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Thinking big in corporate climate action

A playbook on "emergence strategy" and how it can drive systems change

A JOINT REPORT BY DELOITTE AND RMI

Introduction

Slashing carbon emissions and averting the worst impacts of climate change demands that leaders act now to transform core economic systems. Large-scale strategy and action are critical.

But simply calling for "systems change" tells us little about how actors can bring about those shifts. In the face of such potentially complex and far-reaching changes, what role can an individual company play? How can actors meaningfully contribute to broad economic shifts?

Almost any company, even one that might seem far from the decarbonization discourse, can make a tangible difference. Those that integrate a focus on climate strategies and the system-level changes occurring around them can have an outsized impact on speeding the path to a net-zero world—and, meanwhile, position themselves to create and capture sizable business value amid sweeping economic transformation.[1]

A system is more than the sum of its parts. Systems often perform in nonobvious or complex ways, and the concept of "emergence"—a behavior or outcome that is irreducible to its component elements—is central to systems approaches.

Similarly, **emergence strategy** uses systems thinking approaches that integrate external sensing, solution identification, and modes of action to identify and catalyze the fundamental changes emerging in a particular business ecosystem, sector, or value chain in connection with corporate climate action.

Within a system, emergence strategy can help identify new business opportunities, reach tipping points in system transitions, and pinpoint the roles a company can play as a catalyst, advocate, collaborator, or market leader.

Increasingly, leaders across sectors are beginning to look beyond incremental emission-reduction steps and explore business opportunities that are linked to transformative and exponential change in products and services, business models, or supply chain relationships—and emergence strategy can offer a framework to make it happen. In leveraging corporate climate action building blocks such as science-based net-zero commitments and scope-based emissions disclosures, the process can help leaders think past the traditional focus on competition and near-term financial value capture.

The emergence strategy process involves three functions, applied iteratively:

- **SYSTEM SENSING** to identify opportunities for profitably delivering sustainable solutions. It answers the question: *What needs to happen?*
- **SYSTEM SOLUTIONS** to overcome barriers based on understanding innovation adoption dynamics (S-curves) and patterns common to many system transformations. It answers the question: *What actions can accelerate change?*
- **SYSTEM ROLES** to describe how a particular organization is best suited to act and mobilize others to drive and shape systemic change. It answers the question: *How is my organization best positioned to act?*

Together, these can allow leaders to assess the strategic landscape using systems thinking and to choose where and how to collaborate and compete, all with an attention to the speed and scale with which emissions reductions must occur. Emergence strategy can help leaders identify, understand, and use the unique role that a company can play in relation to other actors in its system.

On the following pages, we offer a playbook for how companies can adopt systems thinking as the central operating principle guiding their climate actions, accelerating the path to a low-emissions future and positioning themselves for long-term value creation.

The systems transformation imperative

Even as climate change has secured a place atop many C-suite and board agendas,[2] and as extreme weather events grab global attention,[3] we are collectively falling short of what is needed to avert a severe climate crisis. After the COVID-19-induced dip, 2022 global greenhouse gas emissions reached record highs,[4] and CDP estimates that G7 nations' existing private-sector climate commitments—not actions, just pledges—would lead to roughly 2.7°C of warming, far higher than the Paris Agreement's 1.5°C target.[5] The sources of emissions and the key changes required to mitigate them are well-known,[6] yet many leaders have not taken steps as bold as the crisis warrants.

Part of this disconnect stems from some companies treating climate strategies as incremental bolt-on initiatives rather than drivers of fundamental change. Many corporate leaders appear to underestimate the pace at which key energy systems and technologies are changing and the speed and scale at which the shift to a low-emissions economy is unfolding … and they are failing to recognize the substantial business opportunity associated with the transition.[7] A decade ago, a go-slow strategy might have been justifiable from a business perspective; today, that approach is fraught with risk.[8]

Embracing systems thinking can both help companies accelerate the green transition and position themselves for long-term advantage, allowing corporate leaders to better understand how transitions unfold: holistically, dynamically, and across traditional industry boundaries. This opening of the aperture can expand the range of available strategic actions and business opportunities. For example, several automakers are entering the power and energy space in different ways—moves made possible, in part, by thinking outside of the traditional auto industry and envisioning a more complex, interconnected system of electric vehicles (and their batteries), charging infrastructure, grid connectivity, renewable energy, and consumer demand.[9] The business case for these initiatives will likely become clearer as new revenue models and funding sources (such as public investment and tax credits) become available; policy shifts and billions of dollars in capital are already fundamentally altering the underlying economics.[10]

Ultimately, acting through the lens of systems transformation can position companies for long-term value creation. Actions informed by systems thinking tend to lie at the interstices of existing industries or aim to develop markets that are likely to grow in importance as the low-carbon transition unfolds. Many early movers can shape these transformations and position themselves to create significant new financial and societal value.[11]

The language and logic of systems transformation is part of an invaluable toolkit for companies navigating the energy transition and adapting to the new economy. It is important for business leaders to identify when systems change is happening and understand how to respond, especially when forces such as climate change are disrupting the economy on many levels simultaneously. (To further explore these ideas, see our previous paper, *Systems change for a sustainable future*.)

Emergence strategy can enable companies to effectively harness the dynamics of systems transformation, creating forward-looking corporate action based on system-level changes in the business environment. By building capabilities to assess shifts in the broader landscape, understand key interventions to spur systems change, and calibrate responses based on current capabilities and position, a business can build a portfolio of systems-level actions that can catalyze change and position the enterprise for future success. And the opportunity is sizable: A rapid transition to address climate change could generate US$43 trillion globally in value by 2070.[12]

The emergence strategy process

Traditional approaches to corporate strategy—centered on the company itself and based on competition, efficiency, and differentiation—can be useful when the landscape of technologies, customer solutions, and market structures are well-established and relatively stable and where change is incremental and linear. In periods of disruption such as today's environment, leaders should get creative and find new paths forward. Indeed, with industry business models increasingly subject to fundamental and exponential change, companies should widen their focus to assess the deeper transitions that could be emerging.

It's already happening: The climate imperative is driving fundamental changes across the economy, with potentially far-reaching consequences for companies up and down value chains and around the globe, well beyond the energy and materials industries. Moreover, sustainability efforts are creating new system linkages across sectors: An airline company is working on biofuels production in farming regions;[13] a shoe company is considering sustainable wool production in New Zealand.[14]

All of this means that companies' strategy processes should adapt to gather and metabolize new kinds of information, taking into consideration the systemic impacts of sustainability and climate action. Where a particular area is seeing potentially transformative changes, executives should assess how the system might evolve and what role their company can play. This *emergence strategy* approach uses systems thinking tools that integrate external sensing, solution identification, and modes of action to identify and catalyze the fundamental changes emerging in a particular business ecosystem, sector, or value chain in connection with corporate climate action. It puts competitive strategy in a broader context, starting from fundamental questions and answers about what must happen to achieve a sustainable economy. Likewise, it leverages climate action building blocks such as science-based net-zero commitments and scope-based emissions disclosures.

Emergence strategy's three functions work recursively, each informing and supporting the others:

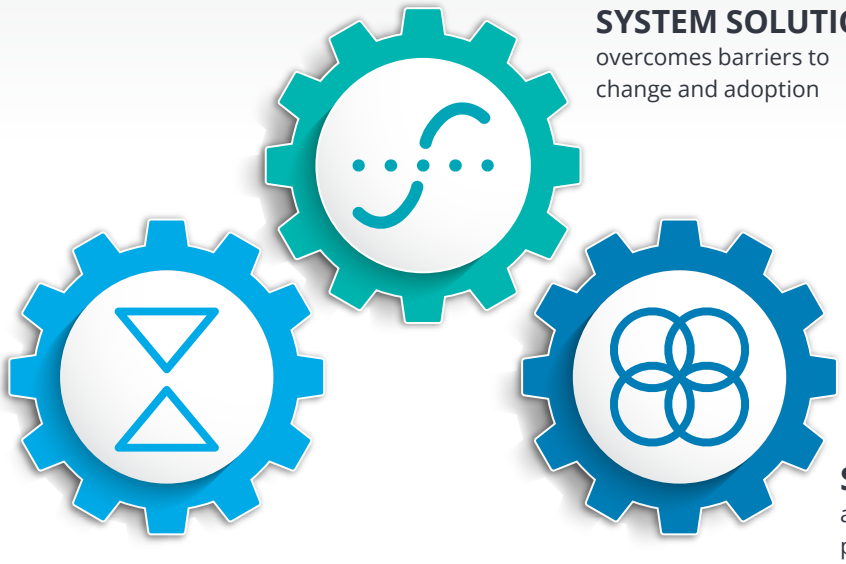
SYSTEM SENSING to identify opportunities. Using systems thinking and applying multiple lenses, leaders can identify decarbonization pathways and the most promising business opportunities to deliver needed solutions. It answers the question: *What needs to happen?*

SYSTEM SOLUTIONS to overcome barriers to change and adoption for identified opportunities. Using established frameworks for understanding systems transformation and the adoption of innovations, companies can pinpoint specific interventions that can help accelerate progress. It answers the question: *What actions can accelerate change?*

SYSTEM ROLES to assess a particular company's ideal place in its various networks. Leaders should understand how the company is best suited to act and mobilize others to drive and shape systemic change. It answers the question: *How is my organization best positioned to act?*

The first two steps can answer the traditional strategy question of *Where to play?* through the lens of broader system dynamics. The last step can answer the question *How to win?*—in which winning is as much about averting a planetary catastrophe as it is about profitability, growth, or market share.

Figure 1: The emergence strategy framework



System sensing to identify opportunities amid change

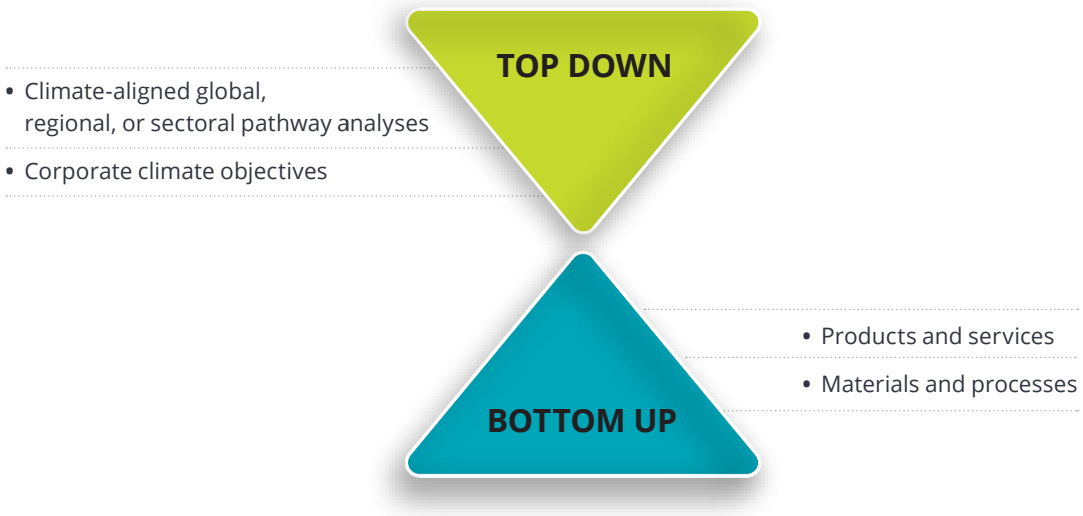
The first capability of emergence strategy is **system sensing**: the ability to understand the broader networks in which the organization is embedded, their participants, and their connections—and to surface, in the process, opportunities for system-level action.

Applying both a top-down (or macro) and bottom-up (or micro) system-sensing lens can be key to businesses assessing the strategic landscape for relevant climate action and identifying an available portfolio of opportunities. Each of these lenses has its own tools and can deliver different kinds of insights. Together, they can provide a multidimensional view of the complex landscape that companies may face in assessing their strategic opportunities in a low-carbon future. The leading strategies are likely ones that connect the dots among those areas of opportunity.

Top-down sensing can help companies survey the big picture of how much they need to reduce emissions over time to align with global or national climate change mitigation goals. Top-down reference points for large companies include global, sectoral, and geographic transition pathways analyses such as the International Energy Agency's (IEA) *Net zero by 2050* roadmap[15] or the United Nations–convened Net-Zero Asset Owner Alliance's (NZAOA) *Sectoral pathways to net zero* report;[16] sectoral transition analyses provided by industry groups and partnerships, such as the Science Based Targets initiative (SBTi),[17] Mission Possible Partnership,[18] and Network for Greening the Financial System (NGFS);[19] and relevant national and regional transition pathway analyses for geographies where the company, its competitors, and customers operate. Companies can also leverage quantitative and qualitative scenarios to understand different potential futures.[20]

These resources can help to ground companies' understanding of the big, system-level changes necessary to achieve net-zero emissions, how these changes can cascade through different value chains, and where the gaps may be to deliver solutions. For some companies, it may be enough to know that they will aim to cut emissions in half by 2030 and achieve net-zero by 2050. Others may need to launch rigorous and deep assessments of low-carbon transition pathways for their sector and others up and down the value chain, which could require both in-house analysis and work done by consultants and industry groups evaluating how to upgrade or replace assets to achieve climate goals. These deeper analyses can be coupled with analysis of market size and potential value pools associated with low-emissions solutions.

Figure 2: System-sensing lenses to assess the landscape of opportunities for impactful climate action



Top-down sensing can yield high-level emissions reduction targets for the sectors and regions where the company operates; insights on key system linkages and both available and needed technologies based on integrated systems modeling; information on market size and value pools; and top-level corporate emissions reduction goals aligned to science-based targets.

The Mission Possible Partnership (MPP), which looks to galvanize net-zero transformation across seven high-emitting industrial sectors, illustrates how top-down system sensing can build momentum for action. MPP's four-step approach, aiming to establish market infrastructure to enable change, starts with convening players across the value chain, including producers, consumers, and financiers. It then develops viable, high-ambition sector decarbonization strategies around which participants can align.[21] Such efforts can help to foster shared understanding and dialogue among key participants.

Bottom-up sensing considers and balances two different types of analysis: assessing avenues for reducing emissions from existing products and services and assessing the viability of new technologies or services that could outcompete today's offerings in a low-carbon future. Striking a balance between these two can be important for strategy, and many companies should do both simultaneously. Companies focused on transformative growth and value creation typically focus on the latter: products and services needed to transform the broader system.

Bottom-up analyses can start with the specifics of a company's existing products and services, materials, and processes to determine where direct and indirect emissions come from across the company's operations and up and down the value chain. In parallel, companies can also assess new technologies and business models that could challenge conventional solutions in the low-carbon economy of the future. The top-down lens can inform these assessments, helping to identify the products, services, and business models needed to meet climate and sustainability goals (and form the basis for the company's future innovation portfolio). These solutions may be in early research and development (R&D), prototyping, and proof of concept, so assessing their potential and speed to market can require a systems view of how key actors can drive rapid change.

Bottom-up sensing outputs generally include assessments of transformative opportunities that entail fundamental changes in products and services or business models; detailed breakdowns of companies' emissions in relation to activities, purchases, and sales up and down the value chain; and assessments of costs and benefits of opportunities for emissions reduction through procurement, process improvement, or other means applied to existing products and services.

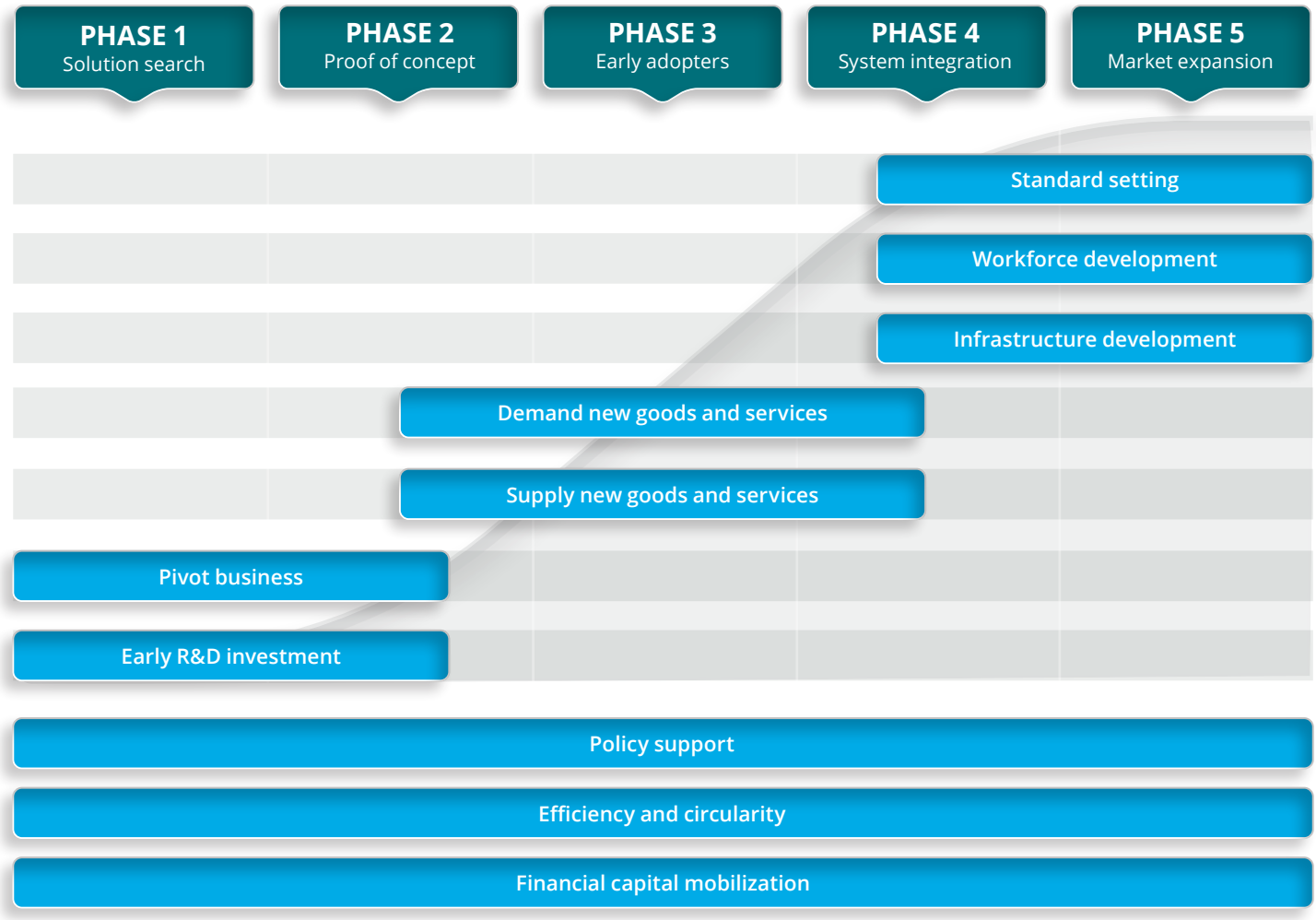
To cite one industry's example: Some tire manufacturers are assessing ways to reduce emissions from conventional manufacturing and supply chains while simultaneously exploring radical design alternatives that aim to reduce emissions, increase circularity, and improve vehicle efficiency. Companies such as Michelin, Bridgestone, and Goodyear are testing airless, non-pneumatic tires based on potential advantages in terms of safety, sustainable materials, reduced weight and embodied carbon, and increased circularity in materials use. The ongoing transition to electric vehicles (EVs)—together with a focus on carbon emissions reduction, improved circularity, and renewable materials—could speed the adoption of revolutionary new tire technologies. Companies in the extended EV space should make strategic choices about priorities in reducing emissions from existing products versus replacing them with new ones, keeping in mind that disruptive innovators can take advantage of system transformation strategies to overcome early-stage barriers.[22]

Using system solutions to overcome barriers to change

Once companies have used system sensing to identify one or more climate-related strategic opportunities, they can use systems transformation frameworks to help identify barriers and solutions for these opportunities. Understanding the common patterns of systems transformation and new technology adoption (figure 3), based on experience with a wide range of products and services, can inform the process of identifying the specific system interventions that may be needed to trigger positive feedback loops and turn emerging opportunities into mature business realities.

Our analysis of dozens of historical examples of systems transformation—from water wheels and canals to smartphones and renewables—and of the evolution of a variety of solutions in today's climate transition reveals a selection of distinct interventions or company actions, which broadly align to common barriers encountered at particular S-curve phases.

Figure 3: Emergence strategy interventions by S-curve phases



Source 1: Deloitte and RMI analysis.

Solution search and proof of concept

Early in a systems transformation, the lack of a clear alternative solution can hinder progress. Interventions should focus on accelerating experimentation and prototyping and working toward convergence around one or more promising alternatives. As a leading solution (which may be a bundle of several technologies, processes, and novel models and relationships) emerges, questions may persist about its viability and scalability. System solutions should focus on proving out the concept and demonstrating its in-market applicability.

Early-stage investment investment involves funding exploratory R&D, with a vision for identifying and advancing new goods and services that can fill current or future needs in a climate-aligned economy and help secure the company's position in shaping the trajectory of systems-level changes. More broadly, this early investment can further accelerate innovation's role across the entire sector: bringing new solutions to market, supporting the emergence of new markets, and enabling improved efficiency, accessibility, and economies of scale.

Numerous airlines, energy companies, and corporate customers have invested in growing the sustainable aviation fuels (SAF) market.[23] For example, in 2021, United Airlines launched a venture capital fund investing in sustainable aviation technologies as well as other innovations in the aviation sector;[24] two years later, the airline launched an investment vehicle designed to support startups focused on the reduction of carbon emissions in the aviation sector by accelerating the research, production, and technologies associated with sustainable aviation fuel.[25] The company hopes its investments ultimately catalyze the production of up to 5 billion gallons of SAF.[26]

Pivoting the business can change or recalibrate the company's existing mission, resources, processes, and/or business model, prioritizing the phase-out of carbon-intensive assets and activities and moving into offering low-emissions goods and services. Businesses can gain early access into new market spaces with high growth potential as systems transformations unfold. The goal is for the new business to become the company's growth engine. In so doing, it can provide proof points for how the low-emissions alternative functions in the real world, helping to bridge the "valley of death"[27] and spurring other players in the nascent value chain to action.

In 2020, global iron ore supplier Fortescue Metals Group established a subsidiary, Fortescue Future Industries (FFI), to expand its business to green hydrogen.[28] The iron ore market is facing decline, especially as steelmakers switch from virgin steel production using iron ore to recycled steel production using scrap. Backed by upward of $1 billion in capital,[29] Fortescue's entry into green hydrogen could be a way for the company to pivot to a potentially more profitable business going forward, as well as to give its conventional business a "green" market advantage by decarbonizing operations faster than any of its industry competitors.[30]

Early adopters

Even as actors align around a leading low-emissions solution, promising alternatives can languish. The "chicken-and-egg" problem is endemic. Producers might hesitate to ramp up capacity, unsure of customer demand; would-be customers may perceive insufficient supply to meet their needs. At this phase, innovations typically come with a price premium, which can further deter producers concerned about their competitiveness. To help break this impasse, companies can explore various mechanisms to signal demand for climate-aligned innovations.

Demand and/or supply new goods and services to help kick-start learning effects and economies of scale. Companies can signal demand for low-emissions alternatives through direct procurement, offtake agreements, book-and-claim accounting, and buyers' coalitions, which could give producers the confidence needed to accelerate production. For producers, providing early supply of new goods and services can boost buyer confidence and help coalesce an initial market.

Such moves could form the basis for ongoing market differentiation and attract new customers, but producers should be willing to take on initial market risk, since return on investment is likely to be uncertain until the market matures.

Danish energy company Ørsted and wind turbine manufacturer Vestas have forged a commercial sustainability partnership, with Ørsted committing to buy turbines produced with low-carbon steel and eventually blades for all joint offshore wind projects. This partnership helps to reduce uncertainty and seeks to establish guaranteed demand for all future joint efforts.[31]

System integration and market expansion

Finally, the absence of critical enabling infrastructure or complementary technologies can hold back adoption and scalability. An uncertain regulatory or tax environment, behavioral or attitudinal barriers, and insufficient capital can slow what might otherwise be an exponential transformation. System solutions focus on creating a conducive environment for rapid scaling.

Infrastructure and workforce development involves developing the key inputs and enablers for the transition to the future system. From transmission lines and EV charging networks to the digital infrastructure to flexibly manage a more complex energy system, few solutions in the low-carbon transition will likely be able to reach scale without significant enabling infrastructure. Companies, perhaps in partnership with government agencies, can fill these important needs, which may require reimagining how a traditional capability is executed or developing new capabilities. And labor will be an important input across every part of the climate-focused transition, as companies work to retrain and reskill their existing workers to address expected shortages.[32] Leaders should also work toward a just transition—one that is fair, inclusive, and equitable and which recognizes that people are at the heart of the transition.[33]

With financial incentives from the US government, Tesla has opened its EV charging network,[34] prompting other automakers as well as many charging network operators to adopt EV charging standards compatible with the company's technology.[35] For Tesla to qualify for federal funding to support infrastructure upgrades, including plans to more than double its US charging network, the government requires the company to maximize accessibility to reach the "broadest number of people."[36]

BlocPower, a climate-tech company focused on building electrification infrastructure, offers training in next-gen clean energy careers to communities affected by gun violence and historically underrepresented populations. With support from the New York City government, the company's Civilian Climate Corps program, launched in 2021, has already upgraded more than 500 buildings and trained more than 1,700 people—97% of them Black, Indigenous, or people of color, according to the company—for skilled green energy jobs.[36]

Standard-setting efforts—with industry groups, competitors, customers, suppliers, and governments collaborating—can establish uniform and accepted rules for sustainable products and services. Standardization can help companies mobilize investment at scale by creating a level playing field.[38] When enforced by an industry association or government agency, standard-setting can help resolve issues of quality, cost, consumer trust, and compatibility.

Hy Stor Energy is the first North American pledge member advocating for the GH2 Green Hydrogen Standard, meaning the company promises to produce hydrogen with (at or near) 100% renewable energy for all future projects. While discussions continue among industry and government players, the broader goal of establishing and advocating for such standards can help provide clarity to stakeholders on what green hydrogen production looks like, create a set of rules to evaluate and label projects, and coalesce action to meet decarbonization goals in many hard-to-abate sectors.[39]

Cross-cutting system solutions

Some interventions are applicable across the phases of a systems transformation, even as they take on different emphases tuned to the particular barrier that players are trying to surmount.

Policy support involves championing regulatory and policy changes to address hurdles to systems change. Early on, that may entail securing government funding for initial R&D efforts, over time shifting toward tax or subsidy support for deployment and scaling and regulatory changes to encourage rapid adoption. The private sector can have a significant impact on policy change, removing regulatory barriers, and helping to smooth market growth.

The We Mean Business Coalition brings together companies from across sectors in an effort to catalyze business and policy action to halve global emissions by 2030 in line with a 1.5°C pathway.* The group encourages climate policy across a variety of areas, including finance, energy, transport, and industry.[40]

Efficiency and circularity can apply powerful, widely useful approaches to emissions reduction across all business activities. Across diverse industries, these methods can unlock abundant opportunities for simultaneously reducing costs and emissions. Efficiency and circularity can have macro system-level impacts. Technology available today offers options for 75% efficiency gains in buildings, profitably. Less can also mean more: US industry can produce 84% more with 9% to 13% less energy.[41]

At the systems level, material and energy efficiency can reduce overall demand for (carbon-intensive) fuels and materials, counterbalancing some of the effects of market growth. At the company level, reduced material and energy use can contribute directly to emissions reductions and also offer direct cost savings.[42]

Ikea, for example, is changing the way it designs products to increase energy efficiency for customers and offering new delivery options such as cargo bikes to reduce customer trips to stores. The company is also analyzing every product's circular profile, looking to boost repurposing, refurbishing, and recycling.[43]

Financial capital mobilization can fuel systems transformation, from early-stage government or foundation funding and venture capital through novel structures and blended finance and public-private partnerships as change accelerates.

Stripe, an online payments company, launched Stripe Climate to offer companies a "green badge" for contributing a fraction of their digital sales through Stripe to carbon removal technologies.[44] Tens of thousands of businesses are now part of Stripe Climate. In addition, the company works with a panel of scientific experts to identify promising tech startups and then offers to pay a premium for their services, hoping this will help scale up green technology and reduce costs.[45]

* Deloitte is a participant of the We Mean Business Coalition.

System roles: Finding your company's system superpower

The first two steps in the emergence strategy process can establish a company's position in a broader web, help diagnose challenges to change, and identify the opportunities to catalyze positive reinforcing feedback loops. System sensing and solutions should provide a discrete set of actions for systems change, aligned to a particular dimension of the climate challenge.

In short, they can answer the most fundamental questions: ***What needs to happen?*** and, ***What actions can accelerate change?***

But making emergence strategy effective also requires answering a final question: ***How is my organization best positioned to act?*** By assessing their company's characteristics, leaders can identify the path(s) by which they can influence the broader system and mobilize other actors for change.

That mobilization is key: Companies, no matter how large, generally cannot spur change at the necessary scale on their own. Because the transition to a low-emissions economy demands the synchronized transformation of multiple, interdependent systems, proactively advancing systems transformation requires collective effort by groups of players, often cutting across traditional value chains and industry lines. An electrified vehicle fleet significantly addresses climate change only if it is charged with clean, renewable electricity and manufactured with circular, low-waste processes using sustainably extracted raw materials.[46]

But how companies go about encouraging such efforts will likely vary. Being clear-eyed about constraints and limitations can help avoid frustration and wasted effort. To understand the path by which a company can best influence broader systems transformation, leaders first should assess their strategic flexibility and level of system influence.

Strategic flexibility reflects the internal and external factors that define the degree to which a company has permission to change. Relevant considerations may include the regulatory environment in which it operates; expectations and pressure from employees, customers, investors, and other stakeholders; aspects of company culture—for instance, risk-accepting versus risk-averse or an inclination for innovation versus fast followership; and the extent to which company leadership prioritizes addressing climate change.

Informed by the sensing effort described earlier, an assessment of ***system influence*** aims to develop a picture of the company's position and varieties of connections within the relevant extended value chain. The aim is to understand the diverse ways the organization can affect the broader environment and those channels' relative strength. It encompasses conventional measures of things such as competitive position, market share, and capital available for investment. But leaders should also think expansively and creatively about the levers available to them. Companies can exercise system influence through a variety of "soft" means, including through policy advocacy, the setting of ambitious climate commitments with robust execution plans, and marketing and branding to, for example, shape consumer perceptions and preferences.

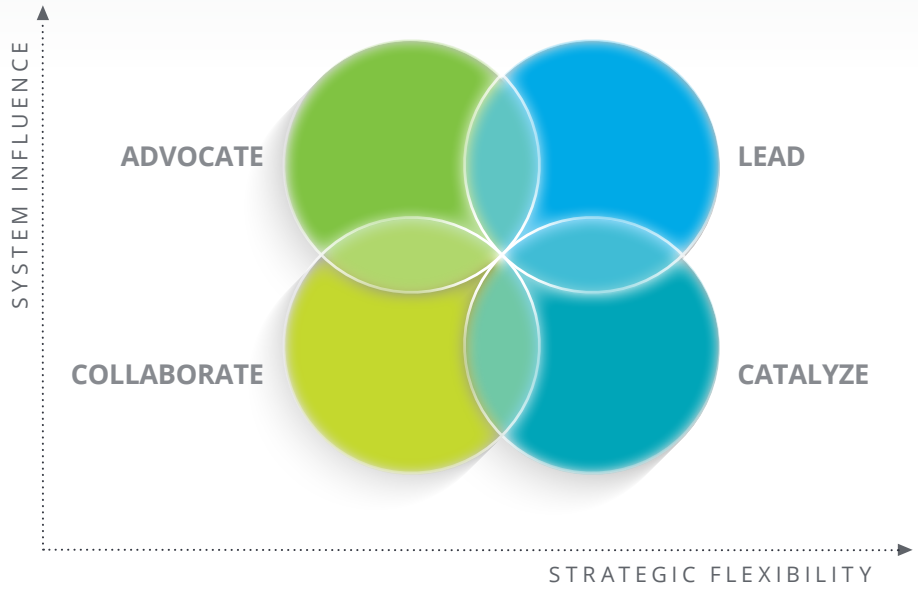
Each of these dimensions is an agglomeration of characteristics whose relative weight will vary from company to company; some components may conflict, demanding finesse and negotiation. For example, an incumbent energy provider may be led by a visionary CEO eager to chart a new course, suggesting a higher degree of strategic flexibility, but also be constrained by legacy assets and investor expectations. Leaders who know their businesses and industries intimately are likely to be best positioned to develop an informed, synthetic assessment of their degree of strategic flexibility and system influence.

It's important to challenge assumptions, bring an outside-in perspective, and not fall back on conclusions that might seem convenient in the moment—for example, that your company has limited flexibility and influence and therefore limited scope to change. Leaders should revisit those assumptions as circumstances evolve and available systems interventions shift. Positioning an organization to truly thrive in the low-carbon future requires a transformative and farsighted approach, with the courage and fortitude to make significant bets on an uncertain and unknowable future. Profound shifts in the sources of value creation and in business models are almost certain.

Again, even companies with the ability to shape their broader system and high degrees of flexibility may find it advantageous or necessary to work with allies and competitors to achieve broad goals or shift an industry's direction. Even the largest players can seldom instigate systems transformation alone.

The dimensions of strategic flexibility and system influence are continuums, but they suggest four broad roles for companies looking to implement climate strategy through a systems lens. These roles can inform how companies might best leverage their unique circumstances to spur other players to act (figure 4).

Figure 4: System role by company characteristics



NOTE:

Roles and scaling of axes are directional, and companies may be positioned to pursue more than one role.

LEAD. Those with maximum degrees of freedom in undertaking climate action and enjoying an influential position within the relevant system may have an opportunity to lead the way. For example, Amazon, because of its size and central role in multiple value chains (e-commerce and retail, transportation, technology services), can spur broader change through its actions.

As the world's largest corporate purchaser of renewable energy, Amazon is on a path to power operations, including data centers, fully with renewable energy by 2025 and aims to reach net-zero by 2040.[47] Leaders have also committed to have 100,000 electric delivery vehicles on the road by 2030 to decarbonize the company's transportation network.[48] As such, the company is often able to signal market demand, support economies of scale, and make progress toward its renewable energy goals. Leaders also seem to see the importance of looking beyond their own network and engaging in collaboration. Amazon co-founded the Climate Pledge, a coalition of more than 300 cross-sector collaborators looking to address the climate crisis and solve challenges of decarbonizing the economy, committing to net-zero by 2040.† The Climate Pledge Fund, a US$2 billion venture investment program, supports the development of sustainable technologies and services that could help enable Amazon and others to meet their net-zero carbon goals.

CATALYZE. Organizations that may play a relatively small role in the broader system may nevertheless have significant strategic latitude to catalyze change. Such companies can act as disrupters in implementing systems solutions, pioneering low-emissions business models or technologies. When successful, they can spark the creation of new value chains, serve as an example for others, and spur slower-moving competitors to action.

Tesla is an example. In its early days as a private company, it had significant flexibility to buck automotive orthodoxy but was at best a niche player in the broader auto or transportation system. Over time, the company's technological and design innovations—improving EV performance and appeal and helping gain market share—spurred other automakers to accelerate their EV plans and raise their climate program targets.[49]

ADVOCATE. Advocacy, in multiple forms, can enable influential companies with limited strategic latitude to still shape the broader system. Where competitive pressures are a constraint, organizations might push for policy shifts or the creation of new industry standards that create a level playing field and do not disadvantage those pursuing rapid decarbonization.

In the steel industry, companies are advocating for standards to support policymakers and consumers with comparable, transparent data on the embodied carbon emissions in steel products.[50] Designed well, such standards can help incentivize and accelerate the

† Deloitte is a signatory of the Climate Pledge.

adoption of key decarbonization technologies across an industry.[51] Companies might also exercise the strength of their brand to try to change perceptions or raise awareness through advertising and communications, as consumer-facing businesses such as Allbirds have done.[52]

COLLABORATE. While collaboration can be important to realizing nearly every type of system intervention and for all types of companies, it can be particularly important for those with the greatest constraints and most limited influence. For organizations that may feel limited when it comes to climate action, working closely with other players in the relevant system can amplify their impact. Highly fragmented industries with many smaller players, commoditized products, and/or tight margins can make it difficult or impossible for any single actor to even begin to influence the broader system; being a first mover can entail unacceptable business risk. By calibrating how they implement specific system interventions to their organization's characteristics—looking to realize an emergence strategy through new or existing coalitions or collaborative efforts—companies may be able to increase their effective strategic flexibility and system influence.

Organic Valley is a cooperative of more than 1,600 family farms and over 900 employees.[53] The cooperative is committed to be carbon-neutral from farm to retail by 2050, with clear plans for emissions reductions supported by an insetting program, help for farmers to implement climate-smart practices, and investment in carbon reductions within its own larger value chain. In a sector with often razor-thin margins and many small producers creating an often undifferentiated product, Organic Valley has been able to pool resources and harness the power of collective action to influence the broader food and agriculture sector, even as it acknowledges facing an uphill battle.[54]

Three cases of emergence strategy in action

1 Gogoro finds opportunity in the transition to sustainable mobility

Taiwan-based Gogoro's trajectory—becoming the world's largest provider of light EV battery swapping in just over a decade in business—illustrates how emergence strategy might work in practice.

To begin with, Gogoro focused on an important segment for meeting climate and urban air-quality goals: upgrading and electrifying two-wheeled urban scooters used by commuters and delivery drivers, first in Asia's fastest-growing cities and then elsewhere around the world. Gogoro's solution, announced with fanfare at the 2015 Consumer Electronics Show, was its electric Smartscooter.[55]

But what seemed to differentiate the company's business strategy and may have driven its success over time was a combination of systems-level innovations to vault Gogoro rapidly through the often-challenging thresholds at Phase 3 of the S-curve (early adopters) and into Phase 4 (system integration at mass market scale).

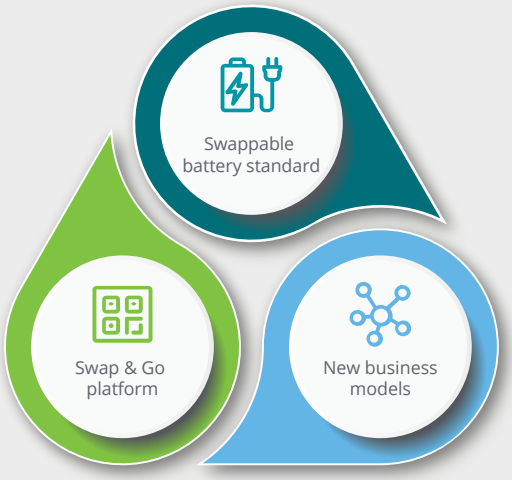
The three system-level innovations that The three system-level innovations that Gogoro applied all fit together to solve a single problem: electric scooter riders' struggle to charge their two-wheeled vehicles. Gogoro implemented three interlocking system solutions to simplify the process for customers, transform this segment of the mobility system, and create sustainable competitive advantage for the company. Together, these innovations opened the door to a rapidly scaled, convenient system of battery swapping for scooter users (figure 5).[56]

First, Gogoro developed a swappable, standard battery specification that could be used in other manufacturers' vehicles as well as its own. Gogoro moved quickly to encourage other manufacturers to adopt its standard, which includes data collection protocols and possibilities for future adoption of alternative battery technologies such as solid-state chemistries.[57] Today, five out of Taiwan's top six electric scooter makers use Gogoro Network battery swapping, and the company's batteries power 90% of all electric scooters in Taiwan.[58] There are more Gogoro Network battery-swapping locations than gas stations across Taiwan's major cities, with more than a million batteries in service there.

Second, Gogoro implemented new business models aligned to the systems transformation it aimed to deliver. One of these was a customer-facing battery-as-a-service business model for vehicle owners that provides access to Gogoro's network of battery-swapping stations. A second was the GoShare model, offering instant access to shareable electric two-wheelers.[59] The company also created a virtual power plant business model to provide ancillary services to electric grid operators by managing power flows at its battery-swapping stations.[60]

The third component of Gogoro's approach is its physical battery-swapping platform, which uses big data, AI, and machine learning to connect an ecosystem of smart vehicles, energy, and user services. Since launching, Gogoro riders have made more than 480 million total swaps, saving upward of 670,000 tons of CO_2 cumulatively[61] In Taiwan, one of the company's 12,000 swapping stations is within a five-minute ride for 85% of all users.

Figure 5: Gogoro system solutions



Viewed through the lens of emergence strategy, Gogoro's story offers a clinic in how systems thinking can guide companies' strategic decisions. While Gogoro's leaders might not have had emergence strategy in mind as a framework for their thinking, the company's approach aligns closely to our three basic steps.

SYSTEM SENSING

Gogoro's system sensing seemed to have identified two-wheeled electric scooters as a solution that could address customer needs while meeting urgent air-quality and carbon-emissions objectives in many of the world's fastest-growing economies. Viewed through the top-down system-sensing lens, numerous low-carbon pathway studies to improve urban mobility in emerging markets show a key role for electric two- and three-wheelers, especially for first- and last-mile transportation and urban deliveries.[62] From the *bottom-up* lens, these vehicles are now cost-competitive with fossil fuel alternatives while offering performance and customer satisfaction benefits.[63]

SYSTEM SOLUTIONS

As a company moving through Phases 3 and 4 of the S-curve, from building a base of early adopters to system integration at scale, Gogoro appears to have focused on market growth. Key decisions with respect to a battery standard amenable to use by multiple manufacturers and design of a battery-swapping platform and business model helped to speed growth and, thereby, the company.[64]

SYSTEM ROLES

Leaders can then look at what role the company can play as a leader, catalyst, advocate, or collaborator in a system transformation. Gogoro seems to have played the role of catalyst in an emerging business ecosystem around electric scooters in Taiwan. Early on, with high flexibility characteristic of a startup but with low system influence, the company appears to have worked strategically with partners to create greater scale and impact for its new products and services than it could have achieved by itself. This strategy looks to have helped it to grow faster than larger competitors.

2 Allbirds leads with open sourcing and collaboration

Footwear and apparel company Allbirds may be best known for its sustainability efforts. The company has been a certified B Corp since 2016[65] and has attached carbon-footprint labels to every product since 2020.[66] Leaders have continuously pursued the innovation of low-carbon materials, such as regenerative wool, tree fiber, and a bio-based, carbon-negative foam material made from Brazilian sugarcane.[67] In June 2023, Allbirds unveiled the world's first net-zero shoe.[68]

The company embraces collaboration; it open-sourced the formula for the company's SweetFoam material, and other footwear brands have adopted it. Leaders have also open-sourced a life cycle assessment tool developed to measure Allbirds products' carbon footprint, inviting the rest of the industry to follow suit.[69]

SYSTEM SENSING

In calculating every product's carbon footprint, Allbirds illustrates bottom-up system sensing in action. This data is an important ingredient for the company's sustainability strategy, which includes both its signature material innovation and energy efficiency measures such as the use of ocean shipping over air freight.[70] The company's dedication to carbon footprinting also can lend credibility to the stated goal of halving its carbon footprint by the end of 2025, then reducing it to near zero by 2030.[71]

SYSTEM SOLUTIONS

The apparel industry is responsible for 8 to 10% of global emissions.[72] Decarbonization solutions are generally at relatively early stages of the S-curve. Allbirds' focus on developing new materials and products is thus well-attuned to system needs: The company is both showcasing what is technically possible and seems to be demonstrating that there is market demand for sustainable apparel products.

SYSTEM ROLES

As a startup backed by Silicon Valley investors and pursuing a direct-to-consumer model, Allbirds had high strategic flexibility; the expectation was that leaders would do something new, and they did. As a relatively small player in the footwear and apparel industry, the company sought to grow its system influence through not only open sourcing but strategic collaboration: In 2020, Allbirds entered a partnership with Adidas to develop the world's lowest-carbon performance shoe.[73]

3 Guzman Energy innovates energy model to accelerate local transitions

Denver-based wholesale power provider Guzman Energy focuses on working with rural communities and energy cooperatives, supporting their transitions from fossil fuels to clean energy using financing mechanisms such as "coal swaps" that allow utilities to shift power generation from coal to solar.[74] Guzman is a relatively new player in the energy space but is rapidly gaining recognition, including a spot on Fast Company's 2022 list of the 10 most innovative energy companies.[75]

An example of the company's approach in action, in 2016 Guzman partnered with Kit Carson Electric Cooperative (KCEC) in Taos, New Mexico, to facilitate its shift to locally built and maintained solar power. Guzman financed KCEC's buyout from a contract with another power cooperative that limited solar generation to 5%.[76] Since then, Guzman has worked with KCEC to install solar arrays and battery storage locally, providing energy users with not only clean energy but lower costs and stabilized rates. In 2022, the company achieved 100% daytime solar energy.[77]

While Guzman has focused on rural areas in the West, leaders recognize that many co-ops across the United States face similar issues exiting contracts with coal-heavy portfolios and have begun working in other regions such as the Midwest.[78]

SYSTEM SENSING

Guzman Energy's approach appears informed by top-down sensing—observing market trends in the energy space and capitalizing on an underutilized business opportunity.[79]

SYSTEM SOLUTIONS

With rapidly falling costs and well established in various niche markets, the market for renewable energy generation is past its tipping point and well along the S-curve.[80] Now, the major challenges facing the market are primarily related to scalability.[81] Guzman has a set of solutions that aim to address these challenges, focusing on expanding supply of renewable energy to rural markets and financing mechanisms to support contract buyouts as well as new infrastructure development.

SYSTEM ROLES

As a relatively new player to the energy scene, Guzman had high strategic flexibility: The company did not have to contend with legacy fossil fuel assets and could focus exclusively on renewable portfolios. While the company's system influence may seem relatively low, its work with smaller distribution co-ops has catalyzed change among larger generation and transmission co-ops. After working with several of its former members, another power provider announced a plan targeting 80% emissions cuts in Colorado by 2030.[82]

Conclusion

As the climate challenge only grows in scale and importance, the *emergence strategy* approach can offer a way to bring together initiatives under one umbrella, a process for integrating systems thinking into a company's corporate strategy development with a focus on sustainable solutions. This approach can be especially useful where climate imperatives are driving, or have the potential to drive, fundamental change in a sector or industry.

Companies at the forefront of change may want to use these types of system tools to assess and pursue strategic opportunities in concert with their overall strategies for climate and sustainability. The process can help leaders choose where and how to collaborate and compete, leveraging each company's unique role in relation to other actors in its system to accelerate the speed and scale of emissions reductions.

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