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Research Article

Between Words and Deeds: Case Studies Exploring the Rhetoric and Reality of Environmentally Sustainable Building Projects

Giulia Scagliotti[1*], Eleni Alexandraki[1*], David Kirk[2], Martin Fischer[1]

* these authors contributed equally to the manuscript
[1] Stanford University, Civil and Environmental Engineering Department
[2] Stanford University, Land, Buildings, and Real Estate (LBRE)
Correspondence: gscaglio@stanford.edu, ealexand@stanford.edu

Abstract

Many organizations promote a positive, sustainability driven outlook in their construction projects (rhetoric). However, in reality the story gets more complicated. Through six case studies, this paper highlights widely differing practices/approaches to relate the rhetoric and reality in environmental sustainability practices.

We introduce a framework to understand the positions and relative distance between rhetorical claims and actual environmental sustainability practices and achievements of organizations that engage in building design and construction. Similar to researchers in other fields, our case analyses suggest that maintaining a certain degree of distance between the rhetoric and the reality provides a healthy tension. Through this tension, an organization is motivated to align their practices with their claims, which can ultimately lead to sustainability improvements. Once an organization's reality matches their rhetoric, a more ambitious rhetoric is established, and as a result, the environmental sustainability of their projects keeps improving. When an organization does not revise their rhetoric to maintain this healthy distance, whether because the rhetoric and reality overlap or because this distance becomes too large, momentum is lost, and the organization reduces or even abandons their efforts to advance sustainability. Conversely, when rhetoric lags reality, rhetoric needs to be elevated to the level of sustainability practice to ensure recognition of progress.

For leaders and managers, the framework helps visualize the complex trajectories of their organization's sustainability journey in an intuitive manner. By better understanding the rhetoric-reality distance of environmental sustainability that stems from their decisions, leaders and managers will be better equipped to support the advancements of sustainability practices in construction projects.

Keywords: Sustainability Rhetoric; Sustainability in Construction; Rhetoric Reality Distance; Sustainability Strategy; Environmental Sustainability; Carbon Emissions.

Highlights

- A healthy rhetoric-reality distance drives continual sustainability progress.
- Our rhetoric-reality framework helps organizations visualize and manage this distance effectively.
- Despite setbacks or stalled efforts, sustainability progress can be regained.

1 Introduction

Researchers in many disciplines have studied the tension or distance between rhetoric and reality, including management (Zbaracki, 1998; Burgelman & Siegel, 2008), agriculture (Cramb, Garcia, Gerrits, & Saguiguit, 2000), industrial production (Rhee & Lee, 2003), and food retail (Jones, Comfort, & Hillier, 2013). Rhetoric can be understood as the art of using language or other forms of communication to persuade an audience. In contrast, reality refers to the actual state of things as they exist. These studies highlight that a distance between rhetoric and reality can drive advancement, while in some cases, when the distance is too small or too large, it may stall progress.

Within sustainability research, scholars often refer to the value-action gap (Barr, 2004), where reality lags public claims (Ross, 2012) or rhetoric fails to encourage practical action (Myers & Macnaghten, 1998). In Environmental, Social, and Governance (ESG) studies, the same phenomenon is framed as policy-practice decoupling (Cepêda, Monteiro, & Aibar-Guzmán, 2025; Loko & Schiehll, 2025). The macro-scale insights into the evolution of the distance between a firm's external ESG claims and its internal actions from these studies enable the comparison of companies against each other, over multiple years, and across countries. While valuable for investors and policymakers, these methods focus on large corporations, annual reporting cycles, and aggregated quantitative data, but do not capture the root causes of the reality-rhetoric distance.

Since actions in response to a particular reality-rhetoric distance typically require input and consensus from several professionals, the distance and its evolution need to be visualized in an intuitive manner. The frameworks on the quantification of the rhetoric-reality distance within sustainability research lack an associated visualization component, making interpretation of the results unintuitive for practitioners. The value of mapping an organization's rhetoric-reality trajectory is evident in the work of Rhee and Lee (2003), who plot the rhetoric-reality trajectory of two organizations on a time-based diagram in a single visualization. Despite the diagram's utility, important details remain obscured, since the reality value is an aggregated index that compresses an organization's environmental sustainability efforts into a single measure.

Improvements in an organization's sustainability performance require actions by people inside the organization. Hence, a framework to support such actions must include the insiders' perspective. Most existing studies rely on secondary sources, such as organization reports or semi-structured interviews (Rhee & Lee, 2003), which filter reality through an organizational lens. Quantitative studies relying on ESG data (Cepêda, Monteiro, & Aibar-Guzmán, 2025; Loko & Schiehll, 2025) present a similarly filtered view by overlooking qualitative insights such as managerial factors (Loko & Schiehll, 2025). Conversely, direct involvement in organizations enables the observation of day-to-day realities without intermediaries biasing the data. This allows for the development of a framework grounded in the insider's perspective, specifically for leaders and managers responsible for major sustainability-driven decisions within such organizations.

Within the field of construction research, sustainability communication has been studied (Male, 2021) and indicator- or theme-based frameworks for sustainability in construction have been proposed (Lu & Zhang, 2016; Morosan-Danila, Grigoras-Ichim, Jeflea, Filipeanu, & Tugui, 2025; Dağılgan & Ercan, 2025). However, the distance between sustainability rhetoric and reality has received little attention (Ebohon & Rwelamila, 2001; Hughes & Laryea, 2013; Loosemore & Phua, 2010). No framework is currently available for the quantification or visualization of the environmental sustainability's rhetoric–reality trajectory of individual organizations, at either the macro- or micro-scale.

In our extensive experience working with organizations, we have observed that they faced recurring challenges in balancing their rhetoric and reality, i.e., being able to effectively communicate sustainability achievements to the public while making real progress on the sustainability of their buildings. Of the six cases, one organization had no clear path on how to start improving their sustainability practices and to communicate their efforts. Three organizations were driven by ambitious rhetoric but, when faced with disappointing results, lost direction and failed to rebalance their claims with their actual sustainability performance. The two that managed to decrease the rhetoric-reality distance did it without a structured approach to track progress. Given the mixed trajectories of the sustainability journeys of these and other organizations we have worked with, we hope that the framework offered in this paper will support them to not only track, but also visualize, these complex trajectories in an intuitive manner. We expect this framework will inspire organizations to pursue continuous improvements in their sustainability journey.

2 Methodology

This study adopts a mixed-methods research approach (qualitative and quantitative) to examine the relationship between rhetoric and reality in environmental sustainability practices. We focus on construction projects managed or built by organizations. The choice of a mixed-method approach was guided by the need to analyze both the qualitative rhetoric expressed by claims and the quantitative reality of sustainability performance related to carbon emissions.

Data was collected over two years by the two first authors through professional engagement, both directly and indirectly through associates, with six organizations in the construction sector. To protect their confidentiality, the organizations have all been anonymized as A, B, C, D, E, and F. Organizations reflect varied sizes and markets globally in the construction industry. Organization A is an owner in Asia. Organizations B, C, and D are early-stage U.S. homebuilders and developers with different approaches to environmental sustainability. Organization E is a large U.S. based owner, while organization F is a large U.S. based owner and developer. These are real cases presented with minor simplification to show the essence of the situation.

We collected rhetoric data from publicly available sources, including organization websites and marketing materials. Then we coded sustainability claims by assessing their positioning and tone. We noted whether these organizations mentioned sustainability efforts or performance, and the degree of emphasis they placed on it. We organized these claims into six rhetoric levels (Table 1).

Table I. Explanation of different rhetoric levels

Rhetoric Level (i.e., boastfulness)	Level Meaning
0 = No Mention	No mention of sustainability efforts or performance.
1 = Minimal Mention	Buried in reports, footnotes, or one-off statements.
2 = Occasional Mention	Appears in some materials (e.g., one webpage or presentation).
3 = Moderate Emphasis	Framed as a regular theme in communications but not positioned as a differentiator.
4 = Strong Emphasis	Front-and-center on website, marketing materials, or investor decks.
5 = Core Identity	Embedded into organization name, slogans, logos, flagship narratives.

When organizations used a technical term, such as “embodied carbon” which has a specific industry definition and coupled it with a quantitative statement such as “X kg CO_2e per square foot”, we classified this as a *quantitative specific* claim. On the other hand, when organizations used a vague and non-technical term, such as “green homes” we classified this as a *generic* sustainability claim. Finally, we

created the *imagery* category to measure indirect cues used to convey or emphasize sustainability practices (Table 2).

Table II. Explanation of different sustainability claim types (rhetoric)

Sustainability Claim Type	Level Meaning
Absent	No claims, neither internal nor external (i.e., no sustainability narrative).
Generic	Vague, unspecific claims without detail (e.g., "green homes", "good for the planet", "sustainable design").
Qualitative Specific	Claims referencing sustainability strategies or attributes, still descriptive rather than quantified (e.g., "use of low-carbon materials", "climate-positive design", "natural materials for sustainability").
Quantitative Specific	Claims supported by data or metrics (e.g., "X kg CO_2e per square footage").
Verified Quantitative	Quantitative claims substantiated by third-party validation (e.g., Living Building Challenge, BREEAM, DGNB).
Imagery	Imagery-based sustainability signaling. Use of visuals (e.g., trees, plants, natural materials, earthy tones, "green" aesthetics) to suggest sustainability, without explicit textual or numeric claims.

Similarly, we established a reality classification, as shown in Table 3, based on our experience of working directly with these organizations to help them assess and reduce embodied carbon, scaling from the project level to the portfolio level. We derived reality data from Life Cycle Assessments (LCAs) that we either conducted directly or accessed and reviewed through reports and interviews. We compared LCA results against benchmarks to perform an objective evaluation of the reality. These benchmarks may reflect external government regulations or internal organizational goals, to name a few. For example, an organization intending to understand the embodied carbon footprint of a single construction project starts by completing an LCA for a business-as-usual scenario. This LCA result is compared against similar projects' embodied carbon intensity that serves as their benchmark. Falling below or above this benchmark indicates in our reality classification whether the reality is positive or negative respectively (i.e., a desirable or undesirable outcome).

Table III. Explanation of different reality levels

Reality Level	Level Meaning specific to Embodied Carbon (EC)
-5 = Systematic Regression	Undesirable systematic regression.
-4 = Assess and Increase at Portfolio Level	Systematic portfolio assessment followed by decisions that result in a consistent EC increase across projects, on a negative track, corrective action required.
-3 = Assess and Increase on a Single Project	Single project assessment followed by decisions that result in an EC increase, on a negative track, corrective action required.
-2 = Assess a Single Project: Result Above Benchmark	Single project assessment shows EC above benchmark.
-1 = Assess at Portfolio Level: Results Above Benchmark	Systematic portfolio assessment shows EC above benchmark.
0 = No assessment	Assessment not completed: blocked or avoided.
1 = Assess a Single Project: Result Below Benchmark	Single project assessment shows EC below benchmark.
2 = Assess at Portfolio Level: Results Below Benchmark	Systematic portfolio assessment shows EC below benchmark.
3 = Assess and Reduce on a Single Project	Single project assessment with an EC reduction achieved via selection of low-carbon materials and/or efficient design.
4 = Assess and Reduce at Portfolio Level	Systematic portfolio assessment with consistent EC reduction across projects achieved via selection of low-carbon materials and/or efficient design.
5 = Systematic Stewardship	Actively influencing policies and industry norms, driving continuous improvements, and inspiring stakeholders through education and example.

In addition, both rhetoric and reality data were supplemented with contextual and anecdotal data that were gathered through formal interviews, project meetings, and informal conversations, providing rich insights into organizational practices and narratives. Because these organizations range from early-stage startups to large and mature institutions, we interacted with key stakeholders including project managers, architects, contractors, CEOs, sustainability experts, and marketing professionals. Each stakeholder possesses varying knowledge, expertise and incentives which provide us with insights into what defines the success of a sustainable construction project. The analyses of these six case studies informed the development and application of our framework, which supports organizations to dynamically navigate their sustainability rhetoric-reality distance.

3 Rhetoric-Reality Framework

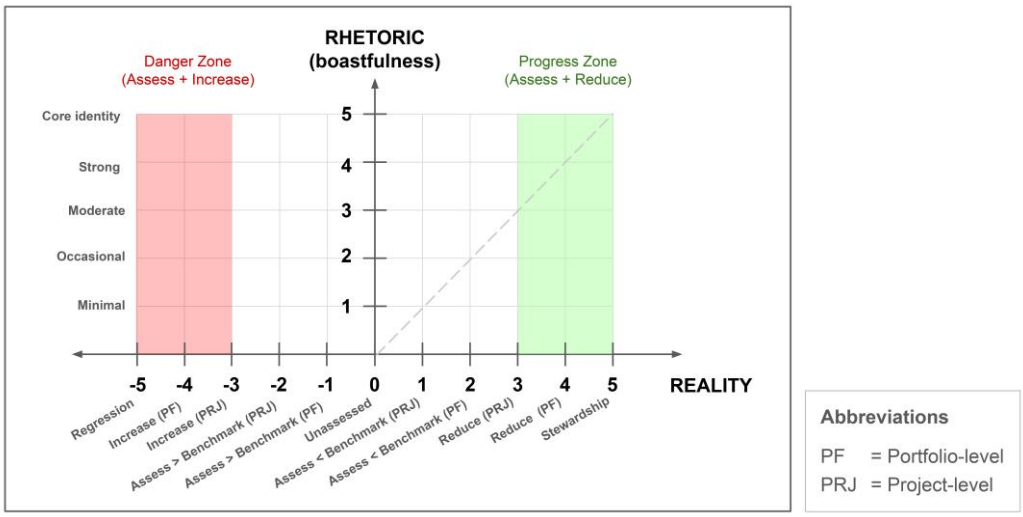

Figure 1. Rhetoric-reality framework diagram with rhetoric on y-axis and reality on x-axis.

Here, we illustrate the rhetoric-reality framework through the lens of embodied carbon reduction in construction (Figure 1). The framework consists of two axes. On the x-axis, the reality axis captures measured embodied carbon assessment and reduction efforts relative to benchmarks. Each organization can begin from a benchmark and tighten it as it progresses through its sustainability journey. Reality levels range from –5 to +5 (Table 3): zero indicates no or failed assessment; positive levels reflect increasingly strong performance (e.g., +1 for a single project below benchmark, +4 for portfolio-wide reduction), while negative levels capture worsening outcomes despite effort (e.g., –4 for portfolio-wide increases of embodied carbon above benchmark). Organizations should aim for the green "Progress zone" of assessment and reduction, while avoiding the red "Danger Zone" where performance declines.

On the y-axis, the rhetoric axis reflects how sustainability performance is communicated. Values are non-negative: zero indicates complete absence of sustainability claims, while levels 1–5 correspond to rising degrees of *boastfulness*, from minimal mention to core identity (Table 1). Negative values are excluded, since even acknowledging poor performance constitutes a rhetorical stance. Another layer of rhetoric is the claim type, which organizations may use to achieve their rhetoric level: generic claims, qualitative specifics, quantitative data, verified/certified results, or imagery-based signaling (Table 2). These claim types are visualized through various shapes (e.g., imagery is represented with a triangle).

In the rhetoric-reality framework, the trajectory of each organization is mapped following a time step approach, where each organization is represented by a circle at coordinates (Xi, Yi) at time step (i). Shapes within the circle denote claim types present at that time. This allows the framework to capture both the progression of actual performance and the evolution of communication strategies, as well as the degree of alignment between the two.

3.1 Framework in Action: Simple Examples

The usefulness and intuitive nature of the framework is best understood through two simple examples. Organization A (Figure 2 - left), an owner in Asia, does not consider embodied carbon among their core values. Based on our interaction with the organization, they have not performed a detailed embodied carbon assessment and make no claims regarding it but recognize the metric's importance.

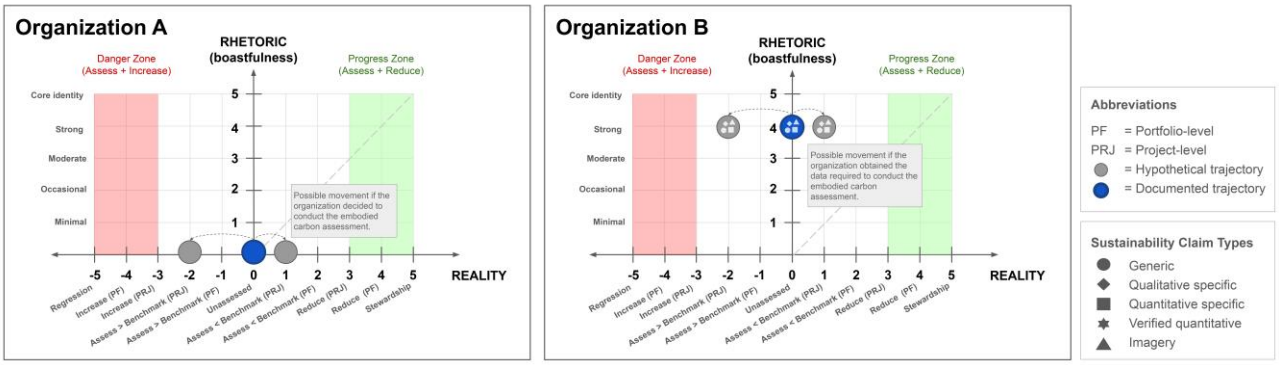

Figure 2. Rhetoric-reality trajectories of Organization A (left) and Organization B (right).

At baseline, both rhetoric and reality related to embodied carbon are at 0 (step 1). The organization was offered a detailed embodied carbon assessment for one project at no cost, which could shift reality to the +1 level or -2 level, depending on results and chosen benchmark (step 2). The organization declined due to the risk of an undesirable outcome of the carbon assessment, effectively freezing movement and reflecting an avoidance of knowledge. However, any movement on the x-axis is a positive sign, as it shows effort towards measuring embodied carbon and increased transparency.

Organization B (Figure 2 - right) is an early-stage U.S. homebuilder with a strong public focus on sustainability, including carbon mitigation. The organization is adopting cutting-edge technologies that pair well with sustainability to position itself as a leader in innovation and become more appealing to customers in a competitive market. Their website reported generic sustainability claims, visuals to increase the impression of green architecture, qualitative and quantitative specific claims, such as an explicit intention to reach zero carbon emissions, and a reported percentage reduction in embodied carbon already achieved. At baseline, the organization's embodied carbon rhetoric was at level 4, while reality remained at 0, due to lack of practical or documented effort to quantify embodied carbon on a real project (step 1). A later attempt to assess embodied carbon on a single project was made, but a third party blocked this effort because it declined to share data about essential building components. Although the assessment could have moved reality to +1 or -2, depending on the outcome (hypothetical steps), the reality remained stagnant at level 0, and the rhetoric was not adjusted, remaining at level 4 (step 2) and highlighting a significant rhetoric-reality distance.

These examples show that even simple cases that have their reality stagnant at x=0 are more nuanced when examined through our framework. By mapping not only what occurred but also potential alternatives, the framework reveals the reason behind each organization's choice. Being at x=0 can mean deliberately avoiding the assessment despite a no-cost chance to act (Organization A) or lacking the opportunity to assess (Organization B). A negative x-value is not necessarily problematic; it signals a completed carbon assessment and can be more constructive than remaining at x=0. When progress toward reducing the rhetoric-reality distance is stalled by external factors, organizations can adjust their claims to move rhetoric downward or exert pressure to resolve data-sharing blocks.

3.2 Rhetoric-Reality Distance and Pathways to Action

In this section, we use our framework to dive deeper into how the rhetoric-reality distance evolves over time for two U.S.-based organizations. Organization C (Figure 3 - left) is a scale-up homebuilder that, while not positioning sustainability as their primary differentiator, emphasizes energy efficiency, waste reduction, and sustainable material choices, driven by motivations similar to those of Organization B.

The organization promoted sustainability widely through both generic and specific qualitative claims in its marketing narratives, such as the use of recyclable materials. However, with only an outdated and partial LCA covering a limited number of building components, the organization decided to investigate the actual sustainability performance behind their claims.

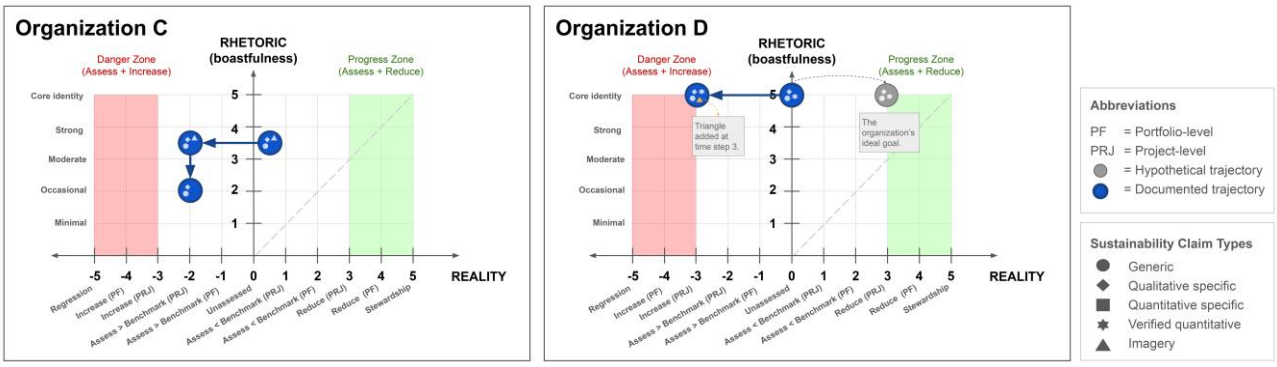

Figure 3. Rhetoric-reality trajectories of Organization C (left) and Organization D (right).

At baseline (step 1), the organization demonstrated medium-high rhetoric at level 3.5 and a reality at level 0.5 (reflecting the partial LCA, which was insufficient to position them relative to a benchmark). A subsequent whole-LCA on a single project revealed embodied carbon result above a benchmark given by similar residential projects, largely due to material choices. This shifted reality to -2, while rhetoric remained unchanged, creating a significant distance (step 2). Confronted with these negative results, employees acknowledged that prior claims were unsupported by reality and updated the organization's website to remove references to carbon and material sustainability. Following the adjustment, rhetoric shifted to level 2 (step 3), a positive action to preserve the organization's integrity.

As opposed to Organization C, Organization D had more ambitious embodied carbon reduction goals; however, the organization did not adjust their rhetoric based on their reality findings. Organization D (Figure 3 - right) is an early-stage developer that places environmental sustainability as one of their core values, embedded in their name and reflected in their emphasis on using sustainable materials. The organization's sustainability focus is driven by the need to attract investors and customers, and a genuine ambition to exceed standard sustainability practices. Their website reported both generic and specific qualitative sustainability claims, and displayed symbols of sustainability certifications. The terminology employed suggested that their buildings were net zero-carbon, setting their rhetoric at level 5 (step 1), while reality remained at x=0. To align reality to rhetoric, several LCAs were conducted to compare structural materials and systems for a single project, showing a serious attempt to assess and reduce carbon. However, budget constraints led them to forgo the lowest-carbon option. As a result, the embodied carbon of their selected design exceeded their ambitious benchmark, increasing carbon relative to their feasible alternative. Their reality fell to level -3, while their rhetoric remained unchanged (step 2). Though carbon reduction efforts stalled, the organization's rhetoric was amplified when the website was redesigned with more appealing images of greenery and natural materials, thereby creating an even stronger sustainability narrative (orange triangle in Figure 3).

In these examples, the framework highlights an organization's rhetoric-reality distance over time. When this distance is large, it should prompt either an adjustment of rhetoric (Organization C), design and budget revisions, or the establishment of a more achievable benchmark for the first project. In the case of Organization D, the project's reality was not poor if compared to external benchmarks but negative only in relation to the organization's own ambitious benchmark.

3.3 Advancing Reality Before Rhetoric and Steps Along the Diagonal

The large rhetoric-reality distance and the negative reality values positioned Organizations C and D away from the framework's ideal diagonal (positive x, positive y), where rhetoric and reality match (Figure 4 - right). In contrast, Organization E gradually moved closer to this ideal diagonal. Organization E (Figure 4 - left) is a large U.S. based owner with no prior experience in embodied carbon and set no reduction targets for a project for which they hired an architecture firm.

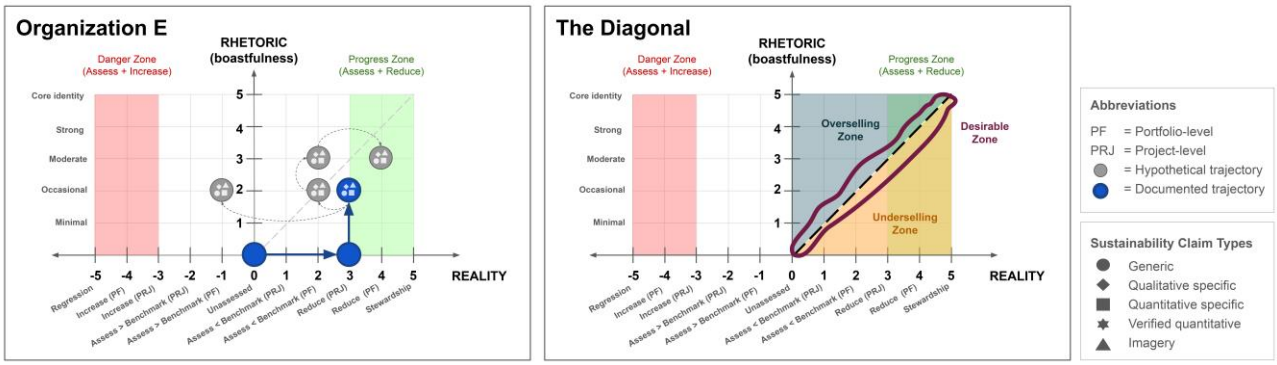

Figure 4. Rhetoric-reality trajectories of Organization E (left) and different zones defined by the ideal diagonal (right).

At baseline (step 1), both rhetoric and reality were at 0, and with no assessments or reductions requested, both were expected to remain at 0 by project completion. However, reality leaped ahead of rhetoric because the architecture firm conducted embodied carbon assessments and implemented reduction measures even without the client's request. For the architecture firm, such assessments are standard practice. By project completion, the carbon reduction achieved shifted the reality of Organization E to +3 (step 2). While this ensured truthfulness, the organization was underselling itself (orange zone in Figure 4 - right), missing the chance to build momentum and gain recognition. Guided by the architecture firm, the organization updated their sustainability messaging to include the embodied carbon savings, raising its rhetoric. The organization obtained high-quality sustainability data that supported their evidence-based sustainability claims, shifting their rhetoric from 0 to +2 (step 3).

From here onwards, we present a future hypothetical trajectory for Organization E, which may be motivated to pursue embodied carbon reduction in future projects and reach the progress zone (Figure 4 - left). At a hypothetical time step 4, portfolio-wide adoption would require detailed embodied carbon assessment for all new construction and renovations, positioning reality at either -1 or +2 relative to the established benchmark. Both positions mark progress, as conducting an assessment itself showcases an effort towards transparency. Assuming a positive outcome, the organization's rhetoric can rise to level 3 (moderate emphasis) at step 5, entering the overselling zone (light blue zone in Figure 4 - right). A small distance between rhetoric and reality can be seen as aspirational and motivating progress, while excessive distance risks appearing as deceptive. At a hypothetical step 6, transitioning from assessment to action could shift reality to +4 (portfolio carbon reduction).

The rhetoric-reality framework shows how unexpected positive experiences can inspire an organization to embed sustainability into their identity and processes. Early reality wins can build credibility and create a positive cycle in which rhetoric sets ambitious goals that drive further action. Maintaining a healthy interplay between rhetoric and reality enables substantial progress in the sustainability journey of an organization. Incremental steps on the ideal diagonal (Figure 4 - right), where rhetoric and reality align, reflect synchronized improvement in both sustainability performance and communication.

3.4 Towards Systematic Stewardship

While Organization E benefited from the positive actions of the hired architect, Organization F took the lead and, by aiming to advance industry's best practices through environmental stewardship, positively influenced their stakeholders in moving towards the ideal rhetoric-reality diagonal. Organization F is a large U.S. developer and owner committed to innovation, technological advancement, and education, managing a large building portfolio. Known for decarbonization efforts such as transitioning to 100% renewable electricity, the organization has recently increased its focus on embodied carbon. The organization aims for net-zero scope 3 emissions by 2050 and has dedicated efforts to make this goal a reality. Its sustainability focus is driven by global leadership ambitions, climate resilience, reputation, and regulations. The organization's website features generic sustainability claims, qualitative measures, quantitative targets, infographics and field imagery, reflecting a truthful, engaging narrative.

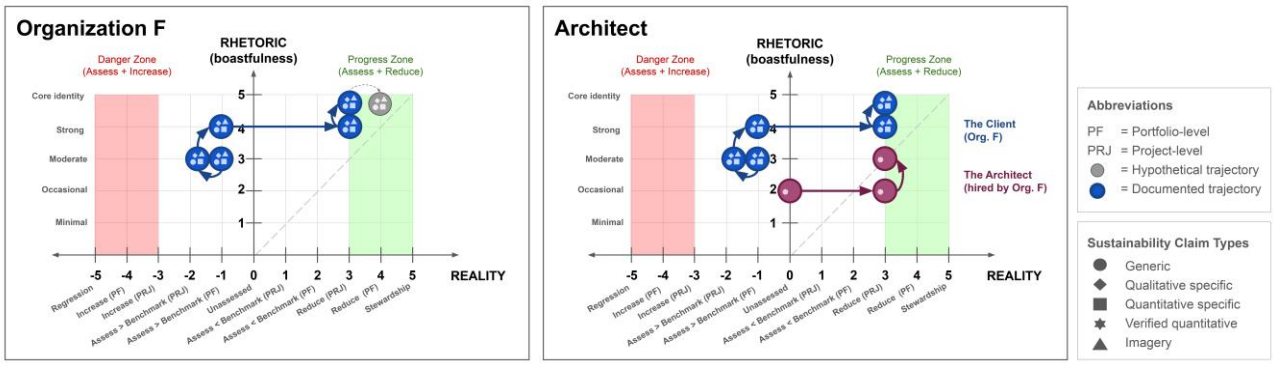

Figure 5. Rhetoric-reality trajectories of Organization F (left) and their hired Architect (right).

At baseline (step 1), embodied carbon rhetoric is at level 3, while an organization-wide scope 3 emissions study identified construction as the main contributor, placing the organization's reality at -1. To address this issue, the organization conducted detailed embodied carbon assessments on three representative construction projects. This shifted reality to -1.5 (step 2) to reflect (1) the three projects performing above the desired benchmark, which was defined as industry "best practices" in the region; and (2) the incomplete portfolio coverage. Results from the assessments revealed major carbon reduction opportunities, prompting the introduction of a new policy requiring all major projects to reduce embodied carbon by 20% below a baseline, raising rhetoric to 4 (step 3). Next, the organization launched a pilot project aiming for embodied carbon assessments throughout design to achieve the targeted reduction. The project succeeded, elevating the organization's reality to +3 (step 4). Lessons learned informed new embodied carbon reduction guidelines that were applied to three additional projects and publicized through articles and social media, raising rhetoric to 4.5 (step 5). Planned application of these guidelines across another 17 projects over the next three years is expected to advance reality to 4, achieving portfolio-level carbon reduction (step 6).

The framework revealed how temporary negative positions, timing, and speed of action influence rhetoric–reality dynamics. First, the organization's brief dip to -1.5 was not a regression but the natural outcome of honest assessment similar to what occurred in Organizations C and D. Second, rhetoric played a catalytic role: while reality was negative, the organization strengthened its sustainability policies and required carbon reduction on major projects, creating momentum for action. Some might see this as "dishonest" but this functioned as a positive driver to accelerate the next step (i.e., the pilot project). Third, the organization did not linger at -1.5; within a year it advanced through detailed assessment, policy updates, and a pilot project. This brief time lag is what made the trajectory

successful, i.e., using rhetoric as leverage to create action. Therefore, a temporary rhetoric–reality imbalance can be strategically productive if it leads to quick corrective action. Other organizations can learn from this example to: (1) measure reality honestly, even if results are negative; (2) match this with bold public commitments; and (3) act quickly so rhetoric drives action rather than masking inaction.

The organization's actions also influence the rhetoric-reality trajectories of collaborating organizations. When the organization advances from -1 to +3 (step 3 to 4), transitioning from a negative assessment to assess-and-reduce in a single project, it reaches the Green Zone, which is the most desirable position, and generates interesting network effects. In Figure 5 (right), we examine the rhetoric-reality trajectory from the lens of one stakeholder: the architecture firm. From the architecture firm's perspective, reality began at 0, with no prior embodied carbon experience, while rhetoric consisted of generic claims about the natural environment and LEED certifications achieved on past projects (step 1). To meet client demands, the architecture firm learned new concepts and methods on-the-go; from understanding life cycle stages to performing quantity take-offs for LCA. The architecture firm's reality jumped from 0 to level +3 (step 2). By project completion, the firm gained expertise and raised its rhetoric to level 3 (step 3), positioning itself along the ideal diagonal. The general contractor's firm followed a similar trajectory to meet the client's strict requirements, leading embodied carbon reduction efforts in procurement and educating subcontractors.

The stakeholders' examples illustrate a reality-first trajectory can be very powerful. Unlike many actors, but similarly to Organization E, both the contractor and the architecture firm advanced their reality before rhetoric, temporarily placing them to the right of the diagonal and delivering more than claimed. This shows how the client's ambitious reduction requirements not only improved its own reality but also generated a ripple effect that shifted stakeholders towards the green "Progress Zone". Second, the rhetoric-reality framework makes visible these cascading effects that go beyond direct collaborators and can transform the whole construction industry. The client's strict requirements pressured not only the architect and general contractor (first degree collaborators), but also subcontractors and supply chain actors (second degree collaborators), that adapted to meet requests and avoid losing relevance. Over time, such dynamics can drive the construction industry transformation, particularly in context with strong regulations, environmentally conscious markets, or large clients facing public scrutiny.

4 Conclusions

This study explored the rhetoric–reality dynamics of embodied carbon in construction through six case studies. By comparing organizations' sustainability claims with their LCA results, we developed a rhetoric–reality framework that highlights how a "healthy distance" between rhetoric and reality can drive sustainability progress. When rhetoric and reality align too closely or diverge excessively, momentum is lost; but when managed constructively, this tension motivates organizations to improve both sustainability communication and practice. While limited to six case studies focused on embodied carbon, the framework is adaptable to other reduction-oriented sustainability metrics, such as waste generation, water usage, or energy consumption. Further application would confirm its generality and value. The framework contributes a practical and visual tool for assessing sustainability trajectories at project and portfolio levels, addressing a gap in construction research. Beyond academic value, it enables organizations to track and steer progress throughout their sustainability journey by visualizing the distance between claims and actions, fostering accountability and long-term advancements. Over time, such dynamics can have a network effect and drive an industry-wide sustainability transformation in construction.

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The authors declare no conflict of interest.

References

Zbaracki, M. J. (1998). The Rhetoric and Reality of Total Quality Management. Administrative Science Quarterly, 43(3), 602–636. https://doi.org/10.2307/2393677
Burgelman, R. A., & Siegel, R. E. (2008). Cutting the strategy diamond in high-technology ventures. California Management Review, 50(3), 140–166. https://doi.org/10.2307/41166449
Cramb, R. A., Garcia, J. N. M., Gerrits, R. V., & Saguiguit, G. C. (2000). Conservation Farming Projects in the Philippine Uplands: Rhetoric and Reality. World Development, 28(5), 911–927. https://doi.org/10.1016/S0305-750X(99)00157-6
Rhee, S., & Lee, S. (2003). Dynamic change of corporate environmental strategy: Rhetoric and reality. Business Strategy and the Environment, 12(3), 175–190. https://doi.org/10.1002/bse.356
Jones, P., Comfort, D., & Hillier, D. (2013). Local food and the UK's leading food retailers: Rhetoric and reality. World Review of Entrepreneurship, Management and Sustainable Development, 9(1), 26–36. https://doi.org/10.1504/WREMSD.2013.050934
Barr, S. (2004). Are we all environmentalists now? Rhetoric and reality in environmental action. Geoforum, 35(2), 231–249. https://doi.org/10.1016/j.geoforum.2003.08.009
Ross, A. (2012). Sustainable development law in the UK: from rhetoric to reality? Routledge. ISBN: 978-1-84971-288-0
Myers, G., & Macnaghten, P. (1998). Rhetorics of environmental sustainability: Commonplaces and places. Environment and planning A: Economy and Space, 30(2), 333-353. https://doi.org/10.1068/a300333
Cepêda, C., Monteiro, A. P., & Aibar-Guzmán, B. (2025). Bridging the ESG Credibility Gap: The Role of Institutional Investors in Mitigating ESG Decoupling. Business Strategy and the Environment, 34(6), 7139-7160. https://doi.org/10.1002/bse.4336
Loko, A. G. S., & Schiehll, E. (2025). ESG Policy–Practice Decoupling: A Measurement Framework and Empirical Validation. Sustainability, 17(3), 1203. https://doi.org/10.3390/su17031203
Male, L. (2021). Communications for sustainability: Sustainability communications in construction and the built environment. In L. Male & P. Norton (Eds.), Communicating construction: Insight, experience and best practice (pp. 158–180). Abingdon, UK: Routledge. https://doi.org/10.1201/9780429353413
Lu, Y., & Zhang, X. (2016). Corporate sustainability for architecture, engineering, and construction (AEC) organizations: Framework, transition, and implication strategies. Ecological Indicators, 61, 911–922. https://doi.org/10.1016/j.ecolind.2015.10.046
Morosan-Danila, L., Grigoras-Ichim, C.-E., Jeflea, F. V., Filipeanu, D., & Tugui, A. (2025). Assessing the sustainability of construction companies in the digital context: An econometric approach based on financial, social, and environmental indicators. Sustainability, 17(10), 4744. https://doi.org/10.3390/su17104744
Dağılgan, S., & Ercan, T. (2025). Developing a sustainability reporting framework for construction companies: Prioritization of themes using the Delphi study approach. Sustainability, 17(7), 3014. https://doi.org/10.3390/su17073014
Ebohon, O. J., & Rwelamila, P. D. (2001). Sustainable construction in Sub-Saharan Africa: relevance, rhetoric, and the reality. Agenda, 21, 16.
Hughes, W., & Laryea, S. (2013). Organizing for sustainable procurement: Theories, institutions, and practice. In Design and management of sustainable built environments (pp. 385–395). London, UK: Springer London. ISBN: 978-1-4471-4474-6
Loosemore, M., & Phua, F. (2010). Untangling rhetoric and reality in the CSR debate: The role of corporate social responsibility in effective business strategy. Paper presented at the 26th Annual Conference of the Association of Researchers in Construction Management (ARCOM), UK. Retrieved from https://centaur.reading.ac.uk/17617/, Last Access: October 15, 2025.