Bridging science, policy, practice and purpose: global insights from sustainability leaders driving transformative change

Short title: Bridging science, policy, practice and purpose for sustainability

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Abstract

Seventeen percent of the Sustainable Development Goals are currently on track to be achieved by 2030. That number points to a problem that better frameworks and more ambitious targets have not resolved: the gap between sustainability policy and operational delivery is not primarily a design problem. It is, at least in part, a leadership problem. This study examines how that problem is experienced and navigated by the people closest to it: 37 experienced sustainability and climate leaders working across six continents, multiple sectors, and national to global operational scales, all of whom completed executive education programmes at Harvard University in 2025. Using a qualitative-dominant mixed-methods design, we analysed open-ended survey responses through iterative open, axial, and selective coding, complemented by descriptive quantitative context. Five themes emerged from the

data: sustainability challenges experienced as interconnected system pressures; leadership as a purpose-driven, systems-oriented practice; the persistent gap between governance ambition and implementation reality; innovation and collaboration as the practical mechanisms through which impact is achieved; and strong, largely unprompted support for a Global Sustainability Leadership Framework grounded in practitioner experience. Across all five themes, the findings point toward a consistent picture: sustainability leadership is not defined by positional authority or technical expertise but by the capacity to hold fragmented systems together, sustain ethical commitment under institutional pressure, and carry policy intent across the distance between ambition and action. Purpose, systems thinking, collaboration, and adaptive learning emerged not as aspirational orientations but as the practical tools experienced leaders reach for when governance conditions work against them. These findings contribute empirical grounding to sustainability leadership theory, reframe the policy-practice gap as a leadership and capability challenge, and offer a set of practitioner-derived orientations that could inform future sustainability leadership frameworks: frameworks that provide shared foundations for practice without prescribing uniform solutions, and that are designed to complement rather than replace existing global sustainability architectures.

Keywords: Sustainability leadership; Systems thinking; Policy–practice gap; Science–policy–practice interface; Transformative change; Sustainability governance; Collaboration; Global Sustainability Framework; System Change.

Introduction

Something has gone wrong in the relationship between sustainability ambition and sustainability delivery. The goals are more clearly articulated than ever. The frameworks are more

numerous, more detailed, and more internationally endorsed than at any previous point. And yet the distance between what has been committed to and what is actually happening on the ground continues to widen. Climate change, biodiversity loss, water insecurity, food system fragility, and deepening social inequality are not converging toward resolution: they are compounding one another, creating interlocking crises that cross institutional boundaries and overwhelm governance systems built around the assumption that problems arrive one at a time (1–11). Geopolitical instability, economic shocks, and uneven development trajectories have sharpened those pressures further, hitting hardest in the contexts least equipped to absorb them.

The past decade has seen genuine efforts to meet that challenge. The SDGs, the Paris Agreement, and the expanding architecture of ESG standards and reporting frameworks have shaped institutional priorities and mobilised international commitment at a scale that would have seemed unlikely two decades ago (7,12,13). Yet progress remains uneven and, in many cases, off-track. Seventeen percent: that is the share of SDGs currently on track to be achieved by 2030 (13, 17). About half have made minimal to moderate progress, and more than one-third have stalled or are regressing (13). Recent assessments point to persistent implementation failures, coordination challenges, and capacity constraints, particularly at national and sub-national levels (14–19). The frameworks are in place. The distance between them and operational delivery is not closing.

That distance has a name in the literature: the policy-practice gap. And the implementation record suggests that what is missing is not primarily technical or financial, though those constraints are real. What is missing, or at least insufficiently understood, is the leadership that sits between policy ambition and operational delivery: the capacity to navigate institutional complexity, align competing interests across fragmented governance systems, and sustain coordinated action over timeframes that political cycles rarely accommodate. Recent scholarship has argued that meeting sustainability challenges requires leadership that is systems-oriented, adaptive, values-informed, and capable of

operating across the science-policy-practice interface (20,21). That argument is persuasive. What remains thin is the empirical evidence for how such leadership actually works in practice, who exercises it, under what conditions, and with what consequences for the outcomes it is meant to enable.

Sustainability leadership scholarship has grown substantially over the past two decades, and it has produced useful conceptual ground. There is now reasonable consensus that effective sustainability leadership operates across multiple levels, from individual practitioners to teams, institutions, and governance systems, and that interactions among those levels shape whether sustainability commitments translate into outcomes (22–24). What is less settled is how that leadership works in practice, particularly at the level of individual leaders operating within organisations and governance systems where the day-to-day work of sustainability transformation actually gets done (25–29).

What the literature has been slower to produce is evidence grounded in lived practice. Much of what exists is normative: frameworks prescribing what sustainability leaders should do, competency models describing what they should be, and conceptual arguments about why those capacities matter. Targets, goals, indicators, and reporting mechanisms, however ambitious, do not by themselves address the everyday challenges of coordination, institutional inertia, political negotiation, and learning across fragmented governance systems (25–29,30). Recent scholarship has begun to address this, recognising that sustainability leadership requires capacities for sense-making, translation, collaboration, and responsible judgment under uncertainty (26–31), and calling for frameworks that focus on capabilities and practice rather than on prescriptive solutions. Transformational, collaborative, and adaptive leadership orientations have been identified as particularly relevant to sustainability transitions, and the importance of systems thinking, responsible judgment, and cross-sector coordination has been well argued (32–35). Collaborative governance arrangements and adaptive capacity have received similar attention (36–39). But empirical studies tend to focus on specific sectors or regions, limiting what can be said about leadership practice across the diversity of contexts in which global sustainability challenges

actually unfold. And relatively few studies have centred the perspectives of experienced sustainability leaders themselves, particularly those working across national, regional, and global scales. Three questions remain particularly underexplored as a result. How do sustainability leaders understand and respond to systemic complexity in practice, rather than in hypothetical scenarios? What leadership approaches enable action when institutional conditions are actively constraining rather than enabling? And what role do governance arrangements, innovation, and cross-sector partnerships play in determining whether leadership effort translates into measurable impact? These are not abstract questions. They are the questions that determine whether sustainability leadership frameworks, however well designed, produce anything useful for the practitioners they are intended to serve.

This study takes those three questions seriously by going directly to the people best positioned to answer them. The 37 sustainability and climate leaders whose accounts form the basis of this research are not hypothetical subjects or survey respondents selected for demographic representativeness. They are experienced practitioners, working across six continents and every major sector, who have spent years navigating the institutional terrain that sustainability leadership scholarship has been trying to theorise. Their perspectives, gathered through a qualitative-dominant mixed-methods design combining open-ended survey responses with descriptive quantitative context, offer something the literature currently lacks: practice-based evidence of how sustainability leadership is actually exercised under real conditions of complexity, constraint, and uncertainty.

The study is guided by five objectives. It examines how experienced sustainability leaders understand and respond to system-level complexity in their working environments. It identifies the leadership approaches and capabilities that enable action when institutional conditions are resistant rather than supportive. It investigates how governance arrangements and institutional factors shape what leaders can and cannot achieve. It explores how innovation and cross-sector partnerships contribute to implementation and measurable impact. And it seeks to distil from those accounts a set of

practitioner-grounded orientations that could inform the development of a Global Sustainability Leadership Framework, one designed not to prescribe a universal model but to provide the shared foundations for learning, coordination, and practice that experienced leaders across this study consistently said they lacked.

The orientations that emerge from this study are not offered as a replacement for the SDGs, the Paris Agreement, or any other existing governance architecture. They are offered as a contribution to an ongoing conversation: an attempt to surface, from practitioner experience, the human and relational dimensions of sustainability delivery that goal-oriented frameworks do not address, and to make those dimensions visible enough that future framework development can take them seriously.

Methodology

Study design

The study employed a qualitative-dominant mixed-methods design, combining in-depth analysis of open-ended survey responses with descriptive quantitative summaries of respondent characteristics. The choice of design was driven by the nature of the research questions rather than by methodological preference. Sustainability leadership involves judgment, relationship, and context in ways that resist reduction to predefined variables or measurable scales. Understanding how experienced practitioners conceptualise and navigate that complexity required a design that kept interpretive space open while providing sufficient quantitative context to situate findings transparently. Qualitative analysis formed the primary basis for inductive interpretation. Descriptive quantitative data served a supporting role, grounding themes in the broader characteristics of the respondent group rather than driving analytical conclusions.

Participants and study context

Participants were sustainability and climate change leaders who had completed executive education programmes in Sustainability Leadership and/or Climate Change Policy at Harvard University in 2025. Of 94 eligible participants, 37 completed the survey, representing a response rate of approximately 40%. 36 of the 37 survey respondents are co-authors of this manuscript and contributed to the study and manuscript development. The remaining respondent's contribution is acknowledged in the Acknowledgements section.

The shared executive education context served two functions. It provided a common reference point for sustainability and climate governance frameworks across an otherwise diverse group, and it ensured that participants brought substantial professional experience to their responses rather than hypothetical or early-career perspectives. Respondents worked across national, regional, multi-regional, and global operational scales and represented government, private sector, academia, civil society, healthcare, and consultancy sectors. Because detailed demographic information was not available for all eligible participants, systematic comparison of respondents and non-respondents was not possible. The diversity of sectors, geographies, and operational contexts represented in the sample does, however, suggest reasonable breadth of practitioner perspective within the study's scope.

The lead researcher (first author) personally invited participants to collaborate as co-authors, drawing on their shared participation in Harvard University executive education programmes. Participants were fully informed of the study's purpose and collaborative intent prior to data collection. The survey was administered between 11th of November and 26th of December, 2025. Informed consent was obtained electronically from all participants as part of the data collection instrument, with respondents confirming voluntary participation and agreement to be listed as co-authors or acknowledged contributors prior to completing the survey.

Data collection instrument

Data were collected using a semi-structured online survey consisting primarily of open-ended (free-text) questions, designed to elicit reflective, inductive accounts of sustainability leadership practice. The survey included items addressing: (i) primary sustainability challenges and priorities; (ii) leadership roles and approaches; (iii) experiences of policy implementation and governance; (iv) innovation and collaboration in sustainability initiatives; (v) perceived gaps between policy and practice; and (vi) perspectives on the design and value of a Global Sustainability Leadership Framework. Respondents were also invited to describe their leadership approaches. In this study, leadership approaches referenced by participants—including collaborative, systems-thinking, adaptive, transformational, hierarchical, servant, strategic or visionary, and participatory leadership—are understood as broadly recognized orientations within sustainability and organizational leadership scholarship. Collaborative leadership emphasizes partnership and shared decision-making across diverse stakeholders (40,41). Systems-thinking leadership reflects the capacity to understand and act within complex, interconnected socio-ecological systems (42–44). Adaptive leadership highlights learning and adjustment in response to uncertainty and evolving conditions (45–47), while transformational leadership emphasizes mobilizing actors toward long-term collective change (48,49). Participants also referenced additional leadership orientations, including hierarchical leadership associated with formal authority structures, servant leadership centered on service and empowerment of others, strategic or visionary leadership focused on long-term direction setting, and participatory leadership emphasizing inclusive engagement in decision-making. The concept of purpose, which emerged as a central dimension of leadership in the analysis, refers in this study to the ethical commitments, values, and long-term motivations that orient leaders toward sustainability outcomes. Rather than reflecting only formal organizational mandates, purpose is understood as the normative orientation shaping leadership judgment and action in complex governance contexts (20,50–53).

We intentionally emphasized open-ended questions to allow respondents to articulate experiences in their own words, reducing the risk of constraining responses through predefined categories. The survey also included limited structured items to capture respondent characteristics and contextual information and grounding. Respondents were invited to describe their leadership approaches using examples (e.g., collaborative, systems-thinking, adaptive, transformational), but were not restricted to predefined categories in order to preserve open-ended reflection. All survey responses were retained in their original, self-reported form, and no participant-provided data were altered during processing. A complete data dictionary describing the raw variables of our study is provided in Table 1.

Table 1: Data dictionary for raw survey variables (Source: Author-administered global sustainability leadership survey)

Variable Name	Variable Type	Description	Values / Coding
Participant Profile/ Consent			
Full Name	Text	Participant's full name (for co-authorship or acknowledgement)	Free text
Professional Title and Organization	Text	Participant's professional role and affiliated organization	Free text
Country/Region of Work	text	Self-reported country or region(s) where the participant works	Free text (e.g., USA; UK & APAC; Global)
Sector	Categorical & Text	Sector(s) in which the participant operates	Multiple selections permitted & Free-text
Years of Experience in Sustainability or Climate-Related Work	Ordinal	Length of professional experience in sustainability/climate fields	Ordered ranges
Years of Leadership Experience	Ordinal	Experience leading people, programs, budget, or strategy	Ordered ranges
Leadership Context			
Primary Sustainability Issue	Text	Primary sustainability issue or challenge that the participant's organization focuses on, as described by the respondent	Open-ended (free-text)
Sustainability Role Involvement	Text	Respondent's current role or involvement in advancing sustainability initiatives within their organization or professional context	Open-ended (free-text)
Leadership Approach	Categorical & Text	Leadership approaches or styles the respondent identifies with in their professional practice	Multiple selections permitted & Free-text
Sustainability Leadership Challenge	Text	Respondent-perceived primary challenge(s) encountered in exercising sustainability leadership within their organizational or institutional context	Open-ended (free-text)
Impact and Achievements			
Sustainability Project Impact Example	Text	Narrative description of a sustainability project or initiative the respondent led or contributed to, including the project goal, the respondent's role, and at least one measurable outcome or impact	Open-ended (free-text)
Primary Success Factor	Categorical & Text	Primary factor the respondent perceives as most critical to the success of the sustainability initiative described	Single response option & Free-text
Success Factor Explanation	Text	Respondent's brief explanation of why the selected primary success factor was critical to the sustainability project's success	Open-ended (free-text)
Project Challenge and Response	Text	Narrative description of the most significant challenge or barrier encountered in the sustainability project and the actions taken by the team to address it	Open-ended (free-text)
Innovation, Tools, and Approaches	Categorical & Text	Innovation(s), tool(s), or approach(es) identified by the respondent as significantly contributing to the achievement of measurable sustainability impact	Multiple selections permitted & Free-text
Innovation, Tools, and Approaches Impact Explanation	Text	Respondent's brief explanation of how the identified innovation(s), tool(s), or approach(es) contributed to achieving measurable sustainability impact	Open-ended (free-text)
Systems and Global Perspective			

Urgent Sustainability Priorities	Categorical & Text	Most urgent sustainability priorities identified by the respondent within their region or sector (up to three selections)	Multiple selections permitted & Free-text
Alignment with Global Sustainability Frameworks	Text	Respondent's description of how sustainability efforts within their organization or country align with or support global sustainability frameworks (e.g., SDGs, Paris Agreement, ESG standards).	Open-ended (free-text)
Global Framework Impact Examples	Text	Examples of specific actions, outcomes, or partnerships demonstrating measurable sustainability impact linked to alignment with global frameworks, including reported results, collaborations, or innovations.	Open-ended (free-text)
Global Policy Implementation Gap	Text	Respondent's perception of the most significant gap between global sustainability policies and their real-world implementation	Open-ended (free-text)
Global Sustainability Leadership Framework			
Proposed Core Leadership Principle	Text	Respondent's proposed core principle or leadership capability for inclusion in a Global Sustainability Leadership Framework, including a brief explanation of why it matters.	Open-ended (free-text)
Perceived Framework Value and Application	Text	Respondent's perception of whether a Global Sustainability Leadership Framework would add value in their context and how it could strengthen sustainability practice within their organization or professional environment	Open-ended (free-text)
Global Sustainability Leadership Lessons	Text	Key lessons learned by the respondent through sustainability leadership practice that they believe could benefit practitioners globally (up to three lessons)	Open-ended (free-text)
Collaboration and Shared Learning Mechanisms	Text	Respondent's perspectives on the types of collaboration, networks, or shared learning mechanisms that could most effectively help sustainability leaders accelerate collective global impact	Open-ended (free-text)
The Future of Global Sustainability Leadership			
Future Global Sustainability Leadership Vision	Text	Respondent's vision of what effective global sustainability leadership will look like over the next 5–10 years, including emerging qualities, systems, or collaborative models.	Open-ended (free-text)
Proposed Global Systemic Change	Text	Respondent's proposed global policy, institutional, or systemic change that could strengthen sustainability leadership worldwide, including a brief explanation of why it would be impactful.	Open-ended (free-text)

Derived variable: Operational Scope

To support consistent interpretation of leadership influence across geographic scales, a derived variable - Operational Scope - was created post-collection. Operational Scope captured the geographic breadth of participants' professional responsibilities by applying a hierarchical coding approach informed by (i) self-reported country or region of work, (ii) professional titles, and (iii) organizational mandates. Roles with explicit global responsibility (e.g., Global Director, Head of Global Sustainability) were coded as Global, irrespective of physical base country. Roles spanning multiple countries or regions were coded as Multi-regional, while roles operating across multiple countries within a defined region were coded as Regional. Roles confined to a single country, including sub-national contexts, were coded as National.

We used this derived variable solely as an interpretive lens to contextualize thematic findings and illuminate leadership dynamics across scales, rather than as an analytical driver or predictor for subgroup comparison or hypothesis testing. Separating physical location from operational scope enabled more nuanced interpretation of leadership practice in sustainability governance, where professional influence frequently extends beyond national boundaries. The derivation and coding logic for the Operational Scope variable is summarized in S1 Table.

Data analysis

Descriptive quantitative analysis

We conducted descriptive quantitative analysis to summarize respondent characteristics and provide contextual grounding for the qualitative findings. Frequencies were calculated for variables such as geographic distribution, sectoral representation, leadership experience, sustainability priorities, and

leadership approaches. No inferential statistical analysis was conducted, consistent with the study's exploratory and qualitative emphasis. For open-text questions where respondents could list multiple items (e.g., sustainability priorities and challenges), category counts reflect the number of respondents referencing each category and are not mutually exclusive, meaning totals may exceed the sample size of 37.

Qualitative analysis

Qualitative analysis followed an iterative, inductive coding process informed by established qualitative research practices. All free-text responses across survey items were reviewed in full. Analysis proceeded through three stages: open coding, axial coding, and selective coding.

During open coding, initial low-inference codes were generated directly from the data, capturing key ideas, practices, challenges, and reflections articulated by respondents. Coding remained data-driven and close to participants' language to preserve interpretive fidelity. In the axial coding stage, related open codes were grouped/clustered and organized into broader conceptual categories and examined for patterns, convergence, and relationships across respondents. This process enabled the systemic formation of the study's five thematic areas - preserving overlap where appropriate - which were used to structure the Results section. Selective coding then focused on integrating the five thematic areas into a set of cross-cutting core narratives and an explanatory storyline that captured the overarching meaning of sustainability leadership across contexts. This stage generated the study's integrative interpretations, including how leadership dynamics intersect with systemic pressures, governance barriers, enabling mechanisms, and global alignment needs. Operational Scope did not drive code formation, theme development, or subgroup comparison.

Integration of qualitative and quantitative findings

Integration of qualitative and quantitative findings occurred at the interpretive level, rather than through validating results using multiple statistical approaches. Descriptive quantitative results were used to: situate qualitative themes within the broader respondent context; illustrate the breadth of leadership experiences, and; enhance transparency regarding who contributed which perspectives. Qualitative narratives and exemplar quotations formed the primary evidentiary basis for interpretation. This strategy preserved the inductive nature of the qualitative analysis while providing sufficient contextual grounding to support rigor and credibility.

Development of the conceptual framework

The Global Sustainability Leadership Framework was developed through an iterative synthesis of qualitative findings and integrative interpretation. The framework does not represent a prescriptive model, but rather a conceptual architecture that reflects how sustainability leadership is enacted in practice across diverse contexts. Framework components - including purpose, leadership capabilities, enabling mechanisms, and outcomes - were grounded directly in the thematic findings and refined through repeated comparison between data, themes, and interpretive insights. The framework was designed to emphasize relationships, feedback, and adaptation, consistent with the non-linear nature of sustainability challenges.

Rigor, reflexivity, and limitations

Several strategies were used to support the rigour and credibility of the analysis. Systematic staging of the coding process, from open through axial to selective coding, ensured that interpretive claims remained traceable to the raw data at each stage. Exemplar quotations were selected to anchor thematic findings in participants' own language rather than in the researchers' interpretive paraphrase.

Descriptive quantitative summaries were included not to validate qualitative findings statistically but to provide transparent context about who contributed which perspectives and from which institutional positions.

Reflexivity in this study required attention to two specific conditions. First, the analytical team and the participant group overlap: 36 of the 37 respondents are co-authors of this manuscript. The remaining respondent contributed to the study and is acknowledged accordingly. This is a deliberate feature of the co-produced research design, consistent with established principles of collaborative practitioner research in sustainability science (54,55), but it creates an interpretive risk that findings could reflect participant preferences rather than systematic analysis. This risk was managed by maintaining a clear procedural separation between data collection, coding, and interpretation, and by grounding all thematic claims in the full dataset rather than in the accounts of any individual respondent. Second, the shared executive education context of participants may have influenced the language and conceptual framing they brought to their responses. This is acknowledged as a constraint on the study's scope rather than a flaw in its design: the study is explicitly focused on sustainability leadership as practised within formal institutional settings by experienced professionals, and the participant group reflects that focus. Perspectives from leaders working in less formal, less resourced, or community-based sustainability contexts are not represented here and would require separate, dedicated inquiry.

Ethical considerations

Participation in the study was voluntary, and respondents provided informed consent. Responses were de-identified (anonymized) during analysis and reporting to protect confidentiality, and no personally identifying information is reported here (e.g., individual names or uniquely identifiable organizational identifiers). The study focused on professional experience rather than sensitive personal

data, minimizing potential ethical risk. The views expressed in this article are those of the authors and do not necessarily represent the views or policies of the organisations with which the authors are associated.

Results

Respondent characteristics (quantitative)

Thirty-seven practitioners completed the survey. Table 2 summarises their geographic, sectoral, and professional characteristics in full. Three features of this group are worth noting. Geographic spread was broad, spanning North America, Europe, Africa, Asia, Australia, and Latin America, with several respondents holding multi-regional or global mandates. Sectoral representation was diverse, covering government, private sector, academia, civil society, healthcare, and consultancy. Most consequentially for interpreting the findings, this was not an early-career sample: respondents reported substantial experience in sustainability and climate-related work and held positions with direct responsibility for programme leadership, policy advisory functions, or organisational strategy. They were, in other words, practitioners who had already accumulated the kind of experience this study was designed to learn from.

In this study, sustainability leaders refers to professionals with active responsibility for designing, implementing, advising on, or managing sustainability or climate-related initiatives within their organisations or governance contexts, a definition that reflects the study's focus on leadership within formal institutional settings.

Table 2. The geographic, sectoral, and professional characteristics of the 37 sustainability leaders (Respondents) who participated in the study (N = 37)

Characteristics	Category	n	%
Country / Region of Work	United States	13	35.1

	Canada	3	8.1
	United Kingdom	2	5.4
	Australia	2	5.4
	UK & APAC	1	2.7
	Bangladesh	1	2.7
	Brazil	1	2.7
	Europe (multi-country)	1	2.7
	Global	1	2.7
	Global/United States	1	2.7
	Guyana	1	2.7
	Israel & United States	1	2.7
	Mexico	1	2.7
	Nigeria	1	2.7
	Norway (Maritime sector)	1	2.7
	Pakistan	1	2.7
	Philippines	1	2.7
	Rwanda (East Africa)	1	2.7
	South Africa/Sub-Saharan Africa	1	2.7
	The Netherlands	1	2.7
	Turkey	1	2.7
Operational Scope	National	25	67.6
	Multi-regional	6	16.2
	Global	3	8.1
	Regional	3	8.1
Sector Representation*	Private Sector/Corporate	19	51.4
	Academia/Research	13	35.1
	Government/Public Sector	7	18.9
	Consultancy	4	10.8
	NGO/Non-Profit	2	5.4
	Healthcare	2	5.4
	Utilities	1	2.7
Years of Sustainability/Climate Experience	1-5	11	29.7
	6-10	9	24.3
	11-15	9	24.3
	16-20	7	18.9
	21+	1	2.7
Years of Leadership Experience	1-3	3	8.1
	4-7	12	32.4
	8-12	13	35.1
	13+	9	24.3

Notes:
* Multiple sector selections permitted; percentages may exceed 100%.
Totals may not sum to 100% due to rounding.
Operational scope was used as an interpretive lens only, not as an analytical driver.

Qualitative (thematic) results

Overview of sustainability challenges

Figure 1 shows the distribution of sustainability challenges respondents identified as central to their work. Climate adaptation and mitigation and energy transition were jointly the most frequently cited (n=21 each); the remaining challenges, listed in the order they appear in Figure 1, were water security (n=13), biodiversity and ecosystems (n=8), food systems (n=6), waste and circular economy (n=7), and governance and policy (n=1).

One feature of this distribution is worth noting. The challenges cited most frequently are not discrete problems with clean institutional homes: climate adaptation, energy transition, and water security intersect in ways that make them difficult to address independently, and respondents described experiencing them in exactly that way.

Fig 1. Most frequently cited sustainability challenges reported by respondents (N = 37). Challenge categories were inductively coded from open-ended survey responses, with respondents able to reference multiple challenges. Bars represent the number of respondents identifying each sustainability issue as a key organizational or sectoral focus.

Leadership approaches in sustainability practice

Figure 2 shows the distribution of leadership approaches respondents described using in their practice. Collaborative, systems-thinking, and adaptive orientations were the most frequently referenced, each cited by more than two thirds of respondents, followed by transformational (n=20) and values-driven/ethical and inclusive/participatory orientations (n=18 each).

Respondents did not, for the most part, identify with a single leadership style. They described moving between approaches depending on what a given situation required: more directive when

decisions needed to be made quickly, more collaborative when buy-in across institutional boundaries was the bottleneck, more adaptive when implementation conditions shifted in ways that made earlier plans unworkable. That fluidity was not described as a compromise or a lack of clarity about one's leadership identity. It was described as the job. Several respondents specifically described this adaptive dimension as inseparable from learning: the ability to adjust was grounded not in flexibility for its own sake but in the deliberate extraction of operational insight from experience, including from initiatives that did not go as planned.

Fig 2. Distribution of most frequent leadership approaches described by respondents (N = 37). Leadership approaches were inductively coded from open-ended survey responses. Bars represent the number of respondents referencing each leadership approach; respondents could identify multiple approaches.

Sustainability challenges as interconnected system pressures

When respondents described their primary sustainability challenges, they rarely described a single problem. They described entanglements. One respondent's account captured the pattern plainly: "*Multiple — climate change and water and food and food insecurity in changing environments. Cross-cutting, including energy access and transition, air quality, public health, equity and environmental justice." (R13)*. The challenge, as this respondent framed it, was not choosing between priorities but recognising that the priorities were the same problem wearing different faces.

That entanglement was felt institutionally as much as technically. Respondents described governance structures built around sector-specific mandates that work well when problems stay within their assigned boundaries, and work poorly when they do not. Decarbonisation illustrated this clearly for several respondents. As one put it: "*One of the main sustainability challenges our organisation focuses*

on is decarbonising the energy system while maintaining affordability and reliability. This includes reducing greenhouse gas emissions, transitioning to renewable energy sources, and managing the impacts of climate change." (R25). The challenge here is not technical ignorance — the pathways are known. It is that the institutional architecture for pursuing them was not designed to hold affordability, reliability, and decarbonisation in the same frame simultaneously. What respondents described, in other words, was not the bounded complexity typically associated with difficult but tractable problems. It was something more intractable: challenges whose dimensions kept expanding the closer leaders got to addressing any single one of them.

Leadership as a purpose-driven, systems-oriented practice

Purpose and systems thinking were the two orientations that cut most consistently across respondents' accounts, appearing not only in direct descriptions of leadership style but surfacing unprompted across questions about challenges, policy gaps, lessons learned, and framework design. That cross-domain consistency is itself a finding: these were not abstract values respondents endorsed when asked. They were the orientations they reached for when describing what their work actually required.

Three quotes illustrate how differently this looked in practice. One respondent located effective leadership in systemic vision: *"Effective sustainability leadership requires seeing the whole system and acting with purpose beyond short-term organizational goals." (R33)*. Another grounded it in relational intelligence*: "Always remember you are talking to a human being and to get them engaged, you need to find a shared purpose first at a higher level. Data and goals are very important but are not everything." (Column Z).* A third framed it through ethical commitment: *"Co-created through justice, equity and empathy. Bringing talent from various arms of professionals for maximum action and impact." (Column AB).* Purpose, in these accounts, functions as strategic orientation for some, relational practice for others, and ethical foundation for others still — but as something load-bearing in all of them.

That pluralism extended to leadership style. Respondents did not identify with a single approach. As one put it: *"I practice a participatory leadership style, bringing diverse stakeholders into the planning and decision-making process to ensure inclusive solutions. I balance adaptability by adjusting strategies based on real-time feedback and emerging challenges, while applying systems thinking to understand interdependencies across environmental, social, and economic dimensions." (R28)*. What this describes is not a hybrid style chosen for convenience but a practice shaped by what the work demands.

Adaptive learning surfaced as a related but distinct dimension of leadership practice. Respondents described not only moving between approaches situationally, as R28's account illustrates, but actively revising their understanding of what was required based on what implementation revealed. Several described learning from failed initiatives as formative to their current practice, treating setbacks not as exceptions but as the primary source of operational intelligence. This orientation toward learning under conditions of uncertainty and institutional resistance, rather than applying fixed models, was described as essential to sustaining leadership effectiveness over time.

Governance and the persistent policy–practice gap

The policy-practice gap was among the most consistent cross-cutting findings in the dataset. Respondents working at every scale, from national programme managers to global strategy leads, described versions of the same structural problem: policy ambition outrunning institutional capacity to deliver on it. One respondent diagnosed the gap with particular clarity:

"*The biggest gap between sustainability policies and real-world implementation is often the lack of political will and financial resources, as well as insufficient infrastructure and capacity to deliver on commitments. Policies may be ambitious, but without practical enforcement mechanisms, funding, and alignment with local needs, they fail to translate into action. Additionally, competing priorities, short-term economic pressures, and limited stakeholder engagement can undermine implementation." (R25)*

A second respondent located the problem further upstream, in how policies get designed in the first place:

"The gap is that policies are often not designed with the end user in mind (i.e. the community). People feel this is the government saying they must do something. It needs to be co-developed with them and built from the ground up. More importantly, there needs to be transparency and follow through on the outcomes and actions to be taken. There are far too many conversations about sustainability without the resulting action." (R21)

Read together, these accounts point to a gap with two distinct faces: one on the delivery side, where enforcement, financing, and capacity fall short of what ambition requires; and one on the design side, where policies arrive without the legitimacy or community ownership that implementation depends on. Addressing only one face of that problem, as most governance reforms tend to do, leaves the other intact.

Innovation and collaboration as enablers of implementation and impact

When respondents described sustainability initiatives that had achieved measurable impact, the accounts shared a consistent structure: rarely a single intervention, rarely a single actor, and rarely a straightforward path from plan to outcome. What appeared was a pattern of convergence: collaborative processes creating the conditions for technical solutions to work, stakeholder trust making implementation possible where resistance might otherwise have blocked it, and monitoring tools providing the feedback that kept implementation on course when conditions shifted. Innovations described across accounts spanned digital tools, data and monitoring systems, financing mechanisms, and participatory approaches, but consistently in a supporting role rather than as the primary driver of impact.

One respondent's account of a community transportation programme illustrated this pattern directly: *"A sustainable community transportation program… resulted in reduction of hospital emissions by 18%… the biggest success factor was convening a diverse group of stakeholders — it allowed us to collaborate across the organization and also bring in different perspectives to enhance the program. The biggest barrier was buy in. This was something that not everyone was willing to try, and it required continuous engagement and education on why it's important. We found it was important to bring in testimonials and stories to show how it can be done. Innovation and tools: Behaviour change marketing and engagement approach. It allowed us to tailor our approach and create more accessible messaging, meeting people where they are at." (R20).*

A *second account, from an energy efficiency initiative, pointed to the same dynamic from a different angle: "The measurable result was a 15% reduction in energy consumption and cost savings of approximately $50,000 annually. The greatest success factor was strong stakeholder engagement and clear communication, ensuring buy-in from building users and management. This was key because it minimized resistance and facilitated smooth implementation. The most significant challenge was coordinating multiple contractors and minimizing disruption to building operations. We addressed this through detailed planning and scheduling, along with regular progress meetings. Innovations/tools included energy management software to monitor performance, which helped identify further optimization opportunities and ensured sustained savings." (R25).*

Both accounts are notable for what they do not say as much as for what they do. Neither respondent attributed their outcome primarily to the technical intervention. The emissions reduction and the energy savings were real, but both respondents located the decisive factor in the relational and organisational work that made implementation possible: convening the right people, building the trust that overcame resistance, and maintaining the coordination discipline that kept complex delivery on track.

Toward a global sustainability leadership framework (GSLF)

Support for a Global Sustainability Leadership Framework was both widespread and, notably, largely unprompted. Respondents across sectors and operational scales raised it not as a response to a leading question but as something they had arrived at independently through their own experience of working without one. What they described wanting was specific: not a prescriptive model that would standardise their practice, but a shared architecture for learning, language, and mutual accountability that could travel across contexts without flattening them.

One respondent articulated the vision in concrete terms: *"Effective global sustainability leadership in 5–10 years will look like collaborative, systems-thinking leaders who can drive transformational change across sectors. It will involve integrating sustainability into every level of decision-making, with leaders prioritizing equity, resilience, and long-term value over short-term gains. These leaders will be skilled in mobilizing resources, influencing policy, and leveraging innovation to accelerate global transitions. Stronger multilateral cooperation, transparent accountability, and inclusive participation will also be essential." (R37*)

The tension running through many responses was between wanting coherence and resisting uniformity. A framework, in respondents' telling, earns its value not by telling leaders what to do but by providing the shared foundations that make peer learning, cross-context coordination, and collective accountability possible. As one respondent put it simply*: "A global framework would help connect practice, learning, and purpose without imposing a one-size-fits-all model." (R9)*

Taken across all five thematic areas, the findings present a consistent picture: sustainability leadership is shaped by systemic complexity and persistent structural barriers, but it is also held together, in practice, by shared orientations: purpose, systems thinking, collaboration, and adaptive judgment, that appear across very different institutional contexts and operational scales.

Discussion

Thirty-seven sustainability leaders, working across six continents and every major sector, told us essentially the same thing: the hardest part of their job is not knowing what needs to be done. It is doing it: inside institutions that move slowly, across governance systems that weren't designed for interconnected crises, and alongside stakeholders who don't always share the same urgency. That convergence of practitioner experience is itself a finding worth sitting with. These are not early-career optimists describing an ideal future; they are experienced professionals describing the terrain they navigate daily. And what emerges from their accounts, running beneath all the differences of context and sector and geography, is a consistent picture of leadership as fundamentally integrative work: less about authority or expertise, more about holding fragmented systems together long enough for action to take root. Whether that capacity ultimately translates into measurable outcomes depends on something beyond the individual leader, as we discuss below.

Sustainability leadership under polycrisis and systemic risk

Polycrisis was not a theoretical concept for the leaders in this study. It was their working reality. When asked to describe their primary sustainability challenges, respondents did not identify discrete problems: a water issue here, an energy transition challenge there. They described cascading, interlocking pressures that cut across climate, biodiversity, governance, and social equity simultaneously, often in ways that made addressing any single dimension harder without first reckoning with the others. Systems thinking, in this context, was less an intellectual orientation they had chosen and more a practical necessity they had arrived at.

The language our respondents used to describe their operating environment maps closely onto what complexity scholars now call polycrisis: not multiple simultaneous crises, but crises that interact

and amplify one another in ways that defeat sector-by-sector responses (10,56–62). Several respondents described exactly this dynamic: a water challenge that was also a food security challenge that was also a governance challenge, with no obvious entry point and no single institutional mandate. This matters for how we theorize sustainability leadership. Much of the existing literature still frames the challenge as navigating "wicked problems" — difficult, but tractable through the right combination of expertise and collaboration (63–66). What our findings suggest, consistent with more recent scholarship on metacrisis (71–73), is that the terrain may be shifting further still. These conditions increasingly involve systemic thresholds and non-linear change, raising real risks of destabilization that reshape the constraints and trade-offs leaders must navigate in every decision (67–70). In such environments, outcomes are genuinely emergent, control is partial, and the logic of optimizing within stable systems is increasingly difficult to sustain (74–76). These implications are significant for leadership development. Domain expertise remains necessary, but it is not sufficient. What leaders increasingly need are capacities for sense-making under uncertainty, cross-institutional coordination, and adaptive governance, the very orientations our respondents described enacting, often without formal frameworks to support them (37,77–80).

One finding deserves particular attention because it cuts against a common assumption in sustainability leadership research: that context is everything. Respondents working at national, regional, multi-regional, and global scales described strikingly similar leadership challenges — fragmented governance, misaligned incentives, the chronic tension between short-term institutional pressures and long-term sustainability commitments. Scale changed the setting, the stakeholders, and the stakes. It did not change the underlying problem structure. This cross-scalar consistency has theoretical significance. Systems leadership scholarship has long argued for boundary-spanning and adaptive sensemaking as core functions in sustainability transitions (81–84), but that argument has rested largely on conceptual grounds (77,85). What this study adds is practitioner-led evidence that these are not aspirational

capabilities reserved for a particular scale or sector; they are the lived practice of experienced sustainability leaders operating across very different institutional environments. The gap between systems thinking as theory and systems thinking as daily practice, documented in recent empirical work (86–91), appears narrower among this cohort than the literature might predict.

Purpose-driven leadership at the intersection of science, policy, and practice

Perhaps the most unexpected pattern in the data was how consistently purpose surfaced: not as a strategic framing device, but as something closer to a moral anchor. Respondents did not describe purpose in the language of organisational mission statements. They described it in terms of ethical obligation, responsibility to future generations, and a felt commitment to outcomes that outlast any single role or institution. That distinction matters. A growing body of sustainability leadership scholarship points to purpose-driven orientations as central to long-term leadership effectiveness (92–97), and research on sustainability transitions confirms that leaders operating amid volatility and legitimacy pressures depend on something beyond technical competence to sustain their engagement (98–104). What our findings add to that conversation is a harder edge: for several respondents, purpose was not merely motivating. It was what prevented them from walking away. In governance environments defined by misaligned incentives, slow-moving institutions, and the accumulated weight of incremental disappointment, purpose functioned less as inspiration and more as ballast.

The translation problem in sustainability governance is well documented: scientific evidence exists, global frameworks are in place, yet the gap between policy intent and operational reality persists (105–110). What is less well understood is how individual leaders bridge that gap in practice. Our findings point to purpose as one underappreciated mechanism. When evidence alone is insufficient to

move institutions — and respondents were clear that it frequently is — purpose appeared to function as the connective tissue between what the science says should happen and what leaders could actually persuade colleagues, funders, and political actors to do. This is not purpose as inspiration. It is purpose as a practical translation tool: something leaders drew on to reframe abstract global commitments in terms that resonated with the immediate concerns of the people in the room. Several respondents described this almost instinctively, adjusting their language and framing not because the underlying science changed, but because their audience did.

Reframing the policy–practice gap as a leadership challenge, not just a governance failure

The policy–practice gap is not a new problem. Sustainability governance scholars have documented it across sectors, regions, and governance levels for decades (111–115), and if anything the post-2020 period has sharpened its edges — institutional overload, crisis-driven policymaking, and shrinking implementation capacity have made the distance between policy ambition and operational delivery harder to close (114–116). What this study adds is not another documentation of the gap, but a different account of where it lives. The standard explanation locates the problem in institutional design: inadequate enforcement mechanisms, misaligned incentives, insufficient financing (113,117, 118,119). Our respondents did not dispute that. But they described something the institutional literature tends to underplay: the daily work of leaders who sit at the boundary between policy and practice, interpreting frameworks, negotiating trade-offs, building the coalitions that formal governance structures assume but rarely create. The gap, in their telling, is as much a leadership and capability problem as it is a governance one. Closing it requires not just better policy design, but people with the judgment, relationships, and adaptive capacity to carry policy intent across the last and most difficult mile.

This reframing has direct consequences for how we think about policy design and leadership investment. If the policy–practice gap is partly a leadership and capability problem, then the standard response: more detailed frameworks, stronger enforcement mechanisms, better monitoring systems, addresses only part of the challenge (116,117,120–123). The other part requires sustained investment in the people who carry policy across institutional boundaries: their judgment, their relational networks, their capacity to learn and adapt when implementation conditions shift in ways no policy document anticipated. That kind of investment is harder to budget for and harder to evaluate than a new reporting framework. But the respondents in this study, taken as a body of practitioner evidence, make a strong case that it is where a significant portion of the implementation gap actually lives.

Innovation and collaboration as enablers of sustainability implementation and impact

When respondents described what made their sustainability initiatives work, technology was rarely the headline. It appeared, certainly: energy management software, AI-assisted monitoring tools, digital engagement platforms, but consistently in a supporting role rather than as the primary driver of impact. This stands in some contrast to how innovation is typically framed in policy and governance discourse, where digitalisation, artificial intelligence, and data infrastructures tend to dominate the narrative (124–127). What respondents described as decisive was something harder to procure: the ability to convene the right people, design processes that built trust across institutional boundaries, and construct financing or governance arrangements that did not exist before. This broader understanding of innovation, spanning technological, institutional, and social dimensions, is well supported in sustainability transitions research, which has long argued that transformative change depends on their interaction rather than on any single strand (99,101,128–130). What is notable here is that experienced

practitioners arrived at that same understanding not through the literature, but through the accumulated experience of trying to make things happen in resistant institutional environments. The shift in systems thinking scholarship from ego-system to eco-system orientations (131–134) maps onto something these leaders were already doing in practice: treating relationships, trust, and collaborative design as infrastructure, not as soft add-ons to the real work.

If purpose was the anchor and innovation the tool, collaboration was the condition that made either of them usable. Respondents did not describe collaboration as a value or a preference. They described it as a practical necessity: the mechanism through which resources got mobilised, resistance got negotiated, and fragmented institutional mandates got aligned well enough to act. That picture sits comfortably alongside scholarship on boundary-spanning networks, polycentric governance, and relational leadership, all of which position trust and cross-sector coordination as load-bearing elements of sustainability action rather than peripheral niceties (41, 135–144). But what the practitioner accounts in this study add is a texture that the theoretical literature sometimes loses: collaboration was not a pre-existing condition these leaders stepped into. It was something they built, often slowly and against resistance, one relationship and one negotiated agreement at a time. The implication is straightforward. Treating collaboration as a soft skill underestimates what it actually takes to produce it in environments where institutional incentives point in different directions and where trust, once lost, is not quickly recovered.

Toward a global sustainability leadership framework: coherence without uniformity

Box 1. Practitioner Illustration: Sustainability Leadership in Complex Governance Contexts

Not all governance environments are equally challenging. But the practitioners in this study, working across stable democracies, emerging economies, and fragile states alike, described a common underlying condition: institutions that were not designed for the sustainability transitions they are now being asked to support. The gap between what a policy requires and what an institutional environment can actually deliver was not an edge case in these accounts. It was the terrain. For some respondents, that terrain was unusually demanding. One leader working in a fragile governance context, where standard assumptions about institutional stability, policy enforcement, and adequate resources did not hold, described what leadership requires under those conditions:

"Sustainability fails without institutional realism. Ambitious policies collapse when they ignore weak systems, bureaucracy, or the absence of formal governance structures. Community insights are more valuable than external assumptions. In fragile contexts, the most accurate data often comes from people's lived experience, not official records. Flexibility is a leadership skill, not a compromise. The ability to redesign plans, restructure workflows, or adapt communication strategies is essential for driving impact, specifically in unstable environments." (R15)

The phrase that carries the most weight here is not about fragility or instability. It is "flexibility is a leadership skill, not a compromise." That reframing, from adaptive behaviour as a concession to adaptive behaviour as a core competency, ran through accounts from leaders across this study, in contexts far more stable than R15's. What this account articulates with particular sharpness, others described in quieter forms: that reading the institutional environment accurately, and adjusting accordingly, is not a failure of resolve. It is what effective sustainability leadership actually looks like from the inside.".

One of the more striking findings from this study was not about what sustainability leaders struggle with, but about what they want. Across sectors, regions, and operational scales, respondents expressed strong and largely unprompted support for a Global Sustainability Leadership Framework — not as a prescriptive model that would standardise their practice, but as a shared architecture for learning, coordination, and mutual accountability. That distinction is worth holding onto. The existing landscape of global sustainability governance is not short of frameworks. The SDGs, the Paris Agreement, and a growing array of ESG standards provide ambitious goal-oriented structures that have genuinely shaped institutional priorities and reporting practices. What respondents identified as missing was something different: a framework oriented not toward targets, but toward the capabilities, shared language, relationships, and accountability mechanisms through which targets might actually be

achieved. This aligns with a growing body of scholarship calling for governance approaches that balance global coherence with contextual flexibility, particularly where uniform solutions have repeatedly failed to account for the diversity of institutional settings in which sustainability action must be delivered (33,84,101,145–152). The case our respondents made for such a framework was grounded less in theory than in professional experience: they had seen what happens when capable leaders operate without shared language, without peer learning networks, and without any architecture for connecting local practice to global intent.

What does sustainability leadership look like when it is working? The practitioners in this study offered a reasonably consistent answer, and it did not centre on authority, expertise, or positional power. It centred on the capacity to hold a system together: to maintain enough shared direction across fragmented institutions, enough trust across competing stakeholders, and enough adaptive judgment to keep moving when conditions shifted. Purpose provided the ethical orientation. Systems thinking provided the diagnostic lens. Collaboration provided the relational infrastructure. And the capacity to learn, from failure as much as from success, provided the feedback mechanism that kept all of it from calcifying into routine. These are not independent competencies to be developed in sequence. They operate as a mutually conditioning set, each one reinforcing and depending on the others, and all of them shaped by the institutional environments in which leaders work. That reading is consistent with scholarship on knowledge-action systems and institutional diversity, which emphasises that linking knowledge, judgment, and action across governance arenas requires exactly this kind of integrated, iterative capacity rather than linear expertise (78,79,153,154, 155). Figure 3 attempts to capture these relationships visually, illustrating how purpose, leadership capabilities, and institutional mechanisms interact within the science-policy-practice system this study has been mapping.

Fig 3. Practitioner-Informed Global Sustainability Leadership Framework (Conceptual Illustration). The framework places purpose at its ethical and directional core, surrounded by four interdependent leadership capabilities: systems thinking, adaptive and learning-oriented leadership, collaborative and relational leadership, and policy-practice integration. These capabilities operate as a reinforcing system, not a linear sequence, activating science-policy-practice integration as a cross-cutting function throughout. Together they shape and are shaped by institutional mechanisms, including governance design, policy instruments, financing, innovation, and partnership networks, through which sustainability action is implemented. Outcomes, including policy delivery, measurable impact, and systemic resilience, feed back into learning and adaptation processes rather than functioning as endpoints. The framework is conceptual, grounded in practitioner insights from this study, and is intended to inform rather than prescribe.

Key contributions: advancing sustainability leadership scholarship

Taken as a whole, what does this study add to sustainability leadership scholarship? The empirical record on sustainability leadership is thinner than the normative one. There is no shortage of frameworks prescribing what effective sustainability leaders should do: which competencies to develop, which styles to adopt, which governance arrangements to favour. What has been harder to produce is evidence of what experienced practitioners actually do, across diverse institutional contexts and at the level of granularity that would make such frameworks useful in practice. This study contributes to that gap directly. By drawing on the accounts of 37 sustainability and climate leaders working across six continents, multiple sectors, and national to global operational scales, it offers a body of practitioner-informed evidence that grounds sustainability leadership theory not in ideal models but in the messy, instructive reality of trying to deliver sustainability outcomes inside real institutions.

A second contribution concerns how sustainability leadership itself is conceptualised. The systems-oriented, purpose-driven picture that emerges from this study is not entirely new to the literature, but it has rarely been tested against the lived experience of practitioners working under real institutional pressures. What respondents described was not leadership as a competency profile to be acquired and deployed. It was leadership as a practice: something developed through repeated encounters with complexity, refined through failure as much as success, and held together by ethical commitment rather than by formal authority. That distinction has practical consequences. Framework development that starts from competency lists risks producing tools that look rigorous on paper but miss what actually sustains leadership effort when institutions push back, resources shrink, and political conditions shift.

Third, the study reframes the policy-practice gap. The standard account treats it as a governance problem: inadequate enforcement, misaligned incentives, insufficient financing. Our findings do not dispute that, but they add a dimension the institutional literature tends to underplay. What respondents described, consistently and across very different contexts, was a gap that better policy design alone cannot close. It is also a leadership and capability gap, one that sits in the space between policy intent and operational delivery and that depends on people with the judgment, relationships, and adaptive capacity to carry ambition across that distance. Recognising this has direct implications for where investment goes: not only into policy architecture, but into the human infrastructure that makes policy architecture work.

Fourth, the study makes a methodological contribution. Qualitative-dominant mixed-methods designs are not uncommon in sustainability research, but they are not always well executed. This study demonstrates that combining inductive thematic coding with descriptive quantitative context can produce findings that are both analytically rich and practically communicable. That combination matters particularly for practitioner-facing sustainability leadership research, where the risk of producing work

that is either too abstract to apply or too thin to trust is a persistent challenge. The transparency of the analytical process here, from open coding through axial and selective coding to integrative interpretation, provides a replicable model for future studies working at the science-policy-practice interface.

The fifth and final contribution is conceptual. The leadership orientations that emerge from this study, purpose, systems thinking, collaboration, and adaptive learning, are not offered as a replacement for existing sustainability governance frameworks. The SDGs and the Paris Agreement set goals and establish accountability structures that matter. What they do not address is how leaders build the human and relational capacity to pursue those goals inside institutions that were not designed with them in mind. That is the space this study occupies. And what the practitioner accounts here suggest is that filling it does not require a new universal model. It requires shared foundations flexible enough to travel across contexts, specific enough to guide practice, and honest enough to acknowledge that the distance between global ambition and local delivery is crossed by people, not by frameworks.

Implications for policy, practice, and executive education

The findings carry distinct implications for three audiences. For policymakers and institutional designers, the most direct implication is about investment priorities. Sustainability policy has historically been better resourced at the design end than the delivery end: frameworks get developed, targets get set, reporting systems get built. What receives comparatively little investment is the leadership and organisational capacity that sits between a policy commitment and its operational realisation. The practitioners in this study were not asking for better frameworks. They were describing what it costs, in time, relationships, and adaptive judgment, to carry existing frameworks across the distance between intention and action. Closing that distance requires sustained investment in cross-agency coordination

mechanisms, embedded learning and feedback systems, and an explicit recognition that leadership capability is not a soft complement to policy effectiveness. It is a precondition for it.

For sustainability practitioners and the organisations that employ them, the implication is about where leadership gets positioned inside institutional structures. Respondents were consistent on this point: sustainability leadership that sits at the edges of an organisation, disconnected from strategy, budgeting, risk management, and procurement, operates at a permanent disadvantage. It can advocate, but it cannot steer. Embedding sustainability leadership into core organisational functions is not simply a structural preference. It is what determines whether sustainability commitments survive contact with the budget cycle and the quarterly review.

For executive education and leadership development programmes, the findings point toward a gap that formal training rarely addresses directly. The capabilities respondents described as most consequential, building trust across institutional boundaries, sustaining purpose under conditions of systemic resistance, and learning adaptively from implementation rather than from theory, are not easily taught through frameworks and case studies alone. Programme design that prioritises peer learning across sectors, regions, and institutional contexts comes closer to what these practitioners said they needed. So does an honest reckoning with access: practitioners working in under-resourced organisations or regions face real barriers to executive education of this kind, and programmes that draw predominantly from well-resourced institutional contexts will systematically underrepresent the leadership realities where the sustainability challenge is often most acute.

Limitations

Three limitations of this study warrant acknowledgment. The first concerns the participant group. All 37 respondents completed executive education programmes at Harvard University, sharing not only a professional development context but also the institutional access and organisational support

that made participation possible. That is a specific kind of sustainability leader, and the findings reflect that specificity. Leaders working in under-resourced environments, grassroots initiatives, or without access to formal professional networks may experience sustainability leadership very differently. The study does not speak for them. The second limitation is inherent to the design. Self-reported survey data captures how practitioners understand and frame their own leadership experience, not what they actually do or whether the capabilities they describe translate into measurable outcomes. Longitudinal designs or mixed-method case studies that connect practitioner accounts to organisational and policy outcomes would move the field toward something closer to causal understanding. The third is about scope. This study generates a conceptual framework grounded in practitioner experience but does not test it in practice. Whether the leadership orientations identified here function as described when applied deliberately across different governance contexts and institutional scales remains an open question, and one that future research is well positioned to take up.

Conclusion

Sustainability leadership is not a solved problem. The practitioners who contributed to this study were not describing a practice that has been figured out and now needs scaling. They were describing one that is still being worked out, in real time, inside institutions that were not designed for the challenges they are being asked to address, and under conditions of complexity and uncertainty that show no signs of easing.

What this study offers is not a framework that resolves that difficulty. It is an account of how experienced leaders are navigating it. And that account has a consistent shape across very different contexts: purpose as the ethical anchor that keeps leaders oriented when institutional conditions push back; systems thinking as the diagnostic capacity that keeps them from mistaking symptoms for causes;

collaboration as the relational infrastructure through which isolated effort becomes collective momentum; and adaptive learning as the feedback mechanism that keeps all of it from hardening into routine. These are not new ideas. What is new is the degree to which they are confirmed, not by scholarship, but by practitioners who arrived at them through the accumulated experience of trying to deliver sustainability outcomes inside real governance systems. That convergence between theory and lived practice is itself a finding, and it has a practical implication that is easy to state and hard to act on: the investments most needed to close the gap between sustainability ambition and sustainability delivery are not primarily technical or institutional. They are human.

Global sustainability challenges will not wait for perfect conditions or perfect frameworks. What they require are leaders who can act under imperfect ones, and institutions that take seriously the task of developing, supporting, and retaining them. This study is offered in that spirit: not as a conclusion, but as a contribution to a conversation that the state of the planet makes increasingly difficult to defer.

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Supporting Information

S1 Table: The derivation and coding logic for the Operational Scope variable. Variable (Derive)

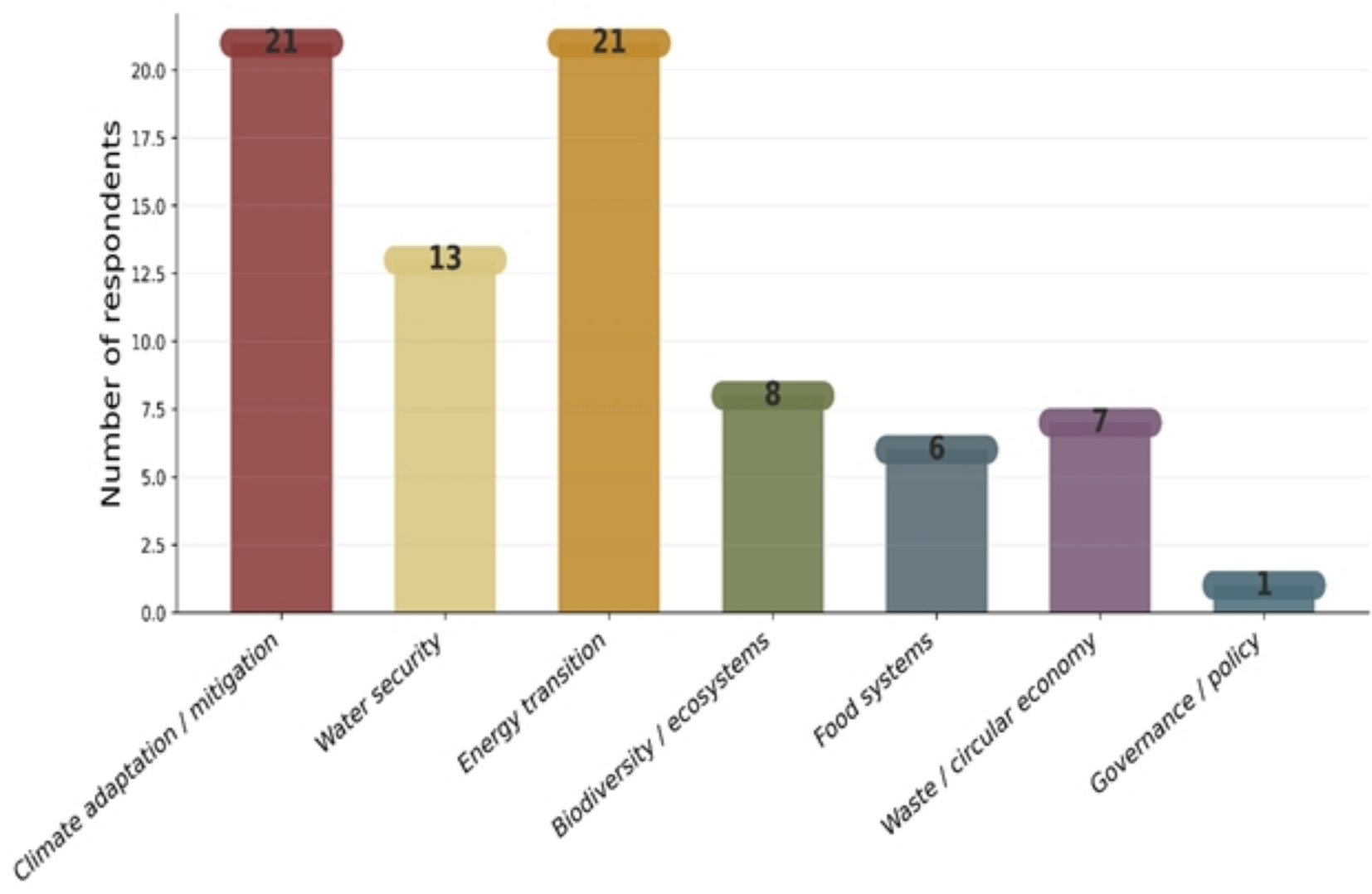
Number of respondents
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
21
13
21
8
6
7
1
Climate adaptation / mitigation
Water security
Energy transition
Biodiversity / ecosystems
Food systems
Waste / circular economy
Governance / policy

Figure 1

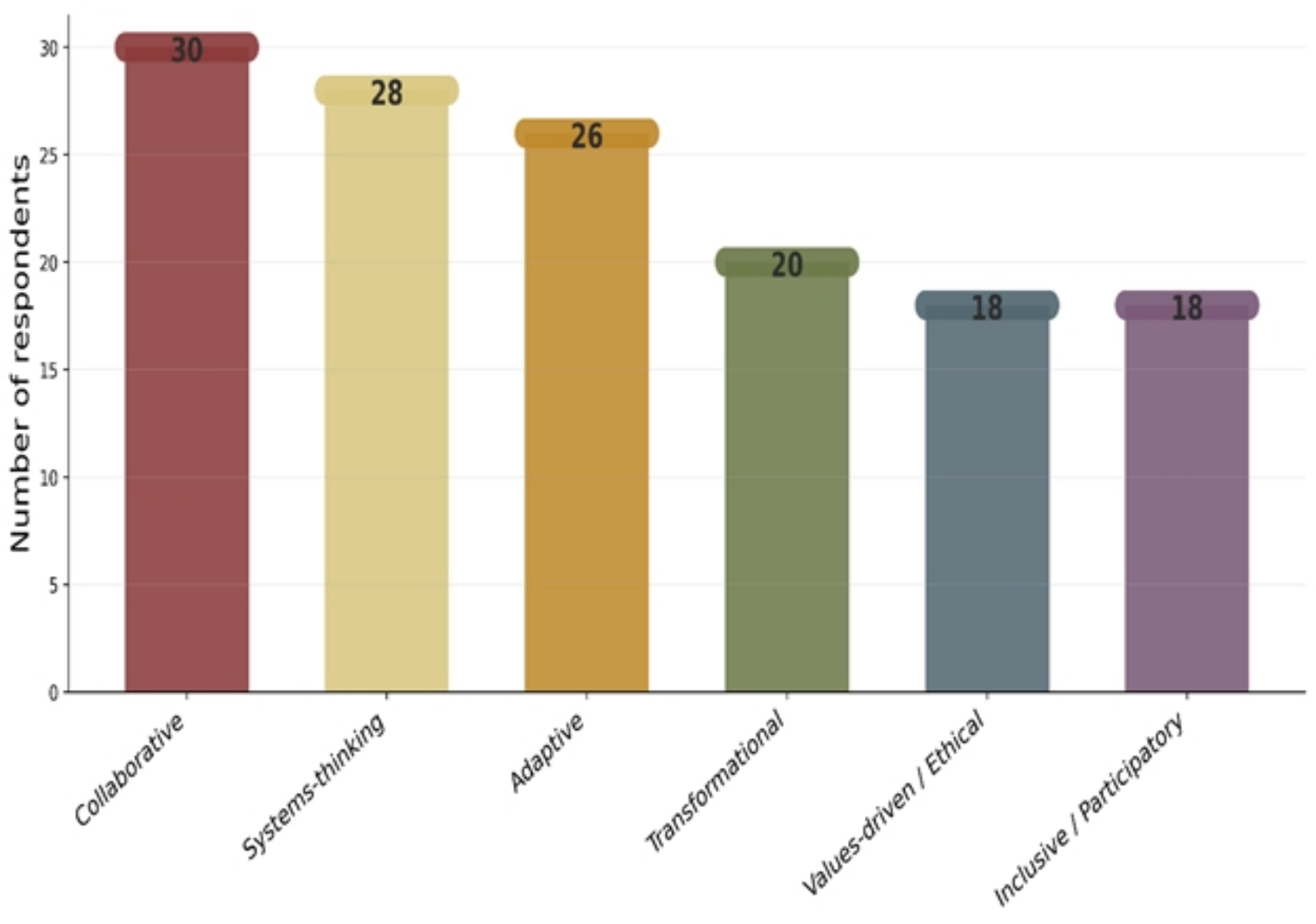
Number of respondents
0
5
10
15
20
25
30
30
28
26
20
18
18
Collaborative
Systems-thinking
Adaptive
Transformational
Values-driven / Ethical
Inclusive / Participatory

Figure 2

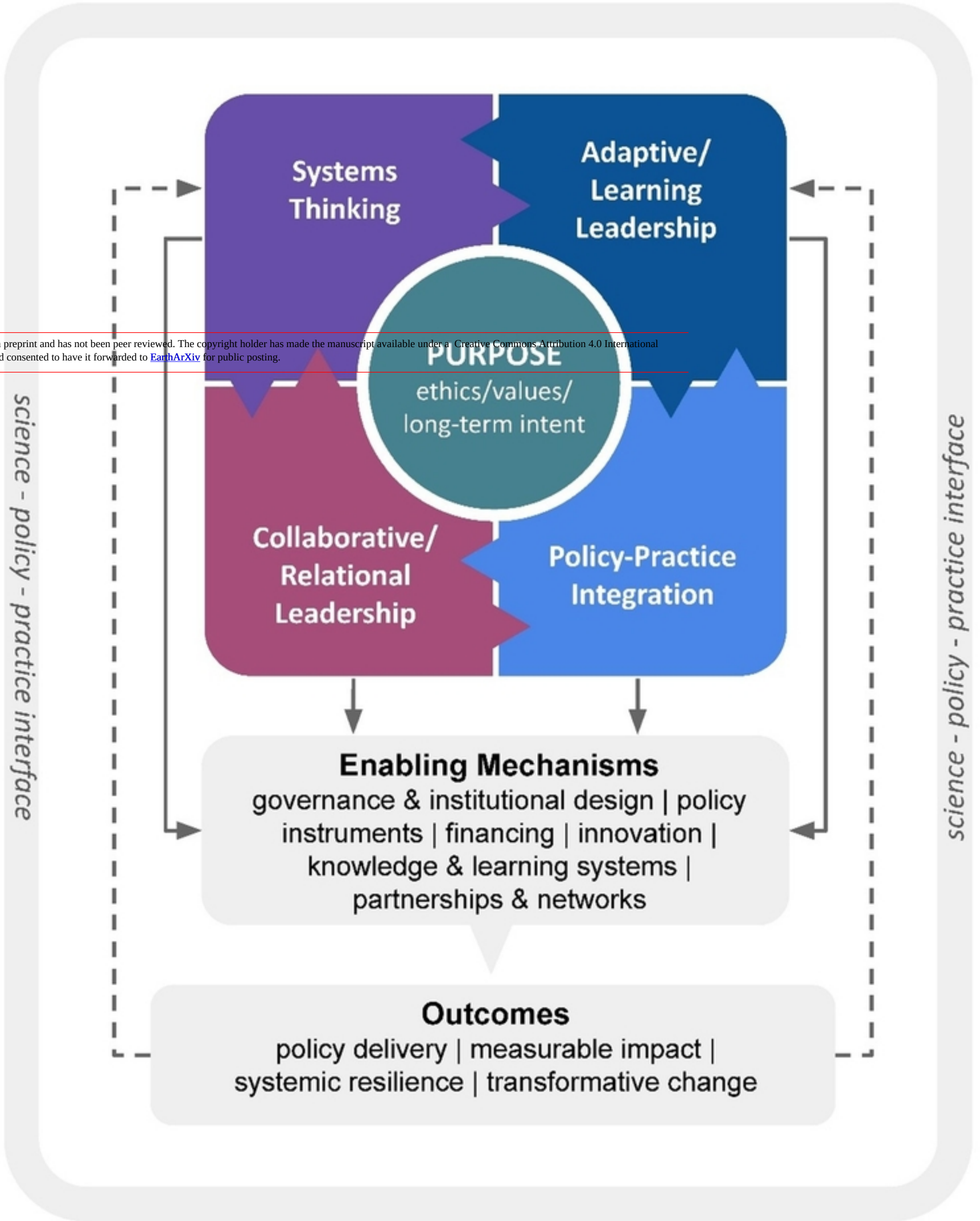

Figure 3