



Strategic resilience: A primer for business

Contents

- ① **Introduction** | 3
- ② **Framing resilience** | 4
- ③ **The case for resilience** | 5
- ④ **A practical approach for managing resilience** | 6
- ⑤ **Application examples** | 10

1 Introduction

Resilience thinking is by its nature strategic, as it supports and drives fundamental questions on how systems and companies are organized to deliver utility, how they might anticipate, respond and adapt to change and disruption, and how they might drive new business models and ways of meeting society's needs.

This primer complements the Vision 2050 [issue brief](#) on Building long term business resilience. The issue brief explores early business responses to COVID-19, making recommendations on how companies can build greater long-term resilience through improved approaches to corporate risk management, human & social capital management, and the integration of environmental, social and governance (ESG) information.

This primer presents the importance of resilience to corporate strategy, and how companies can evolve their approach and processes using resilience principles. It introduces fundamental principles of resilience, explores ways in which these principles can be used as lenses by which to choose practical interventions and how those lenses can be used in specific contexts, including in food and energy systems. Resilience is a crucial property of business and societal value and a critical enabler of system transformation.



2 Framing resilience

Resilience is the capacity of business, economic and social structures to survive, adapt and grow in the face of change and uncertainty related to disturbances, whether they be caused by resource stresses, societal stresses and/or acute events.¹

Some definitions of resilience focus mainly on robustness, the capacity to absorb a shock or stress – for example by building a higher storm levee around a manufacturing plant, managing

a more solid balance sheet or expanding the legal department. But resilience is much more: it's the capacity to adapt to and learn from the stress, to emerge stronger. In order to truly be resilient, it's critical to continue learning and to innovate. A piece of infrastructure - like a bridge - can ever only be robust, but a community can be resilient and adapt to change. Businesses can do both.

A business can have resilience against something specific, like a market crash or a hurricane, or general resilience to known and unidentified threats.

Often the focus is on specified resilience, but general resilience is probably more valuable. Take, for example, the COVID-19 pandemic and accompanying economic crisis. Most companies did not prepare for the specifics of such an event and its outcomes, but companies with generalized approaches to resilience – like those who prioritize ESG - have [fared better](#). Although we'll know the [full effect](#) of COVID-19 and ESG's role in the years to come.



3 The case for resilience

Businesses were first established in a more stable and predictable ecosystem, designed for efficiency and risk sharing. But the context and landscape has changed, now more volatile, turbulent, uncertain, complex and ambiguous. As a result, the understanding and application of resilience in a corporate context must evolve.

The trade-off between resilience and efficiency is a well-established dynamic. In the traditional business context, efficiency is prized. However, efficiency can come at a price, and that price is resilience. In fact, Brian Walker observes that “most losses in resilience are unintended consequences of narrowly focused optimization, like an efficiency drive.”^{2,3}

In one of the starkest examples, Tropical Storm Nock-ten made landfall in Thailand on 11 July 2011, causing widespread flooding and displacement. 20,000 square kilometers of farmland were flooded, and seven major industrial estates were inundated in water as much three meters deep.

At the time, Thailand was a critical supplier of car parts and hard disk drives. Toyota, Honda and Nissan lost the production of over 420,000 cars directly due to the unavailability of parts from their Thai factories.⁴ The tightly integrated supply chains, often single sourcing parts, allowed the just-in-time production that had contributed to its dominant role in the global car industry from the 1980s. But, the heightened efficiency had made the industry less resilient to natural disasters such as flooding in Thailand.

Just-in-time production had helped the Japanese car industry become a leading force in automotive manufacturing and response times, compared to which a few months lost production might appear a reasonable trade-off. Focusing on resilience helps organizations to assess these trade-offs more consciously and plausibly, to refine the balance. Indeed, following the 2011 floods, the Japanese manufacturers operating in Thailand diversified their supply chains, without abandoning the primacy of efficiency over resilience.

Unlike sustainability, gross margin or employee motivation, resilience has no normative connotation. While more resilience is often a good thing, there are cases where

resilience may hinder change. For example, the resilience of a drug cartel is a bad thing, while community resilience is good. Business values and culture can support resilience, but they can at the same time be a barrier to adapting to a new context. It is always necessary to define system resilience focus, application and context.

Companies should have two categories of resilience concerns. On the one hand, how their products, services and practices contribute to the resilience of their stakeholders, be they other companies, individuals, cities or regions. And on the other hand, they should focus on their own resilience, for example by prioritizing ESG. As discussed above, resilience is always for a particular system – and increasing the resilience of one part can sometimes come at the expense of other parts. So there are purposeful choices to be made.



4 A practical approach for managing resilience

The following nine box framework provides a practical process for assessing and managing resilience using a set of three groups of three lenses to characterize resilience. The first group of lenses are relevant for structural resilience; resilience that can be built through changes in structure. The second group is integrative resilience, which refers to those measures that focus on modifying the interconnections of the company with its context. The final group is called transformative resilience, for when resilience can only be achieved through deeper transformation. The nine lenses are described below⁵:

Figure 1: The Nine-Box Resilience Framework

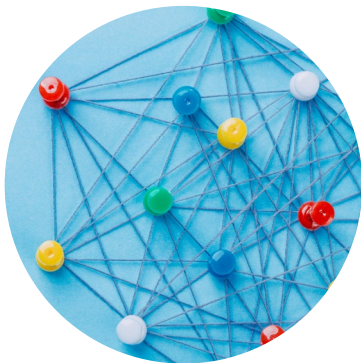
Structural Resilience	Integrative Resilience	Transformative Resilience
REDUNDANCY	MULTI - SCALAR INTERACTIONS	DISTRIBUTED GOVERNANCE
MODULARITY	THRESHOLD	FORESIGHT CAPACITY
REQUISITE DIVERSITY	SOCIAL COHESION	INNOVATION AND EXPERIMENTATION



STRUCTURAL RESILIENCE - THE SYSTEMIC, INFRASTRUCTURE-RELATED ASPECTS OF RESILIENCE.



REDUNDANCY refers to spare capacity. This is often the most straightforward but also most costly way of building resilience. Examples of redundancy include the spare tire of a car, additional staff to deal with unexpected peaks or spare capacity in a power grid. The COVID-19 pandemic has highlighted the importance of considering a shift where appropriate from just-in-time to just-in-case. Similarly, after the 2008 financial crisis, banks were required to lower their leverage levels, increasing their resilience.



MODULARITY refers to loosely coupled components. When one part is affected, the components can be separated and recombined. Well designed modularity means that systems can be re-combined in many ways to respond to changes in the environment. For example, a shipping container is designed with fixings and dimensions that can work well across multiple modes of transport — road, rail and sea. However, caution must be applied to recognize and avoid “fake modularity”. The 2008 financial crisis demonstrated this as financial companies and institutions were much more strongly connected than previously perceived.



REQUISITE DIVERSITY reduces business risks. Workforce diversity also enables different responses in times of crisis. However, increasing diversity may reduce efficiency in the short term. Rather than diversity for its own sake, it is important to consider what types of diversity are relevant for particular circumstances, hence requisite diversity. Examples include the effort to include more diversity in thinking through mid-career recruitment, secondments and cross-postings. Another example is the exposure of agribusinesses to the genetic homogeneity in crops and in herds, making them susceptible to the rapid spread of any new disease. Or the vertical integration of oil and gas majors which helps balance their business performance across trading, upstream and downstream. The challenge is to establish which diversities build resilience and how much is required.

INTEGRATIVE RESILIENCE EMPHASIZES COMPLEX INTERCONNECTIONS.



MULTI-SCALAR INTERACTIONS characterize relationships at different scales. Scales can be geographical (e.g., neighborhood, city, province and nation), temporal (short, medium and long term) or biological (alpha, beta, gamma). The ability to understand multiple scales, both above and below the focal scale which one is operating in, is crucial for building resilience. This is because feedback loops operate across scales and have an impact on the focal scale. It is the quality of the links between the scales that strongly influences resilience. For example, a highly centralized company can be less resilient to certain stresses than one with empowered subsidiaries or businesses.

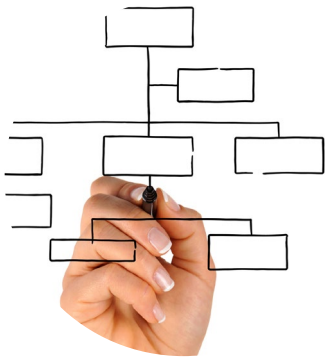


THRESHOLDS are often excluded from planning narratives. Frequently, a system functions in a stable mode for what seems a long time then, once past a threshold, the system begins to work in unexpected ways. Examples include sudden shifts in industry competitiveness, capacity and the impact of pollution. Discussions and plans about the future almost always project smooth and gradual change. Discontinuities that occur as a result of thresholds being crossed are rarely anticipated. Many threshold events are impossible to forecast, but that does not mean sudden change should not feature in planning. Envisaging thresholds, even unknown thresholds, can build resilience and adaptive capacity to deal with them when they arise.



SOCIAL COHESION can contribute much to resilience. Self-organizing capabilities, social norms, relationships and trust levels all have an impact on resilience and decision-making. The Edelman Trust Barometer provides a glimpse into the level of societal trust that businesses have: "Business ranks highest in competence, holding a massive 54-point edge over government as an institution that is good at what it does (64 percent vs. 10 percent). NGOs lead on ethical behavior over government (a 31-point gap) and business (a 25-point gap)."⁶ These kinds of indicators provide a sense of how social and relationship capital supports resilience.

TRANSFORMATIVE RESILIENCE EXAMINES BROADER CAPACITY ISSUES AND LONGER TIME HORIZONS.



DISTRIBUTED GOVERNANCE or polycentric governance is the core model for managing resilience.⁷ Centralized control is often perceived to be more efficient, but it represents the classic trade-off between resilience and efficiency. While occasionally frustrating, democratic processes, stakeholder consultation or even family meetings are all examples of the ultimate strength of a distributed model of governance.



FORESIGHT capacity is the competence to go beyond a culture of forecasting, to include irreducible uncertainties and the plausibility of multiple futures into planning culture. Having institutional capacity to engage decision-makers and help them be comfortable with multiple possible futures will build adaptive capacity for resilience. Various techniques such as scenario analysis and futures thinking are available, but they all require a sustained effort to influence governance and management culture.



INNOVATION & EXPERIMENTATION are obviously important for generating new ideas. However, in this context there is an additional purpose, which is to build a culture that systematically explores unknowns. Having people who are comfortable with ideas of radical change and experiencing the friction of diverse concepts increases adaptive capacity and builds resilience. Google's policy of encouraging employees to dedicate a fixed percentage of their time to personal innovation projects is an example. It may yield some new ideas, but it will certainly deliver a more adaptive employee and corporate culture.

5 Application examples

The following examples are intended to illustrate the application of the resilience definition and lenses in a food and energy system context. They are accompanied by a description of a practical resilience workshop, 'The Resilience Garage'.

Figure 2: Resilience in a food system context

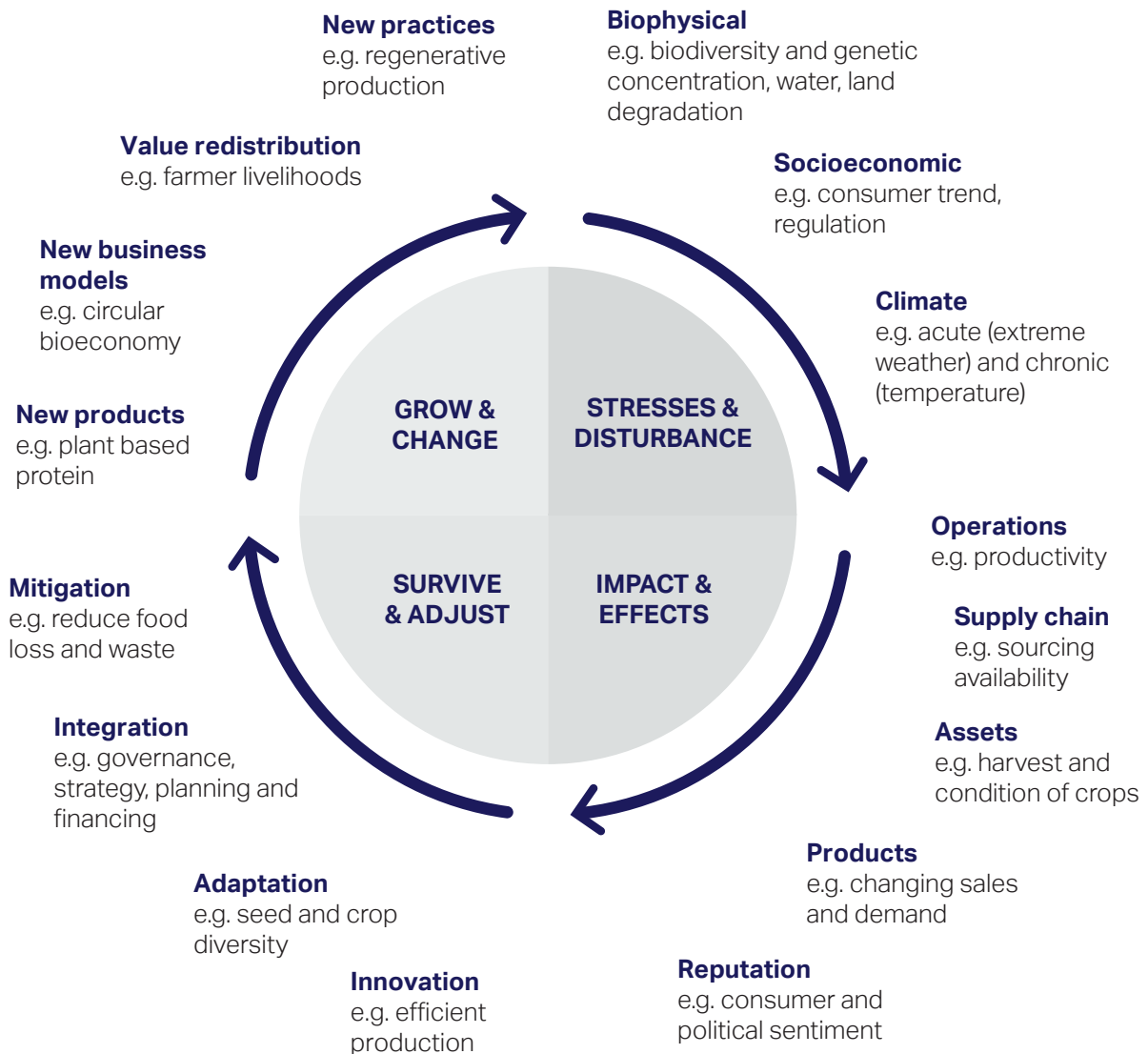


Figure 3: Resilience lenses applied to energy system

<p>REDUNDANCY</p> <p>Complementing renewable baseload power with spare capacity, energy storage, fossil backup power</p>	<p>MULTI-SCALE</p> <p>Long, medium and short term planning</p> <p>Meeting the needs of different uses, contexts, geographies</p>	<p>DISTRIBUTED GOVERNANCE</p> <p>Decentralized systems and actors, supported and enabled e.g city grids, microgrids</p>
<p>MODULARITY</p> <p>System modularity - investment in grids, digital infrastructure, direct current grid, energy storage and demand management</p>	<p>THRESHOLDS</p> <p>Climate change related tipping points - warming, methane release, ice melt</p> <p>Policy conditions - restructuring, incentivizing, stranded assets</p>	<p>FORESIGHT CAPACITY</p> <p>Energy-related scenario analysis - end use, delivery, fuel, demand, policy, technology for example, warming, methane, release and ice melts</p>
<p>REQUISITE DIVERSITY</p> <p>Diversification approach - across generation, storage, decentralization, product offering</p>	<p>SOCIAL COHESION</p> <p>Social license to operate</p>	<p>INNOVATION & EXPERIMENTATION</p> <p>New technologies e.g thermal storage, space-based solar</p> <p>New business models - joint venture, two way power exchange, service centricity</p>

The Resilience Garage as a practical tool for resilience interventions.

A Resilience Garage assembles a group of 20-25 experts from across sectors and disciplines with the aim to peer review and to identify opportunities to better understand or solve challenging problems.

This is done by identifying two resilience cases and collectively developing response options, applying the nine-box resilience framework.

It is practical – aiming for concrete recommendations – as well as fundamental – rigorously applying a rich resilience toolset.

The Resilience Garage provides participants with the opportunity to take part in an expert discussion on resilience, to bridge theory into practice, to get deep insights into resilience practice, solve existing problems and build links to other organizations who might help with implementation.

Endnotes

¹ Kupers (2014) – Kupers, R. (Ed.), *Turbulence, A Corporate Perspective on Collaborating for Resilience*, Amsterdam University Press 2014

² Walker and Salt 2006 - Walker, B., and D. Salt (2006), *Resilience Thinking: Sustaining Ecosystems and People in a Changing, World*. Washington, DC: Island Press.

³ Walker and Salt 2012 - Walker, B. and D. Salt (2012), *Resilience Practice: Building Capacity to Absorb Disturbance and Maintain Function*. Washington, DC: Island Press.

⁴ Haraguchi and Lall (2015) - Haraguchi, M. and Lall, U. Flood risks and impacts: A case study of Thailand's floods in 2011 and research questions for supply chain decision making, *International Journal of Disaster Risk Reduction*, Volume 14, Part 3, December 2015, Pages 256-272.

⁵ Adapted from Kupers and Song (2016) – Kupers, R. and Song H. C., *A Resilience Framework for Smart Cities*, Civil Service College Singapore, Nov. 2016

⁶ Edelman 2020 - <https://www.edelman.com/trustbarometer>

⁷ Ostrom 2010 – Ostrom, E. (2010). "Beyond Markets and States: Polycentric Governance of Complex Economic Systems." *American Economic Review* 100: 1-33.

ACKNOWLEDGMENTS

This primer was produced in partnership with Dr. Roland Kupers, a fellow at the Institute for Advanced Studies in Amsterdam and a Professor of Practice at the Thunderbird School of Global Management at ASU, drawing on the book edited by Dr. Kupers - *Turbulence: A Corporate Perspective on Collaborating for Resilience*.

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