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Anticipate, Innovate, Transform



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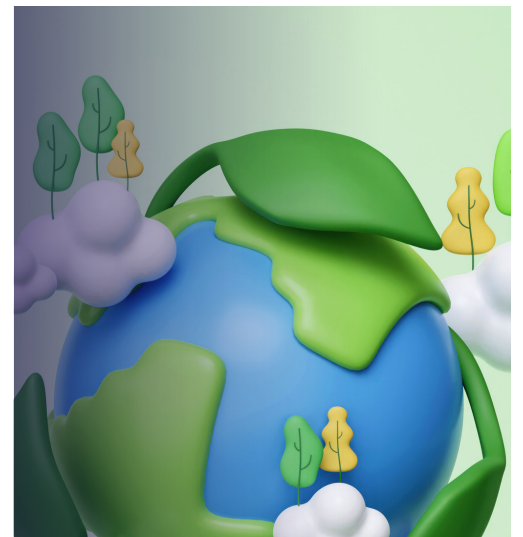
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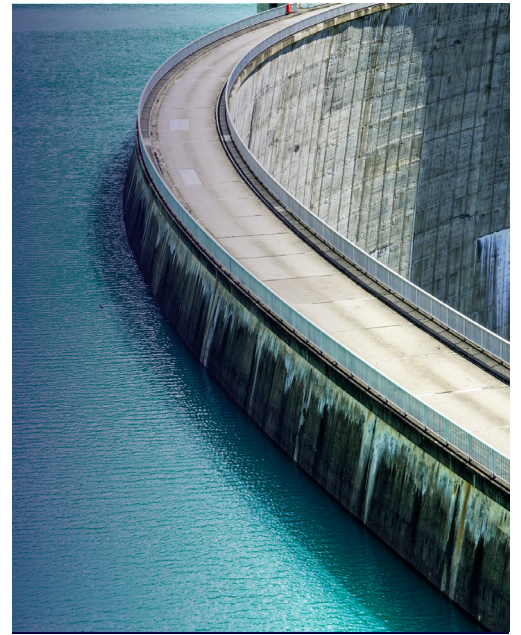
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CORPORATE SUSTAINABILITY STRATEGIES: UNIFYING EFFORTS FOR GREATER IMPACT

**BY MARGARET O’GORMAN AND FRANK WERNER,
GUEST EDITORS**

In November 2024, the Convention on Biological Diversity (CBD), which oversees the Global Biodiversity Framework (GBF), sent a message to the United Nations Framework Convention on Climate Change (UNFCCC), the body responsible for implementing the Paris Agreement. The message emphasized that biodiversity conservation and climate action must go hand in hand to achieve meaningful progress.¹

It’s no secret that the nature and climate crises are interdependent. As the communique from CBD to UNFCCC stated:

A thriving nature keeps carbon stored where it naturally belongs and not in our planet’s atmosphere. Biodiversity enhances adaptation capacity and resilience, including in disaster-risk reduction. Climate change, on the other hand, is one of the major drivers of biodiversity loss.

It’s also no secret that the policies to address them remain separate and unequal in terms of resources, engagement, and awareness.

This separation traces back to the foundations of the *Rio Conventions* in 1992 and the different routes through which these multilateral instruments were established. It exemplifies a global systems challenge that echoes from the *Conferences of the Parties* to corporate boardrooms, where climate, nature, water, and social impact are siloed by function, budget, and focus — often causing ambition to fall out of sync with implementation.

This systems challenge remains a major obstacle to fully integrating sustainability into business models, preventing the efficient use of resources, the leveraging of co-benefits, and the creation of streamlined pathways for meaningful change.

This issue of *Amplify*, Part I of a two-part series, shines a light on the challenges and opportunities of unifying sustainability efforts and showcases pragmatic approaches for greater impact.

**IT’S NO SECRET
THAT THE NATURE
& CLIMATE
CRISES ARE
INTERDEPENDENT**

IN THIS ISSUE

Kelly T. Cooper and Neil C. Hawkins open the issue by warning that “large corporations tend to overlook the fact that successful integration of sustainable business models consistently results in product innovation, new market entry, and commercial longevity.” They elevate the concept of purpose by combining the “what” and “why” of vision, mission, and strategy with the “how” of implementation to create a *constancy of purpose*. The article internalizes a whole-of-business approach to sustainability, which recognizes that ups and downs, headwinds and tailwinds, and expansions and contractions are normal to any business cycle. Wading into the evergreen discussion about the ROI of sustainability, Cooper and Hawkins assert that organizations with constancy of purpose center their ROI on value preservation, opportunity, and the cost of inaction. They provide clarity through four success enablers: (1) translating priorities into actionable plans, (2) focusing on value-driven approaches, (3) innovating on purpose, and (4) enlisting the corps.

Enlisting the corps — a company’s employees — is crucial. Often overlooked, the corp can be a powerful engine of innovation when activated. Leaders who understand the drivers of human behavior are three times more successful in driving transformation. In other words, those who effectively engage their workforce achieve better results. Empowering individuals fosters accountability and embeds a shared purpose throughout the organization. However, the authors emphasize that this must begin with purpose-driven leaders and be sustained across generations.

This type of leadership forms the heart of our second piece. In their article, Matt Mayberry, Scott Tew, and Laura Asiala contend that a lack of strategic alignment between leadership and management is the root cause of failure in sustainability transformations — when sustainability is treated as an add-on, it remains separate from core business operations. Using Trane Technologies as an example (and pulling from the experience of coauthor Scott Tew, Trane’s chief sustainability officer), the article highlights a common pitfall: once executives roll out a strategy, leaders expect strategy execution to propagate naturally across the enterprise, but without structured alignment, implementation falters. This gap often leaves ambitious

sustainability goals unheard or unheeded across the enterprise because of the distance — both actual and metaphorical — between the corporate boardroom and operations.

Mayberry et al. propose a four-step integration process: (1) setting an aspiration, (2) developing a strategy, (3) creating an enabling environment through “chartering,” and (4) executing. Most failures occur between strategy and chartering, where alignment breaks down. Trane, as a purpose-driven company, uses tools like the Sustainable Value Creation Map (SVCM) to bridge this gap. Such a map acts as a charter that creates alignment along the corporate vertical by connecting C-suite ambition to operations and along the horizontal axis by identifying interdependencies that can lead to silo eradication or minimization. The SVCM also promotes a culture of learning and build competencies. By embedding sustainability into all business areas — beyond engineering into communications, marketing, and supply chains — this approach ensures shareholder and customer needs are met while considering broader system stakeholders.

Next, in a sector-specific article, Shannon Ames and Whitney D. Stovall demonstrate how a whole-system approach can transform hydropower by expanding project evaluations beyond reliability and longevity to embrace multiple priorities that deliver additional value. The authors illustrate how, when designed effectively, hydropower can fulfill its renewable energy mandate while also supporting 24/7 demand matching, biodiversity protection and restoration, and positive community impact.

Ames and Stovall provide examples of how US hydropower operations are integrating outcomes that deliver green power with education opportunities for communities, support water supply protection through shared resources, protect native species from invasives, and restore riparian ecosystems.

While focused on hydropower, the article clearly illustrates how integrated design and implementation can generate co-benefits. With over 50% of hydropower located in or near environmental justice communities and a third of all licenses up for review in the next decade, designers, buyers, and operators have a real opportunity to align energy, nature, and community needs for greater impact.

Another industry sector that can benefit from integrated sustainability approaches is health-care. Ali Alessandro Ayach and Farhan Mirza of Arthur D. Little (ADL) explore this in their insightful, fact-filled article. The health-care sector is significant in terms of economic and environmental impact, accounting for 10% of global GDP and 4.4% of net emissions — ironically contributing to the very health issues it seeks to prevent and cure. According to authors, the sector is pursuing sustainability both in response to regulatory pressure and as a moral imperative. The benefits — financial, reputational, and health-related — are clear, but so are the challenges, given health-care's complexity and heavy regulations. In this sector, sustainability can only be embraced if quality of care is not compromised.

Ayach and Mirza propose a three-step approach: (1) *green practices*, where health-care facilities seek energy efficiency to reduce emissions by as much as 2,000 kg CO₂e per hospital per year; (2) *green initiatives*, such as telemedicine, which can lower the sector's carbon footprint; and (3) *green environment*, which fosters cultural change to focus on well-being and preventive care. Real-world examples from health-care systems illustrate how sustainability can be effectively integrated into this complex industry.

While the authors highlight the key players responsible for driving sustainability strategies (regulators, providers, payers, and suppliers), Paul C. Godfrey and Vishal Gajjar, in our final article, explore how a newly appointed chief sustainability officer (CSO) can navigate complex sustainability challenges to deliver co-benefits, satisfy multiple stakeholders, and optimize resources. This can be achieved through the Sustainability Canvas, a strategic framework that acts as a compass.

The authors take us inside the world of a new CSO facing seemingly disparate issues — low maturity in sustainability reporting, water scarcity in operations, toxic chemicals in products, and a shallow community program that prioritizes philanthropy over genuine engagement. As the CSO plots sustainability approaches to address these issues, the Sustainability Canvas tool offers a structured approach for balancing compliance, costs, reputation, and customer expectations, viewing each challenge through both risk and opportunity lenses while

addressing ROI concerns. As the authors point out, a truly integrated strategy using the canvas approach can eliminate the idea of a “sustainability tax” — the false choice between economic and social value or between shareholder and stakeholder interests. This tool helps evolve sustainability from a few time-bound, focused individual efforts into a long-term journey across several impact areas.

CONCLUSION

In our work, we have witnessed companies' attempts to fulfill sustainability goals in different ways. Some have succeeded; some have not. The common elements in the success stories we've encountered are contained in the various approaches outlined in this issue:

- **Sustainability** — needs to be a strategy and not an initiative
- **Purpose-driven leadership** — needs to be multigenerational
- **Corporate commitments** — need to be connected to operational realities
- **Sustainability competencies** — outside the CSO function need to be built
- **Integration across functions** — needs to be mapped and understood

Many frameworks and approaches exist for companies at different stages of the sustainability maturity curve. In this issue of *Amplify*, we are thrilled to present several proven, practical examples that we hope readers will adopt or adapt to fit their needs. Understanding the relationship between climate, water, nature, and business has never been more essential, and addressing our planetary crises requires proven strategies; businesses that embrace this mindset have the potential to drive real, lasting impact.

Back to the global stage, the CBD, in adopting the GBF, recognized that a whole-of-government and whole-of-society approach is crucial to “unlock everything nations have in the way of resources, action, innovation, and knowledge.”² Likewise, this issue of *Amplify* clearly shows how a whole-of-business approach to corporate sustainability can unlock the private sector's power to advance sustainability in tandem with the environment.

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About the guest editors

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Margaret O’Gorman operates at the intersection of business and nature as CEO of Tandem Global (established from the merger of Wildlife Habitat Council [WHC] and World Environment Center). Currently, as President of WHC, she helps multinational corporations integrate nature-based solutions into their sustainability efforts. Ms. O’Gorman is also a member of Arthur D. Little’s AMP open consulting network. She uses her platform and audience to promote private sector engagement in conservation action to restore ecosystems, recover species, connect communities, and make a positive difference to people and the planet. Ms. O’Gorman has consulted with *Fortune* 500 companies like General Motors, Exelon, Chevron, BASF, and many others to develop nature strategies and frameworks. She helps companies drive long-term sustainability through WHC Certification, a recognition program powered by Tandem Global that connects C-suite ambition to site-based action. In addition, Ms. O’Gorman inspires companies to consider the human element in their sustainability efforts through community and employee engagement. She is the author of *Strategic Corporate Conservation Planning*. Ms. O’Gorman is a member of BASF’s Nature Advisory Council and an appointee to the Guidance Committee for the North American Biodiversity and Climate Change Assessment. Prior to her work with WHC, she led the Conserve Wildlife Foundation of New Jersey and also steered fundraising efforts for New Jersey Future and Pinelands Preservation Alliance. Ms. O’Gorman earned a master of science degree in micropaleontology from the University of Southampton, UK. She can be reached at mogorman@wildlifehc.org.

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UNLOCKING THE
ECONOMIC VALUE
OF SUSTAINABLE
TRANSFORMATION
VIA CONSTANCY
OF PURPOSE



Authors

Kelly T. Cooper and Neil C. Hawkins

Sustainable business transformation (SBT) continues to be a focus in the private sector and a challenge to deliver successfully at scale. The board or C-suite may consider the investment too high, the outcomes intangible, the revenue growth limited. Or perhaps the political landscape changes so drastically that companies wonder, “Why even bother?”

However, by abandoning SBT efforts (or not embarking on the journey) some companies are leaving real financial results on the table in the form of top-line growth and bottom-line optimization. Those companies are also opting out of the collective power of SBT by the private sector that is so critical to progressing the United Nations Sustainable Development Goals (UN SDGs).¹

Large corporations tend to overlook the fact that successful integration of sustainable business models consistently results in product innovation, new market entry, and commercial longevity — potential financial impacts that should not be ignored. Proven benefits include cultural performance improvement, increased employee retention and progression, improved talent recruitment, and customer loyalty, greatly strengthening the financial business case for SBT.

Companies also overlook the potential for broader economic impact. Harvesting the business value of sustainability for themselves is one thing, but we must not lose sight of the societal and planetary-level economic value that can be derived from the corporate collective. The economic impacts of scaled, private-sector SBT are tremendous.

In fact, a holistic economic business case is a critical piece of any company’s strategic spear. Importantly, the extent to which companies realize the long-term benefits of their economic business case turns on two factors: (1) their ability to derive tangible, measurable value from those sustainability efforts and (2) leadership’s ability to stay the course as the market twists and turns and externalities present peaks and valleys of opportunity and risk.

This brings us back to why so many companies abandon their SBT efforts. They are missing a *Constancy of Purpose* that serves as a guidepost across business cycles. It’s time to right-size (if not super-size) our SBT expectations by committing to the Constancy of Purpose required to realize it.

THE ECONOMIC IMPACTS OF SCALED, PRIVATE- SECTOR SBT ARE TREMENDOUS

PURPOSE-DRIVEN LEADERSHIP LEADS TO SUSTAINABLE TRANSFORMATION

A strong economic business case doesn’t begin by defining a purpose but by making each individual in the business feel empowered to pursue and accountable for achieving it. This requires infusing the purpose from top to bottom; across sales, marketing, product development, and operations; and from leaders to analysts. Unfortunately, the concept of purpose has been conflated with mission, ambition, values, and other strategies over time (not to mention devalued in the era of “wokeness”), making it difficult to define, let alone achieve.

In this article, we reference purpose as being rooted in sustainability, environmental impact, or an otherwise SDG-aligned, planetary-related outcome(s).

Historically, purpose has served as a “what” or a “why.” In *Accelerate*, leadership strategist John Kotter calls this “The Big Idea”: a strategic vision, direction, or objective otherwise intended to unify leadership, employees, and customers around a *raison d’être*.² This definition holds true in the sense that it can serve as the connective tissue between ambition, effort, and outcomes.



A more novel proposal positions purpose as a “how” that is delivered with constancy:

- It exists as a *bedrock foundation* that is unchanging (or changing rarely and minutely over business cycles).
- It serves as a *unifier* that carries an organization through the headwinds and tailwinds of our modern polycrisis.
- Rather than a standalone value driver, it’s an *enabler* of a larger economic business case that permeates the organization, elevates the brand, and positively impacts society.

- It’s a *tool* to adapt to rapidly shifting priorities, market urgencies, and socioeconomic volatility that businesses face with increasing frequency and inconvenient timing.
- It acts as a *cultural catalyst* throughout the organization and comes to represent the spirit of “how we do things here,” readying the business to accelerate and adapt at the right time, every time.

Ultimately, purpose can generate a business that possesses cultural empowerment and resilience that is otherwise unattainable. Successful long-term integration of purpose is the key to creating a strong economic business case. This is not accomplished in a single business cycle but over many cycles of change.

Kotter’s attempt at an integration framework to realize The Big Idea centered around a dual operating system in which management hierarchy at the top meets adaptive networks grown organically somewhere in the center. Our framework differs in two ways. First, it is focused on achieving SBT- and SDG-related outcomes. This requires an evolved depth of purpose and the stamina of generations of leadership to reinforce. Second, it pushes the boundaries and spirit of The Big Idea beyond a short-term market opportunity into a broader economic business case — and what some might consider the moral high ground of purpose.

Ultimately, purpose-led people and products produce purposeful profits. These organizations are positioned to achieve SBT, grow sustainably, and meet evolving consumer demands. By simultaneously leveraging purpose as “what,” “why,” and “how,” companies can authentically integrate it into business operations and across the value chain, from product design and go-to-market relationships to leadership development and performance management.

The company’s top leaders must build trust with shareholders, employees, and customers, and purpose must be infused into critical decision-making, especially in times of crisis. If the relationship between purpose and business decisions is not visible with constancy, the company risks becoming a promoter of green or purpose-washing.

CONSTANCY OF PURPOSE FOSTERS INTEGRATION & LONGEVITY

Constancy has been an underutilized transformation lever, primarily because of the difficulty in achieving it. Company leadership must embody the purpose in everything they do over the course of many years. It must be unchanging in the face of executive transitions and both anticipated and unforeseen market events (see Figure 1). It must also be ever-present for employees, customers, and shareholders, motivating them in times of immense opportunity and giving them faith when conditions threaten stability.

Constancy of Purpose provides a robust structure for deploying leadership through multiple business cycles. With constancy, purpose becomes a platform that enables change, empowers resilience, and can be deeply trusted by the organization when difficult decisions must be made.

In organizations with Constancy of Purpose, integration of SBT (and any thematic driver the future may present) is smooth and efficient. Constancy also counteracts short-termism when it comes to prioritization of quarterly or in-year financial goals, fostering long-term, sustainable growth.

Applying Constancy of Purpose *well* requires some ground rules, boundaries, and trade-offs. Although not an exhaustive list, the concepts below provide critical direction:

- **By no means should purpose be prioritized over (or operate independently from) profit.** The opposite is true: companies must find a balanced harmony with financial performance. This is core to achieving constancy.
- **Applying Constancy of Purpose requires a realistic assessment of the risks and potential losses in not only the strategy but also the timeline, milestones, and resources to deliver on the purpose.** Although purpose can be a long-term unifier, enabler, and opportunity, the business must also consider the “what” of purpose in traditional operational delivery terms and smaller timescales.
- **The economic business case on which a company’s Constancy of Purpose is built must consider the value of opportunity, the cost of inaction, and value preservation.** Incorporating a balanced approach to assessing the economic and financial impacts of purpose-enabled leadership decisions is necessary to achieve constancy. If profits are prioritized in the short term, the cost of inaction or threat to current value drivers might equate to cannibalizing an existing product or new business opportunity elsewhere in the organization, or just beyond the horizon.

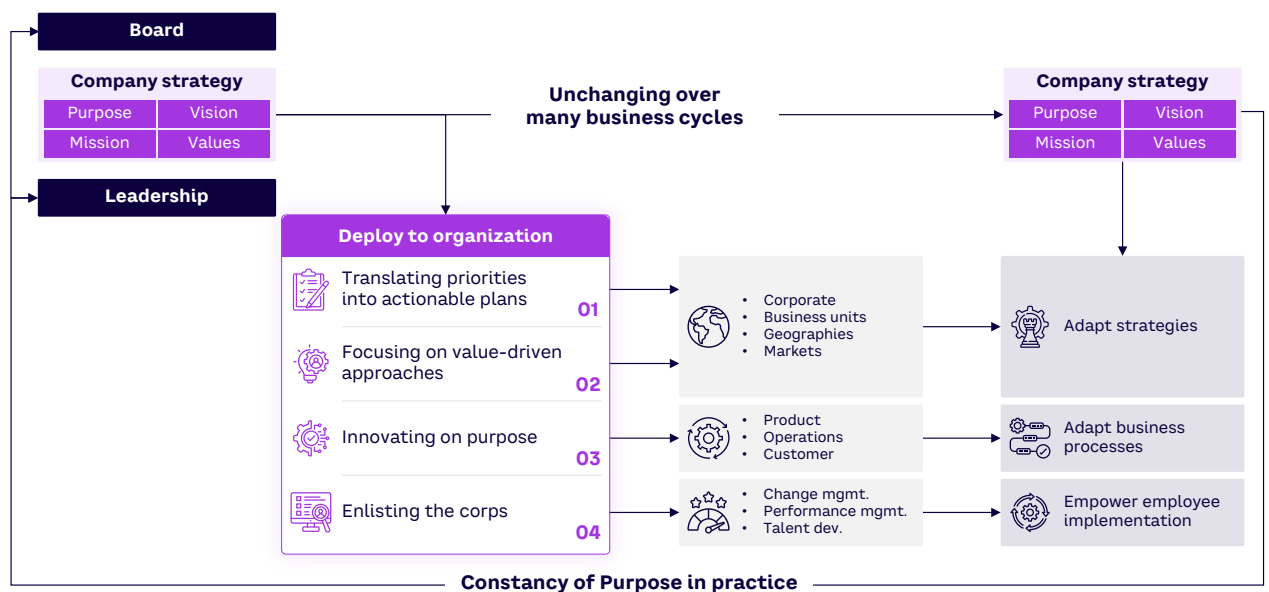


Figure 1. Constancy of Purpose

- **Constancy of Purpose involves considering the cyclical nature of achieving long-term financial gains and delivering the scaled impacts set out by the economic business case.** Anticipating and accepting the short-term outcomes of both internalities and externalities will lend credibility to a company's (and leader's) purpose, strengthening the trust required to enable constancy across three- to five-year objectives.

4 SUCCESS ENABLERS

Dow, with one of the earliest public commitments to measurable sustainability goals in 1996; DuPont, which famously appointed the first chief sustainability officer of a publicly traded company in 2004; and Unilever, which announced the Unilever Sustainable Living Plan in 2010 and pursued an operational and product portfolio rebirth, are some of the best examples of constancy in purpose-driven leadership.³⁻⁵ Their purpose has become them. This is evident in their early commitment to sustainability and their unwavering dedication to upholding those values decades later.

These companies set an ambitious standard, but it is important to acknowledge that most companies are at an early stage in their SBT, commitments to SDGs, and/or pursuit of an economic business case (indeed, many still are considering where to begin). How does a company achieve a Constancy of Purpose that delivers the type of powerful results for the planet that Dow, DuPont, and Unilever have managed?

The most effective framework for sustainability-enabled value creation starts with a purpose-driven leader at the helm. This leader's commitment to purpose becomes the driving force behind four enablers of success for SBT integration and the realization of an economic business case.

Our framework was developed from best-in-class behaviors observed over time from purposeful leadership and companies that achieved SBT. It is built on the assumption that purpose has been defined, is represented by a purposeful leader, and is at some stage of adoption and integration across the organization.

1. TRANSLATING PRIORITIES INTO ACTIONABLE PLANS

Annual objectives and strategic agendas should not be distinct from purpose. Integration and infusion are key; how leadership seamlessly embeds the expectations of and outcomes delivered by the purpose is critical.

Translate critical objectives straight from the CEO's plate into digestible, actionable components that can trickle down into the organization. Grassroots employee movements can lead to powerful operational and cultural transformation. Give them the fuel they need to align the company's purpose and economic business case with their business-as-usual pursuit of the revolving goals of the executive office.

At the same time, defining expectations and the scope of impact for sustainability-related goals, especially in relation to new processes, outputs, and outcomes, can ease the transition to larger-ticket and (perhaps) more controversial or public efforts. A phased approach creates a safe space for trial and error, failures and learnings, and building trust with employees responsible for delivering on the purpose.

For example, internal operations, product design, and IT are target-rich environments, full of deeply knowledgeable employees with a wealth of ideas who can be unleashed for rapid sustainability impact. Quick wins and tangible impact will support more challenging conversations with hesitant shareholders, executives, employees, and suppliers about expanding transformation efforts into areas such as manufacturing and supply chain, as well as partners you'd like to commit to your purpose-related goals and economic business case.

2. FOCUSING ON VALUE-DRIVEN APPROACHES

Without financially aligned business objectives, purpose-driven leadership and a sustainability-focused economic business case will likely fail. It would be difficult to find a successful sustainability agenda that was not built on the foundation of leveraging a purpose to unlock new profits.

Building sustainability as a competitive advantage is core to making a value-driven case for change. However, markets have seen the accusations and outcomes associated with major corporations using greenwashing as a differentiator, so there are some considerations about the extent to which using sustainability as a brand transformation tool is wise. That said, the spirit of the exercise remains fit for exploring internal operational efforts, product and service development, and customer experience optimization.

Challenge leadership to evolve business cases to assess the broader sustainability impacts and benefits reflected by the purpose and the economic business case. By expanding traditional risk and opportunity analysis to include top- and bottom-line implications to people and the planet, a clear and robust case for change can be made from the ground up.

Assess ways to transition to renewable and recycled resources across value and supply chains, keeping in mind the necessary trade-offs between short-term investment, long-term gain, and economic impact.

Explore opportunities to participate in the principles of circular economy and enable related business models that might offer top-line growth opportunities, bottom-line reductions, and/or SBT investment offsets.

3. INNOVATING ON PURPOSE

Growth can be accelerated and sustained by integrating purpose into innovation capabilities. Our framework asserts that sustainable innovation is not just a nice to have; it's a necessity and a business requirement. New product creation, new business model invention, and new revenue-stream identification must include a purpose-aligned sustainability goal that enables some part of your economic business case. Innovation should always reflect those inherent values and ambitions, and leadership must be willing to eliminate ideas that do not — that is Constancy of Purpose in practice.

Introduce systems thinking and biomimicry as enhancements to traditional product-design processes. When interconnectedness, ecosystem trade-offs, and long-term planetary and societal impacts are considered, a company's economic business case will likely accelerate.

Challenge vendors and go-to-market partners to innovate on purpose, together. Holding the broader delivery ecosystem accountable might begin as the cost of doing business with you and transform into a powerful enabler of a shared purpose and economic business case.

By integrating sustainability goals into the innovation process, purposeful leaders can challenge the notion of future-proofing to extend beyond profits and market share to include implications for people and the planet.

4. ENLISTING THE CORPS

Leverage employees to deliver. For example, don't just rely on organic efforts to "green" office spaces; empower employees to make sustainability a culture they are responsible for and are proud of having a hand in delivering.

Hold organizational leaders, if not all managers, accountable for both purpose *and* constancy of delivering it. These concepts and associated practices should be development topics for rising leaders and part of performance evaluations for established ones.

Reward managers for identifying and delivering results. This reassures employees that leaders are committed to the purpose and willing to put skin in the game to recognize team members who are also committed to it. The naysayers will quickly follow.

Differentiate between what is possible, feasible, and realistic and on what timeline. Set expectations throughout business cycles between outcomes and time-to-scale of proofs of concept, pilots, and transformation of business-as-usual procedures. Employees and leadership need this to effectively manage their efforts and deliver productive results without burning out.

Integrating purpose into performance presents challenges. Get ahead of alignment and timing issues, systematic impacts, and the change management requirements of the organization and current culture. Navigating these types of internalities successfully the first time prepares the organization for long-term strength, stamina, and credibility.

TACTICAL FRAMEWORK FOR ACHIEVING CONSTANCY

With an effective purpose and a strategy for applying it within a single business cycle or SBT effort in hand, leaders must form habits of constancy for successful integration. By reframing the most common points of failure to integrate new or transformed business models and processes, a tactical framework for achieving constancy across multiple business cycles can be derived.

The University of Oxford recently conducted a study to determine the most common causes of transformation failure and the impact of various failures on larger efforts. Unsurprisingly, the research showed that leadership that addresses the root causes of human behavior driving program failures is nearly three times more likely to achieve

target outcomes. That’s the difference between 28% and 73% chance of success! The study also found purposeful vision to be a leading enabler of transformation efforts.⁶

The integration failure points in Table 1 represent a broad set of research and academic inquiries alongside our experience with transformation efforts. It shows a chronological order of transformational undertakings to provide a linear model of how points of success or failure in integration link to or influence the next. The list also represents potential turning points within transformation efforts where trust is most frequently broken, confidence is lost, ownership is unclear, or a strategic intervention of another kind becomes required to bring the effort back on track. These failure points and the accompanying course correction show how Constancy of Purpose can be achieved over multiple business cycles.

INTEGRATION FAILURE	WHY IT GOES WRONG	BEST PRACTICES & COURSE CORRECTION
1. Leadership fails to connect SBT objectives to top & bottom lines	Lack of value framework prevents objectives from being distilled into relevant business goals across functions; leaders are unable to communicate or manage expected outcomes	<ul style="list-style-type: none"> • Use 3- to 5-year objective cycles that transcend & integrate to annual goals • Adapt executive-level strategic goals & leverage right channels & language • Ensure “why” is clear, connecting purpose to effort & outcomes for every level
2. SBT objectives not funded at the time they are defined	SBT & economic business case objectives don’t fit traditional business cases for funding requests; goals are structured without an owner or LOB to fund the effort	<ul style="list-style-type: none"> • Change case template to include SBT/economic business case drivers, impacts & outcomes in quantitative terms • Identify corporate, business & geographically responsible leaders for each objective • Incorporate associated measures in monthly, quarterly & annual reporting
3. Lack of realistic & achievable execution plan	Distillation of SBT outcomes into quarterly milestones for BU & functional hierarchies loses sight of what’s required for 3- to 5-year SBT objectives	<ul style="list-style-type: none"> • Adapt business planning to account for multi-year SBT realities, resource requirements & time to ROI • Define execution plan for economic business case & integrate into BU & functional timelines & efforts • Anticipate hurdles & proactively advance change management efforts
4. Accountability not infused throughout leadership hierarchy	Employees are not responsible for the purpose or its constant delivery; accountability mechanism has not been integrated into performance management	<ul style="list-style-type: none"> • Define realistic metrics; hold people accountable in annual reviews • Incorporate purpose & constancy into promotional tracks & assessments; set expectation that employees will not progress in the organization if they do not embody the purpose & lead with it
5. Siloed efforts across borders & functions	Federated decision-making & budgets reduce global collaboration; accountability has not been determined at LOB, functional & geographic leadership levels	<ul style="list-style-type: none"> • Determine what constitutes success; quickly move pilots, proofs of concept, etc., to production • Maintain capital allocation on balance sheet for SBT integration efforts • Integrate SBT efforts into performance management process
6. SBT governance not aligned to ESG	Responsibility for SBT is housed within ESG & oversight excludes value preservation or growth; enterprise risk management not leveraged in sustainability agendas	<ul style="list-style-type: none"> • Engage risk management in SBT oversight to drive organizational focus • Ensure metrics translate across ESG, financials & performance management for end-to-end integration • Enable streamlined aggregation & communication of impact through value-framework-based objectives & outcomes
7. Business-as-usual processes not adapted to include SBT objectives	The business waits for purpose-driven & SBT outcomes to be delivered to them, as though they are distinct from financial expectations	<ul style="list-style-type: none"> • Ensure business reviews, balanced scorecards & other reporting reflect progress against SBT • Engage corporate sustainability teams in LOB/BU strategy planning to drive inclusion & alignment • Hold people & process managers accountable for integration of SBT
8. SBT metrics exclude accountability & lack flexibility	KPIs & OKRs are not specific enough for deployment or fully incorporated to performance management; ebbs & flows of 3- to 5-year SBT are not appropriately represented & funding & program leniency is tightened	<ul style="list-style-type: none"> • Determine what disciplined freedom looks like for your organization • Acknowledge & reward SBT & economic business case risk taking • Define appropriate way to reflect low points of SBT in annual metrics & performance management • Avoid financial or resource penalties to SBT initiatives experiencing natural progress dips
9. Culture does not compel employees to deliver outcomes	Employees might be personally inspired by the purpose, but behavioral models & incentives are not used to draw out the professional commitment required by the corps at scale	<ul style="list-style-type: none"> • Catalyze new (& sustain long-term) employee participation in purpose & SBT with real-time incentives • Arrange it so employees who don’t engage have limited performance outcomes & progression opportunities over time
10. Lack of organizational skills & experience	Sustainability-related skills are deprioritized in learning & hiring outside niche roles, leaving a gap between expectations & execution for employees; change management programs not deployed to prepare the organization	<ul style="list-style-type: none"> • Mandate purpose & SBT-aligned leadership training for new/current managers • Introduce self-paced skill-building paths into learning system • Integrate purpose, SBT & economic business case components into talent sourcing, interviews & hiring • Focus hiring on those who bring fresh in-demand skills, experience & cultural perspectives to the organization

Table 1. Tactical framework for achieving Constancy of Purpose

CONCLUSION

Although most companies have a stated purpose, constancy over business cycles is required to sustain that purpose, successfully execute and integrate sustainable business transformation efforts, and unlock the financial outcomes of a company's broader economic business case.

The strategic framework for Constancy of Purpose and tactical checklist provided here can be leveraged to start making dramatic improvements today. By transforming spirit of purpose into a strategy and method of execution that can be institutionalized, procedurally replicated, and harmonized as an operational leadership tool, constancy is possible, and the economic and planetary value of SBT in the private sector can be realized.

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HOW TO DELIVER ON AMBITIOUS SUSTAINABILITY COMMITMENTS



Authors

Matt Mayberry, Scott Tew, and Laura Asiala

Increasingly, companies are making bold commitments to deliver solutions to environmental and social challenges, spurred by customer, investor, and legislative pressures. To date, most organizations are struggling to live up to their commitments. A lack of strategic alignment within the leadership and management organization is often the root problem.

Companies will fail to achieve ambitious sustainability goals as long as managers treat sustainability as separate from the core business. Expecting aspirational targets to be reached via business as usual is wishful thinking. So is pursuing those targets without delivering financial value.

What's needed is a fundamental reexamination of the business strategy — and how that cascades into aligned action — so sustainability becomes an integral part of how the firm creates value. This begins with executives (working with the board) but also requires aligned decisions and actions by managers and employees across the organization.

MOVING FROM ASPIRATIONS TO RESULTS

Achieving bold sustainability commitments requires changing how business is done and a complete redesign of company strategy. Management consultant and author Roger Martin describes strategy as a cascade of choices that address five questions:^{1,2}

1. What is our winning aspiration?
2. Where will we play?
3. How will we win in chosen markets?
4. What capabilities must be in place to win?
5. What management systems are required?

These questions must be addressed both at a high level by executives and through more specific choices at operational management levels. We break the process of strategic transformation into four phases: aspirations, strategy, chartering, and execution. Figure 1 shows why the flow between these phases is critical to achieving transformational results.

WHAT'S NEEDED IS A FUNDAMENTAL REEXAMINATION OF THE BUSINESS STRATEGY

An aspiration defines what winning looks like. It incorporates the company's purpose and mission, as well as its vision for success. Traditionally, corporate aspirations have been financially grounded, with purpose statements focused on meeting customer needs while delivering shareholder value. Sustainability recognizes the importance of meeting both shareholder and customer needs but goes beyond that to consider the stakeholders of the whole system in which a business operates.

Sustainability aspirations must be connected to the strategy cascade in a way that creates financial value while having a positive environmental, social, and economic impact. We refer to this as *sustainable value creation*.³ The logic for an integrated strategy must be clear, addressing potential risks while seeking opportunities to grow the business.

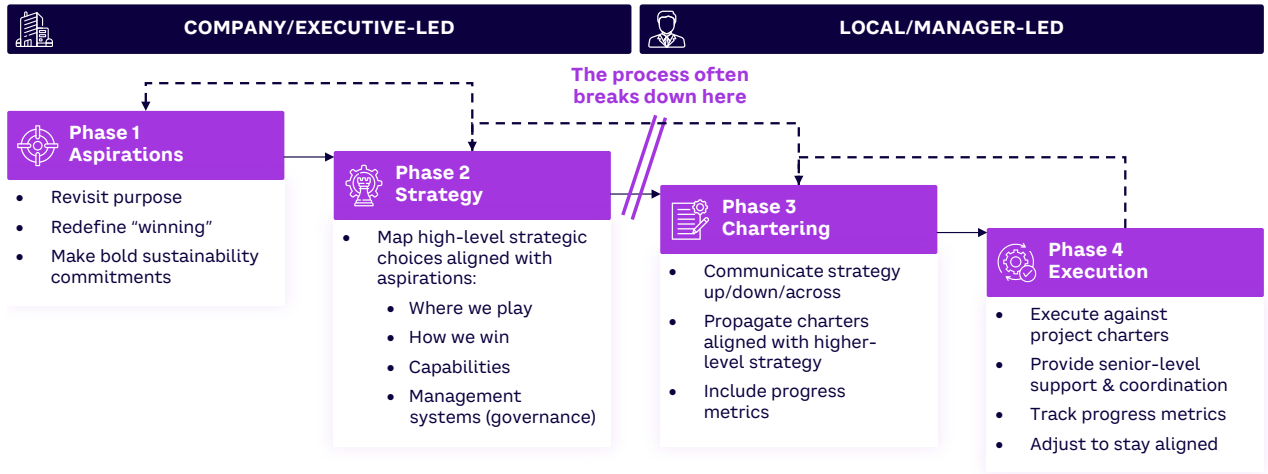


Figure 1. From aspirations to results

In the chartering phase, middle managers make strategic choices and frame the choices needed at the next level down. “The CEO may initiate the process, but the making and chartering of choices must continue all the way down the hierarchy for effective action to take place,” writes Martin.⁴

This is often where the process breaks down. Organizations struggle with the transition from phase 2 to phase 3: executives roll out a strategy and expect aligned implementation to propagate naturally from top to bottom. Unfortunately, this rarely happens on its own.

What may seem like a clear sustainability strategy to executives often fails to translate into a practical set of strategic choices for managers deeper in the organization and closer to the reality of the business. Without a relevant sustainability strategy for their part of the business, managers stick with business as usual, limiting progress toward corporate commitments. Operating under a traditional strategy, they treat sustainability initiatives as a distraction (or even something harmful to the business) rather than essential to creating business value.

Bridging the aspiration-execution (and results) divide isn’t simple, but it can be done. In this article, we use Trane Technologies, a US \$17 billion manufacturer of sustainability-focused HVAC and refrigerated transport equipment and solutions, as an example. Trane Technologies has spent considerable time developing and implementing sustainability as a strategy.⁵

INTEGRATING SUSTAINABILITY STRATEGY: STARTING AT THE TOP

The most important prerequisite for chartering (defining, selecting, and executing) meaningful projects and activities that deliver on aspirational commitments is an integrated sustainability strategy that shows how they will strengthen the core business. Trane Technologies is a purpose-driven company with deeply embedded sustainability aspirations.⁶

These aspirations propelled Trane Technologies’ leadership to set ambitious 2030 Sustainability Commitments, especially around greenhouse gas emissions (GHGs). The company is known for setting the “Gigaton Challenge,” which is designed to reduce its customers’ emissions by a gigaton of carbon dioxide equivalent (CO₂e) between 2020 and 2030.⁷

It also developed a metric to measure a product’s lifetime emissions against its capacity (giving the industry a new Scope 3 standard to compare alternatives) and established a Science Based Targets initiative (SBTi)-approved goal to reduce the emission intensity of their products by 55% by 2030.⁸ These goals represent milestones in the company’s longer-term commitment to achieve net zero GHG emissions by 2050.

Moving from aspiration to clear strategy, the leaders at Trane Technologies developed a playbook to broadly map out how to successfully achieve the Gigaton Challenge.⁹ The playbook effectively addresses phase 2 (see sidebar “Trane Technologies Playbook for the Gigaton Challenge”).

HOW THE GIGATON CHALLENGE CREATES SUSTAINABLE VALUE

The Sustainable Value Creation Map (SVCM) in Figure 2 shows how the elements of Trane Technologies’s strategy link to create sustainable value¹⁰ and illustrates how sustainability initiatives can strengthen a company’s core business strategy. It depicts how an initiative can create sustainable value by mapping the cause-and-effect drivers. It connects the dots upward through the value chain to show how an

initiative can build new resources and capabilities that strengthen core processes. These can create new competitive advantages in chosen markets that grow revenue. Core processes can also lead to operational improvements that lower operating expenses, optimize capital investments, and reduce risk. Together, these impacts combine to create long-term financial returns for company investors.

Figure 2 shows a high-level map of how the Trane Technologies Gigaton Challenge was applied to the commercial HVAC market. The sustainable business strategy is an interconnected system, linking elements from bottom to top along the value creation chain and across the functional areas of the business. Understanding these links is key to organizational alignment, but they are often assumed to be understood, taken for granted, or not made explicit — especially when moving from strategy to action.

TRANE TECHNOLOGIES PLAYBOOK FOR THE GIGATON CHALLENGE

The strategy at Trane Technologies for achieving the Gigaton Challenge can be summarized using Martin’s strategy cascade:

- **Winning aspirations.** Trane Technologies established clear 2030 commitments, including financial growth and reduced global carbon emissions.
 - **Where to play.** In 2020, Trane spun off its industrial business from Ingersoll Rand, creating a pure-play climate-control company. Today, the company focuses on products and services that have a significant impact on global climate change, including commercial and residential HVAC and refrigerated transport solutions.
 - **How to win.** Trane Technologies reinforced its competitive advantage by understanding its customers’ needs and translating them into products and services that improve energy efficiency and reduce carbon emissions. This translation enables its customers to decrease operating costs and reduce their carbon emissions for an environmental and economic win-win.
- **Must-have capabilities.** To deliver on these competitive advantages, Trane Technologies developed several must-have capabilities across its business, which can be grouped into two categories:
 1. *The core processes needed to achieve the Gigaton Challenge, including engineering and product management, sales and lifecycle service, communications and marketing, and global integrated supply chain*
 2. *Resources and capabilities that fuel those processes, including product technology, human resources, information technology and data analytics, and process improvement capabilities*
 - **Enabling management systems.** These systems integrate sustainability throughout the company to the highest level: the board of directors. They include creating standard systems for defining, reporting, and monitoring progress on key non-financial metrics as well as financial performance. For example, an internal publication, “Doing Our Part: Reducing GHG Emissions in Operations and Across the Value Chain,” helps employees understand the key levers driving emission reduction across all emissions scopes within its value chain and how they can support the strategy.

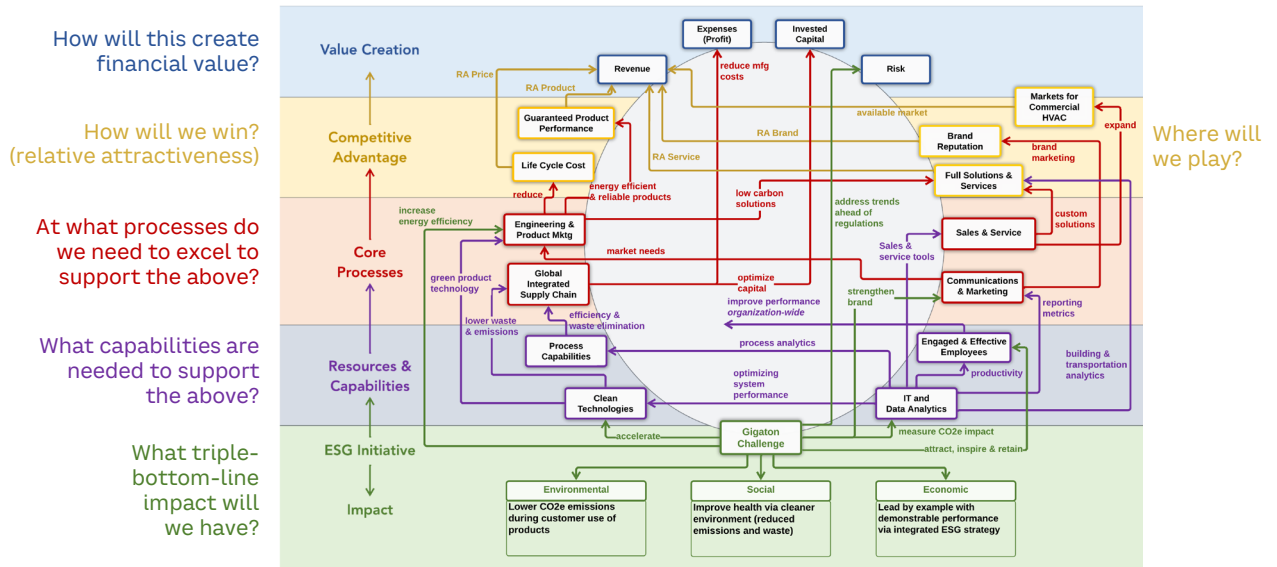


Figure 2. How the Gigaton Challenge creates sustainable value

The SVCM is a tool for exploring how a specific initiative can reinforce a company’s strategy for sustainable value creation (or how the company creates financial value) by increasing revenues, reducing expenses, optimizing capital, and/or reducing risk while pursuing sustainable impact environmentally, socially, and economically (sometimes called the “triple bottom line” or TBL).

Figure 2 shows how the Gigaton Challenge supports the business strategy in the commercial HVAC market while achieving positive environmental impact. The middle layers of the map incorporate key elements of Martin’s strategy choice cascade. The arrows depict cause-and-effect links between the elements. For the strategy to be financially sustainable, it must drive the elements shown in the value-creation layer at the top.

To illustrate the value-creation chain, one impact of the Gigaton Challenge is to accelerate the development of clean technologies, a strategic capability for the company that supports the core process of engineering and product marketing. This leads to energy-efficient products that enhance the firm’s competitive advantage in terms of product performance, increasing the relative attractiveness of products. This in turn drives revenue growth. The development of low-carbon technologies enables sales teams to offer new system solutions to customers, further driving sales and revenue growth by improving service, relative to competition.

These value-creating impacts are further reinforced by the other activities shown on the map that strengthen Trane Technologies’s brand reputation, reduce manufacturing costs, and reduce risk.

THE KEY TO CHARTERING

A single map of a corporate strategy, no matter how clear, is not enough to inform “local” decisions that managers make across the business.¹¹ For bold commitments such as the Gigaton Challenge, the logic of sustainable value creation must be clearly mapped at each level in the organization and across functional disciplines.

This is where sustainability aspirations often go offtrack. To achieve them, managers at all levels must go through a similar sustainability integration process in phase 3 that executives go through in phase 2. This includes mapping the strategy of an issue or opportunity in their area of responsibility (i.e., local) and showing how it impacts sustainability targets and creates financial value for the company.

For example, heat pumps let customers shift from fossil fuel-powered climate-control systems to electric, where renewable energy sources can reduce carbon emissions. Cory Sauls, VP of the Project Management Office, Commercial HVAC Americas at Trane Technologies, created a project charter to accelerate the development

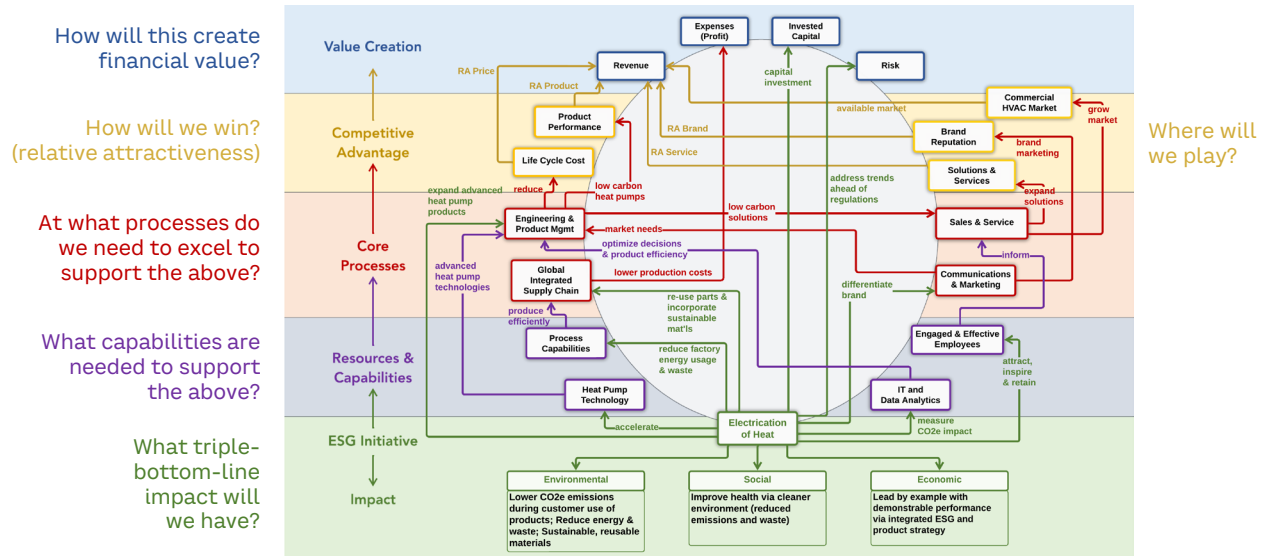


Figure 3. Mapping the EoH initiative at Trane Technologies

of next-generation energy-efficient heat pumps.¹² This is a high-level initiative requiring significant operating and capital investment, and it will drive the activities of hundreds of engineers and managers across a cross-section of Trane Technologies. Figure 3 shows the SVCM developed by Sauls to show how the “Electrification of Heat” (EoH) initiative creates sustainable value.

The top of the map shows how the initiative creates financial value by increasing revenue (market share), reducing operating costs, and reducing risk. These benefits must be weighed against the investments required to fund the project.

The middle layers of the map show how EoH connects to Trane Technologies’s higher-level strategy by reinforcing the company’s competitive advantage in the commercial HVAC market and strengthening its core processes, resources, and capabilities.

The left side of the map shows how accelerating the development of advanced heat pump technology fuels product development by engineering and product management.¹³

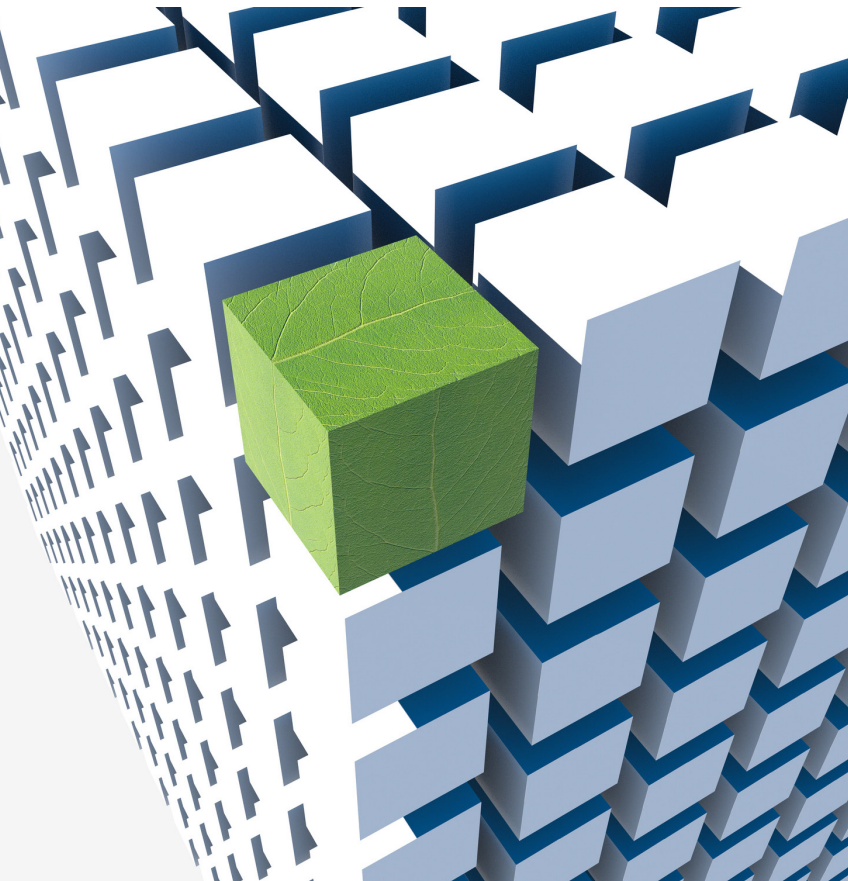
The resulting products enable marketing and sales to increase their win rate with customers and increase market share while commanding a price premium.¹⁴

The bottom section shows the sustainability impact of the initiative. It highlights the environmental benefits of decarbonization as well as the benefits of moving toward a circular supply chain model, which increases part reuse and incorporates more sustainable materials.

To gain executive support for this initiative, the project management office leader linked the project directly to the Gigaton Challenge and used the SVCM to depict on a single page how EoH connects to the corporate strategy to create sustainable value. This strengthens the chartering process in three ways:

1. It shows how an initiative addresses specific sustainability issues while building a business case for the initiative.
2. It highlights the key interdependencies between functional areas needed for the initiative to succeed. This is essential for identifying and enrolling the larger team needed to execute the project.
3. It points to specific metrics at each layer of the map that can be used to measure progress across the system. For example, some key metrics for EoH might include reductions in customer CO2 emissions (sustainability impact), new EoH products (core processes), market share in the commercial HVAC market (competitive advantage), and revenue from new EoH products (value creation).

The logic of the EoH strategy also makes it clear to members of the EoH team how their decisions need to align with each other. The team members add specificity to the strategy as they make consistent choices about how to work with suppliers, engineers, and the sales teams to develop and sell new heat pump solutions.



Of course, creating a frontline strategy is not the end of the journey. As the EoH team implements its strategic choices in phase 4 (execution) and encounters the constraints and uncertainties of the business, it is easy to get caught up in functional details and lose sight of the guiding strategy. Having a clear strategy map and revisiting it regularly helps team members maintain a clear line of sight to the higher-level roadmap, even as they learn and adjust. The problem-solving question becomes: “Does this decision support my team’s strategy for creating sustainable value?” Without this discipline, the game plan cascaded from the top can easily diffuse into disconnected local improvisation.

SUPPORTING THE CHARTERING PROCESS FROM THE TOP

The roles played by company executives and management during the chartering process are complementary. Managers inform executives about market needs, operational strengths and weaknesses, and opportunities for innovation that can lead to revisions to the corporate strategy (revisiting phase 2).¹⁵ Similarly, the work of executives doesn’t end after a strategy is created and communicated. Executives and boards play a critical role in overseeing the chartering process, managing a portfolio of projects across the organization, allocating resources, and monitoring key metrics.

In addition to establishing a logical, integrated sustainability strategy from the top, executives can support the chartering phase in several ways:

- **Check for vertical alignment.** This includes ensuring that key strategy cascade questions are being consistently asked and answered and that the answers are aligned with the top-level strategy.
- **Encourage horizontal alignment.** Ambitious goals can’t be achieved in a siloed culture. Executives must encourage (and reward) managers to reach across boundaries and functions to optimize the whole system rather than focus narrowly on their piece of it.
- **Create a learning culture with upstream feedback.** Well-designed and well-executed strategies don’t always produce intended results. Explicit permission from executives to learn and adjust is critical. As planning comes face-to-face with implementation or operational realities, higher-level strategies may need to be revised.
- **Build leadership competencies across the management ranks.** Executives shouldn’t underestimate the challenges facing managers in leading change. It requires advanced competencies in systems thinking, stakeholder engagement, influence, emotional intelligence, sustainable business acumen, and strategic thinking. Providing managers with hands-on development of these leadership competencies should be part of the management systems developed in phase 2.

ACHIEVING AMBITIOUS SUSTAINABILITY COMMITMENTS

At the end of 2023, Trane Technologies had reduced its customers' carbon footprint by 157 million metric tons of CO₂e and achieved 15.2% emissions per thermal ton reduction, based on its 2019 baseline.¹⁶

The company continues to identify opportunities to accelerate its progress toward its 1 gigaton milestone by 2030. This requires further embedding its sustainability strategy deep within the organization. The chartering phase continues to progress across the organization. Strategic realignment is iterative and complex, an inherently messy process. The challenge is to align the thousands of strategic and tactical choices managers at all levels make so they add up to something profoundly impactful and to not allow bold commitments to dissipate into the organizational abyss. And all this must be done while strengthening the business.

To maintain alignment across the organization, managers and employees need a line of sight to a clear corporate strategy, one that spells out the cause-and-effect drivers of sustainable value creation. Transformation then unfolds as local managers fill in the operational details and work across functions and departments to link their initiatives to those of others.

Transformation is hard, especially in large organizations. It requires constant rethinking, reconnecting, and retooling the elements of the business system in new ways. But this essential work must be done if companies are to walk the walk, meet their bold commitments, and help solve our world's greatest challenges.

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- ¹² Note: this example has been simplified, both to protect confidential information and to make the connections clearer for outsiders.
- ¹³ New product development processes integrate sustainability considerations by requiring the use of a Design Systems for Sustainability and Circularity tool as part of the standard practice. This tool supports engineers and designers as they optimize new products' contributions to the Gigaton Challenge.
- ¹⁴ A detailed analysis of these impacts would likely be needed before a significant initiative such as this would be approved. Supporting analyses could include a lifecycle assessment to estimate the impacts of EoH on lifecycle environment and health systems, including climate change. A more thorough financial analysis using a method such as net present value would also be required to quantitatively assess the financial returns from the project. The purpose of the SVCM is to depict the key drivers of value.
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ENERGY PROCUREMENT:

A CASE FOR HOLISTIC
DECISION-MAKING

Authors

Shannon Ames and Whitney D. Stovall

Imagine two hydropower facilities. One sits quietly on a river, generating clean energy for nearby communities while supporting fish migration through a carefully designed bypass system. The riverbanks around it teem with wildlife, and the facility hosts school visits to educate children about renewable energy and local ecosystems. This dam is a symbol of how sustainability and progress can work together.

The other facility, built decades ago, provides significant energy to a community but blocks migratory fish, disrupts water quality, and alters the surrounding ecosystem. Local communities downstream have seen declining fish populations, and Indigenous groups struggle to maintain cultural practices tied to the river. The dam's benefits come at a visible environmental and social cost.

Both are renewable energy sources, but their impacts couldn't be more different. So, which to choose?

Globally, the procurement choices of energy buyers (from large corporations and governments to small community utilities) have the power to shape the future of renewable development. All renewable energy development and generation has the potential to create negative externalities, but the health of the environment and those living near project areas don't have to be sacrificed for the sake of these projects. Indeed, energy buyers are uniquely positioned to choose projects that put people and the environment first.

Today's energy buyers emphasize only two criteria: (1) whether the electricity is renewable and (2) whether the renewable electricity comes from a newly built project. These criteria are important for the global transition to a clean grid, but they are insufficient to prevent putting renewable development on a collision course with biodiversity conservation and the rights of local communities. If we want a livable planet, we need more than just renewable electrons — we need a thriving environment and resilient communities.

Energy buyers can change the status quo by prioritizing energy sources that meet a high sustainability bar. They can consider a project's environmental, social, and cultural impacts in addition to its generation attributes and better understand how energy generation integrates with its environment and community needs.

**GLOBALLY, THE
PROCUREMENT
CHOICES OF
ENERGY BUYERS
HAVE THE POWER
TO SHAPE THE
FUTURE OF
RENEWABLE
DEVELOPMENT**

This is where the Low Impact Hydropower Institute's (LIHI) holistic decision-making comes into play. Recognizing the need for comprehensive hydropower generation assessments, LIHI is leading an effort to ensure that energy projects align with environmental and social priorities. LIHI runs a certification program highlighting meaningful community involvement to understand project impacts and successfully promote restoration and improvement efforts. LIHI evaluates hydropower plants across the US and globally (through a partnership with the Hydropower Sustainability Alliance) on eight criteria: river flows, fish passage, water quality, preservation and protection of historic and cultural resources, species, habitats, shorelines, and public access.

LIHI's approach to centering community perspectives and assessing a project's environmental and cultural resource impacts is appropriate for hydropower anywhere in the world, including recent expansions in East Asia, the Pacific, and Africa.¹ LIHI's criteria can be used by developers to build projects and by energy buyers to test whether or not projects meet critical standards around sustainability.

This article focuses on hydropower, but the criteria can be applied to any renewable project in which buyers can choose energy development that prevents biodiversity loss and delivers benefits for local communities.

HYDROPOWER LEADS THE RACE IN RENEWABLE ENERGY RESOURCES

Hydropower is a good example of the complexities facing sustainable energy solutions. It is highly supported in some sectors because it is reliable and renewable, but it has faced backlash due to its environmental and ecological impacts.^{2,3}

Hydropower's ability to match generation demand and help energy buyers meet their goals has secured its role as a vital component of the energy market. Nevertheless, to define effective goals for hydropower, we must acknowledge its history.

Large public projects were built all over the western US from the 1930s to 1950s. The hydropower projects constructed at that time still provide low-cost power to cities, but they were developed when consideration for ecological systems and local communities, particularly tribal groups, were not priorities. Some of these plants are targeted for removal by conservation groups (e.g., the Klamath dams in California), but energy operators and, ultimately, consumers depend on many of them for generation and system stabilization.

HYDROPOWER MAY SEEM AT ODDS WITH SUSTAINABILITY PRINCIPLES, BUT ITS OPERATIONS INTERSECT WITH SUSTAINABILITY GOALS

Many dams in the Northeastern US were built centuries ago to power small grist mills and sawmills. Historic mills later supported textile operations in Massachusetts and the paper industry in Maine. Over the years, these dams were converted from mechanical to electrical power (primarily small capacity, under 50 MW), providing a reliable renewable energy source. These small facilities provide baseload electricity and grid-support services such as spinning reserves. Although the output from one such facility might only power a small village, they are a grid-wide source of reliable, flexible power. Unfortunately, these dams impact ecosystems and were largely responsible for the extirpation of Atlantic salmon 100 years ago.

By identifying sustainability goals that consider historical realities, objectives can be effectively matched to facility operations, helping energy buyers become better informed and increasing the likelihood of gaining (1) hydropower owner support for improvements and (2) energy buyer support for hydropower generation.

SUSTAINABILITY PRIORITIES THAT INTERSECT WITH HYDROPOWER OPERATIONS

At first glance, hydropower may seem at odds with sustainability principles, but its operations intersect with sustainability goals, sometimes beyond the scope of renewable energy. For example, the water is used to power turbines in a non-consumptive process that does not impact water quality. Also, hydropower projects have incredible longevity. Globally, the average hydropower plant is 30 years old. In the US, the average is 64, although many, especially in the Northeast, are more than 100 years old. Some of those use their original turbines to provide meaningful amounts of electricity and additional grid services.



Figure 1. A high school senior, as part of a two-week internship with LIHI, gets a history and engineering lesson at Pawtucket Hydropower in Rhode Island (source: LIHI)

One example is the Mother Ann Lee Project in Kentucky, which has been operating since the 1920s.⁴ It is located along the Kentucky River, which historically has had poor oxygen levels at certain times of the year. In 2005, the project voluntarily adopted an adaptive management plan to improve the river's oxygen levels.

By prioritizing community benefits, accountability, and transparency and approaching hydropower through the lens of sustainability, hydropower can provide benefits to the environment, area habitats, and surrounding communities.

COMMUNITY BENEFITS

One community benefit comes in the form of educational opportunities: introducing students to renewable energy and inspiring future careers in environmental science, engineering, and sustainable resource management. Exposure to hydropower operations fosters a deeper understanding of the interconnectedness between energy production, water management, and ecosystem conservation, equipping young learners with the knowledge and motivation to tackle future environmental challenges.

For instance, in Pawtucket, Rhode Island, the downtown hydropower facility routinely hosts school groups at its accessible powerhouse, which is downstream of a historic mill building erected in 1793 (see Figure 1).⁵ In Oregon, the Falls Creek Project hosts fourth graders yearly at its rural facility. Students learn about energy production and ecosystem preservation, reinforcing the significance of responsible environmental stewardship.⁶

The Bowersock Project in Lawrence, Kansas, takes community engagement a step further with a public partnership.⁷ When the plant added a second powerhouse, it tripled potential generation while also contributing to the circular economy by sourcing two used turbines for 2 MW of capacity. Bowersock Mills & Power Co. owns the dam, but the City of Lawrence is responsible for maintaining its structural integrity, as the reservoir is the source of more than half the city's drinking water supply.

Bowersock manages the daily operations and ensures the reservoir is held at the appropriate level, lowering operating costs for the city's municipal water operations. As a bonus, owner Sarah Hill-Nelson is working with regional stakeholders and conservation groups to create a recreation park upstream of the powerhouse that will include the restoration of native vegetation in the river corridor. Hydropower facilities like Bowersock are enhancing community engagement, fostering environmental literacy, and demonstrating the broader societal benefits of renewable energy investments by integrating public education with conservation efforts (see Figure 2).

IMPROVED BIODIVERSITY

Biodiversity is key to climate adaptation but is profoundly impacted by climate change.⁸ Hydropower operates on both sides of this equation. On the one hand, dams can prevent fish migration and slow flows, leading to warming waters. On the other hand, they can artificially create cool water sources for critical habitats.

Maine's Freedom Falls Project is the first US installation of a new turbine design that is nearly 100% safe for downstream fish passage.⁹ Although small (350 kW), the design is highly efficient and provides evidence that turbines can be cost-effective and protective, eliminating the need for expensive screens that block the entrance of fish into the turbines but also reduce energy output.



Figure 2. Sarah Hill-Nelson, owner of Bowersock Mills & Power Co., shares the history and operations of the Kansas hydropower plant (source: LIHI)

Another good example is the Cutler Project in Utah, which created a buffer zone around the Bear River, protecting nearly 99% of the undeveloped area that encircles the facility.¹⁰ The owner also planted vegetation to create designated wildlife habitats and restore native plants and grasses.

Traditionally, hydropower facilities have been viewed as environmental disruptors, but even that can be a benefit. When the Bowersock Project went through relicensing in 2020, the owner actively considered adding fish passage to the dam to benefit local fish species (historically, there have been no anadromous fish species present in this stretch of the river). However, state and federal resource agencies were concerned with preventing the spread of invasive carp, which can wipe out native species. Native species have demonstrated the capacity to pass the low-head dam at high flows; invasive species have not. The dam now serves as a barrier and is the site of ongoing studies.

Municipal hydropower facilities have sometimes extended their environmental efforts to the larger regional state. For example, the Massachusetts Water Resources Authority (MWRA) installed three hydropower facilities within its water supply infrastructure, which provides most of eastern Massachusetts with its drinking water.¹¹ With no direct impacts on the environment, MWRA partners with the state's Department of Conservation and Recreation (DCR) to provide statewide watershed protection actions. MWRA also funds the DCR's watershed management programs, in part from the sale of the project's renewable energy credits.

TRANSPARENCY & ACCOUNTABILITY

Most hydropower facilities in the US are regulated by the Federal Energy Regulatory Commission (FERC), which posts all non-sensitive project documents to its e-library, an excellent source of technical information and a way for the public to participate in FERC licensing processes.¹² This level of governmental transparency is somewhat unique globally and is the launching point for LIHI's assessments. Globally, assessment needs to start earlier, beginning with assessments of whether or not developers deeply considered a project's intersection with communities and ecosystems.

LIHI certifies hydropower that meets science-based criteria in eight areas of common impact, with more than 20% of facilities going above and beyond license requirements or the minimum LIHI criteria. The LIHI process also includes a framework for assessing renewable energy procurement options, which can serve as a guide for similar questions for solar and wind projects.

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Like FERC, LIHI's process is open and incorporates public comment into its certification decisions. Unlike FERC, LIHI's review cycle is 10 years with yearly compliance demands (FERC's cycle lasts between 30 and 50 years). In many countries, if a license is required, it is often issued for life. LIHI publishes individual webpages with materials and information on each of its 186 active certified projects (and more than 300 facilities), providing a point of contact and regular updates for those facilities.

Energy buyers concerned with transparency and environmental performance can encourage LIHI certification of a project under consideration. Doing so can cause direct improvements to a facility well before a license proceeding. In the US, if a FERC license proceeding is imminent, it can influence its outcomes. Energy buyers can also leverage LIHI's certification program to gain additional insight into the diversity of a project's impacts.

More than a third of FERC hydropower licenses in the US will be up for renewal in the next 10 years. This is the ideal time to outline sustainability priorities and identify hydropower facilities that

meet energy needs and improve environmental and social outcomes. Many projects already provide such services. With the right encouragement, others could integrate sustainability practices under their existing licenses or address provisions in an upcoming relicensing process. In essence, if a potential energy buyer requires sustainability, project owners will be incentivized to act, and long-term purchase agreements can provide the financial stability necessary to carry out improvements.

Note that of the nearly 100,000 dams in the US National Inventory of Dams, only about 3% have hydropower. Although dams writ large are responsible for significant impacts on species and their habitats, water quality, flows, and access, thousands of non-powered dams that serve useful purposes (and thus are not contenders for removal) could produce enough energy to support millions of homes if retrofitted with hydropower.¹³

Globally, new dams are being considered for construction to address changing rain patterns driven by climate change. These dams have the potential for hydropower, and those potential hydropower projects could be designed to safeguard the environment and use new technology that protects migrating fish. However, developers need incentives to adopt designs that are (or may be) more expensive in the short term but avert the costs of harmful externalities in the long term.

THE CRITICAL INFLUENCE OF ENERGY BUYERS

Energy buyers can ensure that renewable energy choices contribute to long-term resilience by integrating broader sustainability goals into procurement processes. This means looking beyond immediate energy needs to address each project's social, cultural, and environmental impacts. Asking the right questions can encourage innovation, foster collaboration with local stakeholders, and set a higher accountability and community engagement standard.

In this age of simultaneous crises, it isn't enough to ask for new megawatts. Energy buyers should ask how those megawatts protect biodiversity and local communities. All projects have an opportunity to do things differently, and the time for one-dimensional decision-making is over.

Renewable energy has the potential to power the grid and drive positive change, shaping a future where economic growth and ecological health coexist.

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GREENING HEALTHCARE



Authors

Ali Alessandro Ayach and Farhan Mirza

The healthcare sector stands at a crossroads, confronted with the dual challenge of dealing with the health impacts of climate change while reducing its own substantial carbon footprint. With global emissions from the sector projected to triple by 2050, there is a dire need for immediate, decisive action. Healthcare organizations must integrate sustainability into their operations to ensure their long-term viability and improved health outcomes.

The healthcare sector accounts for 10% of the world's GDP, or US \$7.2 trillion annually; it also contributes to 4.4% of global net emissions.¹ To put this into context, if the healthcare sector was a country, it would be the fifth-largest emitter of greenhouse gases (GHGs) in the world.

Unless action is taken, the sector's global emissions will reach 6 gigatons a year by 2050.² Factors such as air pollution, water pollution, and climate change contribute to the burden of disease, not least in the form of cardiovascular disease and cancers, creating pressure on health systems. How can the healthcare sector resolve the paradox of being responsible for both the cause and the care?

Many healthcare organizations are implementing environmentally friendly practices to reduce their carbon footprint, make more sustainable use of their resources, and deliver results on the triple bottom line of people, profits, and the planet. They do this knowing that sustainability intersects with other priorities such as a rising demand for health services, spiraling healthcare costs, quality of health outcomes, and patient satisfaction. For sector participants and their stakeholders, adopting environment-friendly practices is not just a moral obligation, it is also a strategic necessity with sizeable financial, reputational, and population-health implications.

Regulatory pressures are also increasing, with stricter reporting requirements and penalties for noncompliance creating urgency. Healthcare organizations that proactively commit to sustainability stand to benefit not only from cost reduction but also by building trust and credibility with patients, regulators, and investors. Embedding sustainability offers a path to environmental responsibility, financial performance, and operational excellence.

In this article, we introduce a framework for improving the healthcare sector's environmental performance based on three steps: green practices, green initiatives, and green environment enabled by digital solutions.

Green practices focus on energy efficiency, optimizing waste management, and adopting circular economy practices to tackle the sector's environmental inefficiencies. *Green initiatives* drive clinical and operational changes such as new models of care, service-line management, clinical pathway redesign, and digital/AI adoption. Finally, *green environment* addresses cultural and stakeholder-related barriers in the wider health system to enable long-term environmental and operational resilience.

THE HIDDEN COST OF HEALTHCARE

Healthcare facilities are the cornerstone of most health systems and where the sector’s environmental impact can most easily be observed. Hospitals operate 24/7 and typically consume between 2,000 and 4,000 kWh per bed annually on energy for lighting, heating, ventilation, and medical equipment (equivalent to 3,000-10,000 kg of carbon dioxide equivalent [CO2e] in emissions).

The healthcare sector also generates substantial waste, including single-use and disposable materials, which can amount to almost 2,000 kg of CO2e per bed per year from medical and general waste. Operating rooms occupy a relatively small physical area in a hospital but produce 20%-33% of a facility’s total waste. It is estimated that 15% of hospital waste is hazardous and can be infectious, toxic, or radioactive, with hospitals in high-income countries producing up to 11 kg of hazardous waste per bed per day, much of which is not biodegradable.^{3,4}

Orthopedics, oncology, cardiology, and neurology departments have the highest carbon footprint because of their extensive use of energy-intensive equipment (e.g., operating rooms, intensive care units, and imaging machines), single-use materials, and gases. In nephrology, dialysis contributes significantly due to high water and energy consumption. In hospitals, support functions such as facilities management, IT, and catering stand out as chief contributors.

The scale of the problem is also challenging beyond the four walls of a hospital, with the healthcare supply chain responsible for more than 70% of the sector’s emissions, primarily from fossil fuel consumption in the production, transport, and disposal of drugs, devices, and supplies.

The manifestation of emissions at a hospital level is shown in Figure 1,⁵ split across Scope 1 (direct), Scope 2 (indirect via energy usage), and Scope 3 (all other indirect sources, including supply chain). This highlights the need for a comprehensive approach that extends beyond hospital operations.

SOLUTIONS FOR HEALING HEALTHCARE

The healthcare sector can embrace sustainability without compromising quality of care or impairing patient experience (see Figure 2).⁶ Advances in green technologies such as alternative energy sources, water conservation systems, and waste-reduction measures, particularly in sterile zones such as operating rooms, offer significant potential for reducing environmental impact.

International energy regulations and standards provide complementary guidelines that can be integrated into broader sustainability efforts. Infrastructure and real estate standards such as LEED (Leadership in Energy and Environmental Design) inform energy-efficient building design; ASTM (American Society for Testing and Materials) provides standards for environmental site

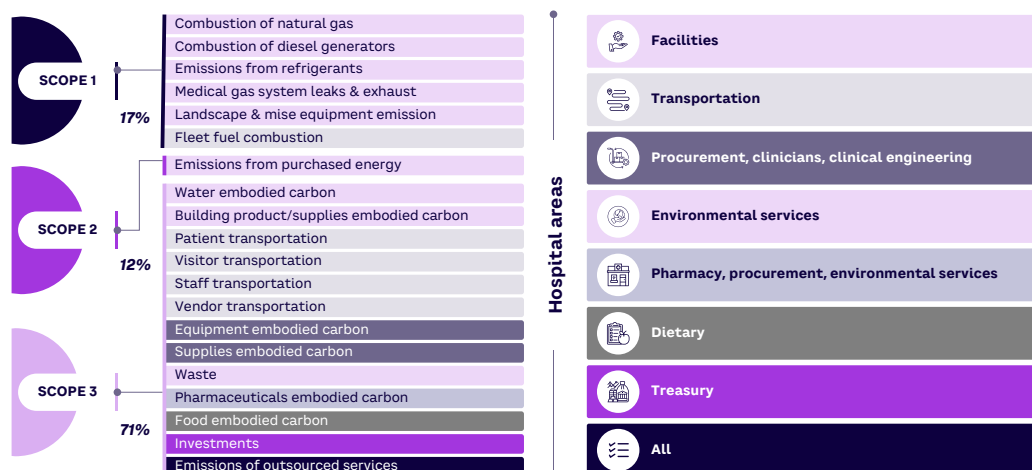


Figure 1. GHG emissions by hospital area (source: Arthur D. Little, Healthcare Without Harm, Arup)

assessments; and BREEAM (Building Research Establishment Environmental Assessment Method) certifies the sustainability performance of buildings. From a management perspective, International Organization for Standardization (ISO) 14001 provides a framework for organizations to improve their environmental performance, and the US program Energy Star certifies energy efficiency.

The Global Green and Healthy Hospitals (GGHH) network and the International Hospital Federation (IHF) also provide resources to help hospitals reduce their environmental footprint as part of a knowledge-sharing community. These standards yield substantial cost savings, enhance operational efficiencies, and encourage cross-industry collaboration and partnerships that can drive systemic change and innovation in sustainable healthcare practices.

We can also look to leading healthcare organizations that have successfully integrated sustainable practices into their operations:

- The University Medical Center of Princeton (New Jersey, USA) reduced energy use by 30% with sustainable design features like a green roof and energy-efficient lighting.

- Cleveland Clinic (Ohio, USA) installed LED lights and solar arrays, reducing its energy use and GHGs by 30%. By replacing disposable items with reusable or compostable alternatives, the Mount Sinai Health System (New York, USA) reduced its use of single-use plastics and cut waste by 15% in the first year.
- The Lucile Packard Children’s Hospital Stanford in California, USA, implemented a comprehensive water management plan that reduced its water usage by 38%.
- National Health Service (NHS) England, which is responsible for more than 500 hospitals, is targeting net zero emissions by 2040 for Scope 1 and 2 and by 2045 for Scope 3. Strategies such as reusing medical instruments have saved more than £250,000 annually for some hospitals.

At a national level, the UK’s NHS Sustainability Action Plan and the US’s Sustainability Action Plan aim to reduce the sector’s carbon footprint and enhance sustainability. Both plans include a variety of initiatives, from energy efficiency and transportation to sustainable procurement and partnerships. Each plan addresses unique regional challenges, but they share the overarching goal of achieving net zero emissions and promoting environmentally responsible healthcare practices.

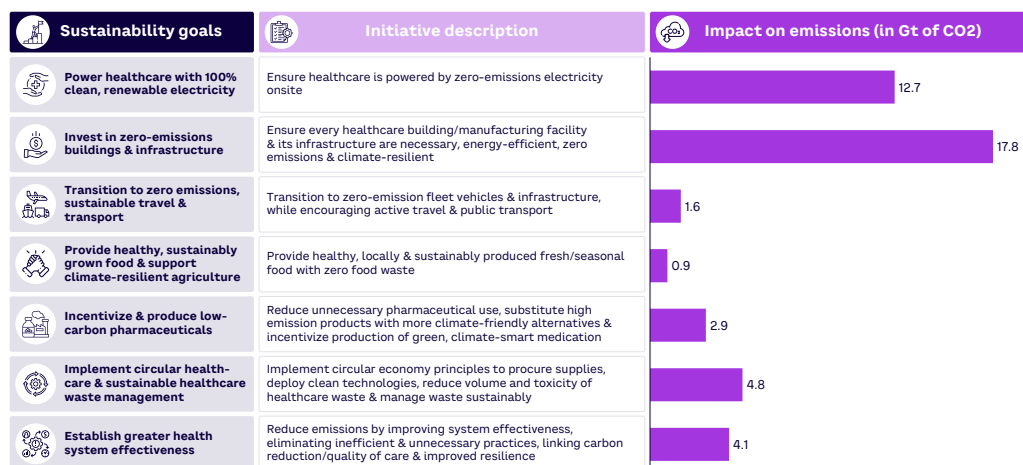


Figure 2. Healthcare initiatives and impacts on emissions (source: Arthur D. Little, Health Care Without Harm)

NHS SUSTAINABILITY ACTION PLAN (UK)

- Developing frameworks to assess carbon reductions in new care models
- Transitioning to zero-emission vehicles, including the world's first zero-emission ambulance
- Planning to construct 40 net zero hospitals, adhering to carbon-neutral standard
- Utilizing \$60 million LED lighting replacement program to enhance patient comfort & save energy
- Collaborating with suppliers to align the medicine supply chain with net zero emissions targets by the end of the decade

SUSTAINABILITY ACTION PLAN (US)

- Targeting 100% carbon pollution-free electricity through renewable energy
- Transitioning to zero-emission vehicle fleets
- Achieving net zero emissions in buildings by enhancing energy & water efficiency
- Expanding recycling & minimizing construction debris
- Updating sustainable procurement practices & conducting staff training in climate literacy through outreach programs
- Addressing climate impacts on underserved communities
- Accelerating sustainability & climate initiatives through partnerships with federal agencies & private organizations

Global healthcare entities are adopting a range of KPIs to monitor and measure the effectiveness of their sustainability efforts (see Figure 3). These measurements help track progress and ensure alignment with global environmental goals, such as *COP28* and the Paris Agreement, as well as national CO₂e targets.

THE ROAD TO ENVIRONMENTAL PERFORMANCE

In Arthur D. Little's (ADL's) work with healthcare clients, we encourage a three-step approach to improving environmental performance (see Figure 4). By addressing environmental, economic, and operational practices at all levels, from core principles to societal integration, healthcare organizations can systematically work toward their sustainability goals and realize long-term benefits at a facility, system, and population level.

GREEN PRACTICES

As a first step, organizations should focus on fundamentals such as water conservation, waste management, energy efficiency, circular economy principles, and investment in renewable sources (e.g., wind turbines, solar panels, and biomass energy). For example, waste-to-energy systems that convert medical waste into usable energy generation and have been successfully implemented by several European hospitals.

These basic activities reduce the environmental footprint of healthcare operations and lay the foundation for sustainable progress, starting with Scope 1 and Scope 2 emissions.

GREEN INITIATIVES

The next step is to integrate sustainability into broader operational areas, recognizing the impact of initiatives like community-based care, clinical pathway redesign, behavioral change, and service-line management can have on Scope 1 and Scope 2.



Figure 3. KPIs for measuring effectiveness of sustainability in healthcare systems (source: Arthur D. Little)

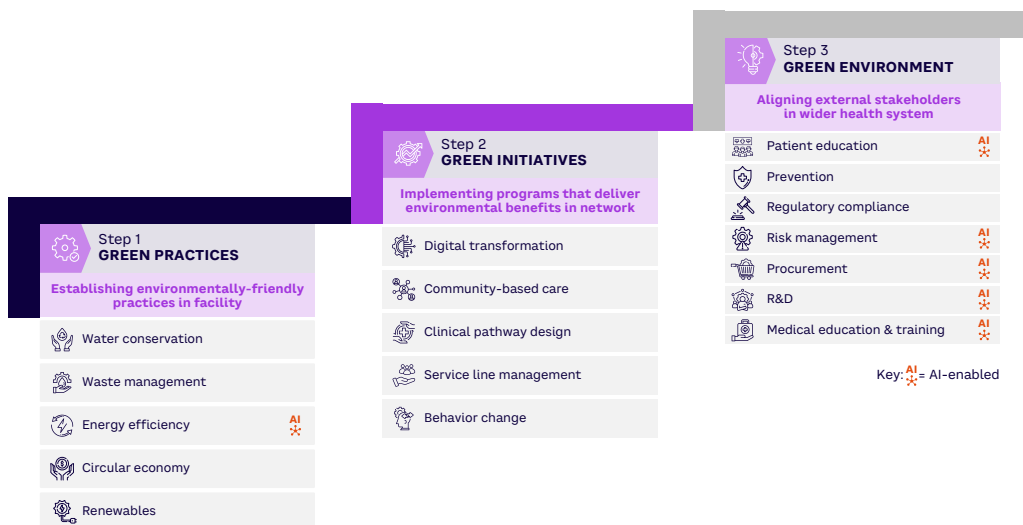
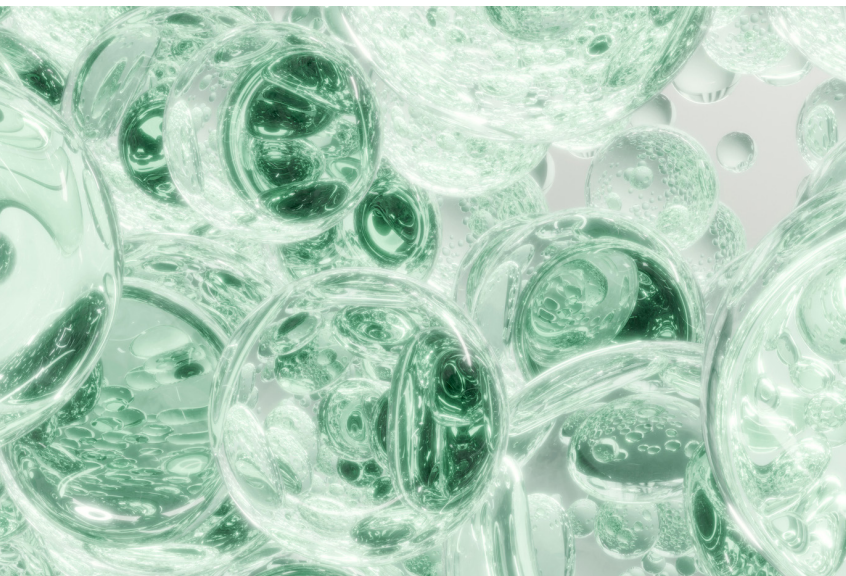


Figure 4. Framework for improving healthcare sector's environmental performance (source: Arthur D. Little)

Telemedicine is being adopted at a good pace, in part because of a ramp-up during the recent pandemic. Virtual consultations reduce the need for physical visits, decreasing carbon emissions associated with transportation while lowering the demand for physical infrastructure such as clinic space. Diagnostic tools can reduce the frequency of unnecessary tests and procedures, lowering resource consumption and patient visits. More robust demand prediction can minimize waste from unused, short-shelf-life drugs and supplies.

Redesigning the model of care to focus on well-being and healthy living, as well as care in alternative settings, can reduce resource consumption and hospital visits while enhancing patient experience and convenience. Linked to this, standardized clinical pathways streamline care processes and reduce unnecessary interventions, leading to more efficient resource use and minimized waste. Hospitals can optimize staffing, scheduling, and patient flow and reduce the need for some patient tests and travel, lowering the environmental impact of healthcare.



GREEN ENVIRONMENT

The third step is to tackle complex challenges that require stakeholder alignment, such as patient education, procurement, regulatory compliance, and risk management. This step also focuses on long-term enablers such as prevention, medical education, and R&D to ensure sustainability becomes deeply integrated into healthcare delivery.

Wearable devices can monitor patient health in real time, alerting the patient/caregiver/provider about potential health issues before they escalate. The Scope 3 implications of such technologies, however, need to be weighed against the potential benefits. In post-discharge scenarios, they can prevent avoidable readmissions and thus lower the resources consumed by emergency visits and rehospitalization.

With Scope 3 emissions accounting for around 70% of the sector's GHGs, procurement is key to greening the healthcare supply chain. Procurement teams must collaborate with suppliers to improve transparency and reduce emissions. For example, they can consider the potential reusability of medical instruments, reduced need for packaging, and recyclability of the materials used to manufacture their products. Balancing sustainability with cost, quality, and performance requires thoughtful compromises. Healthcare organizations can adopt eco-friendly procurement strategies, focusing on reducing single-use plastics, sourcing sustainably, and ensuring supplier adherence to environmental standards.

R&D can leverage AI to minimize resource consumption and environmental waste in clinical trials and drug discovery (e.g., modeling the impact on certain patient segments without sourcing new datasets). This can lead to a more streamlined process that balances innovation with sustainability goals.

Increasing physician awareness of healthcare's environmental impact and integrating best practices into medical education and training is essential for promoting sustainability. AI tools, such as those used to diagnose diabetic retinopathy, can help clinicians make more accurate diagnoses and choose optimal treatments, resulting in faster recoveries and reducing the need for more complex procedures, ultimately leading to lower resource consumption.

OVERCOMING CHALLENGES

The high up-front costs of implementing green technologies, the complexity of regulatory requirements, and difficulties capturing and reporting data pose significant hurdles. The fragmented nature of the healthcare industry, with its mix of public and private providers, further complicates efforts.

One of the major barriers to sustainable transformation is the significant financial investment required to upgrade existing (often aged) facilities with energy-efficient systems. Renewable energy systems, energy-efficient HVAC systems, and sustainable building materials often require substantial up-front costs that can take years to recoup. Lenders and investors are increasingly factoring in environmental, social, and governance (ESG) criteria when assessing credit risk and financing terms, as these considerations can greatly influence an organization's long-term financial performance and sustainability.

Decisions about investing in care versus investing in the environment, and issues around short-term capital-funding constraints, can be simplified through public-private partnerships (PPPs) and private-sector participation (PSP) contracts designed to fund large-scale capital projects and provide access to best-practice solutions.

Healthcare organizations must navigate a complex regulatory environment, often involving multiple agencies that have their own stringent standards. Any changes to operations, such as adopting a new waste management system, must comply with these regulations, which can hinder implementation. Taking proactive steps toward integrating sustainability into their operations, reporting, and ensuring compliance with standards will ensure healthcare organizations are better positioned to meet these requirements and avoid potential fines or penalties.

A commitment to decarbonization requires setting clear, achievable carbon-reduction targets and developing a plan to implement and monitor results. This entails gathering detailed activity data (bottom-up) from internal sources relating to transportation, energy consumption, waste production, and material usage. This is challenging enough for most organizations. Getting accurate and reliable data from suppliers on Scope 3 emissions is even harder due to data availability, data quality, and restrictions on data sharing. A collaborative approach that balances rewards and incentives and accommodates trade-offs in product cost, quality, and performance is needed.

A SECTOR-WIDE RESPONSIBILITY

Effective decarbonization in healthcare requires coordinated efforts from various stakeholders, each playing a critical role in driving sustainability, as we explore below.

REGULATORS

- **Establish standards** that encourage existing facilities to modernize and upgrade. Issue regulations to guide new facility development.
- **Introduce regulations** for healthcare facilities to report their emissions targets and performance. Regulations should include clear, measurable goals and timelines, with regular audits and penalties for noncompliance.
- **Support R&D** in energy-efficient technologies and renewable energy sources.
- **Facilitate partnerships and PPP/PSP contracts;** provide incentives like sustainability credits, grants, or tax breaks for hospitals meeting emissions standards.

HEALTHCARE PROVIDERS

- **Identify and implement KPIs** to track progress in carbon-emissions reduction with regular monitoring to ensure continuous improvement and data-driven decisions.
- **Report sustainability performance** to regulatory bodies to demonstrate commitment and ensure compliance with industry standards. Hospitals should prepare annual sustainability reports detailing their energy use, carbon emissions, and overall environmental performance.
- **Build a culture of sustainability** to empower staff to actively participate in decarbonization efforts. Hospitals should educate staff on best practices and raise awareness through internal campaigns.

PAYERS

- **Design pricing models** that reward hospitals for implementing sustainable practices. Premiums can be reduced for hospitals that meet targets to encourage widespread adoption of carbon-reduction efforts.
- **Support initiatives like sustainability credits or lower premiums** for hospitals meeting emission standards. This can create a competitive advantage for green hospitals.
- **Partner on projects or fund sustainable upgrades** to reduce overall healthcare costs. Payers should work with hospitals to develop joint initiatives that align sustainability objectives with premium healthcare standards.

SUPPLIERS

- **Provide sustainable products** that are manufactured using low-carbon processes and sustainable materials and that minimize packaging waste.
- **Ensure transparency in supply chain emissions** by providing data on the carbon impact of products. Healthcare organizations should be able to make informed purchase choices according to information on how materials were sourced, produced, and delivered.
- **Partner with hospitals** on joint sustainability projects to develop eco-friendly products and packaging, reduce transportation emissions, and lower disposal costs.

CONCLUSION

Sustainability in healthcare is a strategic imperative that can drive cost savings, enhance patient care, and improve an organization's reputation with stakeholders. By investing in green technologies, optimizing supply chains, and adopting sustainable practices, healthcare organizations can contribute to a healthier planet and ensure their long-term success in an increasingly competitive and environmentally conscious world.

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SUSTAINABLE SUSTAINABILITY: HOW TO CREATE AN ENDURING & INTEGRATED SUSTAINABILITY PROGRAM



Authors

Paul C. Godfrey and Vishal Gajjar

Mary Jacobs just returned from an unexpected meeting with her CEO where he invited Mary to take a new role as chief sustainability officer (CSO) of Exactibrate Corporation. Exactibrate, headquartered in Cleveland, Ohio, is a publicly held company that manufactures production, process, and testing equipment for semiconductor chip fabricators. With 12,000 employees and US \$13 billion in annual revenue, Exactibrate has manufacturing facilities in Cleveland, Rio Rancho, New Mexico, and a newly opened facility outside Berlin, Germany. The EU hopes to produce 20% of the world's chips by 2030,¹ and Exactibrate entered the market with the goal of becoming the leading supplier to this region.

Mary took a class in corporate social responsibility during her MBA studies at Case Western Reserve University a decade ago, but her work in the company's marketing and sales group never called on that learning. Mary's mandate from the CEO, to whom she will report, is to reconcile the company's fragmented efforts around sustainability, with two goals: (1) develop an integrated sustainability program that creates positive economic returns for the company and benefits communities where it operates and (2) boost the company's competitive position as a cutting-edge manufacturer. Mary lacks detailed knowledge about the state of sustainability at Exactibrate, but four concerns came quickly to mind:

1. She knows the company has described its capacity as "moderate" in sustainability reporting. The accounting group had some level of sophistication, but she knows they have not fully incorporated Sustainability Accounting Standards Board principles and frameworks into their work. There are gaps in data collection and reporting across a broad spectrum of reporting areas, and she wonders how the company's US-based group will handle more stringent EU reporting requirements.
2. The company's plant in Rio Rancho, colocated with a major Intel plant, is a heavy user of water. That's fine in the humid Midwest, but arid New Mexico has experienced drought conditions for several years, and the future of water supplies in the Western US looks more under threat with each passing year.^{2,3} Exactibrate's water costs continue

to rise, but leaders have made little effort to reduce water consumption. Costs aside, Mary has concerns about the plant's long-term viability, given ever-tightening water supplies.

3. Semiconductor chips use as inputs (and produce as byproducts) several toxic chemicals, including PFAS (per- and polyfluoroalkyl substances).⁴ In her marketing role, several European customers had reached out about potential manufacturing and process solutions to this issue that her company might have or can develop to help reduce the use and/or impact of these chemicals.
4. Cleveland, the company's home, has the lowest median household income and second-highest separation and divorce rate in the country, as well as one of the highest violent crime rates.⁵ Other than employing 6,000 people in northern Ohio, Exactibrate's only community involvement has been a donation to the Cleveland Orchestra. The community needs wage growth, financial literacy, work on preserving families, and improvements in education and training. What role can the company play in improving community sustainability?

Mary's challenge is not unique. Exactibrate, like many companies, faces several sustainability issues that seem unconnected. For Mary and many like her, a change of mindset is the first step. Rather than a few individual efforts with a variety of short- to medium-term time horizons, sustainable sustainability is a long-term journey across several areas of impact.

Having a good map helps during any journey, and this article provides one in the form of a Sustainability Canvas designed to help CSOs and other leaders create an integrated, ongoing sustainability program that creates economic, social, and strategic value for a business and its communities.



DEFINING THE COMPASS POINTS

Just as north, east, south, and west anchor geographic maps, the Sustainability Canvas orients around four foundational compass points. The first considers two areas of business activity: (1) those internal to the company and (2) those that interact with external audiences. Many of a firm's internal processes, from expense report accounting to Six Sigma quality initiatives, satisfy the needs and concerns of internal stakeholders, such as employees, investors, and regulators. Other processes, such as R&D and advertising campaigns, create products or services that the business provides to external stakeholders, including customers, supply chain partners, and the communities where the business operates.

The other set of compass points considers two arenas where all businesses operate: (1) private markets and (2) the public square. All firms depend on private markets for key resources, such as supplies (from raw materials to intermediate to final goods), labor (employees and subcontractors), financial (private banks or public markets),

and reputation (brand and recognition). All firms participate in the public domain as well, which includes everything from paying taxes and making voluntary philanthropic donations to following laws and regulations, using existing community infrastructure, and proactively investing in new infrastructure or resource development.

4 DESTINATIONS/ AREAS OF FOCUS

Figure 1 shows the four anchors of the map and describes the four destinations (or focus areas of sustainability). We classify each focus area as its own quadrant, and many of our partners find it helpful to use the associated color scheme to name them.

The "red quadrant" (internal activities of interest to the public square) focuses on measurement and assessment, including evaluation and compliance with existing laws, norms, and regulations. Common measures of concern include carbon footprint; Scope 1, 2, and potentially 3 emissions; waste produced; and measures of social concern, such as social impact of philanthropic programs, controls for human trafficking in the supply chain, and wage and benefit fairness among employees. A sustainability report (of interest to customers, regulators, environmental/social activists) and other compliance reports constitute this quadrant's outcome or work product.

The "yellow quadrant" (internal activities that focus on private markets) focuses on efficiency and cost reduction. The easiest way to define this quadrant is the supply chain: inbound supplies and logistics, manufacturing, and outbound logistics. This quadrant creates the data that the red quadrant captures and reports. Activities in the yellow quadrant include reducing energy use, eliminating waste, and/or improving the overall efficiency and productivity of the firm. Projects that reduce the firm's resource footprint or improve productivity usually reduce its overall cost position over medium- or long-term time horizons. Mary's concern about water usage at the Rio Rancho plant is a yellow quadrant activity. Sustainability projects here would aim to reduce overall water usage and improve how productively the firm uses each gallon, including recycling and purification for discharge into the community. Sustainability becomes sustainable as it drives down costs and improves efficiency.

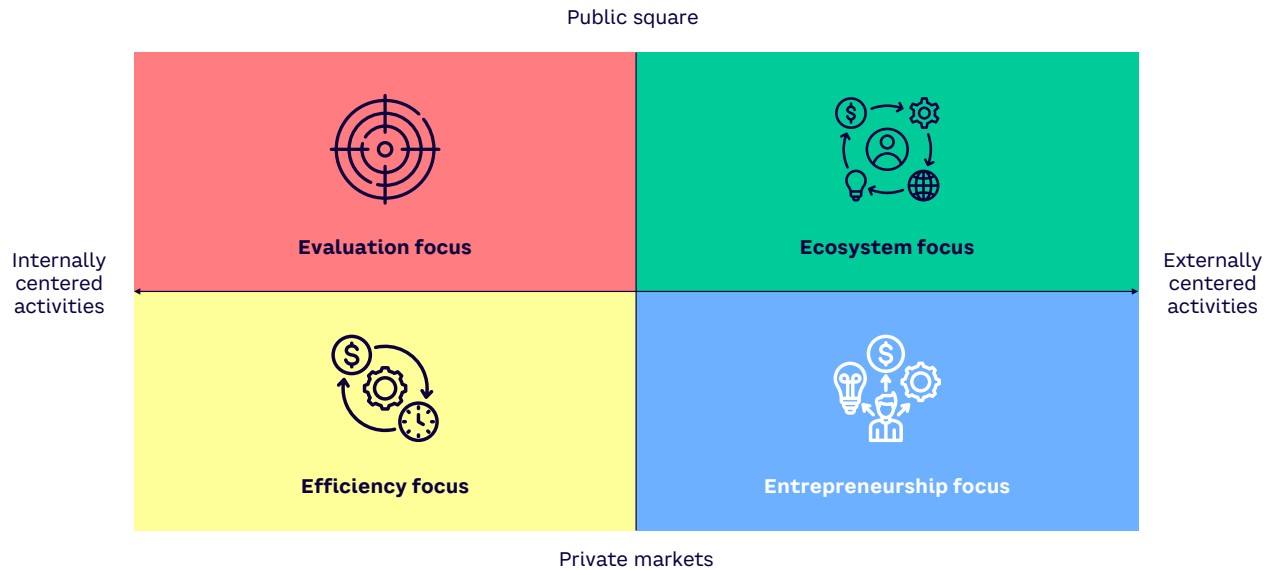


Figure 1. The Sustainability Canvas

The “blue quadrant” (externally focused activities in private markets) offers a new way of thinking about sustainability for many executives. This is the quadrant of products, services, and revenue, and the question of how to leverage a company’s expertise to create new sustainability-based revenue streams too often goes unasked. Leaders can often find potential products in their yellow quadrant activities. Creating sustainability within the four walls of the firm may result in new processes (and sometimes new patentable solutions) that become the basis of monetizable innovations. At the very least, the firm may provide consulting services to other companies facing similar issues. For Exactibrate, the European customers clamoring for help with their own sustainability problems convey two important messages: (1) customers see the company as competent in sustainability; and (2) they are likely to see Exactibrate as a leader in this area. That constitutes a set of warm leads for sales and marketing efforts.

The “green quadrant” encompasses what in an earlier age was called “corporate social responsibility.” This is the quadrant of external activities targeting the public square (the community and larger social ecosystem in which the business operates). Philanthropy comes to mind for most people as a go-to activity to build communities, but donations are just the tip of the iceberg. For example, scholarship programs help a few in the community while mentoring and other knowledge-sharing programs benefit hundreds or thousands. Rather than just donate funds to the symphony, as Mary’s company does, effective

ecosystem building invites businesses to share their expertise, knowledge, and skills in ways that help communities solve complex and enduring challenges. One often overlooked contribution is for a company to act as a “convenor” and leverage its network connections to build awareness and critical mass around pressing issues.

JUST AS NORTH, EAST, SOUTH & WEST ANCHOR GEOGRAPHIC MAPS, THE SUSTAINABILITY CANVAS ORIENTS AROUND FOUR FOUNDATIONAL COMPASS POINTS

The Sustainability Canvas shows how leaders can integrate their sustainability efforts. Every organization has some activity in each of the four quadrants of sustainability, and one role of a CSO like Mary lies in leveraging learning from activities in one quadrant across the map. For example, red quadrant evaluation and compliance activities may suggest low-hanging fruit for yellow quadrant efficiency-enhancing projects. Those projects may suggest potential blue quadrant products and/

or services, some of which may help strengthen a green quadrant ecosystem. This represents one level of integration across quadrants. Another type of integration requires understanding how each of these quadrants creates value for both shareholders and stakeholders, which we consider next.

HOW EACH QUADRANT HELPS SHAREHOLDERS & STAKEHOLDERS WIN

Mary’s mandate includes creating economic value for Exactibrate’s shareholders and social value for its stakeholders. In accepting this, Mary adopted an important perspective that denies the existence of a “sustainability tax” — the idea that executives must choose between economic and social value or between shareholders and stakeholders.

This represents a critical evolution in the sustainability journey because abandoning sustainability tax thinking means that leaders only execute projects that create value for all: investors, customers, employees, suppliers, regulators, and the community. In this section, we outline the ways that actions in the quadrants create value for all. Table 1 shows the sources of value for each quadrant.

SHAREHOLDER VALUE

Shareholder value arises from either the current (and potentially future) earnings stream of the business or the multiplier on those earnings that creates the valuation of the firm. We all learned in Accounting 101 that a firm’s earnings equal its revenues minus its costs. By keeping the business compliant with regulatory requirements and other legal obligations, red quadrant activities reduce costs: firms avoid fines and related legal expenses. Yellow quadrant activities also reduce costs, either directly from lower resource use and less waste or

indirectly by improving productivity. Blue quadrant activities grow top-line revenue. Green quadrant activities may not impact current or future earnings, but they impact the multiplier by building a positive reputation for the firm and/or brand equity among various stakeholders.

As a company travels further in its sustainability journey, it focuses on activities in each quadrant that produce long-term gains, including lasting efficiencies, recurring revenues, and/or an institutionalized brand and reputation. Thoughtful and careful sustainability initiatives increase the economic value of the firm — shareholders win.

STAKEHOLDER VALUE

Stakeholder value can be measured in monetary terms, such as when sustainability work reduces the prices customers pay for products or when those products help them solve specific problems. Suppliers win when they get paid sooner, employees benefit from higher wages, and communities benefit from cash or in-kind donations that fund their programs. This usually represents the lesser source of stakeholder value; stakeholders also benefit when the quality of their interactions with the business and their lives in general improve.

Red quadrant activities improve the lives of stakeholders through transparent information, which sends a signal of respect from the business toward them and allows them to make informed assessments of the quality of the firm. Yellow quadrant activities improve their suppliers by making those interactions more efficient and effective. Employees win through greater levels of engagement, which may come through participating in this sustainability work or through the reputational benefits of working for a cutting-edge company.

FOCUS	EVALUATION	EFFICIENCY	ENTREPRENEURSHIP	ECOSYSTEM
Shareholder value	Compliance	Productivity	Revenue	Reputation
Stakeholder value	Transparency & trust	Employee engagement	Customer loyalty	Community quality of life
Risks reduced	Activist	Operational	Churn	Political

Table 1. How each quadrant creates value

Blue quadrant activities improve the quality of customer interactions through increased respect and trust. Exactibrate's customers openly asked the company to help solve their issues. When companies listen to their customers, they not only develop better products, they also exhibit respect for them. That respect engenders trust between the parties, which lays a foundation for a stream of products and services that meet real customer needs and earn solid returns for the business.

Green quadrant activities, when done thoughtfully and well, improve the quality of life for the community. Everyone benefits when firms contribute their knowledge and skill — not just their money — to solving or mitigating deep-seated community challenges and issues. Cleveland residents may find their lives less stressed due to Exactibrate's targeted work that focuses on urban renewal in its hometown. Just as with shareholder value, the Sustainability Canvas shows stakeholders where tangible societal value lies, and stakeholders win.

RISK REDUCTION

The third row of Table 1 shows how sustainability efforts in each quadrant reduce risk. Reducing risk benefits both shareholders (through less volatile earnings) and stakeholders (through more predictable behavior by the business). Red quadrant activities mitigate the risk of social activist pressure on the firm, such as boycotts. They also allow those activists to better understand and predict why the firm does what it does. Yellow quadrant efforts reduce operational risk, such as safety or supply chain disruptions from climate events. Shareholders appreciate a more stable earnings stream, and stakeholders such as employees and suppliers prize workflows with fewer potential interruptions. Blue quadrant activities reduce customer churn, which stabilizes revenue streams and lowers customer-acquisition costs. Customers win because they avoid product-related disruptions, and they do not incur the search costs associated with finding a new supplier. Finally, green quadrant activities reduce political risks for the firm as it and its leaders fulfill their roles as good corporate citizens. The general citizenry benefits as they have (and know they have) a stable, predictable partner dedicated to improving the quality of life for all.

COMPETITIVE ADVANTAGE

The second half of Mary's mandate includes a charge to create an integrated sustainability program that helps build and secure a stronger competitive position. A generation ago, Michael Porter advanced a simple thesis about successful strategy: firms won in their markets through either cost leadership or creating a differentiated offering.⁶



The logic of the Sustainability Canvas belies that notion. Yellow quadrant activities improve the firm's cost position at the same time blue quadrant ones enhance competitive uniqueness. As firms become active in these two quadrants, they find themselves in the enviable position of beating competitors on both cost and differentiation. Green quadrant activities may contribute to dual advantage by lowering the firm's political risk profile and associated costs while burnishing its reputation and raising social capital.

We don't know who Mary's competitors are, but as she uses the Sustainability Canvas to create an integrated sustainability program, Exactibrate will gain advantages over its rivals. As she integrates efforts across all four quadrants, the firm will develop routines to both codify and share important knowledge. As discussed above, a truly integrated program shares knowledge and best practices across quadrants. Firms that adopt a learning or growth mindset develop a culture of continuous learning, improvement, and innovation. That culture bestows significant advantages over rivals that fail to integrate their sustainability programs and related learning.

CONCLUSION

Mary Jacobs isn't real; she represents a composite of several directors or C-suite sustainability leaders we've met. But the challenges we posed for her are very real. Many firms engage in a series of short-term/one-off sustainability initiatives. Regardless of whether these activities are run from the corporate center or under the purview of division or business unit heads, they lack the strategic rationale and integration that come with placing activities on the Sustainability Canvas.

At a basic level, the Sustainability Canvas helps leaders understand where their efforts lie and where further investment should occur. Every firm engages stakeholders in each quadrant of the map (internal or external, market or public square focused) whether they intend to or not. The map helps leaders see where their efforts are opportunistic and reactive and where they are strategic and proactive.

At a higher level, the Sustainability Canvas helps leaders identify and exploit synergies across quadrants. How might learning and working in the yellow quadrant create opportunities for new blue quadrant products or services? How might better evaluation and measurement help the firm contribute to community ecosystem development? When organizations and their leaders create this type of integration, they leverage a flywheel effect that makes their sustainability programs self-reinforcing and self-perpetuating. When this happens, they've achieved sustainable sustainability.

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