



Executive
Perspectives

The CEO's Dilemma

Preparing Your Supply Chain for Resilience

December 2022




Introduction to this document


Recent macro events like COVID-19, the Russian invasion of Ukraine, and soaring inflation have stressed supply chains globally. Even when these current challenges subside, future supply chain disruptions in various forms are likely to continue.

To thrive relative to underprepared peers, companies must design their supply chain structure, processes, and organizations for resilience. It is critical to be selective in where and how to invest to stay cost-competitive while mitigating the most at-risk parts of supply chains with the highest potential financial impact.

This document explains which capabilities and enablers are needed to build resilient supply chains, and the no-regret moves that all companies should take today.



In this BCG Executive Perspectives edition, we address how to respond to uncertainty by building supply chain resilience



Executive Summary | Supply chain resilience creates better business outcomes and requires action today to build key capabilities and enablers

Benefits of supply chain resilience

Companies that invest in **supply chain resilience capabilities** turn disruption into a **competitive advantage**. The gross profit growth of resilience leaders outpaced that of laggards by up to 55 percentage points. Leaders succeeded because **they invested before they needed it**.

Without these capabilities, companies are exposed to inevitable supply chain disruptions. Resilient supply chains can **minimize costs and lost revenue** in times of crisis and **support accelerated growth** in times of expansion.

Early investments in resilience can deliver immediate benefits **to help fund the journey**. Deploying inventory more efficiently with better demand visibility and improving procurement with better upstream visibility for sourcing are just a few examples.

Unplanned supply chain challenges will continue. It is **imperative that companies prioritize investments now** so they don't fall behind peers. They must invest intelligently in supply resilience to avoid exacerbating costs.

Building supply chain resilience

Near-term, large opportunities exist to **build supply chain resilience capabilities**. This requires a holistic program:

- **Absorb**: Better handle shocks through network design, sourcing strategy, planning, and product design
- **Recover**: React faster when disruption occurs through monitoring, prediction, and crisis response

To enable these capabilities, companies need **visibility into their extended supply chain**; sustaining this value may require **new enablers**, including digital tools, governance, talent, and change management assets.

Continued uncertainty about future demand and economic stability

1 Global growth outlook

GDP forecasts¹ (Real GDP YoY)

	2021A	2022E	2023E	2024E
US	5.9%	1.8%	0.4%	1.4%
Eurozone	5.3%	3.2%	-0.1%	1.5%
Global	6.0%	2.9%	2.1%	2.9%

2 Commodity prices and inflation

Commodity prices²

	Sep '22	Oct '22	Nov '22	Change ¹⁰
Brent oil	79.5	86.5	80.6	-6.9%
Natural gas				
US	6.8	6.4	6.9	+9.0%
Eurozone	165.0	84.0	145.0	+66.6%

Consumer price inflation (YoY)³

	Sep '22	Oct '22	Nov '22	Change ¹⁰
US	8.2%	7.7%	-	-0.5ppts
Eurozone	9.9%	10.6%	10.0%	-0.6ppts

3 Financial markets

Equity market performance (YTD change)⁷

	Sep '22	Oct '22	Nov '22
S&P 500	-24.8%	-18.8%	-14.4%
Eurostoxx 50	-22.8%	-15.8%	-7.8%

Corporate spreads (High Yield)⁸

	Sep '22	Oct '22	Nov '22	Change ¹⁰
US	5.52%	4.64%	4.48%	-16bps
Eurozone	6.31%	6.05%	5.20%	-79bps

4 Monetary policy

Monetary policy rates⁶

	Sep '22	Oct '22	Nov '22	Change ¹⁰
US	3.25%	3.25% ¹²	4.0%	+75bps
Eurozone	1.25%	2.0%	2.0%	0bps

5 Labor market

Job openings rate⁴

	Q1 '21	Q2 '22	Q3 '22	Change ¹¹
US	7.3%	6.8%	6.5%	-0.3ppts
Eurozone	3.1%	3.2%	3.2%	0ppts

Unemployment rate⁵

	Sep '22	Oct '22	Nov '22	Change ¹⁰
US	3.5%	3.7%	3.7%	0ppts
Germany	3.0%	3.0%	-	0ppts
France	7.1%	7.1%	-	0ppts

6 Manufacturing

PMI Manufacturing (<50 = contraction)⁹

	Sep '22	Oct '22	Nov '22	Change ¹⁰
US	50.9	50.2	49.0	-2.4%
Eurozone	48.4	46.6	47.1	+1.5%


1. Bloomberg, data as of 12/06/2022. 2. Data presented as end of month figures. Brent oil in \$/bbl; US Natural gas (Henry Hub) in \$/MMBtu; Dutch Natural gas (TTF front month future) in EUR/MWh. 3. CPI monthly seasonally adjusted data from Bureau of Labor Statistics; HICP monthly data for Eurozone from Eurostat. 4. Seasonally adjusted rates; Bureau of Labor Statistics for US; Job vacancy rate from Eurostat for Eurozone. 5. Bureau of Labor Statistics for US; Eurostat for Eurozone. 6. Federal Reserve for US; ECB for Eurozone (main refinancing rate). 7. Bloomberg. 8. Bloomberg US Corporate High Yield Average OAS; Bloomberg Pan-European High Yield Average OAS. 9. ISM manufacturing PMI for US; S&P Global Eurozone Manufacturing PMI from Markit for Eurozone. 10. Change Oct vs Nov. 11. Change Q2 '22 vs Q3 '22. 12. As of 12/06/2022. Note: All displayed numbers are based on end of months figures. Changes based on incremental changes vs. previous months.



BCG Executive Perspectives

AGENDA

- ✓ **Benefits of supply chain resilience**
- ✓ Building holistic supply chain resilience



The nature of supply chain disruptions may change, but disruptions are inevitable

Three sources of supply chain disruptions expected to continue in the future



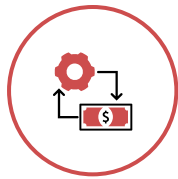
Macroeconomic

Volatile demand, vulnerable suppliers, capacity/inventory shrinkage from higher interest rates, bankruptcies from higher energy prices, etc.



Geopolitical

Increased power tensions leading to trade actions (e.g., tariffs, tech restrictions), military actions, ESG¹ (e.g., carbon border taxes), etc.



Operational

Natural disasters (e.g., hurricanes, floods), pandemics, labor strikes, labor/material shortages, catastrophic equipment downtime, etc.

Companies must prepare now to be resilient to all these unpredictable future disruptions

1. ESG = environmental, social, and governance

Supply chain leaders across industries show better financial performance vs. laggards

Gross profit increase
difference between
leaders and laggards
(percentage point differential)



AUTOMOTIVE

+25–45 p.p.



MEDTECH

+5–20 p.p.



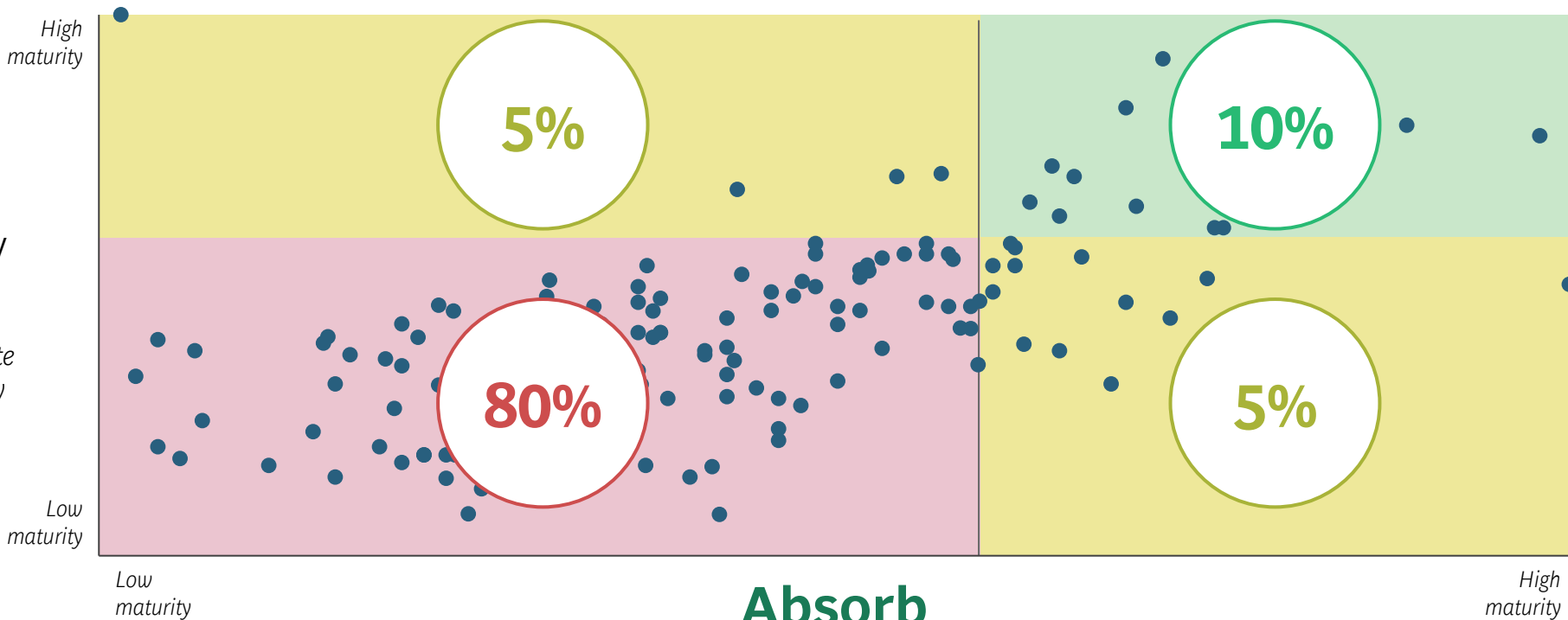
CONSUMER

+0–55 p.p.



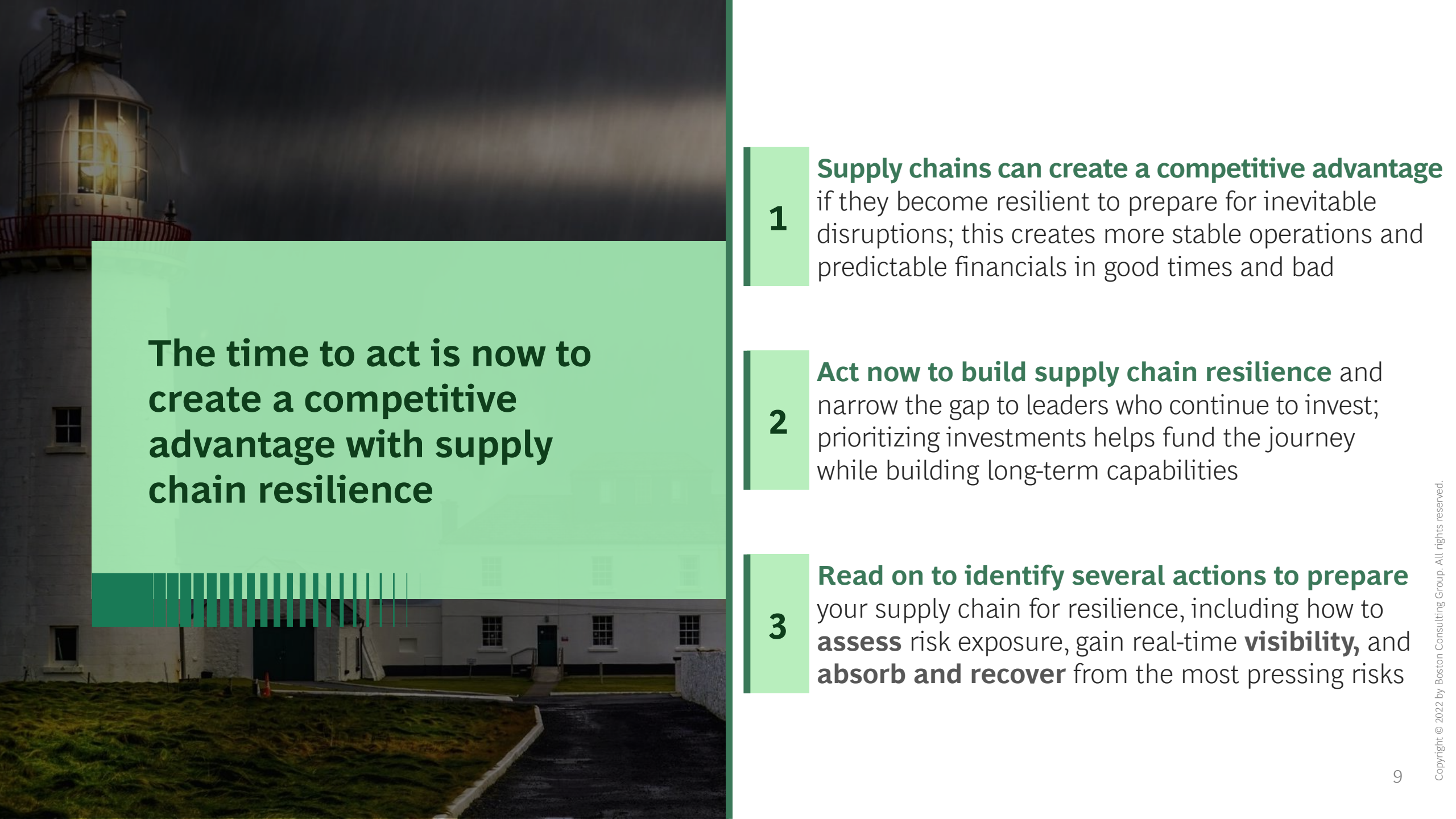
A resilient supply chain helps absorb shocks and recover from disruption faster – but few companies have managed to build these capabilities yet

Recover
React faster when supply chain disruption occurs
e.g., digital twin of operations to evaluate disruption scenarios and prepare supply chain to minimize financial impact



Absorb
Increase ability to handle supply chain shocks
e.g., tiered sourcing strategy for custom/critical components through product redesign or alternative sourcing options

% Denotes % of companies in quadrant
Source: BCG 2022 supply chain resilience capabilities survey (N=136)



The time to act is now to create a competitive advantage with supply chain resilience

1

Supply chains can create a competitive advantage if they become resilient to prepare for inevitable disruptions; this creates more stable operations and predictable financials in good times and bad

2

Act now to build supply chain resilience and narrow the gap to leaders who continue to invest; prioritizing investments helps fund the journey while building long-term capabilities

3

Read on to identify several actions to prepare your supply chain for resilience, including how to **assess** risk exposure, gain real-time **visibility**, and **absorb and recover** from the most pressing risks



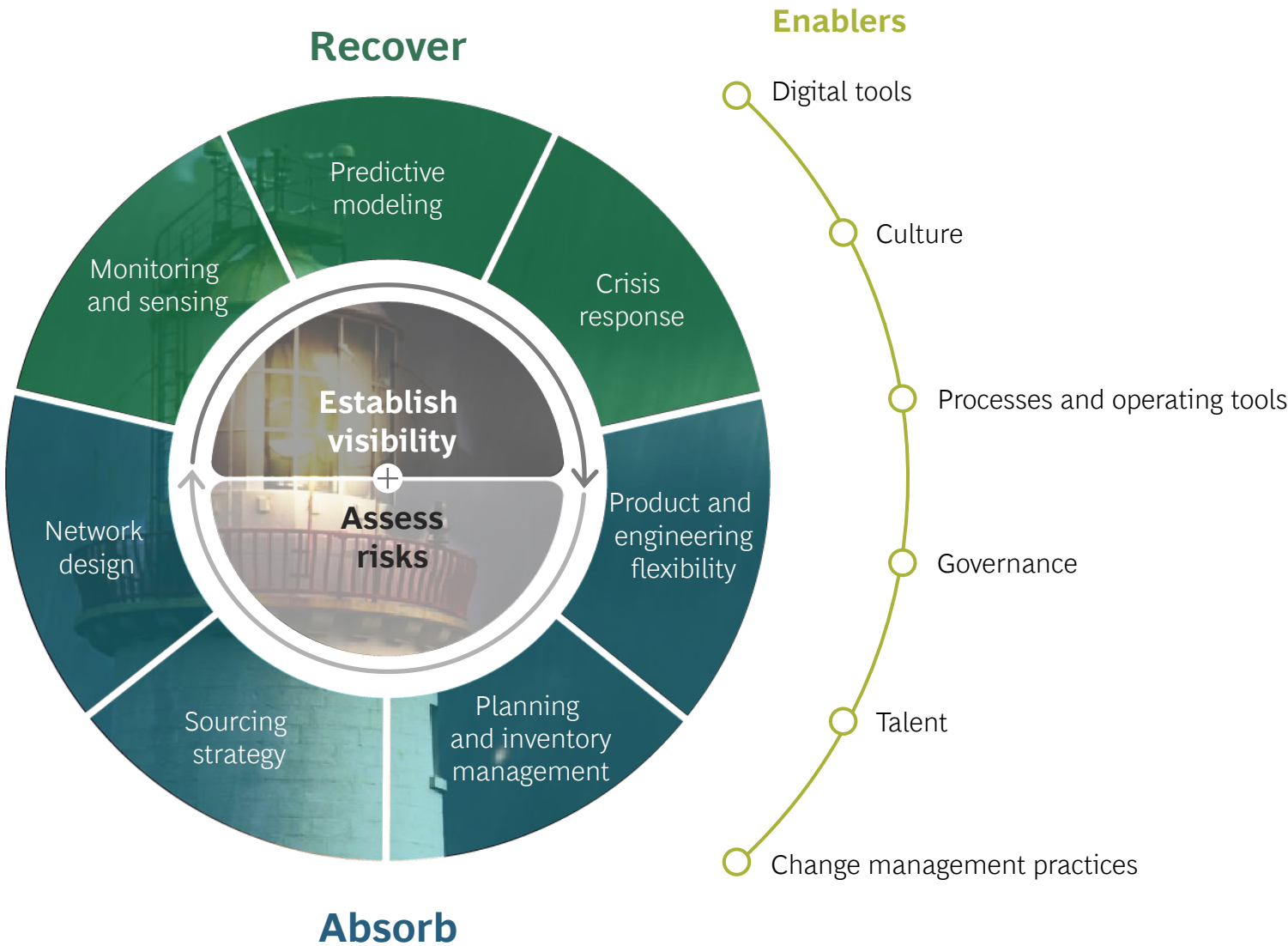
BCG Executive Perspectives

AGENDA

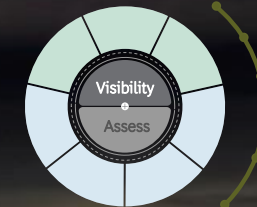
- ✓ Benefits of supply chain resilience
- ✓ **Building holistic supply chain resilience**



Excellence in supply chain resilience requires a holistic approach

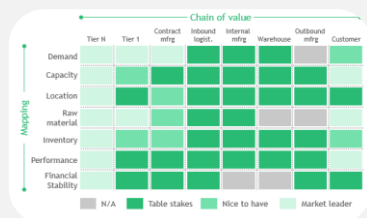


Visibility and Assessment | Understand potential problems and quantify the magnitude of potential exposure



Visibility

- Create visibility across network, including multi-tier supplier mapping, multi-echelon inventory, production facilities, and transportation
- Quickly view changes in performance across various KPIs in different parts of the network



Assessment

- Establish KPIs that measure a company's level of resilience capabilities
- Identify potential exposures at the part, supplier, location, and product level
- Prioritize risks by quantifying the magnitude and likelihood of exposure
- Develop capability building and a risk mitigation roadmap to improve resilience



Case example: industrial goods company

Why was it important?

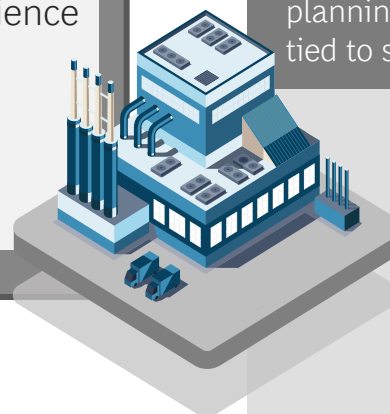
Client concerned about geopolitical & trade risk with large percentage of components sourced from China, especially single sourced, with specialized technology

How did we help?

Built an enhanced monitoring dashboard to enable risk segmentation and quantification; developed a mitigation roadmap to address risks

What was the impact?

Integrated dashboard into daily operations planning; executed 5 key mitigation solutions tied to sourcing risks for 85% of revenue

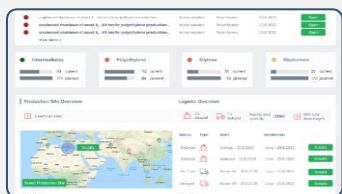


Recover | Continuously monitor using advanced analytics coupled with predictive algorithms



Monitoring/sensing

- Real-time monitoring leveraging digital tools to identify external events that may impact ops
- Proactive alerts that sense operational deviations & disruptions



Prediction

- Predictive algorithm to show how disruptions could impact operations
- Scenario modeling that will show best action given changing conditions



Crisis response

- Established team(s), processes, & playbook to optimize decision making
- Leverage real-time data to mitigate crisis within existing process



Case example: medical device company

Why was it important?

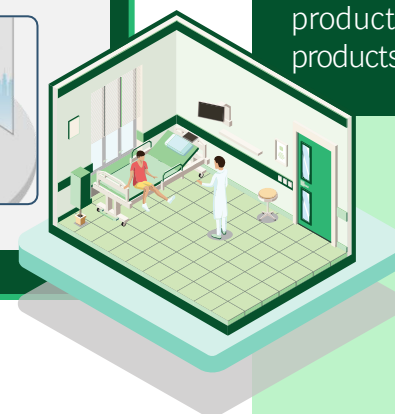
Client anticipated shortage of semiconductors and needed a data-driven approach to monitor and mitigate component supply risks

How did we help?

Implemented a data room and control tower to develop data-driven risk identification for prioritization and management of supply base

What was the impact?

Reduced potential revenue loss by 20%, prioritizing product redesign/substitution for most profitable products & health criticality to minimize patient impact



Absorb | Prep for events through network design and inventory planning while developing comprehensive sourcing strategy



Network design

- Network map of all locations and flows across multiple tiers of the supply chain
- Scenario evaluation for single points of failure



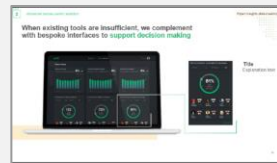
Sourcing strategy

- Tiered multi-sourcing strategies with recovery for single-sourced items
- Senior and cross-functional engagement on supplier location selection



Inventory & planning

- Data-driven inventory targets set with additional safety stock for high-risk items
- Sales forecast and demand plan to determine supply & production needs



Flexible products

- Sourcing strategy to identify source components with roadmap to migrate to flexible designs
- Process for rapid emergency design change, substitution, and spec deviation



Case example: consumer beverage company

Why was it important?

Client adversely affected by supply chain disruptions and expected to underdeliver export volumes due to labor & raw material shortages

How did we help?

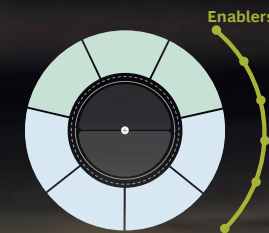
Developed cross-functional initiatives focused primarily on network design and sourcing/inventory strategy to increase resilience

What was the impact?

Reduced addressable cost by 20% while increasing volume per site by 50%, significantly reducing planned expansion capex



Enablers | Resilient companies build capabilities to strengthen overall operations organization and processes



More details on next page



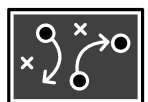
Data, analytics, and tools

- Build ecosystem of new tools to better anticipate risks and gain a competitive edge
- Improve real-time visibility into multiple supply chain tiers and across network
- Leverage advanced and predictive analytics to enable data-driven planning



Culture

- Win hearts and minds of employees
- Make talking about risk and resilience as commonplace as cost and efficiency
- Embed resilience in every function across organization and decision processes



Process and operating model

- Integrate resilience into supply chain, order execution, procurement, and strategic planning
- Focus on both long-term improvements and near-term crisis response



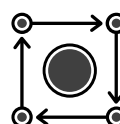
Governance

- Align metrics and incentives to resilience measures
- Establish regular cadence of executive engagement
- Build cross-functional risk and resilience teams with direct line of reporting to COO or CEO



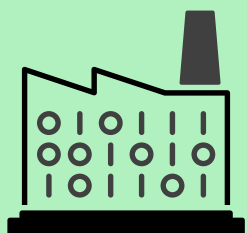
Talent

- Build new strategic, tactical, analytical, and digital capabilities required to enable resilient operations
- Hire, train, and retain leaders and employees committed to resilience across the organization

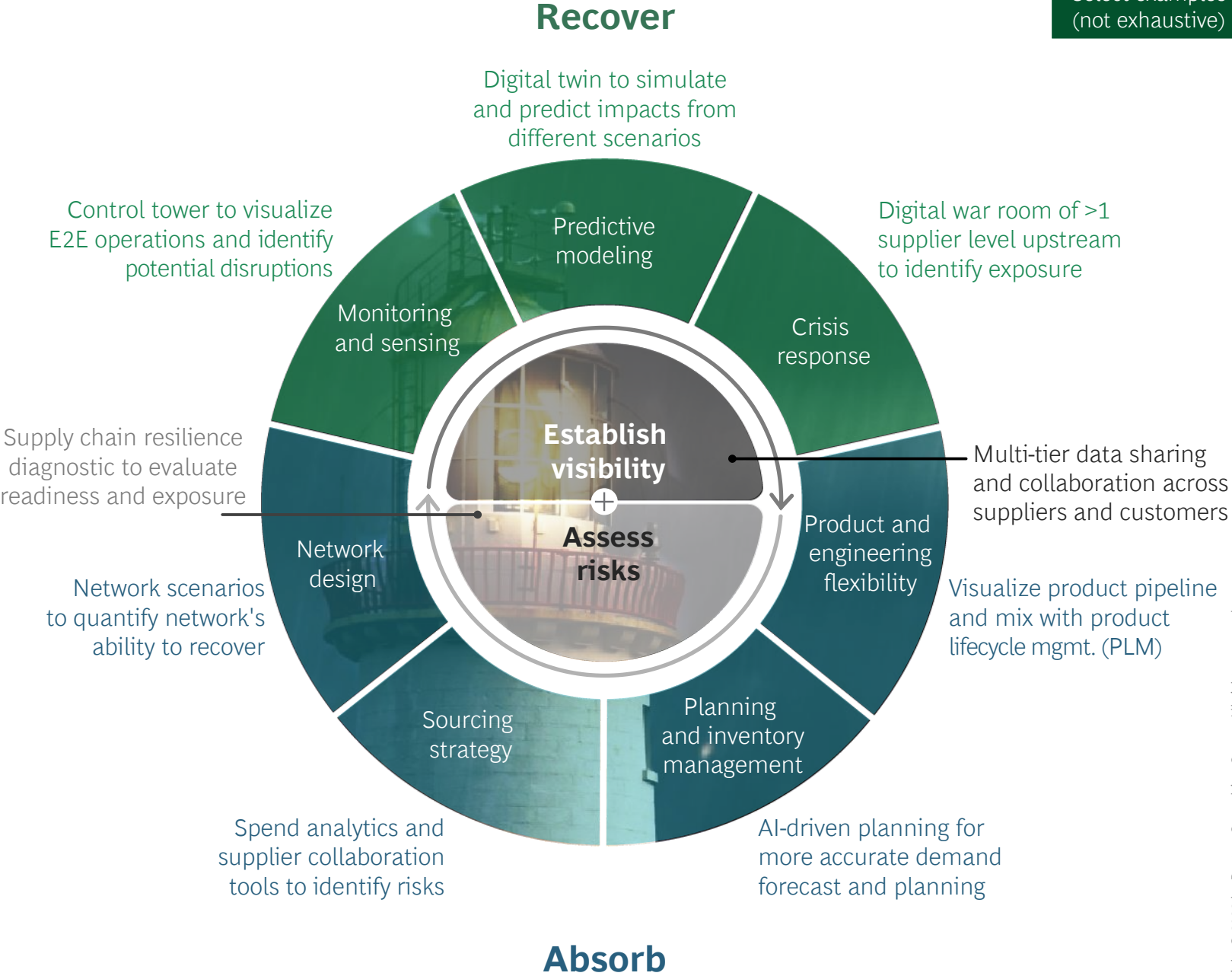


Change management

- Enable sustainable change to the way work is done and decisions are made
- Ensure that change is both deep (every level) and broad (cross-functional)



Supply chain
resilience strategy
is accelerated when
leveraging digital
and analytics tools



Connect with our Supply Chain, Central Resilience, and Geopolitics teams

North America



Jeremy Kay
Managing Director & Partner
Kay.Jeremy@bcg.com
Chicago



Ben Aylor
Managing Dir. & Sr. Partner
Aylor.Ben@bcg.com
Washington, DC



Justin Ahmad
Managing Director & Partner
Ahmad.Justin@bcg.com
Boston



Grace Havlin
Partner
Havlin.Grace@bcg.com
New York



Dustin Burke
Managing Dir. & Sr. Partner
Burke.Dustin@bcg.com
Chicago

Europe, Mid. East, S.Amer



Thomas Kingombe
Managing Director & Partner
Kingombe.Thomas@bcg.com
Copenhagen



Rainer Schuster
Partner & Associate Director
Schuster.Rainer@bcg.com
Munich



Dragana Kovacevic
Project Leader
Kovacevic.Dragana@bcg.com
Frankfurt



Marco Moretti
Managing Director & Partner
Moretti.Marco@bcg.com
Rome



Wolfgang Schnellbacher
Managing Director & Partner
Schnellbaecher.Wolfgang@bcg.com
Stuttgart

Asia Pacific



Ravi Srivastava
Managing Dir. & Sr. Partner
Srivastava.Ravi@bcg.com
New Delhi



Kosuke Uchida
Managing Director & Partner
Uchida.Kosuke@bcg.com
Nagoya



Koichi Hasegawa
Managing Director & Partner
Hasegawa.Koichi@bcg.com
Tokyo



Wales Wei
Managing Director & Partner
Wei.Wales@bcg.com
Hong Kong

Central Resilience Team



Tuukka Seppä
Managing Dir. & Sr. Partner
Seppa.Tuukka@bcg.com
Helsinki



Ryoji Kimura
Managing Director & Partner
Kimura.Ryoji@BCG.com
Tokyo



Alexander Roos
Managing Dir. & Sr. Partner
Roos.Alexander@bcg.com
Berlin



Daniel Feldkamp
Managing Director & Partner
Feldkamp.Daniel@bcg.com
Munich


Geopolitics and Trade Impact Team



Marc Gilbert
Managing Director & Partner
Gilbert.Marc@bcg.com
Montréal



Michael McAdoo
Partner & Director
McAdoo.Michael@bcg.com
Montréal

 Email OpsResilience@bcg.com for our **Resilience Benchmark & Self Assessment**
Click [here](#) for insights on **supply chain resilience** and our **latest operations publications**

Disclaimer

The services and materials provided by Boston Consulting Group (BCG) are subject to BCG's Standard Terms (a copy of which is available upon request) or such other agreement as may have been previously executed by BCG. BCG does not provide legal, accounting, or tax advice. The Client is responsible for obtaining independent advice concerning these matters. This advice may affect the guidance given by BCG. Further, BCG has made no undertaking to update these materials after the date hereof, notwithstanding that such information may become outdated or inaccurate.

The materials contained in this presentation are designed for the sole use by the board of directors or senior management of the Client and solely for the limited purposes described in the presentation. The materials shall not be copied or given to any person or entity other than the Client ("Third Party") without the prior written consent of BCG. These materials serve only as the focus for discussion; they are incomplete without the accompanying oral commentary and may not be relied on as a stand-alone document. Further, Third Parties may not, and it is unreasonable for any Third Party to, rely on these materials for any purpose whatsoever. To the fullest extent permitted by law (and except to the extent otherwise agreed in a signed writing by BCG), BCG shall have no liability whatsoever to any Third Party, and any Third Party hereby waives any rights and claims it may have at any time against BCG with regard to the services, this presentation, or other materials, including the accuracy or completeness thereof. Receipt and review of this document shall be deemed agreement with and consideration for the foregoing.

BCG does not provide fairness opinions or valuations of market transactions, and these materials should not be relied on or construed as such. Further, the financial evaluations, projected market and financial information, and conclusions contained in these materials are based upon standard valuation methodologies, are not definitive forecasts, and are not guaranteed by BCG. BCG has used public and/or confidential data and assumptions provided to BCG by the Client. BCG has not independently verified the data and assumptions used in these analyses. Changes in the underlying data or operating assumptions will clearly impact the analyses and conclusions.



BCG