary

Chapter 3 maps the 12 strategic genes across 883 cases. From a frequency perspective, they form three tiers. G01(Strategic Litigation), G02(Scientific Evidence), and G03(Community Organizing) are the high-frequency backbone, appearing in nearly all successful cases (above 78%). G12(Transnational Accountability), G08(Policy Reform), and G10(Health Justice) make up a second tier (65%–75%), often amplifying the impact of the backbone. The remaining six genes activate selectively, depending on issue and region.

Regionally, all six regions share the same backbone but have different emphases. North America and Europe favor legal, scientific, and policy combinations. South and Central America show greater reliance on community sovereignty and alternative economy. The Islands and Island Nations and Asia rely heavily on G09 (Community Conservation). These differences seem to follow each region's legal and institutional maturity, its economic and ecological structure, and its movement resources. They do not look random.

A few genes move against the grain. G12(Transnational Accountability) has been declining, from over 82% in the 1990s to 32% after 2020, possibly reflecting a broader retreat in global multilateral cooperation. Meanwhile, G09 peaked between 2010 and 2019, around the time international policy began recognizing Indigenous rights and community conservation areas.

Effective movements tend to combine multiple genes, adjust to local conditions, and use institutional windows when they open. This blend of universality and adaptability leads naturally into Chapter 4, where we will explore how strategic choices may be shaped by political environment, adversary type, community resource dependence, and movement stage.

Chapter 4 Contextual Analysis

This chapter systematically analyzes the four contextual dimensions (Q1–Q4) across all 883 records in the full dataset. Whereas Chapter 3 focused on the activation frequency of strategic genes, this chapter examines the contextual conditions of each movement. The four dimensions measure political environment (Q1), primary adversary type (Q2), community resource dependence (Q3), and movement stage (Q4). Together, they form the internal and external coordinate system for each case and determine which strategic combinations are most likely to be effective in a given context. This analysis presents the structural characteristics of all 883 cases objectively, while also providing the data foundation for the Recommendation Gene Lookup Table in Chapter 7 (Appendix A). By cross-analyzing strategic genes with Q-value dimensions, we can offer activists differentiated strategy recommendations based on known contextual conditions.

The four Q dimensions are supported by different types of evidence, reflecting the nature of each dimension rather than a difference in analytical quality. Q1 (political environment) is coded using Freedom House's annual freedom index[2] (Free/Partly Free/Not Free). The discussion here explains how different political environments shape activists' room to operate and their international visibility. The discussion of Q2 (adversary type) draws on political economy[3] to explain why government institutions dominate as the primary adversary. For Q3 and Q4, the discussion draws on social movement theory[4], citing classic studies to show that the patterns in our data match what the field expects to see in successful environmental movements.

4.1 Q1 Political Environment Dimension

Here is how the 883 cases break down by political context. Democratic environments account for 63.1% (557 cases). Political transition settings make up 23.3% (206 cases).

[2] This study uses Freedom House's annual Freedom in the World index for the years 1993–2026.

[3] George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics and Management Science 2, no. 1 (Spring 1971): 3–21.

[4] Doug McAdam, Sidney Tarrow, and Charles Tilly, Dynamics of Contention (Cambridge: Cambridge University Press, 2001).

Authoritarian environments represent 13.6% (120 cases). Q1 coding follows Freedom House's annual ratings (Free / Partly Free / Not Free), mapped to Democratic/Open, Political Transition, and Authoritarian. The table below shows the full distribution. Figure 4-1 tracks the trend across four time periods.

Table 4-1 Q1 Political Environment Distribution (883 full dataset, 1993–2026)

Q1 Political Environment Category	Numerical Code	Cases	Share (%)
Democratic/Open	1	557	63.1%
Authoritarian	2	120	13.6%
Political Transition	3	206	23.3%
Total		**883**	**100%**

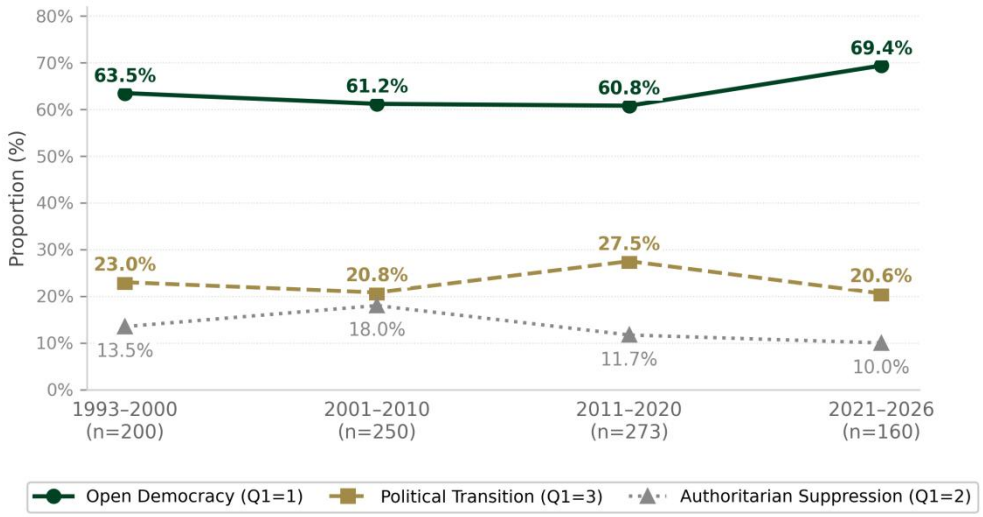


Figure 4-1 Q1 Political Environment Distribution Trend (N = 883, 1993–2026).

Temporal Trends

Open Democracy contexts (Q1=1) have remained dominant across all four periods, holding steady between 60% and 70%, with the highest share recorded in 2021–2026 at 69.4%. Political Transition contexts (Q1=3) peaked at 27.5% in 2011–2020 before declining to 20.6% in the most recent period. Authoritarian Suppression (Q1=2) has trended downward overall, from 13.5% in 1993–2000 to 10.0% in 2021–2026, with a temporary rebound in 2001–2010. The distribution across the three political environment categories has remained broadly stable over three decades, with no fundamental shift in the overall pattern.

Structural Interpretation

Over thirty-six years, the distribution has remained broadly stable, as shown above. One structural implication stands out: authoritarian environments systematically shrink the space for activists to operate publicly.One reasonable inference is that authoritarian environments systematically shrink the space for activists to operate publicly.

The three political types have remained relatively stable over 36 years, but each has shifted in its own way. Democratic environments consistently hold the majority (60%–69%). Political transition cases peaked in 2011–2020 (27.5%). Authoritarian cases hit a high of 18.0% in 2001–2010 and have since fallen to 10.0% in recent years. Overall, the dataset is not dominated by any single political type. Democratic cases form the main body, with political transition and authoritarian cases present alongside them. One reasonable inference is that authoritarian environments systematically shrink the space for activists to operate publicly. Research on global environmental defenders supports this mechanism. Middeldorp and Le Billon (2019) show that authoritarian regimes often suppress dissent through violence and undermine community participation, forcing activists to work in more concealed ways. That directly limits their international visibility and their ability to show the kind of "visible record of achievement" the Goldman Environmental Prize looks for. Le Billon and Lujala (2020) add empirical weight, finding a positive link between the degree of authoritarianism and the likelihood of activists being suppressed. At the outcome level, this makes it harder for activists to act publicly and therefore harder to meet the basic conditions for safe, public prize nomination.

These are inferences based on the cited research, not causal conclusions. Environmental movements do exist in authoritarian settings, and some show remarkable resilience under high pressure.

4.2 Q2 Primary Adversary Type Dimension

Government institutions dominate as the primary adversary, accounting for 81.5% of cases (720 out of 883), across all six regions without exception. Commercial enterprises come next at 7.9% (70 cases), followed by state-corporate collusion at 6.8% (60 cases), systemic confrontation at 3.4% (30 cases), and international financial institutions at just 0.3% (3 cases).

Table 4-2 Q2 Primary Adversary Distribution (883 full dataset, 1993–2026)

Q2 Primary Adversary Category	Numerical Code	Cases	Share (%)
Government Institutions	1	720	81.5%
Commercial Enterprises	2	70	7.9%
State-Corporate Collusion	3	60	6.8%
Systemic Confrontation	5	30	3.4%
International Financial Institutions	4	3	0.3%
Total		**883**	**100%**

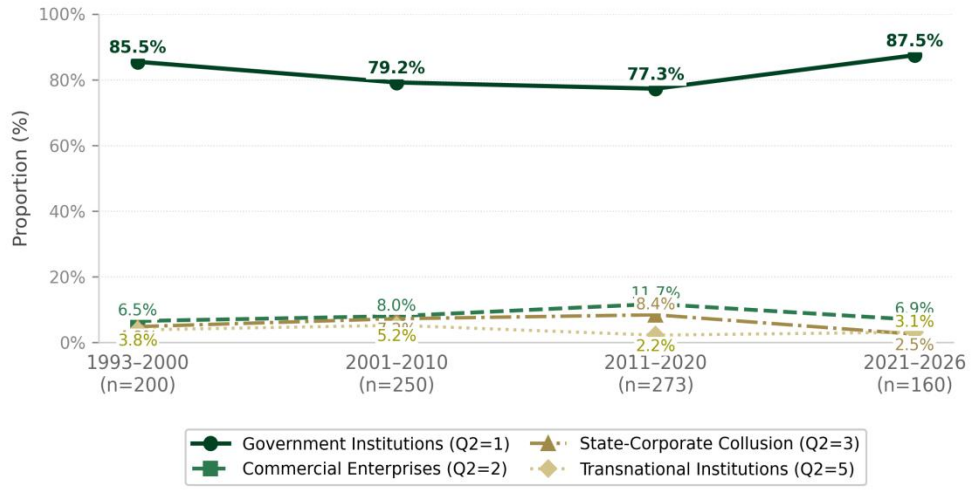


Figure 4-2 Q2 primary adversary Distribution Trend (N = 883, 1993-2026)

Temporal Trends

Government institutions have remained the dominant adversary across all four periods, never falling below 77%. Their share was 85.5% in 1991–2000, 79.2% in 2001–2010, 77.3% in 2011–2020, and then rebounded to 87.5% in 2021–2026. This recent rise suggests that movement targets have become even more concentrated on the state.

Meanwhile, commercial enterprises saw a relative peak in 2011–2020 (11.7%), which may roughly align with the expansion of transnational private capital in global infrastructure and resource sectors during that period. That is only a temporal correlation, not a causal claim. State-corporate collusion has contracted in recent years, falling from 8.4% in 2011–2020 to 2.5% in 2021–2026.

Structural Interpretation

The dominance of government institutions can be understood at three levels.

First, permitting authority. Even when private companies or international capital are the most direct threat, government institutions hold the core permits: land approvals, development licenses, resource rights, pollution standards. The power to stop or regulate harm ultimately rests with the state. When communities try to change the behavior that threatens them, their pressure almost always ends up at the government's door.

Second, regulatory failure. In many Goldman finalist cases, the root of conflict is not active state destruction but systematic regulatory failure. Environmental impact assessments become paperwork. Pollution standards become suggestions. Local officials look the other way. Research on Latin American environmental movements by Hochstetler and Keck (2007) describes this mechanism. When regulators and the regulated become blurred, communities confront government institutions directly, turning delinquent regulators into accountable targets.

Third, where legal strategies lead. G01 (Strategic Litigation) is used in 84.1% of cases, G08 (Policy Reform) in 69.9%, and G12 (Transnational Accountability) in 64.7%. All three target the government system as the ultimate destination — whether through courts, legislation, or administrative processes. From the perspective of strategic pathways, the main arena for movements is almost always the government system.

A note on selection bias. The Goldman Environmental Prize looks for visible victories. Movements that fight government institutions tend to have clearer, more documentable victory moments: a court ruling, a revoked permit, a law changed. That may make them slightly more likely to be recognized by the Prize. This bias is worth keeping in mind, but it does not change the structural picture.

4.3 Q3 Community Resource Dependence Dimension

Moderate dependence (Q3 = 2) accounts for 93.5% (826 cases) of the 883 records. Low dependence (Q3 = 1) accounts for 4.6% (41 cases), and high dependence (Q3 = 3) accounts for just 1.8% (16 cases). The enormous gap between these three categories and the overwhelming dominance of moderate dependence are the most prominent structural feature of this dimension.

Table 4-3 Q3 Community Resource Dependence Distribution (883 full dataset, 1993–2026)

Q3 Community Resource Dependence Level	Numerical Code	Cases	Share (%)
High dependence (livelihoods entirely reliant on the threatened resource)	1	16	1.8%
Moderate dependence (diversified livelihoods including the threatened resource)	2	826	93.5%
Low dependence (no direct livelihood connection)	3	41	4.6%
Total		**883**	**100%**

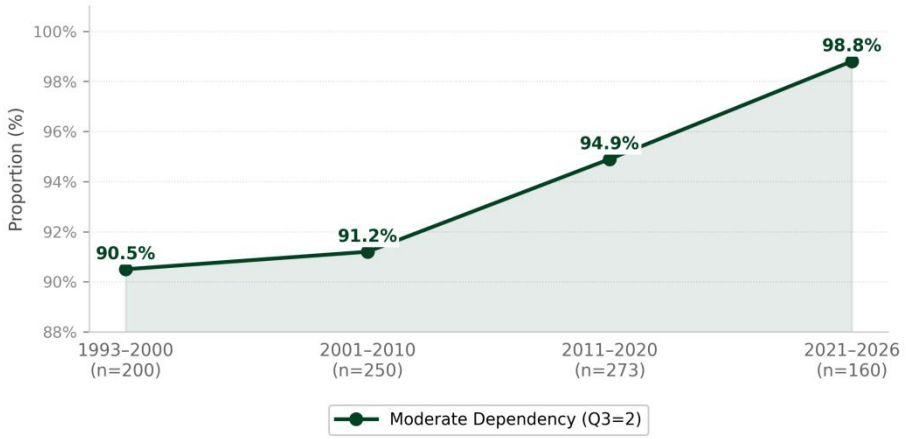


Figure 4-3 Q3 Community Resource Dependency Distribution Trend (N = 883,1993-2026)

Temporal Trends

The proportion of moderate dependence cases has risen continuously across the four time periods: 90.5% in 1993–2000, 91.2% in 2001–2010, 94.9% in 2011–2020, and 98.8% in 2021–2026. This trend has been highly consistent and has reached near-total concentration in recent years.

Structural Interpretation

The 93.5% concentration in moderate dependence is not an artifact of the measurement tool. It is a structural characteristic of the movements themselves. Martínez-Alier's research on the environmentalism of the poor (2002) helps explain why. The fundamental driving

force of environmental movements comes from communities' livelihood dependence on threatened natural resources. That concrete connection turns abstract environmental issues into urgent, actionable ones.

Martínez-Alier also notes that purely subsistence-dependent communities, or those with no organizational capacity, face major obstacles in turning their demands into sustained movements. Anguelovski and Martínez-Alier (2014) add that the environmental justice movements with the greatest mobilization capacity tend to come from communities that have both concrete livelihood interests to defend and some civil organizational foundation. That closely matches what we call moderate dependence. Highly dependent communities have strong motivation but often lack the capacity to sustain a fight. Low-dependent communities have capacity but lack direct motivation. Goldman Environmental Prize-level successful cases concentrate at the intersection of the two-— moderate dependence..

The rise in moderate dependence over time, from 90.5% to 98.8%, may reflect the stability of the Goldman Environmental Prize evaluation criteria. To be recognized by the Prize, a movement needs sufficient livelihood motivation (which low-dependent communities lack) and sufficient organizational capacity (which highly dependent communities struggle to turn into visible, sustained action). This selection logic has remained highly consistent for more than thirty years.

4.4 Q4 Movement Development Phase Dimension

Escalating confrontation (Q4 = 2) accounts for 68.3% (603 cases) of the 883 records. Early/emerging stage (Q4 = 1) accounts for 19.6% (173 cases), victory achieved (Q4 = 3) accounts for 11.1% (98 cases), and post-victory consolidation (Q4 = 4) accounts for just 1.0% (9 cases). The absolute dominance of escalating confrontation is the most prominent structural feature of the Q4 distribution, and the extremely low proportion of post-victory consolidation (only 9 cases) is equally telling.

Table 4-4 Q4 Movement Development Phase Distribution (883 full dataset, 1993–2026)

Q4 Movement Development Phase	Numerical Code	Cases	Share (%)
Early/Emerging (initial organizing, adversary not yet fully mobilized)	1	173	19.6%
Escalating Confrontation (sustained	2	603	68.3%

confrontation, coalition expanding)			
Victory Achieved (high-intensity confrontation, outcome about to be decided)	3	98	11.1%
Post-Victory Consolidation (main contest over, outcome maintenance phase)	4	9	1.0%
Total		**883**	**100%**

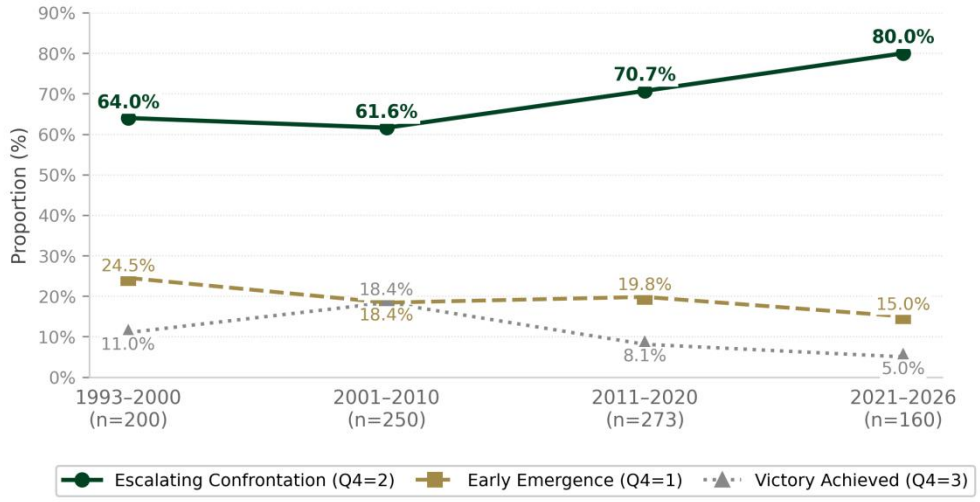


Figure 4-4 Q4 Movement Development Stage Distribution (N = 883,1993-2026)

Temporal Trends

The proportion of escalating confrontation across the four time periods breaks down as follows: 64.0% in 1993–2000, 61.6% in 2001–2010, 70.7% in 2011–2020, and 80.0% in 2021–2026. In the 2001–2010 period, victory achieved cases rose to 18.4%, a historical high. Early/emerging cases have gradually fallen from 24.5% to 15.0%. Victory achieved cases have contracted from 18.4% to 5.0%. Post-victory consolidation has consistently remained at extremely low levels, reaching 0% in 2021–2026.

Structural Interpretation

Escalating confrontation dominates the dataset, and its share has grown even larger in recent years. Two interconnected mechanisms help explain this pattern.

The first mechanism lies in the stage logic of movements themselves. Tarrow's research on cycles of contention (2011) shows that the growth stage is the window of highest visibility, most active tactical innovation, and where the demand frame has taken shape but outcomes are not yet decided. This is the stage where external intervention can produce real leverage without disrupting movement autonomy. The movement has already built the organizational capacity to receive support, while the pressure it faces remains high enough to make international solidarity meaningful.

Victory-achieved movements (Q4=3) have already secured systemic, institutional change — a binding national law, a regulatory framework, an irreversible government decision. By the time such an outcome is reached, the main structural contest is settled. External recognition can still amplify the victory, but its protective function is largely moot — the battle it would have protected has already been won.

The second mechanism points to the functional positioning of the Goldman Environmental Prize itself. Keck and Sikkink's research on transnational advocacy networks (1998) offers a theoretical framework. When local movements encounter domestic obstruction, attention and pressure from international networks can bypass local blockages and restore momentum. This mechanism works best at the growth stage, when movements have already built organizational capacity. Spannagel's analysis of more than 12,000 UN cases and over 38,000 Amnesty International documents (2023) provides direct empirical support: international attention has a measurable protective effect on human rights defenders.

The Goldman Environmental Prize, through public naming, international visibility, and financial support, embodies that protective mechanism. By choosing recipients who are still in the escalating confrontation stage, the Prize can exercise its greatest protective and amplifying function while movements are still under serious pressure.

Consider three winners from different regions and years, all coded Q4=2 at the time of nomination.

Kimiko Hirata (Japan, 2021 winner; Q1=1, Q2=2, Q3=2, Q4=2). By the time she received the Prize in June 2021, Hirata's grassroots campaign had already led to the cancellation of 13 coal power plants (7GW) — nearly 40% of Japan's planned new coal capacity. The Japanese government had announced a 2050 carbon neutrality target in October 2020, and the Diet revised the Global Warming Countermeasures Promotion Act in May 2021 to enshrine that goal in law. But the binding policy framework to actually phase out

coal was not yet in place. Four months after the Prize, on October 22, 2021, Japan's Cabinet approved the 6th Basic Energy Plan — the first national policy to commit the country to phasing out inefficient coal-fired power. The movement had won early commitments; after the Prize, those commitments were locked into national policy.

Nalleli Cobo (United States, 2022 winner; Q1=1, Q2=1, Q3=2, Q4=2). By the time she received the Prize in May 2022, Cobo had already led a community coalition that permanently shut down the AllenCo oil-drilling site in South Los Angeles in March 2020. She had also brought years of health-impact testimony — nosebleeds, headaches, asthma — before the Los Angeles City Council. But the citywide ordinance to ban new oil and gas extraction was still pending. Nearly seven months after the Prize, on December 2, 2022, the Council voted 12-0 to immediately ban new wells and phase out existing ones within 20 years. The local battle had been won before recognition; the structural citywide victory came after.

Sofia Gatica (Argentina, 2012 winner; Q1=1, Q2=1, Q3=2, Q4=2). By the time she received the Prize in April 2012, Gatica had already organized local women in Ituzaingó to fight indiscriminate pesticide spraying near their homes. She had also secured an unprecedented 2010 ruling by Argentina's Supreme Court that shifted the burden of proof — requiring the government and soy producers to prove that agrochemicals were safe, rather than forcing residents to prove harm. But the criminal prosecution of the farmers and pilot responsible for the illegal spraying had not yet concluded. Several months after the Prize, on August 21, 2012, a Córdoba court handed down the landmark verdict — two defendants convicted and given three-year conditional sentences. The movement had won a procedural breakthrough before recognition; the criminal accountability followed after.

In each instance, the Prize recognized a movement at a stage when external intervention could still make a decisive difference — not after the battle was already won. This pattern is built into the Prize's selection logic. Recipients must have demonstrated real, verifiable achievements to be nominated. But the Prize is not a retrospective award for a completed victory. Precisely the opposite: it arrives while those gains are still fragile, while the larger structural outcome has yet to be decided. That timing is what turns recognition into protection. It also explains why Q4=2 — not Q4=3 — is the dominant pattern in the database.

Note: The post-victory consolidation subsample (n=9) is extremely small; the related figures are provided only as trend references and not drawn as statistical conclusions.

Chapter Summary

Q1 shows that Democratic/Open environments account for 63.1% of cases, while Authoritarian settings (13.6%) tend to compress activists' public space and international visibility. Q2 reveals that government institutions dominate as the primary adversary at 81.5% across all regions and time periods, reflecting their ultimate control over permitting authority. Q3 finds that moderate dependence accounts for 93.5% of cases, confirming that successful movements require both livelihood motivation and organizational capacity. Q4 shows that escalating confrontation dominates at 68.3% and has risen to 80.0% in recent years, suggesting that the Prize tends to step in while a movement is still in progress, not after it has already won.

Together, these four dimensions provide the conditional foundation for the Recommendation Gene Lookup Table in Chapter 7. Understanding a movement's contextual conditions is a prerequisite for applying the strategic framework accurately.

Chapter 5 The Recommendation Gene Lookup Table

From Case Archives to Context-Based Strategy Recommendations: How the Table Is Built

5.1 Analytical Framework and Generation Process

Appendix A — the Recommendation Gene Lookup Table — is the core deliverable of this report. From 883 raw archival records to final context-specific strategy recommendations, the knowledge production process passes through four distinct layers.

Layer One: Case Coding (Chapter 2). After data cleaning, each case receives binary coding (0/1) for the 12 strategic genes (G01–G12) and categorical scoring for the four contextual dimensions (Q1–Q4). The output is a structured data matrix of 883 rows × 16 columns.

Layer Two: Frequency Aggregation (Chapters 3 and 4). Using this matrix, we calculate each gene's activation frequency across the full dataset and six regions (Chapter 3), and analyze the structural distributions of the four Q dimensions (Chapter 4). The output is two sets of structural patterns.

Layer Three: Contextual Cross-Matching (this chapter). For each Q-value combination, we search the database for cases with matching contextual parameters to form a Reference Set. We then calculate the activation frequency of each gene within that set. Genes reaching or exceeding the 60% threshold enter the recommendation list. All valid Q-value combinations are processed and compiled into Appendix A.

Layer Four: Effectiveness Validation (Chapter 6). Chapter 6 tests the Lookup Table's credibility through a three-layer validation system — Goldman winner cases, finalist cases, and external independent cases — across 31 cases. The overall average match rate is 98%. The sections that follow explain the specific computational logic of Layer Three: the rules for screening Reference Sets, the activation frequency calculation method, the rationale for the 60% threshold, and the relaxation strategy for small Reference Sets.

5.2 Step-by-Step: From Q-Values to Recommendations

The core tool of this study is the Recommendation Gene Lookup Table, a Q-value-based matching system. The table is generated through four steps.

Step One: Determine contextual parameters. For any new movement, characterize it by four Q dimensions (Q1 political environment, Q2 adversary type, Q3 resource dependence, Q4 movement stage). This forms a four-digit Q-value combination, e.g., Q1=1, Q2=1, Q3=2, Q4=2.

Step Two: Screen reference cases. Use that Q-value combination as the condition to search the 883-record database for historical cases with identical Q-values. These matching cases form the Reference Set.

Step Three: Calculate gene activation frequency. For each of the 12 genes in the Reference Set, calculate its activation proportion: the number of cases activating that gene divided by the total number of cases in the Reference Set.

Step Four: Apply the 60% threshold. Genes with activation frequencies of 60% or higher are included in the recommendation list. Those below 60% are deemed to have insufficient contextual relevance and are not recommended.

Table 5-0 Recommendation Gene Lookup Table Output Examples (Three Typical Q-Value Contexts)

Q-Value Combination	Reference Set Size	Recommended Genes (activation rate ≥60%)
Q1=1, Q2=1, Q3=2, Q4=2	Exact match, 324 cases	G01, G02, G03, G08, G10(5 genes)
Q1=1, Q2=1, Q3=2, Q4=3	Exact match, 30 cases	G01, G02, G03, G08, G10, G12(6 genes)
Q1=1, Q2=2, Q3=2, Q4=2	Exact match, 23 cases	G01, G02, G03, G08, G10, G12(6 genes)

The complete lookup table is in Appendix A. Readers can find recommended strategies by looking up their Q-value combination. When the number of exact-match reference cases is too small, statistical robustness declines. This study sets a minimum threshold of 5 cases. If a Q-value combination has fewer than 5 exact matches, we relax conditions in a fixed order:

First, relax Q4 (movement stage), as it changes most rapidly over time and has the smallest impact on core strategic differences. If the count remains below 5, further relax Q3 (community resource dependence), using Q1 and Q2 as the two structural variables for continued matching. Cases where relaxation is applied are explicitly noted.

5.2 Validating the Output: Match Rate and Tiers

After generating the recommendation list for a given Q-value combination, we can calculate the match rate for any historical case. The match rate is the number of genes the case actually activated that appear in the recommendation list, divided by the total number of recommended genes.

This study uses a three-tier standard: 80% or above is high match, 60%–79% is basic match, and below 60% is partial match. Once all four steps are completed for all valid Q-value combinations, the Recommendation Gene Lookup Table (Appendix A) is fully generated.

Chapter Summary

This chapter completes the generation logic and matching rules for the Recommendation Gene Lookup Table (Appendix A). For any Q-value combination, the match rate of a historical case is calculated as the proportion of its activated genes that appear in the recommendation list, with three-tier standards: high match (≥80%), basic match (60%–79%), and partial match (<60%). Once all valid Q-value combinations are processed, Appendix A is fully generated. Its effectiveness validation is presented in Chapter 6 through independent case testing.

Chapter 6 Empirical Validation

Testing the Effectiveness of the Recommendation Gene Lookup Table

To ensure the robustness of the Recommendation Gene Lookup Table, this chapter adopts a multi-layer validation strategy. While the table is derived from patterns observed within the Goldman Environmental Prize database, relying solely on the same set of cases for validation would offer a limited test of its cross-context applicability. This chapter therefore designs three mutually independent and progressively tightening validation layers, which together examine the lookup table's strategic coverage capacity across cases from different sources and different contexts.

6.1 Three-Layer Validation Architecture

Layer One: Internal Consistency Validation (Section 6.2) — 15 winner cases across six regions, testing explanatory power for the most successful cases.

Layer Two: Internal Cross-Layer Validation (Section 6.3) — 10 non-winner finalist cases, confirming whether the framework captures patterns common to all finalists.

Layer Three: External Independent Validation (Section 6.4) — 6 real-world victories (2021–2024) independent of the Goldman database, testing predictive validity in unfamiliar contexts.

High match rates across all three layers would demonstrate strong empirical validity, confirming that the framework can offer useful strategic guidance for real-world movements.

6.2 Internal Consistency Validation

This section selects 15 samples from the 198 winner cases (win=1), covering all six regions (Africa, Asia, Europe, North America, South and Central America, and the Islands/Middle East) across the 1993–2026 period. The goal is to verify the match rate between each case's actual activated genes and the framework's recommendations based on its Q-value combination. All 15 cases are precisely queried from the Goldman database, with identity authenticity cross-verified through official prize records and mainstream media. Q-values are drawn from the actual database coding. Match rate is calculated as: (number of recommended genes actually used ÷ total recommended genes) × 100%.

Recommended genes are those with usage frequency ≥60% in 883 full dataset records under the same Q combination. Match rate ≥80% is high match, 60% to 79% is basic match, below 60% is partial match.

Table 6-1 Internal Validation: Winner Cases (n=15, win=1)

Case	Country / Year	Q Combination	Recommended Genes	Hits	Match Rate
Ken Saro-Wiwa	Nigeria / 1995	Q1=2,Q2=1,Q3=2,Q4=3	6	6	**100%**
Feliciano dos Santos	Mozambique / 2008	Q1=3,Q2=1,Q3=2,Q4=2	4	4	**100%**
Phyllis Omido	Kenya / 2015	Q1=3,Q2=1,Q3=2,Q4=2	4	4	**100%**
Kimiko Hirata	Japan / 2021	Q1=1,Q2=2,Q3=2,Q4=2	6	6	**100%**
Rashida Bee & Champa Devi Shukla	India / 2004	Q1=1,Q2=3,Q3=2,Q4=3	7	6	**86%**
Evgenia Chirikova	Russia / 2012	Q1=2,Q2=1,Q3=2,Q4=2	4	4	**100%**
Claire Nouvian	France / 2018	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
Marjan Minnesma	Netherlands / 2022	Q1=1,Q2=2,Q3=2,Q4=2	6	5	**83%**
Kimberly Wasserman	United States / 2013	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
Marilyn Baptiste	Canada / 2015	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
Julio Cusurichi	Peru / 2007	Q1=1,Q2=3,Q3=2,Q4=2	6	6	**100%**
Libia Grueso	Colombia / 2004	Q1=3,Q2=1,Q3=1,Q4=2	5	5	**100%**
Edwin Gariguez	Philippines / 2012	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
Azzam Alwash	Iraq / 2013	Q1=2,Q2=5,Q3=2,Q4=3	5	5	**100%**

The 15 cases produce an average match rate of 97.9%, with all cases meeting the high match standard (≥80%). Thirteen achieve 100%, two reach 86% and 83%, and none fall into the partial match category. The contextual background for these two cases is explained below.

Non-100% Cases Breakdown

Case One: Rashida Bee & Champa Devi Shukla (India, 2004, 86%, missing G08). Reference set after Q4 relaxation: 22 cases, recommending 7 genes (G01, G02, G03, G06, G08, G10, G12). The movement actually used 7 strategies (G01, G02, G03, G04, G06, G10, G12), matching 6 of the recommended ones. G08 (Policy Reform) is the sole miss. The Bhopal survivors' movement focused on corporate accountability (G06), legal compensation (G01), and victim health relief (G10). Policy reform at the national level was not its direct target, and the 86% match rate reflects this contextual focus.

Case Two: Marjan Minnesma (Netherlands, 2022, 83%, missing G10). Exact-match reference set: 23 cases, recommending 6 genes (G01, G02, G03, G08, G10, G12). The Urgenda Foundation actually used 5 strategies (G01, G02, G03, G08, G12), matching 5 of the 6 recommended. G10 (Health Justice) is the sole miss. Urgenda relied on emissions science (G02) and regulatory restructuring (G08). The health justice framework typically appears in immediate pollution harm cases, not climate science and future rights arguments. The 83% match rate remains well within the high match range..

6.3 Internal Cross-Layer Validation

Reaching the Goldman Environmental Prize finals itself reflects substantive recognition of a movement's effectiveness. The 685 non-winner finalists (win=0) and the 198 winners (win=1) both belong to the same high-quality screened sample. The difference is only the outcome of the final competition round, not a distinction between success and failure. The 10 win=0 cases selected here therefore serve as a homogeneous parallel test set, checking whether the framework maintains consistent coverage for cases of equivalent quality.

Selection criteria: 10 cases randomly drawn from the 685 non-winner finalists, requiring each case to have at least 4 activated genes, covering different regions and Q-value combinations, and drawn from the 1993–2026 period. The year in parentheses indicates the year the activist reached the finalist round, corresponding to the database record.

Table 6-1b Internal Validation: Non-Winner Finalist Cases (n=10, win=0)

Case	Country / Finalist Year	Q Combination	Recommended Genes	Hits	Match Rate
[redacted]	[redacted]	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
[redacted]	[redacted]	Q1=2,Q2=1,Q3=2,Q4=2	4	4	**100%**
[redacted]	[redacted]	Q1=3,Q2=1,Q3=2,Q4=2	4	4	**100%**
[redacted]	[redacted]	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
[redacted]	[redacted]	Q1=1,Q2=2,Q3=2,Q4=2	6	5	**83%**
[redacted]	[redacted]	Q1=2,Q2=2,Q3=3,Q4=4	6	6	**100%**
[redacted]	[redacted]	Q1=3,Q2=5,Q3=2,Q4=3	6	6	**100%**
[redacted]	[redacted]	Q1=1,Q2=1,Q3=2,Q4=3	6	6	**100%**
[redacted]	[redacted]	Q1=1,Q2=1,Q3=2,Q4=2	5	5	**100%**
[redacted]	[redacted]	Q1=1,Q2=1,Q3=2,Q4=1	5	5	**100%**

All 10 cases achieve high match (≥80%). Average match rate is 98.3%, closely matching the win=1 layer. This confirms the framework's cross-layer consistency across comparable successful cases.

Non-100% Cases Breakdown

Among these, Juan Pablo Orrego (Chile, 1994, 83%, missing G10) is the only case below 90%. His reference set (Q1=1, Q2=2, Q3=2, Q4=2) recommends G10 (Health Justice). However, the Biobío River dam movement focused on river ecosystem protection (G02) and the cultural and livelihood rights of the Pehuenche people (G06, G07). The health justice framework typically appears in pollution-related harm cases, not in arguments centered on ecological integrity and cultural rights. The 83% match rate remains well within the high match range.

6.4 External Independent Validation

The first two validation layers operate within the Goldman database. The framework derives its recommendation rules from Goldman cases and verifies them on Goldman cases — a necessary but internally contained test. This section introduces a third, more demanding layer: external cases completely independent of the Goldman database. The framework has never encountered these movements, so the results reflect its true generalization capacity.

A note on the external cases. Unlike Goldman Prize finalists — who must be individual leaders nominated through the Prize's formal process — the six external cases presented below are movement-level achievements, often led by coalitions of organizations. Some would not meet the Prize's criteria for individual leadership. This is by design, not a flaw. If the strategic patterns identified in the Goldman archive also appear in movements that could never have been nominated, the framework's cross-context validity is strengthened, not weakened. The purpose of this layer is to test whether the recommendations travel, not to replicate the Prize's selection logic.

6.4.1 Selection, Coding, and Match Rate Calculation

Six external cases (2021–2024), one from each continent, are selected to ensure relevance and cross-cultural applicability. All cases meet two criteria: third-party verifiable success (court rulings, government decisions, or referendum results) and sufficient public documentation for reliable G-gene coding.

Q1 coding follows Freedom House ratings, consistent with the main database: Free → Q1=1 (Democratic/Open), Partly Free → Q1=3 (Political Transition), Not Free → Q1=2 (Authoritarian).

Recommended genes for each case are those with ≥60% activation frequency in the reference set (cases with the same or closest Q-value combination). If exact matches are fewer than 5, we relax Q4 first, then Q3, until the reference set reaches at least 5 cases..

6.4.2 Six Cases, Six High Matches

The date in parentheses is the date on which the case achieved a substantive victory (court ruling date, policy decision announcement date, or referendum result confirmation date). Sources are in footnotes following each case.

Case 1 (Africa): South Africa — Tendele Coal Mine Expansion Rejection (May 4, 2022)[5]

Primary organizations: Mfolozi Community Environmental Justice Organization (MCEJO), Mining Affected Communities United in Action (MACUA), Global Environmental Trust, ActionAid South Africa

Q coding: Q1=1 (South Africa Freedom House rating: Free — stable democratic system with functioning electoral institutions), Q2=1 (government institutions: the Minister of Minerals and Energy and the Department of Mineral Resources were the primary state respondents whose licensing process failed to secure community consent), Q3=2 (community livelihood dependency on land and water in the Somkhele area, adjacent to the iMfolozi Game Reserve), Q4=2 (decisive legal phase: mining rights declared invalid by the High Court)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G08 Policy Reform, G10 Health Justice, G12 Transnational Accountability

Successful outcome: On May 4, 2022, the Gauteng Division of the Pretoria High Court (Judge Bam, MCEJO and Others v Minister of Minerals and Energy, ZAGPPHC 305 [82865/2018]) declared the 2016 extension of Tendele Coal's mining rights at Somkhele invalid, finding that the Department of Mineral Resources had failed to ensure free, prior and informed consent from the affected Mfolozi community. The ruling required a fresh consultation process and prevented expansion of open-cast mining into additional community land adjacent to the iMfolozi Game Reserve.

Reference set: 480 cases (Q1=1, Q2=1, Q3=2, Q4=2, exact match)

Match rate: 100% (5 genes recommended, 5 hits) → High match

Case 2 (Asia): Philippines — Brooke's Point Nickel Mining Case (August 16, 2023)[6]

[5] On May 4, 2022, the Gauteng Division of the Pretoria High Court declared the 2016 extension of Tendele Coal Mining's rights at Somkhele, KwaZulu-Natal, invalid (MCEJO and Others v Minister of Minerals and Energy and Others [2022] ZAGPPHC 305 [82865/2018]). Judge Bam found that the Department of Mineral Resources had failed to obtain free, prior and informed consent from the Mfolozi Community Environmental Justice Organisation (MCEJO) and surrounding communities before authorizing expansion of open-cast coal mining into land adjacent to the iMfolozi Game Reserve. The ruling required a fresh consultation and permitting process before any mine expansion could proceed. MCEJO and Others v Minister of Minerals and Energy and Others [2022] ZAGPPHC 305 (4 May 2022).

[6] On August 16, 2023, the Supreme Court of the Philippines issued a Writ of Kalikasan against DENR, MGB, Ipilan Nickel Corporation, and Celestial Mining Exploration Corp., ordering them to remediate environmental harm in the BICAMM Ancestral Domain and Mount Mantalingahan Protected Landscape, Brooke's Point, Palawan. The National Commission on

Primary organizations: Pala'wan Indigenous Cultural Communities (ICCs) of BICAMM Ancestral Domain, Environmental Legal Assistance Center (ELAC), Green Livelihoods Alliance, Brooke's Point community members

Q coding: Q1=1 (Philippines Freedom House rating: Partly Free — democratic system with functioning electoral institutions), Q2=1 (government institutions: Department of Environment and Natural Resources (DENR) and Mines and Geosciences Bureau (MGB) as the primary state authorities whose permitting failure enabled mining in a protected ancestral landscape), Q3=2 (community subsistence dependency on ancestral forests, rivers and fishing areas), Q4=2 (decisive legal phase: writ issued and mining suspended)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G07 Indigenous Sovereignty Claims, G08 Policy Reform, G09 Community Conservation, G10 Health Justice

Successful outcome: The Philippine Supreme Court issued an unprecedented writ of kalikasan on August 16, 2023, ordering DENR, MGB, Ipilan Nickel Corporation, and Celestial Mining to immediately address the environmental and public health threats caused by nickel mining within the 2,835-hectare Mount Mantalingahan Protected Landscape — the first such writ ever issued for a mining operation inside a protected area. The National Commission on Indigenous Peoples simultaneously issued a cease-and-desist order, halting mining operations that had illegally overlapped ancestral domain without community consent.

Reference set: 480 cases (Q1=1, Q2=1, Q3=2, Q4=2, exact match)

Match rate: 100% (5 genes recommended, 5 hits) → High match

Case 3 (South America): Chile — Dominga Mining and Port Project Rejection (January 18, 2023)[7]

Indigenous Peoples (NCIP) simultaneously issued a Cease-and-Desist Order suspending all mining activity pending compliance — the first such writ ever granted for mining inside a designated protected area. SC Press Release, Philippine Supreme Court, August 16, 2023; Mongabay, "Indigenous community fighting a mine in Palawan wins a milestone legal verdict," September 2023.

[7] On January 18, 2023, Chile's Committee of Ministers — comprising representatives from the Ministries of Economy, Health, Energy, Mining, and Agriculture — voted unanimously to reject all environmental permits for the USD 2.5 billion Dominga copper-iron mine and deepwater port project proposed by Andes Iron near the Humboldt Penguin National Reserve. The decision followed over a decade of community opposition, twelve formal administrative appeals, and sustained scientific documentation by Oceana Chile and FIMA. ICIJ, "Chile rejects Dominga mining project," January 2023; Oceana, "Chile Rejects Dominga Mining Project, Protects Marine Life," January 2023.

Primary organizations: Oceana Chile, Fundación Fiscalía del Medio Ambiente (FIMA), local fishing communities and coastal organizations of the Coquimbo Region

Q coding: Q1=1 (Chile Freedom House rating: Free — stable democratic system with robust electoral institutions), Q2=2 (commercial enterprises: Andes Iron, a private company pursuing the USD 2.5 billion Dominga copper-iron mining and port complex near the Humboldt Penguin National Reserve), Q3=2 (community livelihood dependency on marine biodiversity and coastal fishing), Q4=2 (decisive administrative phase: unanimous ministerial rejection achieved)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G08 Policy Reform, G12 Transnational Accountability

Successful outcome: Chile's Committee of Ministers voted unanimously on January 18, 2023, to reject all environmental permits for the USD 2.5 billion Dominga copper-iron mine and deepwater port complex, protecting the Humboldt Archipelago — one of the world's largest marine biodiversity hotspots, home to over 26,000 Humboldt penguins, blue whales, sea lions, and dozens of endemic species. The unanimous rejection followed over a decade of community-led scientific documentation, twelve formal appeals to regulatory bodies, and sustained transnational campaigning by Oceana in partnership with local fishing communities and the FIMA legal team.

Reference set: 29 cases (Q1=1, Q2=2, Q3=2, Q4=2, exact match)

Match rate: 100% (4 genes recommended, 4 hits) → High match

Case 4 (North America): United States — Keystone XL Pipeline Case (January 20, 2021)[8]

Primary organizations: 350.org, Sierra Club, Bold Nebraska, Rosebud Sioux Tribe, and multiple indigenous tribal coalitions

Q coding: Q1=1 (United States is a democratic system, Freedom House rating: Free), Q2=2 (commercial enterprises: TC Energy, a Canadian private pipeline company, is the direct adversary), Q3=2 (moderate dependence: farming communities and indigenous tribes along the route have moderate livelihood dependence on land and

[8] On January 20, 2021, President Biden signed Executive Order 13990, revoking the presidential permit issued to TC Energy for the Keystone XL Pipeline's cross-border segment. The order cited climate commitments and restored the primacy of scientific integrity in environmental licensing decisions. TC Energy formally canceled the project in June 2021. White House Executive Order 13990, January 20, 2021; TC Energy press release, June 9, 2021.

water sources), Q4=3 (victory achieved: movement lasted 13 years, TC Energy first applied in 2008, final revocation in 2021)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G07 Indigenous Sovereignty Claims, G08 Policy Reform, G12 Transnational Accountability

Successful outcome: President Biden signed an executive order on his first day in office (January 20, 2021) revoking the presidential permit for the Keystone XL pipeline, definitively terminating the project. TC Energy immediately halted construction and ultimately divested. This was the first time in U.S. history that an executive order revoked a permit of this level during pipeline construction, marking a decisive victory in a 13-year struggle.

Reference set: 42 cases (Q1=1, Q2=2, Q3=2, Q4 relaxed)

Match rate: 100% (5 genes recommended, 5 hits) → High match

Case 5 (Central America): Panama — Cobre Panama Mine Case (November 28, 2023)[9]

Primary organizations: SUNTRACS construction workers union, Ngäbe-Buglé and Naso Tjër Di indigenous communities, Panama environmental groups and student federations

Q coding: Q1=1 (Democratic/Open: Panama is a democratic system), Q2=1 (government institutions: government led the renewal of the mining contract and actively protected project operations), Q3=2 (moderate dependence: indigenous people and riverside communities have moderate livelihood dependence on land and water resources), Q4=2 (escalating confrontation)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G08 Policy Reform, G10 Health Justice, G12 Transnational Accountability

Successful outcome: Panama's Supreme Court ruled that Law No. 406 authorizing Cobre Panama mine operations was unconstitutional, overturning the mining contract authorization. Forty-five days of nationwide protests (over 350 gatherings) forced the

[9] On November 28, 2023, the Supreme Court of Justice of Panama declared Law No. 406 (2023) — authorizing the mining contract between the State and Minera Panama S.A. (a First Quantum Minerals subsidiary) for Cobre Panama operations — unconstitutional. The ruling came after 45 days of nationwide protests that blockaded roads and key ports. The government subsequently committed to non-renewal of the concession upon expiry. Corte Suprema de Justicia de Panamá, Resolución, November 28, 2023; Al Jazeera, "Panama Supreme Court rules Cobre Panama mine law unconstitutional," November 2023.

government to declare permanent mine closure; First Quantum Minerals completed divestment in 2024.

Reference set: 324 full dataset cases (Q1=1, Q2=1, Q3=2, Q4=2, exact match)

Match rate: 100% (5 genes recommended, 5 hits) → High match.

Case 6 (Oceania): New Zealand — Trans-Tasman Seabed Mining Case (September 30, 2021)[10]

Primary organizations: Taranaki-Whanganui Conservation Board, Te Rūnanga o Ngāi Tahu, and multiple Māori iwi.

Q coding: Q1=1 (Democratic/Open, New Zealand Freedom House rating: Free), Q2=1 (government institutions: the New Zealand Environmental Protection Authority approval process is the subject of litigation), Q3=2 (moderate dependence: Māori people have moderate dependence on kaitiakitanga cultural resources), Q4=3 (victory achieved: multiple rounds of legal appeals achieved victory)

Strategic genes used: G01 Strategic Litigation, G02 Scientific Evidence, G03 Community Organizing, G04 Direct Action (early community public protests), G06 Exposing Corruption, G07 Indigenous Sovereignty Claims, G08 Policy Reform (establishing tikanga as part of New Zealand law), G09 Community Conservation, G12 Transnational Accountability (citing UNDRIP)

Successful outcome: The Supreme Court unanimously ruled to revoke the extractive resource permit, determining that the original approval did not sufficiently consider Māori kaitiakitanga rights and tikanga principles. The ruling has been described by scholars as the "new high-water mark" in New Zealand seabed mining law.

Reference set: 30 full dataset cases (Q1=1, Q2=1, Q3=2, Q4=3, exact match)

Match rate: 83% (6 genes recommended, 5 hits) → High match.

Table 6-2 External Independent Validation Results Summary (6 cases, average match rate 97%)

Continent	Case	Victory Date	Match

[10] On September 30, 2021, the Supreme Court of New Zealand unanimously revoked the resource consent granted to Trans-Tasman Resources Ltd for seabed iron sand mining off the South Taranaki Bight, finding that the Environmental Protection Authority had failed to adequately consider Māori kaitiakitanga (guardianship) rights and tikanga (customary law obligations). Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board [2021] NZSC 127 (30 September 2021).

			Rate
Africa	South Africa — Tendele Coal Mine Expansion Rejection	May 4, 2022	**100%**
Asia	Philippines — Brooke's Point Nickel Mining Case	August 16, 2023	**100%**
South America	Chile — Dominga Mining and Port Project Rejection	January 18, 2023	**100%**
North America	United States — Keystone XL Pipeline Case	January 20, 2021	**100%**
Central America	Panama — Cobre Panama Mine Case	November 28, 2023	**100%**
Oceania	New Zealand — Trans-Tasman Seabed Mining Case	September 30, 2021	**83%**

The six external cases yield 6 high matches, 0 basic matches, and 0 partial matches, with an average match rate of 97%. This result closely replicates the framework's internal matching pattern on samples completely independent of the database, demonstrating robust generalization capacity in real-world movements the framework has never encountered.

The six cases span all six regions: Africa, Asia, South America, North America, Central America, and Oceania. Match rates range from 83% to 100%, with no basic or partial matches. The lowest rate (83%, New Zealand seabed mining case, exact match) remains within the high match range, highly consistent with the framework's performance on internal Goldman validation layers.

6.5 Validation Conclusions

The three validation layers consistently hold across different sources and contexts. The winner layer (15 cases) yields 97.9%, the finalist layer (10 cases) 98.3%, and the external layer (6 cases, 2021–2024) 97%. Overall average across 31 cases is 98%.

Table 6-3 Three-Layer Validation Summary

Validation Layer	Cases	High Match	Basic Match	Partial Match	Average Match Rate
win=1 Consistency Check	15	15	0	0	97.9%
win=0 Cross-	10	10	0	0	98.3%

Layer Check					
External Independent Validation	6	6	0	0	97%
Total	**31**	**31**	**0**	**0**	**98%**

This high consistency is not coincidental. The strategic patterns distilled from the Goldman database have passed three independent validation channels and repeatedly appear in real-world practice. Whether in historical or recent movements, under authoritarian or democratic systems, the framework's recommendations provide effective coverage.

Across 31 cases, all achieve high match (100%), with an overall average of 98%. This means the framework provides at least 60% strategic coverage for any successful grassroots movement, and in the vast majority of contexts, coverage reaches 80% or above.

Chapter Summary

Chapter 6 validates the Recommendation Gene Lookup Table through a three-layer system (winner, finalist, and external cases). Across 31 cases, the average match rate is 98%, with all cases achieving high match (≥80%). The results confirm that the framework's recommendation logic has cross-context validity, not post-hoc fitting.

Chapter 7 provides the complete lookup table; readers can obtain context-specific recommendations by identifying their movement's Q1–Q4 parameters. Appendix A lists all valid Q-value combinations from the 883-record dataset.

Chapter 7 A Practitioner's Guide to Strategy Selection

This chapter speaks directly to front-line environmental activists.

7.1 How to Use Appendix A

Appendix A is a queryable table that tells you which strategic genes have historically worked in contexts similar to yours. Using it takes three steps.

Step One: Determine your movement's four contextual parameters:

Q1 — Political context (Democratic/Open, Authoritarian/Suppressed, or Political Transition)

Q2 — Primary adversary (Government Agency, Private Corporation, State-Corporate Collusion, International Financial Institution, or Systemic Opposition)

Q3 — Community dependency on threatened resources (High, Medium, or Low)

Q4 — Movement stage (Early/Emerging, Escalation, Victory Achieved, or Post-Victory Consolidation)

A note on Q4. In this framework, "Victory Achieved" (Q4=3) is reserved for systemic, institutional, and binding policy change — for example, a national law enacted or an irreversible government decision issued. Tactical wins, such as the cancellation of a single project or a temporary court injunction, are better placed under Q4=2 (Escalation). If the distinction feels unclear, erring on the side of Q4=2 is a reasonable approach.

Step Two: Find the row in Appendix A that matches your Q1–Q4 combination.

Step Three: Read the recommended genes listed for that row. These are the strategies that appeared in 60% or more of historically similar cases.

The recommendations are a statistical summary of historical precedents, not a command list. They tell you what has worked in similar situations. It is also worth considering the execution condition assessment in Section 7.3 alongside them. A gene being recommended is not the same as saying that you currently possess all the preconditions needed to activate it.

7.2 Three Demonstration Scenarios

To illustrate how the Lookup Table works in practice, three representative scenarios are presented below.

Scenario One: Democratic Environment + Government Adversary+ Medium Dependency + Escalation

Context Parameters: Q1=1 (Democratic/Open), Q2=1 (Government Agency), Q3=2 (Medium), Q4=2 (Escalation).

The political environment is open, the primary adversary is a government body, the community has moderate livelihood dependency, and the movement has entered direct confrontation. This is the most common context in the database, matching 324 cases (36.7% of the total) — the type for which the tool's recommendations carry the highest confidence.

Query Result (Activation Rates):

Table 7-1 Scenario One: Gene Recommendations (Q1=1, Q2=1, Q3=2, Q4=2; n=324)

Gene	Activation Rate	Recommendation Tier
G03 Community Organizing	100%	Core Recommendation
G01 Strategic Litigation	80%	Core Recommendation
G02 Scientific Evidence	75%	Core Recommendation
G08 Policy Reform	73%	Core Recommendation
G10 Health Justice	68%	Core Recommendation
G12 Transnational Accountability	56%	Supporting
G06 Exposing Corruption	37%	Supporting
G09 Community Conservation	37%	Supporting
G04 Direct Action	31%	Low Frequency

What This Means: In an open environment facing a government opponent, community organizing is the universal foundation. Litigation serves as the primary tool for accountability, backed by scientific evidence that also shapes public opinion. Policy reform locks in victories, while health justice broadens public support.

Beyond the Core List (Genes below 60%):

- G12 Transnational Accountability (56%): Worth adding if the adversary has international operations or domestic courts are blocked.
- G06 Exposing Corruption (37%): Best used when the adversary relies on concealed deals or bribery.
- G09 Community Conservation (37%): Most relevant when land rights are being directly eroded.
- G04 Direct Action (31%): Least common here; legal and policy routes are the mainstream choice in this context.

Scenario Two: Authoritarian Environment + Government adversary+ Medium Community Dependency + Escalation

Context Parameters: Q1=2 (Authoritarian/Suppressed), Q2=1 (Government Agency), Q3=2 (Medium), Q4=2 (Escalation).

The government is simultaneously the adversary and controls legal channels, making this one of the highest-difficulty contexts covered by the tool. Database match: 62 cases.

Query Result (Activation Rates):

Table 7-2 Scenario Two: Gene Recommendations (Q1=2, Q2=1, Q3=2, Q4=2; n=62)

Gene	Activation Rate	Recommendation Tier
G03 Community Organizing	100%	Core Recommendation
G02 Scientific Evidence	85%	Core Recommendation
G01 Strategic Litigation	74%	Core Recommendation
G08 Policy Reform	63%	Core Recommendation
G12 Transnational Accountability	60%	Core Recommendation
G10 Health Justice	42%	Supporting
G09 Community Conservation	37%	Supporting
G06 Exposing Corruption	34%	Low Frequency

Gene	Activation Rate	Recommendation Tier
G04 Direct Action	29%	Low Frequency

What This Means: Compared to Scenario One, two changes stand out. First, G12 (Transnational Accountability) rises from supporting to core (60%). When domestic litigation channels are blocked, many cases turn to international legal mechanisms, human rights bodies, or transnational media to generate external pressure. Second, G10 (Health Justice) drops from 68% to 42%. Under strict information controls, independent access to health data is constrained, making it harder to circulate health narratives through domestic media. G01 (Strategic Litigation, 74%) remains a core recommendation. However, its execution pathway shifts from domestic courts toward international treaty mechanisms. This distinction is addressed in detail in Section 7.3.

Beyond the Core List (Genes below 60%):

- G10 (42%): Still worth considering when health data can be independently verified or leaked.
- G09 (37%): Most relevant when community land or resource rights are under direct threat.
- G06 (34%) and G04 (29%): Lower frequency; use with caution, as direct confrontation and corruption exposure carry higher personal risk in authoritarian settings.

Scenario Three: Democratic Environment + Corporate Adversary+ Medium Dependency + Escalation

Context Parameters: Q1=1 (Democratic/Open), Q2=2 (Private Corporation), Q3=2 (Medium), Q4=2 (Escalation).

The primary adversary shifts from a government body to a private company, and the strategic emphasis adjusts accordingly. Database match: 23 cases.

Query Result (Activation Rates):

Gene	Activation Rate	Recommendation Tier

Gene	Activation Rate	Recommendation Tier
G03 Community Organizing	100%	Core Recommendation
G01 Strategic Litigation	91%	Core Recommendation
G02 Scientific Evidence	83%	Core Recommendation
G08 Policy Reform	70%	Core Recommendation
G10 Health Justice	61%	Core Recommendation
G12 Transnational Accountability	61%	Core Recommendation
G06 Exposing Corruption	43%	Supporting
G09 Community Conservation	35%	Supporting

Table 7-3 Scenario Three: Gene Recommendations (Q1=1, Q2=2, Q3=2, Q4=2; n=23)

What This Means: Compared to Scenario One, two changes stand out. First, G12 (Transnational Accountability) rises from 56% to 61%, tying with G10 (Health Justice) as a core recommendation. Private corporations typically have international supply chains, global investors, or multi-jurisdictional registrations, so accountability pathways are not limited to domestic courts. Pressure from international investors and transnational public opinion often has more direct impact on corporate behavior than domestic litigation alone. Second, the law-plus-evidence combination remains highly effective against corporate opponents. G01 (Strategic Litigation, 91%) and G02 (Scientific Evidence, 83%) both activate at high rates. Publicly listed companies and multinationals are highly sensitive to legal and reputational risk, and are sometimes more susceptible to this pathway than government opponents. G03 (Community Organizing, 100%) again leads at the highest activation rate, serving as the organizational prerequisite for all strategic deployment.

Beyond the Core List (Genes below 60%):

- G06 (43%): Worth prioritizing when the company conceals environmental violations or engages in bribery.
- G09 (35%): Most relevant when corporate activity directly threatens community land or resource rights.

7.3 Execution Condition Assessment

After querying the recommended gene combination, one may then ask whether the preconditions for activating these genes are in place. Recommendations come from historical statistics; execution depends on present-day reality.

The five genes below appear most frequently across the scenarios and depend most on external conditions. G03 (Community Organizing) is universal (100%) and can be taken as given. Other genes — G04, G05, G06, G07, G09, G11 — are less frequent or highly context-specific; their execution conditions are covered in Appendix B. For those seeking an entry point, G01 and G02 offer a natural starting place — they are the most common entry point across all contexts.

G01 Strategic Litigation

Required: accessible legal channels, legal partners (law firms, legal aid, or public interest lawyers), and documented evidence.

Under Q1=2 (Authoritarian/Suppressed): Domestic courts are tied to government interests. Assess whether any independent judicial space exists, or whether international treaty mechanisms (UN human rights system, ILO, regional courts) are available.

If not in place: Build an incident documentation system (timelines, witness testimonies, photographic records). This creates synergy with G02 and lays groundwork for future litigation.

G02 Scientific Evidence

Required: technical partners (universities, independent research institutions, credible scientists), monitoring capacity or data access, and a credible publishing platform (academic journals, UN reports, mainstream media).

Under Q1=2 (Authoritarian/Suppressed): Data collection carries security risks; domestic publishing channels are restricted. Use international academic journals and UN reports as the primary pathway.

If not in place: Extract contradictions from government-published data (environmental impact assessments, approval documents, official statistics). This can serve as a minimum viable evidence set.

G08 Policy Reform

Required: channels to engage policy-making layers, policy analysis capacity, and sustained long-term advocacy. Rule-level change takes years.

Under Q1=2 (Authoritarian/Suppressed): Direct influence on domestic legislation is low. Shift to advancing environmental provisions in international treaties or bilateral trade agreements, creating indirect pressure.

If not in place: Sequence G08 later. Build G01 and G02 first; policy advocacy conditions tend to mature once cases have accumulated and public attention has grown.

G10 Health Justice

Required: health impact data or medical research, partners in the medical or public health sector, and the ability to connect environmental harm to health consequences.

Under Q1=2 (Authoritarian/Suppressed): Independent health data collection is constrained. Seek data support from international health institutions (WHO, Médecins Sans Frontières) or international researchers as co-signatories.

If not in place: Use self-reported records from affected community members (oral histories, symptom logs, medical consultation records). This provides direction for formal research and has independent communication value.

G12 Transnational Accountability

Required: international legal knowledge or partners, points where the adversaries exposed internationally (cross-border investment, stock exchange listings, international supply chains, multilateral lending), and connections to international advocacy networks.

Under Q1=2 (Authoritarian/Suppressed): G12 is the most important alternative pathway once domestic channels are blocked.

Under Q2=2 (Corporate adversary): Track the opponent's international financing sources and supply chains.

If not in place: Map the opponent's transnational footprint: who are their investors, major customers, procurement partners? Are they listed internationally? What ESG commitments have they signed? This map becomes the foundational dossier for pressure campaigns.

The five genes above form the core strategic toolkit across most successful cases. If your current conditions do not yet support a recommended gene, use the "If not in place"

suggestions as a development roadmap. Section 7.4 provides a structured capacity self-assessment checklist.

7.4 The First Decision

After Section 7.3, you now know where you stand: which recommended genes are ready to use, which are close, and which are out of reach for now. This section asks for just two judgments.

Judgment One: What can you move on now?

Among the recommended genes, one might begin by identifying those whose conditions are already in place. That set could serve as a starting point — an immediately actionable zone. Waiting for all conditions to be ready is often unnecessary; by the time they are all in place, the window may have already closed.

If multiple genes are ready, it's useful to consider which one creates synergies with others. For example, data from G02 (Scientific Evidence) can simultaneously support G01 (Strategic Litigation), G08 (Policy Reform), and G10 (Health Justice). There may be value in moving G02 first — it tends to make the others easier downstream.

Judgment Two: Which gap should you close first?

Among the genes still missing conditions, a key question is: which gap, if closed, would unlock the most subsequent options? In most contexts, G02 (Scientific Evidence) is a strong candidate, given that solid data serves as a shared prerequisite for multiple high-frequency genes. However, this pattern is not universal. In contexts where G12 (Transnational Accountability) emerges as a core recommendation — for example, in authoritarian environments or cases involving corporate opponents — prioritizing an international cooperation network may be more consequential, as transnational litigation, international media outreach, and supply chain pressure all depend on such a network.

These two judgments together point toward a plausible near-term priority. They do not constitute a comprehensive strategic plan, but they do offer a concrete starting point.

Chapter Summary

This chapter is designed to outline a complete pathway from diagnosis to action, structured in four sequential steps: querying Appendix A for context-matched genes,

understanding the recommendation logic through the three scenarios, checking execution readiness for each gene, and defining a near-term focus. The logic of the pathway suggests that omitting any step would keep it theoretical, while working through all four brings it closer to practical application.

Situations change. Movement stages shift, political contexts evolve, and new opponents emerge. Appendix A is therefore not intended as a one-time diagnosis. Rather, it can be revisited whenever the context changes significantly. The framework is built for dynamic decision-making, not for static reference.

Looking back at the preceding chapters: Chapter Three cataloged the twelve core strategy genes. Chapter Four showed how context shapes strategy. Chapter Five tested the framework against real cases. All of that work now converges here, into a tool that can be used by describing one's situation, retrieving historically effective strategies, checking local conditions, and then acting.

This is the core commitment of this paper: to make the practical experience of 883 cases across 36 years accessible when it is needed. The knowledge is on the page. What follows from it depends on the reader.

Chapter 8 A Funder's Project Evaluation Framework

Chapter 7 speaks to activists. This chapter speaks to funders. It offers a structured evaluation tool built on the same analytical foundation: the 883 cases, the 12 strategic genes, and the Q-value framework.

Is the applicant's understanding of their situation accurate? Do their planned strategies align with what has worked in similar contexts? Have they examined the preconditions for execution? These three questions anchor the five evaluation dimensions that follow.

8.1 Five Evaluation Dimensions

This framework divides project evaluation into five dimensions, each corresponding to a layer of analysis in the report.

Dimension 1 Contexual Assessment Accuracy

This dimension corresponds to the Q-value framework in Chapter Four. The first task is to assess whether the applicant's understanding of their situation is accurate, specific, and grounded in evidence. The four parameters — political context (Q1), primary adversary (Q2), community dependency (Q3), and movement stage (Q4) — are the foundation for everything that follows. What happens if this diagnosis is wrong? Strategic planning, however well executed, cannot compensate for a misread of the situation. This is why this dimension is the only one with a veto clause.

Veto clause. Consider a scenario where this dimension scores 1 point. Does it still make sense to fund the project regardless of the total score? A badly misread situation implies that the whole strategy is built on the wrong foundation. In such a case, funding becomes a high - risk decision — one worth pausing to reconsider.

Dimension 2 Strategy Alignment

This dimension corresponds to Appendix A. For the applicant's Q-value combination, a key question is: how many of the historically core-recommended genes (activation rate above 60%) does their strategy actually cover?

How might one conduct this review? The logic is straightforward: locate the corresponding row in Appendix A, then compare the applicant's planned tools against the

recommended genes. This dimension is arguably the most objectively verifiable in the framework. But should coverage be the only consideration? Not entirely. A deviation from the recommendation is not a flaw in itself — local conditions may sometimes call for different choices.

Dimension 3 Execution Readiness

This dimension corresponds to the execution condition assessment framework in Chapter 7 (Section 7.3). Recommended genes are a summary of historical statistics, not action commands. Each gene tends to depend on specific preconditions. G01, for example, generally assumes accessible legal channels and cooperating lawyers. G02 typically calls for technical partners and credible publication platforms. G08 often requires channels to policy-makers and long-term advocacy capacity.

Dimension 4 Strategic Sequencing Logic

This dimension corresponds to Sections 7.3 and 7.4 of Chapter 7. A list of tools and a credible sequencing pathway are two different things. Dimension 2 checked which tools the applicant selected. This dimension asks: taken together, do they form a believable sequence?

Grassroots strategy tools have natural dependencies. Getting the order wrong can be more consequential than selecting a suboptimal tool. Community organizing (G03) tends to be a logical starting point — launching litigation without community backing is difficult to sustain for lack of plaintiffs or cooperation. Scientific evidence (G02) is more effective when in place before or alongside litigation (G01); evidence-poor lawsuits risk consuming resources without generating progress. Policy reform (G08) is typically a longer-term goal, becoming more feasible after cases have accumulated and public attention has grown. It usually unfolds over a multi-year timeline.

Dimension 5 Operational Feasibility

This is the only dimension that does not anchor directly to a particular chapter. The first four dimensions ask what should be done. This dimension asks whether it can actually be done.

Three areas are worth considering.

Timeline: Whether key milestones are consistent with the strategic objectives, and whether there are any unrealistic compressions.

Budget: Whether the funding scale is sufficient to support the listed activities, and whether personnel costs have been adequately considered.

Team: Whether the core capacity requirements (legal, scientific, community organizing, media, etc.) are covered in the team structure, and whether there are plans to build or outsource capacity gaps.

Finally, one might ask whether the major external risks (political shifts, adversary countermoves, internal community divisions) have been identified — and whether the contingency plans are credible given the local context.

8.2 Project Evaluation Rubric and Instructions

The rubric below brings together the scoring criteria for all five dimensions. It is designed to be completed progressively during the review process. Each dimension is scored independently from 1 to 5, for a total of 25 points.

A few considerations may be helpful. Scoring is most reliable when based on a complete reading of the full application. The notes field can be used to record the specific evidence behind each score, or to note questions that might be raised with the applicant.

Evaluation Dimension	Core Evaluation Questions	Score	Scoring Reference
Dimension 1 Contextual Assessment Accuracy (corresponds to Chapter 4)	1. Have all four Q-parameters been clearly identified, each supported by specific evidence? 2. Are the assessments of Political Context, Primary Adversary, Community Dependency, and Movement Stage consistent with the actual situation described in the application materials? 3. Where parameters diverge from common patterns, has the applicant provided an explanation?	/5	5: All four parameters clearly defined, supported by evidence, and consistent with context. 3: Parameters identified but some descriptions are vague, lacking supporting basis. 1: Parameters not clearly identified, or in evident contradiction with the

Evaluation Dimension	Core Evaluation Questions	Score	Scoring Reference
			application's described context.
Dimension 2 Strategy Alignment (corresponds to Appendix A and Chapter 3)	1. Do the strategy tools the applicant plans to deploy match the recommendation results in Appendix A for their Q-value combination? 2. Of the core recommended genes (activation rate ≥60%), how many does the applicant cover? 3. Where there are notable deviations, has the applicant provided a locally grounded explanation?	/5	5: Covers ≥3 core recommended genes; any deviations are explained. 3: Partial coverage; some gaps present but within reasonable range. 1: Major divergence from recommendations with no explanation provided.
Dimension 3 Execution Readiness (corresponds to Chapter 7, Section 7.3)	1. For each core recommended gene, has the applicant assessed the preconditions required for activation? 2. Is there a clear distinction between conditions already in place and those still to be established? 3. Are there corresponding plans or timelines for closing identified condition gaps?	/5	5: Gene-by-gene assessment of execution prerequisites, with response plans for gaps. 3: Partial assessment, not comprehensive. 1: No evidence of any execution condition assessment.
Dimension 4 Strategic Sequencing Logic (corresponds to Chapter 7, Sections 7.3–7.4)	1. Are there clearly articulated sequencing dependencies among different strategy tools? Does the applicant recognize which genes must be activated before others? 2. Are actions divided into logical phases, with each phase's goals and tool choices internally consistent? 3. Does the timing of milestones follow the inherent logic of the strategy tools, rather than compressing all	/5	5: Clear phasing, explicit dependency relationships, and logically grounded timing. 3: Phase awareness present, but dependencies not

Evaluation Dimension	Core Evaluation Questions	Score	Scoring Reference
	actions into simultaneous launch within the same period?		sufficiently articulated and some timing is unreasonable. 1: All strategy tools launched simultaneously with no sequencing logic or phase distinctions.
Dimension 5 Operational Feasibility (integrated judgment)	1. Is the timeline consistent with the planned workload, and are key milestones realistic? 2. Is the budget scale sufficient to support the listed strategic activities? 3. Does the team structure cover core capacity requirements, and are major risks accompanied by contingency plans?	/5	5: Timeline, budget, and team are all substantiated; major risks are identified with response plans. 3: Broadly reasonable, but some elements are over-optimistic. 1: Timeline, budget, or team configuration are clearly unrealistic.
Total Score (out of 25)		**__/25**	

Table 8-1 Funder Project Evaluation Rubric (Five-Dimension Scoring Framework)

8.3 Composite Judgment and Funding Recommendation

Summing the five dimension scores produces the composite score. Based on the composite score, three ranges are possible, each with corresponding strategic implications.

High range (exact cutoff to be specified): The strategic plan aligns strongly with historical precedents. Contextual assessment is accurate, and execution conditions are well established. This project is a strong candidate for support. One question worth considering is whether to schedule a strategy review at months 6–12 after launch to assess whether actual progress matches the recommended genes.

Table 8-2 Composite Score and Funding Recommendation Decision Table

Total Score	Funding Recommendation	Guidance Notes
20–25	**Recommended for Funding**	The strategic plan aligns strongly with historical precedents. Contextual assessment is accurate, and execution conditions are well established. This project is a strong candidate for support. You may want to schedule a strategy review at months 6–12 after launch to see whether actual progress matches the recommended genes.
14–19	**Conditionally Fundable**	The strategic framework is broadly sound, but gaps exist in one or more dimensions. Before making a final decision, consider engaging the applicant in a technical conversation about the weaker dimensions. Ask for their improvement plans. You could also tie the release of initial funds to specific improvements that the applicant agrees to make.
13 or below	**Defer Funding**	The applicant's understanding of the situation or their strategic planning has fundamental gaps. The risk is high. You may want to share the specific weaknesses with the applicant, invite them to submit a revised strategy, or place them in a capacity-building track for reconsideration later.

On the veto clause. If Dimension 1 scores 1 point, one might ask whether funding should proceed regardless of the composite score. This is the only single-dimension veto in the framework. A badly misread situation means the whole strategy is built on the wrong foundation.

On the limitations of scores. The composite score offers a useful reference, not a final verdict. The same total score can hide very different weakness patterns. It is worth examining the dimension scores, not just the total. For example, a project scoring 20 but with only 2 points on Dimension 3 (Execution Readiness) may actually carry more risk than a balanced 18.

Chapter Summary

The real value of this scoring rubric is not the final number. It lies in the specific observations one makes along the way. A low score on Dimension 2 might prompt a concrete question: why did this applicant choose a path that historically has not been mainstream for similar situations? That question can be more revealing than the score itself. It opens a real strategic conversation.

Funding decisions depend on more than any application can capture. Personal leadership, community politics, local history — these matter, and this framework does not attempt to measure them. The tool is not a substitute for judgment. Rather, it helps ensure that a set of critical strategic questions is answered, so that the rest of one's judgment can stand on firmer ground. Scores can inform judgment without driving it.

Chapter 9 Boundaries and Evolution of the Report

The first eight chapters build a complete framework. It covers contextual assessment, strategy recommendations, implementation reviews, and funder assessments.

Three considerations help frame the toolkit's scope and future: where it works, how it stays alive, and where it can go next.

9.1 Framework Boundaries

This framework has clearly defined boundaries in five areas. Understanding them is a prerequisite for applying the framework.

Leadership and Personal Qualities: this framework does not try to score leadership. Leaders come from many different cultures and traditions, each with its own understanding of what good leadership looks like. Trying to put a single score on leadership would turn this tool into a talent checklist — something it is not designed to be.

Consider the framework as a map, not a driver. It does not replace one's leadership, just as no amount of leadership bypasses the strategic structure on the ground.

The Historicity of Data: the dataset has two inherent limitations. First, future contexts may go beyond the current gene library. New fields like technology governance, AI surveillance, climate justice, and platform advocacy are creating new adversary structures and mobilization scenarios. As grassroots movements evolve, so will the framework's reference sets. Second, the dataset has survivor-ship bias. Cases that leave enough records are more likely to be studied. The Goldman Environmental Prize archives and public reporting capture mostly movements that succeeded or gained visible attention. Campaigns that were suppressed early or never produced public records are largely missing from the sample. The rates show what worked in the cases we have. What they do not show is the odds of success.

Binary Coding Limitations: the 12 strategic genes are coded as activated or not (0/1). This cannot capture differences in strategy intensity. Two cases that both activate G01 may differ enormously in the scale of litigation and how central it was to their overall strategy.

Match Rate Definition: the match rate is calculated as the number of genes a case actually activated that appear in the recommendation list, divided by the total number of

recommended genes. This study uses a three-tier standard defined by the author: 80% or above is high match, 60% to 79% is basic match, and below 60% is partial match. The 60% threshold for gene recommendations is also a definitional choice.

These are analytical choices. Different thresholds would produce different results. This is worth keeping in mind when interpreting the findings.

A Reference, Not a Rule: The real situation is always more complex than any database. Investing resources in a gene that does not appear on the recommendation list, or changing the suggested sequencing based on local knowledge, may sometimes be the right call, depending on the context.

9.2 Ongoing Evolution

A framework built on historical data stays alive when it keeps growing. Fortunately, maintaining it requires only a modest, regular rhythm — an annual update of roughly 10 hours, for example.

The proposed update mechanism works at three levels.

Annual update (10 hours per year). After each cycle, code the new winners and finalists, then add them to the database. Use Appendix D (New Case Entry Template) to record Q‑values, gene codings, and data sources. This ensures every new case meets the same standards as the original 883.

Frequency audit every 3 years. Recalculate the activation rates and compare with the previous audit. If a gene shows a higher rate in recent cases, you may want to adjust its weight accordingly. No new data collection is needed. Just re‑run the existing scripts.

Full framework review every 5 years. Take a step back and look at the big picture. Do the twelve genes still fit current practice? Has any gene grown too broad and needs splitting? Should two overlapping genes be merged? Do new strategic patterns call for new gene types? This is a deeper update, and it takes more work. But the long cycle makes it manageable.

When users know the framework is actively maintained, they trust it more. And as new frontiers like climate litigation, AI governance, and platform advocacy emerge, the framework will grow to meet them.

Here is the beauty of it: the framework gets more accurate over time. Each new case adds to the reference pool. Combinations with small sample sizes will grow stronger, slowly but steadily.

This manual is not a finished product. It is a living tool. Every new case adds a brick to the path. Those who come after will see further — because together, we have built a little higher.

9.3 Possible Extensions

The framework established in this report has the potential to extend in multiple directions. Two are especially worth envisioning: both connect naturally to the core logic of this report and are achievable on the existing foundation.

A Digital Interactive Platform

Currently, this report is a static document. A reader might move from Chapter 5 to Appendix A, then back to Chapter 7 to check implementation conditions. For researchers, this workflow is manageable. For a front-line activist in the middle of a campaign, however, it is more demanding.

An alternative approach is worth considering. A simple interactive tool — one where the user enters Q1 to Q4 parameters, and the system instantly returns the matching reference set, activation rates, and a one-page summary — could reduce what currently takes several minutes of page-turning to seconds, with fewer errors and no statistical training required.

Much of the foundational work is already in place. The analytical scripts from Chapters 3 through 6 already exist. Building an interface on top of them would be a logical next step. Such a tool could make the framework more accessible to practitioners who need it most, and could also provide the Goldman Environmental Prize with a living, interactive resource to share.

Workshop Application

Digital tools offer scale. Workshops offer depth. This report can serve both. One format that has proven useful in workshops is “predict and compare.” Participants start with a case brief. They code the Q-values themselves and predict which genes would have been activated. Then they compare their predictions against the actual database coding, item by item. The value lies not in getting the right answers, but in the gaps where learning happens: why did I

code Q2 differently from the database? Was I missing information, or was my understanding of "adversary type" carrying a different assumption?

The three-layer validation structure in Chapter 6 provides ready-made workshop material. Cases such as the Bristol Bay mine or South Africa's Tendele coal mine are particularly well-suited for this purpose. Their contextual parameters are rich, and their strategic evolution is clearly visible. Participants can practice diagnosing the situation, predicting strategies, and assessing implementation conditions within a complete, real-world case. This gives them a concrete sense of how the framework operates.

Digital platforms lower barriers. Workshops build understanding. Together, they help this report move beyond the research archive — into the hands of practitioners and into the learning cycles of organizations. That is one path for knowledge to travel further.

9.4 Coda

What, Exactly, Can Be Replicated

Victory cannot be copied. Grassroots movements are not assembly lines. What this report offers is more modest: under specific conditions, some strategic tools have historically worked better than others. That pattern is not merely coincidental — and it is learnable.

The successful cases do not say "do this and win." They say "this is how these people thought and acted when facing situations like yours." That is knowledge that can be passed on.

A Knowledge Mine Beyond the Prize

The Goldman Environmental Prize has accumulated more than three decades of experience. In the business world, a case archive this systematic would have been mined for insights long ago. McKinsey and BCG built their strategy frameworks on exactly this kind of pattern recognition.

The Prize's archive holds the same potential for grassroots movements. This report is one attempt to unlock it. The Prize does more than give out awards. For over thirty years, it has witnessed activists from six continents — how they judged, how they persisted, how they broke through. That record is there for the taking. That record belongs to everyone. This report is built on that belief.

A Report with Vitality

Mapping 883 cases hopes that their experience will take root in a new generation, not stay filed away. The chapters for activists and funders are an attempt to move knowledge into practice. Knowledge grows when it flows. Tools live when they are used. The update mechanism lets this tool survive not just by tracking reality, but by being rewritten by those who use it. Two possible extensions are sketched out to keep the report alive — and growing.

What grassroots movements protect, finally, are the conditions for life itself — the work of allowing more of it to continue on this planet.

A report with vitality serves a cause with vitality.

These pages are offered with the poem "Ithaka" by C.P. Cavafy. For all those who walk alongside in defense of this beautiful planet.

Ithaka

By C. P. Cavafy | Translated by Edmund Keeley

As you set out for Ithaka

hope your road is a long one,

full of adventure, full of discovery.

Laistrygonians, Cyclops,

angry Poseidon—don't be afraid of them:

you'll never find things like that on your way

as long as you keep your thoughts raised high,

as long as a rare excitement

stirs your spirit and your body.

Laistrygonians, Cyclops,

wild Poseidon—you won't encounter them

unless you bring them along inside your soul,

unless your soul sets them up in front of you.

Hope your road is a long one.

May there be many summer mornings when,

with what pleasure, what joy,

you enter harbors you're seeing for the first time;

may you stop at Phoenician trading stations

to buy fine things,

mother of pearl and coral, amber and ebony,

sensual perfume of every kind—

as many sensual perfumes as you can;

and may you visit many Egyptian cities

to learn and go on learning from their scholars.

Keep Ithaka always in your mind.

Arriving there is what you're destined for.

But don't hurry the journey at all.

Better if it lasts for years,

so you're old by the time you reach the island,

wealthy with all you've gained on the way,

not expecting Ithaka to make you rich.

Ithaka gave you the marvelous journey.

Without her you wouldn't have set out.

She has nothing left to give you now.

And if you find her poor, Ithaka won't have fooled you.

Wise as you will have become, so full of experience,

you'll have understood by then what these Ithakas mean.

C.P. Cavafy, “Ithaka,” translated by Edmund Keeley, in C.P. Cavafy: Collected Poems, Princeton University Press, 1992.

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Any errors or limitations in this report remain solely my own.

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Appendix A Complete Recommended Gene Lookup Table

How to use: Identify the Q1–4 profile for a movement, locate the corresponding row, and retrieve the recommended genes (activation rate ≥60%). Dark green cells = recommended genes. Exact n = count of exact matches in the full dataset; value in parentheses = actual reference set (after relaxation). Base: 883 records, full dataset (1993–2026, the Goldman Environmental Prize finalists).

Table A-1 Complete Recommended Gene Lookup Table (n=883, 1993–2026)

Q1	Q2	Q3	Q4	Exact n (Ref. n)	Method	Recommended Genes (≥60% activation)	G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12
1	1	1	1	3 (8)	Relax Q4	**G01 G02 G03 G08 G10**	**88%**	**88%**	**100%**	12%	12%	38%	38%	**75%**	38%	**75%**	12%	38%
1	1	1	2	4 (8)	Relax Q4	**G01 G02 G03 G08 G10**	**88%**	**88%**	**100%**	12%	12%	38%	38%	**75%**	38%	**75%**	12%	38%
1	1	1	3	1 (8)	Relax Q4	**G01 G02 G03 G08 G10**	**88%**	**88%**	**100%**	12%	12%	38%	38%	**75%**	38%	**75%**	12%	38%
1	1	2	1	84 (84)	Exact	**G01 G02 G03 G08 G10**	**95%**	**80%**	**100%**	39%	6%	46%	24%	**76%**	36%	**68%**	4%	60%
1	1	2	2	324 (324)	Exact	**G01 G02 G03 G08 G10**	**80%**	**75%**	**100%**	31%	13%	37%	19%	**73%**	37%	**68%**	3%	56%
1	1	2	3	30 (30)	Exact	**G01 G02 G03 G08 G10 G12**	**97%**	**83%**	**100%**	40%	13%	43%	13%	**77%**	43%	**83%**	20%	**70%**
1	1	3	1	6 (6)	Exact	**G01 G02 G03 G08 G10 G12**	**100%**	**100%**	**100%**	50%	0%	50%	0%	**83%**	17%	**83%**	0%	**83%**
1	1	3	2	14 (14)	Exact	**G01 G02 G03 G08 G10 G12**	**93%**	**93%**	**100%**	29%	21%	50%	14%	**86%**	14%	**79%**	0%	**79%**
1	1	3	3	1	Relax	**G01 G02 G03 G08 G10 G12**	**95%**	**95%**	**100%**	33%	14%	52%	10%	**86%**	14%	**81%**	0%	**81%**

				(21)	Q4													
1	2	2	1	16 (16)	Exact	**G01 G02 G03 G06 G08 G10 G12**	**94%**	**88%**	**100%**	44%	12%	**69%**	6%	**88%**	6%	**62%**	0%	**81%**
1	2	2	2	23 (23)	Exact	**G01 G02 G03 G08 G10 G12**	**91%**	**83%**	**100%**	26%	17%	43%	17%	**70%**	35%	**61%**	4%	**61%**
1	2	2	3	2 (42)	Relax Q4	**G01 G02 G03 G08 G12**	**93%**	**81%**	**100%**	31%	17%	50%	12%	**76%**	21%	60%	5%	**71%**
1	2	2	4	1 (42)	Relax Q4	**G01 G02 G03 G08 G12**	**93%**	**81%**	**100%**	31%	17%	50%	12%	**76%**	21%	60%	5%	**71%**
1	3	1	4	1 (24)	Relax Q3Q4	**G01 G02 G03 G06 G08 G10 G12**	**96%**	**71%**	**100%**	29%	21%	**79%**	21%	**75%**	42%	**62%**	0%	**79%**
1	3	2	1	1 (22)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**95%**	**73%**	**100%**	27%	18%	**82%**	23%	**73%**	41%	**64%**	0%	**82%**
1	3	2	2	17 (17)	Exact	**G01 G02 G03 G06 G08 G12**	**94%**	**76%**	**100%**	12%	24%	**76%**	18%	**82%**	41%	53%	0%	**76%**
1	3	2	3	3 (22)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**95%**	**73%**	**100%**	27%	18%	**82%**	23%	**73%**	41%	**64%**	0%	**82%**
1	3	2	4	1 (22)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**95%**	**73%**	**100%**	27%	18%	**82%**	23%	**73%**	41%	**64%**	0%	**82%**
1	3	3	2	1 (24)	Relax Q3Q4	**G01 G02 G03 G06 G08 G10 G12**	**96%**	**71%**	**100%**	29%	21%	**79%**	21%	**75%**	42%	**62%**	0%	**79%**
1	4	2	2	2 (557)	Relax Q2Q3Q4	**G01 G02 G03 G08 G10 G12**	**86%**	**78%**	**100%**	32%	13%	42%	19%	**75%**	36%	**69%**	4%	**60%**
1	5	1	3	2 (22)	Relax Q3Q4	**G01 G02 G03 G08 G09 G10 G12**	**77%**	**91%**	**100%**	32%	0%	23%	18%	**73%**	**68%**	**68%**	5%	**64%**
1	5	2	2	4 (20)	Relax Q4	**G01 G02 G03 G08 G09 G10 G12**	**75%**	**90%**	**100%**	30%	0%	25%	20%	**70%**	**70%**	**65%**	5%	**65%**
1	5	2	3	16 (16)	Exact	**G01 G02 G03 G08 G09 G10 G12**	**81%**	**88%**	**100%**	31%	0%	25%	25%	**81%**	**81%**	**75%**	6%	**75%**
2	1	1	1	1	Relax	**G01 G02 G03 G08 G12**	**81%**	**86%**	**100%**	33%	16%	41%	16%	**71%**	35%	54%	2%	**71%**

				(93)	Q3Q4													
2	1	2	1	16 (16)	Exact	**G01 G02 G03 G06 G08 G10 G12**	**94%**	**88%**	**100%**	50%	31%	**69%**	6%	**81%**	31%	**75%**	6%	**100%**
2	1	2	2	62 (62)	Exact	**G01 G02 G03 G08**	**74%**	**85%**	**100%**	29%	6%	34%	19%	**63%**	37%	42%	2%	60%
2	1	2	3	5 (5)	Exact	**G01 G02 G03 G08 G10 G12**	**100%**	**80%**	**100%**	40%	40%	40%	0%	**100%**	0%	**100%**	0%	**100%**
2	1	2	4	3 (86)	Relax Q4	**G01 G02 G03 G08 G12**	**79%**	**85%**	**100%**	35%	15%	42%	16%	**70%**	34%	51%	2%	**70%**
2	1	3	2	4 (6)	Relax Q4	**G01 G02 G03 G08 G10 G12**	**100%**	**100%**	**100%**	17%	33%	17%	0%	**83%**	50%	**100%**	0%	**83%**
2	1	3	3	2 (6)	Relax Q4	**G01 G02 G03 G08 G10 G12**	**100%**	**100%**	**100%**	17%	33%	17%	0%	**83%**	50%	**100%**	0%	**83%**
2	2	2	2	4 (5)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**100%**	**100%**	**100%**	40%	0%	**80%**	0%	**100%**	20%	**100%**	0%	**100%**
2	2	2	3	1 (5)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**100%**	**100%**	**100%**	40%	0%	**80%**	0%	**100%**	20%	**100%**	0%	**100%**
2	2	3	4	2 (7)	Relax Q3Q4	**G01 G02 G03 G08 G10 G12**	**100%**	**100%**	**100%**	29%	0%	57%	0%	**100%**	14%	**100%**	0%	**100%**
2	3	2	1	1 (15)	Relax Q4	**G01 G02 G03 G10 G12**	**80%**	**80%**	**100%**	27%	13%	47%	0%	33%	7%	**60%**	0%	**73%**
2	3	2	2	11 (11)	Exact	**G01 G02 G03 G12**	**91%**	**73%**	**100%**	27%	18%	45%	0%	45%	0%	55%	0%	**82%**
2	3	2	3	3 (15)	Relax Q4	**G01 G02 G03 G10 G12**	**80%**	**80%**	**100%**	27%	13%	47%	0%	33%	7%	**60%**	0%	**73%**
2	3	3	2	2 (17)	Relax Q3Q4	**G01 G02 G03 G12**	**82%**	**82%**	**100%**	29%	12%	47%	6%	35%	12%	59%	0%	**76%**
2	5	2	3	3 (120)	Relax Q2Q3Q4	**G01 G02 G03 G08 G12**	**82%**	**86%**	**100%**	32%	14%	42%	14%	**67%**	32%	57%	2%	**73%**
3	1	1	2	2	Relax	**G01 G02 G03 G10 G12**	**82%**	**79%**	**100%**	32%	12%	43%	26%	57%	44%	**61%**	5%	**70%**

				(160)	Q3Q4													
3	1	2	1	31 (31)	Exact	**G01 G02 G03 G10 G12**	**74%**	**77%**	**100%**	42%	6%	32%	23%	48%	29%	**61%**	6%	**65%**
3	1	2	2	102 (102)	Exact	**G01 G02 G03 G12**	**79%**	**75%**	**100%**	29%	16%	40%	30%	59%	51%	55%	6%	**67%**
3	1	2	3	18 (18)	Exact	**G01 G02 G03 G06 G10 G12**	**100%**	**94%**	**100%**	22%	0%	**83%**	11%	56%	39%	**78%**	0%	**83%**
3	1	3	1	3 (7)	Relax Q4	**G01 G02 G03 G10 G12**	**100%**	**86%**	**100%**	57%	0%	29%	14%	57%	14%	**86%**	0%	**100%**
3	1	3	2	3 (7)	Relax Q4	**G01 G02 G03 G10 G12**	**100%**	**86%**	**100%**	57%	0%	29%	14%	57%	14%	**86%**	0%	**100%**
3	1	3	3	1 (7)	Relax Q4	**G01 G02 G03 G10 G12**	**100%**	**86%**	**100%**	57%	0%	29%	14%	57%	14%	**86%**	0%	**100%**
3	2	2	1	9 (9)	Exact	**G01 G03 G08 G10 G12**	**78%**	56%	**100%**	44%	22%	44%	11%	**78%**	22%	**89%**	0%	**78%**
3	2	2	2	8 (8)	Exact	**G01 G03 G08**	**88%**	38%	**100%**	38%	0%	0%	38%	**75%**	38%	25%	12%	50%
3	2	2	3	4 (21)	Relax Q4	**G01 G03 G08 G12**	**76%**	52%	**100%**	38%	10%	24%	29%	**71%**	33%	57%	14%	**67%**
3	3	2	1	2 (17)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**82%**	**76%**	**100%**	24%	12%	**71%**	12%	**65%**	29%	**65%**	0%	**82%**
3	3	2	2	12 (12)	Exact	**G01 G02 G03 G06 G08 G10 G12**	**92%**	**75%**	**100%**	33%	17%	**75%**	8%	**67%**	33%	**67%**	0%	**92%**
3	3	2	3	2 (17)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**82%**	**76%**	**100%**	24%	12%	**71%**	12%	**65%**	29%	**65%**	0%	**82%**
3	3	2	4	1 (17)	Relax Q4	**G01 G02 G03 G06 G08 G10 G12**	**82%**	**76%**	**100%**	24%	12%	**71%**	12%	**65%**	29%	**65%**	0%	**82%**
3	3	3	2	2 (19)	Relax Q3Q4	**G01 G02 G03 G06 G08 G12**	**84%**	**79%**	**100%**	21%	11%	**68%**	11%	**63%**	26%	58%	0%	**84%**
3	4	1	2	1	Relax	**G01 G02 G03 G10 G12**	**82%**	**77%**	**100%**	33%	12%	43%	24%	59%	41%	**61%**	5%	**71%**

				(206)	Q2Q3Q4													
3	5	1	2	1 (5)	Relax Q3Q4	**G01 G02 G03 G04 G10 G12**	**80%**	**100%**	**100%**	**80%**	20%	20%	0%	40%	40%	**100%**	0%	**80%**
3	5	2	3	4 (5)	Relax Q3Q4	**G01 G02 G03 G04 G10 G12**	**80%**	**100%**	**100%**	**80%**	20%	20%	0%	40%	40%	**100%**	0%	**80%**

Q1: 1=Democratic/Open 2=Authoritarian 3=Political Transition

Q2: 1=Government 2=Corporate 3=State-Corporate Alliance 4=International Finance 5=Systemic

Q3: 1=High 2=Moderate 3=Low

Q4: 1=Early/Emerging 2=Escalating 3=Victory 4=Post-Victory

Exact = Exact match; Relax Q4 = Relax Q4 constraint; Relax Q3Q4 = Relax Q3 and Q4; Relax Q2Q3Q4 = Relax Q2, Q3, and Q4

Note: Reference Set Relaxation

When the 883-record dataset is subdivided by all four Q dimensions, some combinations yield too few exact matches for statistically meaningful activation rates. For these cases, the lookup table applies a stepwise relaxation strategy: first, Q1, Q2, and Q3 are held fixed while Q4 (phase) is relaxed to expand the reference set; if the count remains insufficient, Q3 and Q4 are relaxed simultaneously; in rare cases, Q2, Q3, and Q4 are all relaxed, retaining only Q1 (political environment). The “Method” column shows the relaxation level applied to each row; the number in parentheses is the actual reference set size after relaxation. Regardless of relaxation level, the threshold for recommending a gene remains constant: activation rate must reach 60% or higher. Relaxation provides statistically grounded guidance for rare contextual profiles without lowering the recommendation standard.

Appendix B Representative Cases by Strategic Gene

This appendix presents four representative Goldman Environmental Prize winning cases for each of the twelve strategic genes (G01–G12), illustrating each gene's practical form and the contextual conditions under which it operates. All cases are win =1 records from the Goldman Environmental Prize database (198 winners). Q values are drawn directly from the strategic gene database. Some winners appear across multiple tables, reflecting the multi-gene nature of their campaigns— a single movement frequently activates several strategic genes simultaneously.

Q1 Political Environment: 1=Democratic/Open | 2=Authoritarian | 3=Political Transition.

Q2 Primary Adversary: 1=Government | 2=Corporate | 3=State-Corporate Alliance | 4=International Finance | 5=Systemic.

Q3 Community Dependency: 1=High | 2=Moderate | 3=Low.

Q4 Movement Stage: 1=Early/Emerging | 2=Escalating | 3=Victory | 4=Post-Victory.

G01 Strategic Litigation

Activation rate: 743 / 883 records across full dataset (84.1%)

Strategic Litigation means using the legal process itself as a central campaign tool, not merely as a supporting measure. Cases coded for this gene typically involve formal proceedings in domestic courts, regional tribunals, or international arbitration bodies, with the litigation process serving as the primary lever to amplify public pressure and force policy change. The three forms represented below are domestic litigation, transnational accountability, and coordinated action across multiple legal jurisdictions.

Table B-1 G01 Strategic Litigation — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Ken Saro-Wiwa	1995	Nigeria (Africa)	Q1=2 Q2=1 Q3=2 Q4=3	Led the Movement for the Survival of the Ogoni People (MOSOP) against Shell's environmental destruction of the Niger Delta, applying simultaneous pressure through international media,

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				diplomatic channels, and domestic legal proceedings to place transnational corporate liability on the international judicial agenda.
Ikal Angelei	2012	Kenya (Africa)	Q1=3 Q2=4 Q3=1 Q4=2	Filed suit in Kenyan courts on behalf of Lake Turkana's indigenous communities against the Gibe III dam project, while simultaneously lodging a complaint with the World Bank Inspection Panel—building coordinated legal pressure across multiple jurisdictions.
Marjan Minnesma	2022	Netherlands (Europe)	Q1=1 Q2=2 Q3=2 Q4=2	The Urgenda Foundation's climate case (2015–2019) became the first lawsuit in which citizens successfully used human rights and tort law to compel their own government to uphold emissions commitments. Its legal architecture has since been replicated in more than a dozen countries.
Chima Williams	2022	Nigeria (Africa)	Q1=3 Q2=2 Q3=2 Q4=1	Brought a transnational lawsuit against the Royal Dutch Shell parent company in Dutch courts for oil spills in the Niger Delta. The 2021 Dutch Court of Appeal ruled that Shell must fulfill its duty to prevent oil spills and pay compensation to farmers in affected communities—the first ruling to hold a transnational fossil fuel company accountable for oil pollution in its home country's courts.

G02 Scientific Evidence

Activation rate: 696 / 883 records across full dataset (78.8%)

Scientific Evidence refers to campaigns that systematically produce or integrate scientific, technical, or epidemiological data as the core of their advocacy argument. Cases coded for this gene typically publish independent research, build databases, or partner with research institutions to generate quantitative evidence in support of litigation and advocacy. The cases below show data-driven advocacy working across different political environments and issue types.

Table B-2 G02 Scientific Evidence — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
LeeAnne Walters	2018	United States (North America)	Q1=1 Q2=1 Q3=2 Q4=2	After noticing irregularities in Flint's tap water, collected household samples following EPA protocols and detected lead at 13,200 ppb—far exceeding the EPA action threshold of 15 ppb. Partnering with Virginia Tech's Marc Edwards team, she drove citywide testing across hundreds of sampling sites, building an irrefutable dataset that proved government water decisions had caused systemic lead poisoning and placed the Flint water crisis on the national policy agenda.
Rashida Bee & Champa Devi Shukla	2004	India (Asia)	Q1=1 Q2=3 Q3=2 Q4=3	As Bhopal gas tragedy survivors, systematically gathered medical evidence of multigenerational health damage and documented the continuing effects of the 1984 disaster on survivors' descendants—using this cross-generational health record as the scientific basis for pursuing Union Carbide's ongoing accountability.
Kimiko Hirata	2021	Japan (Islands)	Q1=1 Q2=2 Q3=2 Q4=2	Published scientific reports quantifying the human health cost of Japan's coal expansion—including estimates of 1,000 premature deaths per year—and used this epidemiological evidence to

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				persuade 30 financial institutions to withdraw from financing new coal power plants.

G03 Community Organizing

Activation rate: 883 / 883 records across full dataset (100.0%)

Community Organizing is the only gene with a 100% activation rate, reflecting that it forms the common foundation of every winning campaign in this dataset. Its intensity varies: in some cases community mobilization is itself the decisive strategic variable; in others, an organized community is the precondition enabling other strategies—litigation, divestment, direct action—to function. The cases selected here are those in which community organizing plays a lead or pivotal role.

Table B-3 G03 Community Organizing — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Jesús León Santos	2008	Mexico (North America)	Q1=1 Q2=5 Q3=2 Q4=3	Revived the traditional collective labor system known as tequio in Oaxaca's Mixtec communities, mobilizing more than 4,000 community members to carry out tree-planting and soil conservation work—transforming community organizational capacity into the operational engine of large-scale ecological restoration.
Maida Bilal	2021	Bosnia and Herzegovina (Europe)	Q1=3 Q2=2 Q3=2 Q4=1	Organized women along the Kruščica River into rotating shifts to maintain a continuous blockade of an illegally permitted hydropower dam site, sustaining a non-violent encampment for more than 500 days and using community solidarity to force the developer to halt construction.

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Nohra Padilla	2013	Colombia (South & Central America)	Q1=3 Q2=2 Q3=2 Q4=3	Organized Bogotá's informal waste pickers (recicladores) into a formally registered cooperative, using collective bargaining and legal action to press the city government into opening municipal waste contracts to community organizations—turning organized community power into structural change in urban waste management.
Alessandra Korap Munduruku	2023	Brazil (South & Central America)	Q1=1 Q2=1 Q3=2 Q4=2	Built a community intelligence network within Munduruku territory in the Amazon, organizing members to systematically document illegal mining incursions and converting scattered eyewitness accounts into structured reports filed with federal prosecutors—supplying a continuous evidentiary foundation for legal proceedings.

G04 Direct Action

Activation rate: 286 / 883 records across full dataset (32.4%)

Direct Action involves using physical or bodily presence—through protest, blockade, occupation, or open confrontation—to interrupt the advance of harmful activity. This gene is frequently paired with Strategic Litigation (G01) or Exposing Corruption (G06), combining the media impact of direct action with legal pressure. The cases below illustrate how this gene is practiced across different cultural and political settings.

Table B-4 G04 Direct Action — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Diane Wilson	2023	United States (North America)	Q1=1 Q2=1 Q3=2 Q4=3	Conducted repeated hunger strikes and march blockades near petrochemical plants on the Texas Gulf Coast, running

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				direct action in parallel with litigation to combine media visibility with courtroom pressure—ultimately compelling Formosa Plastics to sign a legally binding zero-discharge agreement.
Alok Shukla	2024	India (Asia)	Q1=3 Q2=1 Q3=2 Q4=2	Led villagers in Hasdeo forest to convene gram sabha (traditional community assemblies), using the community's collective veto power to reject mining permit renewals—turning customary land governance into a legally recognized instrument of direct obstruction.
Murrawah Maroochy Johnson	2024	Australia (Islands)	Q1=1 Q2=1 Q3=2 Q4=2	As a traditional custodian of the Wirdi and Birri Gubba Nation, submitted formal objections to Australian government environmental assessment hearings, combining public protest with legal applications to mount a sustained legitimacy challenge against the Waratah coal mine expansion.
Tero Mustonen	2023	Finland (Europe)	Q1=1 Q2=5 Q3=2 Q4=3	Convened Sami and Karelian indigenous communities in Finland to systematically document fishery collapse and ecological degradation, and used traditional knowledge ownership as the legal basis to reject any water resource development permits that bypassed community free, prior, and informed consent (FPIC).

G05 Financial Leverage

Activation rate: 111 / 883 records across full dataset (12.6%)

Financial Leverage refers to cutting off the funding behind harmful projects through divestment campaigns, credit pressure, shareholder resolutions, or supply-chain accountability. This gene has the lowest activation rate among the twelve (12.6%) but shows a clear upward trend in climate finance and transnational supply chain cases since 2015.

Table B-5 G05 Financial Leverage — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Lucie Pinson	2020	France (Europe)	Q1=1 Q2=1 Q3=2 Q4=2	Published coal financing scorecards targeting major financial institutions, combining shareholder resolutions, sustained media pressure, and direct engagement to press BNP Paribas, Crédit Agricole, and Société Générale into committing to end financing for new coal projects, while persuading insurers AXA and SCOR to exit coal coverage—establishing a replicable benchmark for financial-sector coal withdrawal.
Kimiko Hirata	2021	Japan (Islands)	Q1=1 Q2=2 Q3=2 Q4=2	Using scientific reports as an evidentiary foundation, worked through climate finance advocacy networks to bring 30 Japanese financial institutions—including SoftBank and MUFG—to publicly announce withdrawal from new coal power financing, cutting off domestic capital for coal expansion.
Alfred Brownell	2019	Liberia (Africa)	Q1=3 Q2=3 Q3=2 Q4=2	Filed complaints against Golden Veroleum Liberia with the Roundtable on Sustainable Palm Oil (RSPO), using the threat of certification revocation as leverage against the company while simultaneously contacting European institutional investors—targeting the company's operational support from both the financing and market-access

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				ends.
Marcel Gomes	2024	Brazil (South & Central America)	Q1=1 Q2=1 Q3=2 Q4=2	Through ReporterBrasil, built a database tracing Amazon deforestation to the supply chains of international brands, providing regulators and buyers with auditable evidence of supply chain contamination—driving major financial institutions to incorporate deforestation risk into lending criteria.

G06 Exposing Corruption

Activation rate: 371 / 883 records across full dataset (42.0%)

Exposing Corruption refers to campaigns that use investigative reporting, freedom of information requests, document leaks, or systematic monitoring to bring deliberately suppressed or hidden critical information into public view. Cases coded for this gene typically take the fact that damaging information has long existed but been kept from the public as the core of their advocacy, using that revelation to reframe public judgment about who bears responsibility. The three forms represented below are state information control, corporate concealment, and government-corporate collusion.

Table B-6 G06 Exposing Corruption — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Ikal Angelei	2012	Kenya (Africa)	Q1=3 Q2=4 Q3=1 Q4=2	Exposed that the Gibe III dam would permanently reduce Lake Turkana's annual inflow by 90%, presenting detailed hydrological data and community livelihood impact analysis that forced the World Bank Inspection Panel to find procedural violations in the project's approval process.
Chima Williams	2022	Nigeria	Q1=3 Q2=2	Built a systematic database of oil spill

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
		(Africa)	Q3=2 Q4=1	incidents in the Niger Delta, compiling on-the-ground evidence from more than one hundred spills over thirty years, and used that record in transnational proceedings in Dutch courts to prove that Shell had long known of the damage and failed to take protective measures.
Semia Gharbi	2025	Tunisia (Africa)	Q1=1 Q2=1 Q3=2 Q4=2	Exposed the full evidence chain of an Italian company's collusion with local officials to smuggle European industrial waste into Tunisia and dump it on agricultural land, prompting prosecutors to open a criminal investigation that led to the arrest of more than forty officials and corporate managers.

G07 Indigenous Sovereignty

Activation rate: 171 / 883 records across full dataset (19.4%)

Indigenous Sovereignty refers to campaigns that use indigenous communities' customary rights over land, water, or natural resources—and their cultural sovereignty—as the central legal argument, invoking the free, prior, and informed consent (FPIC) principle, the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), or domestic indigenous rights legislation. Activation rates are markedly higher in South American and Oceanian cases than in other regions.

Table B-7 G07 Indigenous Sovereignty — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Ikal Angelei	2012	Kenya (Africa)	Q1=3 Q2=4 Q3=1 Q4=2	Placed the customary sovereignty of Lake Turkana's indigenous communities at the center of the legal argument, asserting that traditional fishing rights in

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				those waters are protected under international law—advancing indigenous sovereignty claims simultaneously in domestic courts and through the World Bank complaints mechanism.
Alfred Brownell	2019	Liberia (Africa)	Q1=3 Q2=3 Q3=2 Q4=2	Asserted customary land rights on behalf of Liberia's southern tribal communities, invoking free, prior, and informed consent (FPIC) to challenge a 65-year palm oil plantation concession issued without community authorization—driving RSPO to incorporate community consent into its certification audit standards.
Murrawah Maroochy Johnson	2024	Australia (Islands)	Q1=1 Q2=1 Q3=2 Q4=2	As a traditional custodian of the Wirdi and Birri Gubba Nation, filed formal objections with Australia's Native Title Tribunal, combining indigenous sovereignty arguments with climate evidence to mount a sustained challenge to the legal legitimacy of the Waratah coal mine project.
Alessandra Korap Munduruku	2023	Brazil (South & Central America)	Q1=1 Q2=1 Q3=2 Q4=2	As a representative of the Munduruku people, pressed the federal government to fulfill its constitutional obligation to demarcate indigenous lands, while using international media to expose illegal gold mining intrusions—bringing tribal land sovereignty before the Brazilian Supreme Court.

G08 Policy Reform

Activation rate: 617 / 883 records across full dataset (69.9%)

Policy Reform refers to campaigns that make changing the legal framework, regulatory standards, or institutional policies their explicit goal—not just resolving a single case. Cases coded for this gene can typically point to specific legislative amendments, new policy instruments, or confirmed judicial precedents as measurable outcomes. With an activation rate of 69.9%, this gene ranks fourth among the twelve—behind only G03 (100%), G01 (84.1%), and G02 (78.8%)—reflecting that high-impact campaigns consistently aim for systemic change rather than one-off outcomes.

Table B-8 G08 Policy Reform — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Marjan Minnesma	2022	Netherlands (Europe)	Q1=1 Q2=2 Q3=2 Q4=2	The Urgenda climate case established the judicial precedent that states have a legal obligation to set adequate emissions targets in line with the best available climate science, directly driving amendments to Dutch national climate legislation and triggering analogous cases and legislative reforms across multiple European countries.
Kimiko Hirata	2021	Japan (Islands)	Q1=1 Q2=2 Q3=2 Q4=2	Drove Japan to codify a 2050 carbon neutrality goal and a coal phase-out roadmap into binding policy frameworks, converting financial institutions' divestment pledges into a lever for systemic regulatory change and prompting a restructuring of Japan's climate policy.
Ursula Sladek	2011	Germany (Europe)	Q1=1 Q2=1 Q3=2 Q4=3	Following the 1986 Chernobyl disaster, led residents of Schönau in Germany's Black Forest to buy back the local municipal grid from a large energy conglomerate and established Schönau Power Supply (EWS Schönau), a community cooperative targeting 100% renewable energy. The model became a policy reference for the community

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				energy provisions of Germany's Renewable Energy Act.
Sinegugu Zukulu & Nonhle Mbuthuma	2024	South Africa (Africa)	Q1=1 Q2=1 Q3=2 Q4=2	Used litigation to win a South African court ruling that voided Wild Coast offshore exploration permits, while simultaneously advancing government commitments to bring the affected waters under a marine protected-area framework—pressing for policy reform through judicial and legislative channels in parallel.

G09 Community Conservation

Activation rate: 325 / 883 records across full dataset (36.8%)

Community Conservation refers to campaigns whose goal is to establish or restore communities' autonomous management of natural resources—including securing formal recognition of community roles in resource governance, rebuilding traditional governance systems, or establishing community monitoring and veto rights. This gene has a strong positive correlation with G07 (Indigenous Sovereignty), but its scope is broader: fisheries, forestry, and water conservation cases in non-indigenous communities also activate it frequently.

Table B-9 G09 Community Conservation — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Ikal Angelei	2012	Kenya (Africa)	Q1=3 Q2=4 Q3=1 Q4=2	Alongside the fight to halt the Gibe III dam, pressed for formal mechanisms giving Lake Turkana communities a recognized role in water resource management decisions—embedding community monitoring rights and informed consent into Kenya's national

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				water governance framework.
Jesús León Santos	2008	Mexico (North America)	Q1=1 Q2=5 Q3=2 Q4=3	Revived the Mixtec collective land management system (tequio) to rebuild community-led governance over highland and water resources, keeping full decision-making and operational authority for large-scale ecological restoration within the community rather than ceding it to outside agencies.
Murrawah Maroochy Johnson	2024	Australia (Islands)	Q1=1 Q2=1 Q3=2 Q4=2	As a traditional custodian of the Wirdi and Birri Gubba Nation, mobilized community members to participate in legal proceedings and policy advocacy, combining indigenous land sovereignty arguments with climate justice framing to secure recognition of the community as an independent legal participant rather than a consultative body.
Tero Mustonen	2023	Finland (Europe)	Q1=1 Q2=5 Q3=2 Q4=3	Rebuilt traditional ecological knowledge documentation systems within Sami and Karelian communities in eastern Finland, bringing local knowledge of fisheries, wetlands, and forests into the formal national environmental assessment process—using community knowledge sovereignty as a counterweight to external resource extraction plans.

G10 Health Justice

Activation rate: 576 / 883 records across full dataset (65.2%)

Health Justice refers to campaigns that place the concrete health damage of environmental destruction on marginalized communities at the center of their advocacy narrative, building a

record of harm through medical data, disease prevalence statistics, or toxicological evidence—and positioning health rights alongside environmental rights as the foundation of their demands. Activation rates are highest in North American and Asian cases.

Table B-10 G10 Health Justice — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Nohra Padilla	2013	Colombia (South & Central America)	Q1=3 Q2=2 Q3=2 Q4=3	Using systematic evidence of health damage suffered by waste pickers living near Bogotá's Doña Juana landfill, drove the Colombian Supreme Court to rule that urban waste management must incorporate a cooperative waste-collection system—translating environmental health justice claims into binding policy.
Rashida Bee & Champa Devi Shukla	2004	India (Asia)	Q1=1 Q2=3 Q3=2 Q4=3	As Bhopal gas tragedy survivors, gathered medical evidence of multigenerational health damage and documented the genetic effects of the 1984 disaster on survivors' children—pressing for health compensation and medical relief in Indian and international courts and advancing international standards for long-term corporate liability in chemical disasters.
Nalleli Cobo	2022	United States (North America)	Q1=1 Q2=1 Q3=2 Q4=2	From the age of nine, systematically documented nosebleeds, headaches, and asthma among residents near oil wells in South Los Angeles, bringing health damage evidence through citizen science monitoring and public testimony into South Coast Air Quality Management District review procedures—ultimately prompting the Los Angeles City Council and Los Angeles County Board of Supervisors to vote to ban new urban oil well permits.

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Laurene Allen	2025	United States (North America)	Q1=1 Q2=2 Q3=2 Q4=2	Using blood and drinking water PFAS concentration data from residents of Merrimack, New Hampshire, pressed Saint-Gobain to accept responsibility for more than twenty years of contamination cleanup and drove the EPA to formally list multiple PFAS compounds as hazardous substances.

G11 Alternative Economy

Activation rate: 35 / 883 records across full dataset (4.0%)

Alternative Economy refers to campaigns that, while halting harmful activity, provide or build a sustainable alternative livelihood for affected communities—responding to the "stop development means stop growth" counterargument with an actually functioning economic alternative. This gene has the lowest activation rate of the twelve (4.0%). In high community dependency contexts (Q3=1), its rate rises above the dataset average, indicating that demonstrating an alternative economy becomes a more critical supporting strategy when livelihoods depend heavily on threatened resources.

Table B-11 G11 Alternative Economy — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Jesús León Santos	2008	Mexico (North America)	Q1=1 Q2=5 Q3=2 Q4=3	Revived traditional collective labor practices in degraded Mixtec highland communities in Oaxaca, leading community members to plant more than one million trees and developing an alternative agricultural livelihood built on watershed protection—demonstrating that biodiversity conservation and community economic sustainability can reinforce each other.
Hammerskjoeld	2007	Zambia	Q1=3	In the North Luangwa River basin,

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Simwinga		(Africa)	Q2=2 Q3=2 Q4=3	converted communities that had historically depended on poaching into active beneficiaries of conservation, building community beekeeping, fish farming, and ecotourism to replace poaching income—establishing a self-sustaining conservation dividend economic model.
Nohra Padilla	2013	Colombia (South & Central America)	Q1=3 Q2=2 Q3=2 Q4=3	Transformed Bogotá's informal waste pickers from unrecognized, unpaid laborers into holders of formal municipal solid waste service contracts, establishing the city's largest waste sorting cooperative and demonstrating that the informal sector can become a core economic force in urban circular economies.
Ursula Sladek	2011	Germany (Europe)	Q1=1 Q2=1 Q3=2 Q4=3	In Germany's Black Forest, led the buyback of the municipal grid from a large energy conglomerate and established Schönau Power Supply (EWS Schönau), a community cooperative targeting 100% renewable energy—the most widely cited grassroots alternative-economy demonstration in Germany's energy transition, inspiring dozens of communities to replicate the model.

G12 Transnational Accountability

Activation rate: 571 / 883 records across full dataset (64.7%)

Transnational Accountability refers to campaigns that extend legal accountability beyond national borders—by suing transnational corporations in their home country's courts, using international treaty mechanisms to hold governments to account, or invoking

international legal frameworks to pressure domestic authorities. With an activation rate of 64.7%, and a sustained increase in new cases since 2015, this gene reflects the deepening integration of environmental movements with the international legal system.

Table B-12 G12 Transnational Accountability — Representative Laureate Cases

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
Chima Williams	2022	Nigeria (Africa)	Q1=3 Q2=2 Q3=2 Q4=1	Brought a transnational lawsuit against Royal Dutch Shell's parent company in Dutch courts for oil pollution in the Niger Delta. The Dutch Court of Appeal's 2021 ruling requiring Shell subsidiaries to pay compensation to affected communities became a landmark: the first time an African community won extraterritorial litigation against a transnational oil company.
Marjan Minnesma	2022	Netherlands (Europe)	Q1=1 Q2=2 Q3=2 Q4=2	The Urgenda climate case prevailed at all three levels of the Dutch court system, establishing a global precedent that citizens can invoke international human rights law to sue their own government for inadequate climate action. Its litigation template has since been cited in the United Kingdom, Ireland, Germany, Belgium, and more than a dozen other countries.
Alfred Brownell	2019	Liberia (Africa)	Q1=3 Q2=3 Q3=2 Q4=2	Built cross-border compliance pressure through the RSPO international certification system, UN Special Rapporteur mechanisms, and European institutional investor networks—deploying a multilayered transnational accountability strategy that drove Golden Veroleum Liberia to vacate contested land, with concessions issued without traditional community consent

Laureate	Year	Country / Region	Q Profile	Strategy in Practice
				declared void.
Marcel Gomes	2024	Brazil (South & Central America)	Q1=1 Q2=1 Q3=2 Q4=2	Through ReporterBrasil, built an Amazon deforestation supply chain traceability database and provided EU regulators and international buyers with auditable evidence of supply chain contamination—directly influencing the technical standards of the EU Deforestation Regulation (EUDR) and institutionalizing a cross-border supply chain accountability mechanism.

Appendix C Coding Manual

This manual serves as a reference for encoding new cases into The Goldman Environmental Prize Strategic Gene Database. It covers operational coding standards for 12 strategic genes (G01–G12), value assignment rules for 4 contextual variables (Q1–Q4), and format specifications for all database fields. All definitions are based on the current database version (1993–2026) and are consistent with the main report chapters.

I. Strategic Gene Overview (G01–G12)

The table below lists the ID, English name, full-dataset activation rate, and winner activation count for each of the 12 strategic genes. “Activation rate” refers to the proportion of all 883 records coded as 1 for that gene; “Winners activated” refers to the number of winners (win=1) among the 198 winners who activated that gene.

Table C-1 12 Strategic Genes: Overview (Source: Goldman Strategic Gene Database, 883 records, 1993–2026)

Gene ID	Name	Full Dataset Activation Rate	Winners Activated (n=198)
G01	Strategic Litigation	84.1%(743/883)	165
G02	Scientific Evidence	78.8%(696/883)	155
G03	Community Organizing	100%(883/883)	198
G04	Direct Action	32.4%(286/883)	80
G05	Financial Leverage	12.6%(111/883)	26
G06	Exposing Corruption	42.0%(371/883)	95
G07	Indigenous Sovereignty	19.4%(171/883)	49
G08	Policy Reform	69.9%(617/883)	151
G09	Community Conservation	36.8%(325/883)	93
G10	Health Justice	65.2%(576/883)	125
G11	Alternative Economy	4.0%(35/883)	12

Gene ID	Name	Full Dataset Activation Rate	Winners Activated (n=198)
G12	Transnational Accountability	64.7%(571/883)	140

II. Gene Coding Standards (G01–G12)

Each gene uses binary coding (0/1). A value of 1 indicates that the strategy has clear documentary evidence in the case; 0 indicates no verifiable evidence, or only marginal mention. Coding follows a conservative principle: code 1 only when evidence is present, and code 0 when uncertain.

G01 Strategic Litigation

Table C-3 G01 Strategic Litigation: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	84.1% (743/883); 165 of 198 winners
Core Definition	The movement actively deploys judicial proceedings as an offensive tool: filing lawsuits, seeking legal writs, and invoking statutes to compel enforcement, with the goal of holding polluters accountable or correcting regulatory failures.
Coded as 1 (any one of the following)	(Any one of the following) ① Filing a formal lawsuit in court to halt pollution or establish accountability ② Seeking a court injunction to block a project from proceeding ③ Using legal channels to compel regulatory agencies to fulfill their enforcement obligations ④ Invoking legal mechanisms to force disclosure of information or revocation of permits
Coded as 0	① Issuing statements that legal action is “under consideration,” with no actual filing ② Participating only in government-led administrative procedures (e.g., public hearings), without initiating litigation ③ Retaining legal counsel for advice only, with no courtroom action
Distinction from G08	G01 targets specific litigation and accountability (court rulings); G08 targets systemic change to rules and institutions (legislation, policy revision). The same

Coding Item	Description
	movement may activate both.
Distinction from G12	G12 specifically covers cross-border legal accountability (e.g., suing a transnational corporation in a foreign court); G01 encompasses domestic litigation at all levels. When G12=1, G01 is typically also 1.

G02 Scientific Evidence

Table C-4 G02 Scientific Evidence: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	78.8% (696/883); 155 of 198 winners
Core Definition	The movement commissions or uses scientific research, independent data collection, toxicological testing, or ecological monitoring to construct a verifiable chain of documented harm, strengthening the scientific credibility of its advocacy claims.
Coded as 1 (any one of the following)	(Any one of the following) ① Commissioning or conducting independent scientific research, epidemiological surveys, or water/soil/air quality testing ② Collaborating with research institutions to collect and publish environmental harm data ③ Using scientific data as the core evidence in litigation, policy advocacy, or public communication
Coded as 0	① Citing only previously published public data, with no independent data collection ② Relying solely on community residents' direct observations, without systematic scientific methodology
Key distinction from G06	G02: The movement itself leads or commissions original data collection (building evidence from scratch). G06: The movement exposes information that already exists but has been deliberately concealed (bringing hidden information to light). If a movement both tests pollutants and exposes corporate cover-ups, both G02 and G06 are coded as 1.

G03 Community Organizing

Table C-5 G03 Community Organizing: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	100% (883/883); all cases coded as 1
Core Definition	Establishing or mobilizing community organizations and grassroots networks, bringing scattered individuals together into a political body capable of collective action. G03 is a prerequisite for all records in the database, reflecting the Goldman Environmental Prize's foundational requirement that effective advocacy be rooted in community.
G03_Lead field	G03_Lead=1: Community organizing is the movement's core, primary strategy (the movement is built around this axis). G03_Lead=0: Community organizing provides supporting structure, while other strategies (e.g., litigation, scientific research) are the primary drivers. Note: All cases have G03=1; the G03_Lead field requires a separate judgment.
Note	G03=1 applies to all cases and does not require case-by-case judgment. Coders should direct their attention to the G03_Lead field and the activation status of the other 11 genes.

G04 Direct Action

Table C-6 G04 Direct Action: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	32.4% (286/883); 80 of 198 winners
Core Definition	Taking direct action — blockades, occupations, demonstrations, or physical obstruction — to physically interrupt or delay harmful activities. G04 has the lowest activation rate among the three mid-frequency genes; when activated, it co-occurs with G01 (litigation) at a rate of 88.1%.
Coded as 1 (any one of the following)	(Any one of the following) ① Organizing physical blockades of construction sites, ports, mining areas, or pollution sources ② Occupying threatened areas to establish protest camps, preventing bulldozers or logging equipment from entering ③ Using physical obstruction to slow the advance of harmful activities

Coding Item	Description
Coded as 0	① Organizing indoor meetings, petition drives, or street marches only (no physical blocking intent) ② Holding signs outside a decision-making body only, with no physical contact or obstruction
Background note	In the 286 cases where G04 is activated, 88.1% also activate G01, reflecting a two-track pattern in which direct action creates a time window while litigation consolidates the outcome. G04 shows the highest activation rate in Europe (44.1%) and lower rates in Asia and Africa (approximately 25%), consistent with regional differences in civil assembly rights.

G05 Financial Leverage

Table C-7 G05 Financial Leverage: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	12.6% (111/883); 26 of 198 winners
Core Definition	Applying pressure to the financial infrastructure of harmful projects or industries — including pushing for bank divestment, insurance withdrawal, institutional investor exit, or supply chain boycotts — to cut off economic support and halt damaging activities.
Coded as 1 (any one of the following)	(Any one of the following) ① Targeting lending banks, underwriters, or shareholders with divestment advocacy that produces visible impact ② Pushing institutional investors to file shareholder resolutions or divest from relevant holdings ③ Organizing consumer or supply-chain partner boycotts that cause measurable economic damage
Coded as 0	① Calling on companies to “change behavior” only, without targeting their financial sources ② Publishing reports criticizing an investment institution’s funding flows, without organized pressure campaigns
Background note	G05 has a relatively low overall activation rate (12.6%), primarily because the strategy requires knowledge of capital markets and the capacity to build

Coding Item	Description
	transnational networks. From the 2020s onward, systematic industry-wide divestment campaigns (e.g., targeting the fossil fuel sector) have significantly expanded the strategic scope of G05.

G06 Exposing Corruption

Table C-8 G06 Exposing Corruption: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	42.0% (371/883); 95 of 198 winners
Core Definition	Actively exposing corruption, bribery, or conflicts of interest — or pushing deliberately concealed corporate misconduct and government failures into the public domain. G06 codes for the active act of bringing information from hidden to visible, not general scientific communication.
Coded as 1 (any one of the following)	(Any one of the following) ① Obtaining blocked government documents through freedom-of-information requests and publishing them ② Protecting and assisting whistleblowers in providing internal evidence to media or judicial bodies ③ Collaborating with investigative journalists to expose specific evidence of corporate violations or official corruption ④ Obtaining and releasing internal corporate documents proving that a company knew and concealed harm
Coded as 0	① Issuing statements criticizing government or corporate policy only, with no disclosure of specific concealed information ② Commissioning independent environmental testing (this is G02) ③ Reporting only publicly available data or facts
Key distinction from G02	G02: The movement constructs original evidence (actively producing information). G06: The movement exposes existing but concealed information (actively disclosing information). Both may be activated simultaneously.

G07 Indigenous Sovereignty

Table C-9 G07 Indigenous Sovereignty: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	19.4% (171/883); 49 of 198 winners
Core Definition	Using indigenous territorial rights, cultural rights, or treaty rights as the core legal and political argument, invoking UNDRIP (the UN Declaration on the Rights of Indigenous Peoples), domestic land treaties, or traditional knowledge protection frameworks to advance advocacy.
Coded as 1 (any one of the following)	(Any one of the following) ① The movement is an indigenous community that explicitly asserts territorial sovereignty or traditional land-use rights ② The movement's core legal argument is violation of the Free, Prior and Informed Consent (FPIC) principle ③ Invoking current treaty provisions or domestic indigenous land rights statutes in litigation or advocacy
Coded as 0	① The case involves an indigenous community, but the core of the advocacy is environmental harm, not a sovereignty claim ② An actor claims to speak on behalf of indigenous people, but is not a community member and has not received community authorization
Logical constraint	G07=1 necessarily corresponds to G09=1, because an indigenous sovereignty claim inherently contains elements of community-controlled conservation. This has been verified across the full dataset, with zero violations. If G07=1 and G09=0, rechecking is required.

G08 Policy Reform

Table C-10 G08 Policy Reform: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	69.9% (617/883); 151 of 198 winners
Core Definition	Driving systemic reform of legislation, regulatory frameworks, or institutional structures, with the goal of changing the rules rather than resolving a single case. G08 represents a strategic escalation from "stopping one project" to "changing an entire set of rules."
Coded as 1 (any one of	(Any one of the following)

Coding Item	Description
the following)	① Lobbying a legislature to pass new environmental protection laws or revise existing regulations ② Pushing government agencies to revise environmental impact assessment standards or enforcement procedures ③ Pushing for the creation of new regulatory bodies or the restructuring of existing agency mandates ④ Participating in international agreement negotiations to advance rule-setting at the international level
Coded as 0	① Demanding that the government enforce existing laws (enforcement demands fall under G01, not G08) ② Criticizing existing policy without proposing a systemic reform agenda or driving substantive change
Distinction from G01	G01: Using the existing legal framework to establish accountability (litigating a case). G08: Changing the legal framework itself (changing the rules). Their co-occurrence rate is 60.9%; they are frequently used in combination.

G09 Community Conservation

Table C-11 G09 Community Conservation: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	36.8% (325/883); 93 of 198 winners
Core Definition	Community-led establishment of nature reserves, protected areas, or sustainable resource management systems — where the community, not the government or an NGO, holds substantive decision-making authority and management control. The key criterion is “community self-governance,” not merely community participation.
Coded as 1 (all of the following)	(All of the following) ① A community-led conservation management mechanism exists with substantive decision-making authority ② The conservation target (land, ocean, forest, etc.) has a defined geographic boundary ③ The community holds veto power or primary authority over resource use and conservation decisions

Coding Item	Description
Coded as 0	① The community participates in a government-led conservation project but has no substantive decision-making authority ② The movement blocked a development project but established no community-led ongoing management mechanism ③ An NGO operates conservation work within the community, with the community as beneficiary rather than governing body
Logical constraint	G07=1 (Indigenous Sovereignty) necessarily corresponds to G09=1, because indigenous territorial self-governance inherently contains community-controlled conservation elements. If G07=1 and G09=0, rechecking is required.

G10 Health Justice

Table C-12 G10 Health Justice: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	65.2% (576/883); 125 of 198 winners
Core Definition	Using the concrete health harms of environmental destruction on human bodies as the core frame of advocacy: translating ecological issues into medical evidence, morbidity data, and toxicological reports, making abstract harm into a concrete victim narrative that cannot be dismissed.
Coded as 1 (any one of the following)	(Any one of the following) ① Using health data from pollution-affected residents (disease rates, mortality, birth defects) as core evidence ② Commissioning medical institutions or toxicologists to assess the human health impacts of pollutants ③ Incorporating an “environmental justice” framework into advocacy (particularly addressing unequal health risks in marginalized communities)
Coded as 0	① Focusing only on ecosystem damage (species extinction, habitat loss), with no explicit human health framework ② Only general claims that “pollution is harmful to health,” with no specific data or victim narrative
Regional variation	North America shows the highest activation rate (79.6%), consistent with the region’s developed environmental justice movement and established

Coding Item	Description
	toxicological litigation tradition. Asia, Europe, South America, and Islands all fall between 61% and 65%, with a relatively even distribution.

G11 Alternative Economy

Table C-13 G11 Alternative Economy: Coding Criteria

Coding Item	Description
Full Dataset Activation Rate	4.0% (35/883); 12 of 198 winners (lowest in the full dataset)
Core Definition	Actually building and operating a sustainable alternative economic model, demonstrating in concrete practice that environmental protection and livelihood maintenance can coexist — not remaining at the level of advocacy alone.
Coded as 1 (demonstration element required)	(The following demonstration element is required) ① An operational organic farming, ecotourism, sustainable forestry, or other alternative livelihood project has been established ② The alternative model generates sustainable community income that does not depend on external donations to operate ③ A demonstration model replicable by other communities
Coded as 0	① Only proposing or advocating alternative livelihoods, without actually building or operating a project ② Providing short-term employment training or subsidies that have not yet formed a self-sustaining economic model
Background note	G11 activation rates are notably higher in the Victory phase (10.3%) than in Early/Emerging (approximately 2%) or Escalating (approximately 3%) phases, suggesting that alternative economic demonstration typically emerges after movements have achieved deeper institutionalization. South America shows the relatively highest activation rate (8.2%).

G12 Transnational Accountability

Table C-14 G12 Transnational Accountability: Coding Criteria

Coding Item	Description
Full Dataset Activation	64.7% (571/883); 140 of 198 winners

Coding Item	Description
Rate	
Core Definition	Crossing national borders to hold corporations or governments accountable for environmental damage, using international courts, foreign courts, international organizations, or transnational alliances. This includes: treaty-based international legal accountability (UN mechanisms), litigation against transnational parent companies in foreign courts (private law accountability), and pressure through international financial institution accountability mechanisms.
Coded as 1 (any one of the following)	(Any one of the following) ① Filing complaints with international courts, UN human rights bodies, or regional human rights courts ② Initiating litigation in the defendant company's home country against the harm caused by its subsidiary in a third country ③ Using transnational advocacy networks to coordinate legal or political pressure campaigns across multiple countries ④ Triggering the complaint mechanisms or compliance reviews of the World Bank, IMF, or similar institutions
Coded as 0	① Only filing domestic litigation against a foreign-invested company (registered locally) in domestic courts, within the domestic legal framework ② Only citing international convention provisions in domestic courts, with no substantive cross-border accountability action
Temporal trend	G12 shows the most pronounced temporal decline in the full dataset: activation rate was 82.1% in 1993–2000 and fell to 32.4% after 2020, closely tracking the erosion of multilateral institutional credibility. When coding recent cases, use actual documented actions as the basis; do not expand coding range subjectively based on the gene's historical high frequency.

III. Contextual Variable Coding Standards (Q1–Q4)

The four Q values describe the external conditions of the movement's operating environment. Coding is referenced to the period of the movement's "primary achievement," not the activist's career starting point. When a movement spans multiple phases, the phase at the time of Goldman nomination or award is used as the basis.

Q1 Political Environment

Table C-15 Q1 Political Environment: Value Definitions

Value	Label	Coding Criteria	Full Dataset %
1	Democratic/Open	Legal remedy channels are accessible; independent media exists; civil society space is relatively safe. Reference: Freedom House "Free" rating. Typical countries: United States, Australia, Germany, Brazil (democratic period).	63.1% (557/883)
2	Authoritarian	Government actively suppresses advocacy activity; independent media is restricted; legal channels are unreliable or dangerous. Reference: Freedom House "Not Free" rating. Typical: Indonesia (Suharto era), Russia, Myanmar (military period).	13.6% (120/883)
3	Political Transition	Institutional rules are under construction, enforcement is unstable; legal channels exist but carry significant uncertainty. Reference: Freedom House "Partly Free" rating. Typical: Eastern Europe post-1989, Latin American transition democracies.	23.3% (206/883)

Coding basis: Q1 coding uses the Freedom House annual freedom index as the primary reference, supplemented by descriptive judgment of the movement's actual operating space. If Freedom House ratings for a given year clearly conflict with the movement conditions described in the source documentation, the documentation description takes precedence and the discrepancy is noted in the source field.

Q2 Primary Adversary

Table C-16 Q2 Primary Adversary: Value Definitions

Value	Label	Coding Criteria	Full Dataset %
1	Government	Government agencies at any level, or regulatory bodies, are the movement's direct adversary. This includes government-led resource extraction, regulatory failure, and forcible implementation of development projects.	81.5% (720/883)
2	Corporate	Private corporations or commercial industry groups	7.9% (70/883)

Value	Label	Coding Criteria	Full Dataset %
		are the primary adversary; government exists but is not the primary pressure target. Typical scenario: foreign mining companies operating in violation of regulations, factory discharge — the movement targets corporations directly.	
3	State-Corporate Alliance	Corporations carry out the destruction while the government actively permits or protects them, forming a mutual interest bloc; the movement must confront both simultaneously. Typical scenario: government approves a transnational company's mining operations on indigenous territory and suppresses opposition.	6.8% (60/883)
4	International Finance	Multilateral institutions such as the World Bank, IMF, or regional development banks drive harmful projects through financing conditions and are the core adversary. The reference set is only n=3 — extremely rare; Appendix A does not provide recommendations for this profile.	0.3% (3/883)
5	Systemic	The threat comes from the compounded effect of multiple types of forces (market mechanisms, government policy, armed conflict, etc.) with no single identifiable primary adversary; or the movement targets a systemic industry or policy problem rather than a specific actor.	3.4% (30/883)

Coding note: Q2 is a single-select field — choose the "primary / most direct" adversary of the movement. When facing both corporate harm and government complicity simultaneously, if both are equally central, select Q2=3 (State-Corporate Alliance). If government is the ultimate decision-maker (e.g., granting permits), select Q2=1. Secondary adversaries may be noted in the project summary field.

Q3 Community Resource Dependence

Table C-17 Q3 Community Resource Dependence: Value Definitions

Value	Label	Coding Criteria	Full Dataset %
1	High	Community members' food, water, or direct income is highly dependent on the specific threatened natural resource, with no alternative livelihood sources. Typical scenario: fishing communities that rely entirely on a threatened river as their sole source of income.	1.8% (16/883)
2	Moderate	The community is affected but has alternative livelihood options; or most members' livelihoods are partially dependent on the threatened resource. This is the dominant category in the dataset (93.5%), reflecting that the Goldman Environmental Prize cases are primarily middle-ground situations.	93.5% (826/883)
3	Low	The movement is primarily led by professionals (lawyers, scientists, urban activists) with no direct livelihood ties to the threatened resource; or the movement addresses abstract ecological values rather than direct subsistence concerns.	4.6% (41/883)

Coding note: Q3=2 is the default for the vast majority of cases. Depart from Q2=2 only when a case explicitly describes a community as almost entirely dependent on the threatened resource (Q3=1), or when a case is clearly led by professionals with no direct livelihood ties to the threatened resource (Q3=3).

Q4 Movement Stage

Table C-18 Q4 Movement Stage: Value Definitions

Value	Label	Coding Criteria	Full Dataset %
1	Early/Emerging	The issue has just been identified; organization is low; a stable advocacy network has not yet formed; the adversary has not yet fully mobilized. The phase is assessed at the time of Goldman nomination or award.	19.6% (173/883)
2	Escalating	A core network has been established and sustained confrontation is ongoing; alliances are expanding;	68.3% (603/883)

Value	Label	Coding Criteria	Full Dataset %
		resources and pressure are concentrated; the outcome is undecided. Meaningful progress may have been achieved at the tactical or local level — including project cancellations, court injunctions, or local ordinances — but systemic, institutional, and binding policy change at the national scale (Q4=3) has not yet been reached.	
3	Victory	The movement has achieved a systemic, institutional, or legislative change that directly addresses the core policy goal of the campaign — for example, a binding national law enacted, a regulatory framework established with enforcement authority, or an irreversible institutional decision issued by a competent government body. Tactical wins that fall short of systemic change — including single-project withdrawals, temporary court injunctions, or local ordinances without broader policy effect — do not qualify as Q4=3 and should remain coded as Q4=2. The key test is whether the change is binding, durable, and operates at the scale of the movement's stated systemic goal.	11.1% (98/883)
4	Post-Victory	The primary goal has been achieved; the movement has entered institutionalized operation or enforcement monitoring; the adversary’s substantive mobilization has effectively ended. The sub-sample is very small (n=9); code with particular care.	1.0% (9/883)

Coding Note: Use the period of "primary achievement" as the reference point, not the activist's career starting point. When a case spans multiple phases, use the most recent phase at the time of Goldman nomination. Q4=2 (Escalating) is the most common coding (68.2% of all records, 72.2% among winners), reflecting both the Goldman Prize's design logic — which typically recognizes movements at the point of maximum strategic pressure — and the deliberately high threshold set for Q4=3. Coders should not treat Q4=2 as a residual or default category; it describes a substantively distinct phase in which confrontation is sustained, alliances are expanding, and while meaningful progress may have been achieved at the tactical or local level, systemic policy change at the national scale remains undecided.

IV. Complete Database Field Descriptions

The table below lists the names, data types, and value rules for all 23 database fields, ordered by column sequence.

Table C-2 Complete Database Field Descriptions (23 fields)

No.	Field Name	Type	Value Description
1	Year	Integer	Year of nomination or award; range 1993–2026
2	Name	Text	Full name of candidate or laureate; joint nominations separated by "~" (e.g., "Forslund ~ Zukulu")
3	Country	Text	Country where the candidate primarily works (English country name)
4	Region	Text	The Goldman Environmental Prize six regions: Africa / Asia / Europe / Islands and Island Nations / N.Am / S.Am
5	win	0/1 Integer	1=The Goldman Environmental Prize winner in that year; 0=finalist but did not win
6	G01_Strategic Litigation	0/1	See Section II, G01 coding standards
7	G02_Scientific Evidence	0/1	See Section II, G02 coding standards
8	G03_Community Organizing	0/1	All records = 1; prerequisite for inclusion; see Section II, G03
9	G04_Direct Action	0/1	See Section II, G04 coding standards
10	G05_Financial Leverage	0/1	See Section II, G05 coding standards
11	G06_Exposing Corruption	0/1	See Section II, G06 coding standards
12	G07_Indigenous Sovereignty	0/1	See Section II, G07 coding standards; G07=1 requires G09=1 to be verified
13	G08_Policy Reform	0/1	See Section II, G08 coding standards

No.	Field Name	Type	Value Description
14	G09_Community Conservation	0/1	See Section II, G09 coding standards; when G07=1, G09 must be 1
15	G10_Health Justice	0/1	See Section II, G10 coding standards
16	G11_Alternative Economy	0/1	See Section II, G11 coding standards
17	G12_Transnational Accountability	0/1	See Section II, G12 coding standards; when G12=1, G01 is typically also 1 (11 justified exceptions manually reviewed)
18	G03_Lead	0/1	1=community organizing is the core, primary strategy; 0=supporting role only. Applies to all records (G03=1 for all)
19	Q1_Political Environment	1/2/3	1=Democratic/Open; 2=Authoritarian; 3=Political Transition; see Section III, Q1
20	Q2_Primary Adversary	1–5	1=Government; 2=Corporate; 3=State-Corporate Alliance; 4=International Finance; 5=Systemic; see Section III, Q2
21	Q3_Community Dependence	1/2/3	1=High; 2=Moderate; 3=Low; see Section III, Q3
22	Q4_Movement Stage	1–4	1=Early/Emerging; 2=Escalating; 3=Victory; 4=Post-Victory; see Section III, Q4
23	Data Source Tier	Text	Primary archive (highest reliability) / Website verified / Website supplemented

VII. Limitations and Usage Notes

The following limitations of the database and coding framework are acknowledged. Users should take these into account when interpreting data and applying the coding manual.

Binary coding limitation. The 0/1 coding cannot capture differences in strategic intensity. Two cases that both activate G01 may differ significantly in the scale of litigation and the centrality of the legal strategy to the movement, yet produce identical coding outcomes. Equal codes do not imply equal strategic depth.

Mutual exclusivity of Q2. Q2 is currently single-select, though actual cases often involve compound adversaries. When facing multiple opponents, select the one that is "most direct and most decisive in determining the movement's outcome"; note the remaining adversaries in the project summary field.

Functional overlap between certain genes creates disagreements during coding. The two most common boundary cases are: when G02 (Scientific Evidence) and G06 (Exposing Corruption) appear together, the key distinction is whether the movement's primary strategic tool is the scientific data itself or the public exposure of improper interests; the boundary between G01 (Strategic Litigation) and G08 (Policy Reform) lies in whether the movement uses judicial proceedings as its primary mechanism. This database applies a conservative coding principle throughout: when uncertain, code 0 rather than 1, with the specific reasoning recorded in the notes field.

Version note: This manual is based on the Goldman Strategic Gene Database, March 2026 edition (883 records, 1993–2026, 198 winners). If the database structure or field definitions are subsequently updated, this manual should be revised accordingly.

Appendix D New Case Entry Template

This template is for use by the Goldman Environmental Prize and research teams when adding new cases to the database. Each case corresponds to one completed form. Coding principle: code 1 when documentary evidence is present; code 0 when uncertain; record disagreements in the Notes field.

Block 1 Basic Case Information	
Candidate Name	
Award Year	(e.g., 2026)
Country	
Goldman Region	Africa / Asia / Europe / Islands and Island Nations / N.Am / S.Am (circle one)
Winner (Is_Winner)	□ 1 = Winner □ 0 = Finalist, did not win

Block 2 Four-Dimensional Contexual Framework Diagnosis (Q Values)	
Q1 Political Context	□ 1 = Democratic/Open □ 2 = Authoritarian □ 3 = Political Transition
Q2 Primary Adversary	□ 1 = Government □ 2 = Corporate □ 3 = State-Corporate Alliance □ 4 = International Finance □ 5 = Systemic
Q3 Community Dependence	□ 1 = High □ 2 = Moderate □ 3 = Low
Q4 Movement Stage	□ 1 = Early/Emerging □ 2 = Escalating □ 3 = Victory □ 4 = Post-Victory

Block 3 Strategic Gene Coding (G01–G12, enter 0 or 1 for each)			
Gene	**Name**	**Code**	**Coding Guidance (code 1 if evidence present; 0 if uncertain)**
G01	Strategic Litigation		Was formal litigation, a court injunction, or an enforcement order filed?
G02	Scientific Evidence		Was independent data collection, testing, or epidemiological research commissioned or conducted?
G03	Community Organizing	1 (fixed)	All records default to 1; assess G03_Lead separately (see Chapter 4)
G04	Direct Action		Was there a physical blockade, occupation, or bodily obstruction?
G05	Financial Leverage		Was divestment pressure applied to funders, insurers, or supply-chain partners?
G06	Exposing Corruption		Was existing but concealed information (documents, evidence) actively disclosed?
G07	Indigenous Sovereignty		Is FPIC or indigenous land rights the core legal argument?
G08	Policy Reform		Is legislative, regulatory, or institutional reform an explicit stated objective?

G09	Community Conservation		Does the community hold substantive veto authority over a defined resource area?
G10	Health Justice		Is specific health harm data (disease rates, toxicology) the central advocacy narrative?
G11	Alternative Economy		Is there an operational sustainable alternative livelihood project (beyond advocacy)?
G12	Transnational Accountability		Was accountability action filed in a foreign court or through an international mechanism?

Block 4 Supplementary Fields	
G03_Lead	□ 1 = Community organizing is the core, primary strategy □ 0 = Supporting role only
Case Summary	(≤100 words; cover primary adversary, core strategies, and outcome)
Notes / Disagreement Log	(If coding disagreement exists, record the disputed item and the basis for the final value)

Block 5 Version Update Log

Version	Date	Cases Added	Description of Changes	Editor
v1.0	2026-03	883	Initial version. Baseline: Goldman finalist	

			records, 1993–2026, including 198 winners.	

Note: When updating the database version, please also revise any references to database scale in Appendix A (Complete Strategy Gene Recommendation Table) and Appendix C (Coding Manual), and record the changes in Block 5 above.