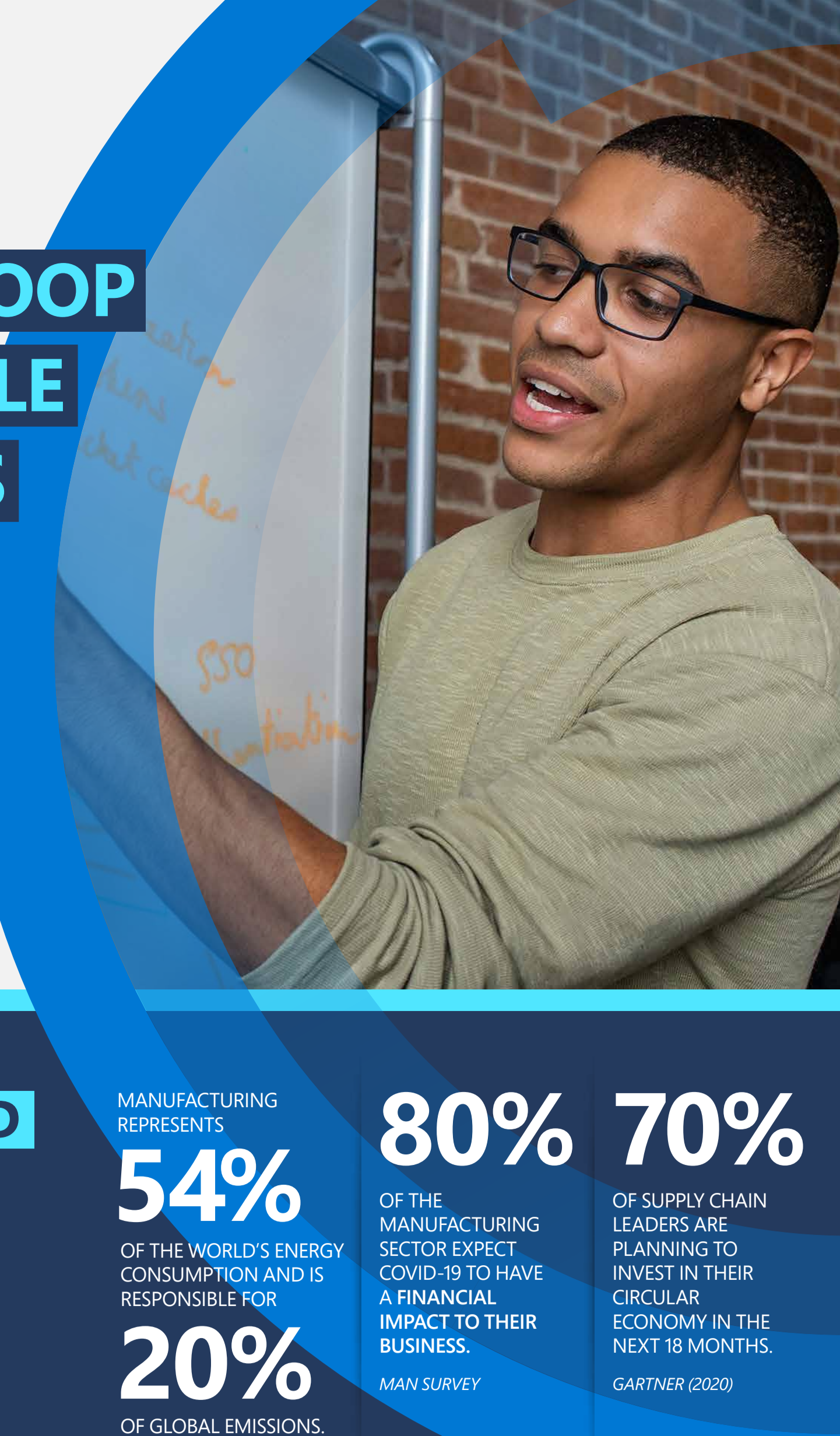


CLOSING THE LOOP ON SUSTAINABLE SUPPLY CHAINS

Supply chains have the ability to positively or negatively affect a company's sustainability position. There is however a lot of complexity, and a number of contributing themes, that affect this position. This paper explores the key themes that must be addressed to deliver the sustainable and resilient supply chain of the future.



MANUFACTURING AND THE SUSTAINABILITY JOURNEY

Business and environmental sustainability are not new considerations in supply chain design and operation. Efforts have been made for years to minimise impact through operational elements including inventory optimisation, optimised logistics and multi-modal transport, and production and warehousing consolidation. This has been accompanied by environmental improvement considerations in recycling and packaging, and reusability of components including totes, pallets and containers.

Traditionally, cost and service have been the most important factors in deciding whether a given supply chain was operating 'optimally.' If profits and margins were high and customers were satisfied, a supply chain was considered successful. However, in the current economic, political and social climate, driven primarily by COVID-19 and uncertainty with Brexit, this has changed. Sustainability is a new driving force to judge a company's ultimate performance.

Within this context, sustainable manufacturing is emerging as the operating model of choice. It has become the driving force for innovative products, processes, and systems for next-generation manufacturing and the supply chains that support them. Sustainability through this lens focuses on a balance between business survivability and minimising the environmental and social impacts of operating. We must focus on holistic business sustainability to ensure companies operate efficiently and competitively, whilst accelerating corporate social responsibility objectives.

MANUFACTURING REPRESENTS

54%
OF THE WORLD'S ENERGY CONSUMPTION AND IS RESPONSIBLE FOR

20%
OF GLOBAL EMISSIONS.

80%
OF THE MANUFACTURING SECTOR EXPECT COVID-19 TO HAVE A FINANCIAL IMPACT TO THEIR BUSINESS.

MAN SURVEY

70%
OF SUPPLY CHAIN LEADERS ARE PLANNING TO INVEST IN THEIR CIRCULAR ECONOMY IN THE NEXT 18 MONTHS.

GARTNER (2020)

Today's increasingly complex, interdependent, and volatile markets demand agile and resilient supply chains. Organisations need to understand the current and emerging challenges facing supply chains, and pivot to embrace new technologies and processes such as AI and automation that optimise the value chain for better stakeholder outcomes and business continuity. By taking this approach, manufacturers will also reduce costs and materials consumption, make more efficient use of resources, and increase their adaptability in times of crisis or rapid market shifts.

Environmental, social and economic impacts exist throughout every stage of supply chains, meaning they must evolve to become sustainable themselves.

To ensure a sustainable supply chain, it is important not to view it in isolation. Our recent report, **Creating a Blueprint for UK Competitiveness**, found that a combination of talent, technology, future readiness and the ecosystem represent the key ingredients in any organisation's future success. A collaborative approach focussed on business and industry impact goals, is essential to accelerate innovation and industry transformation - particularly in the context of remaining competitive and building for the future in a sustainable way.

"As a business we see exciting commercial opportunities from companies taking action on climate change. Some of these customers are also potential or existing suppliers, which means we have the opportunity to create a virtuous circle of engagement on climate change action. By providing low carbon products our action helps our customers to reduce their carbon footprint, brings us new revenue opportunities, and helps to reduce our supply chain carbon footprint – it is a real win-win from collaboration."

Rachel McEwen, Chief Sustainability Officer, SSE

SUSTAINABILITY AND RESILIENT SUPPLY CHAINS

Operating sustainably means that most organisations must evolve their foundational supply chain practices, and they must do so quickly with sustainability as a strategic priority. Performing in a model that balances the good of the business and the good of the planet requires a business to be well-integrated and not operating in siloes. The driver for resilience means a need to be more integrated, typically through digitisation and island avoidance.

The current forces driving a resilient supply chain amplify seven key considerations for manufacturers, as business leaders address immediate challenges and plan for future needs on supply chain sustainability:

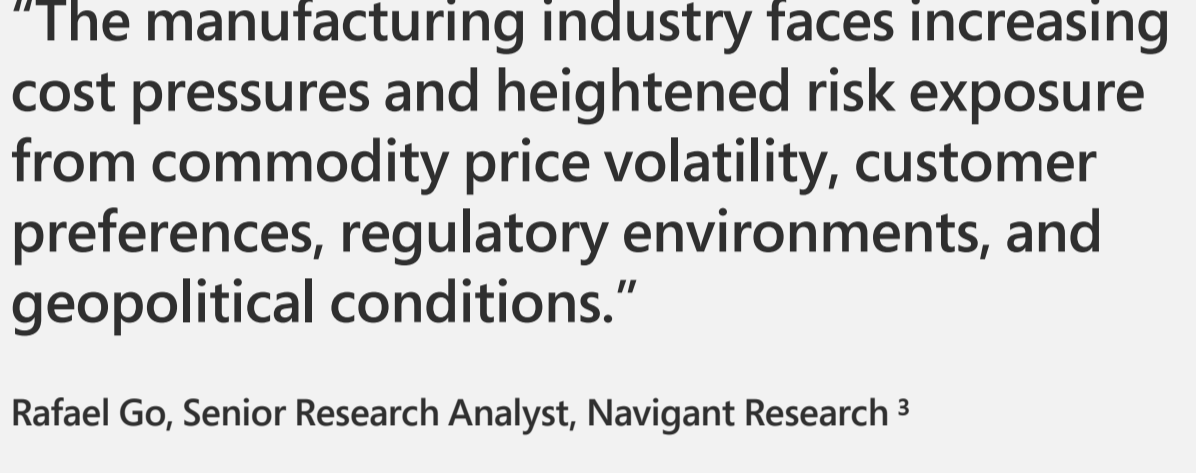
- **Business continuity:** Workforce transformation will be key to recovering from business disruptions and supply chain inconsistency.
- **Diversified operations:** Market conditions demand the diversification and localisation of manufacturing, as well as the ability to overcome the complexities of existing supply sourcing, all whilst enhancing the partnership ecosystem.
- **Risk mitigation:** Supply chain leaders will re-examine risk mitigation strategies and upfront investment, to address future disruptions while also advancing security and compliance goals.
- **Sustainable growth:** Disruptive technology will drive innovation in the development of sustainable products, processes, and services.

"Supply chain sustainability is the management of environmental, social and economic impacts, and the encouragement of good governance practices, throughout the lifecycle of goods and services. The objective of supply chain sustainability is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market. By integrating the UN Global Compact principles into supply chain relationships, companies can advance corporate sustainability and promote broader sustainable development objectives."

Supply Chain Sustainability A Practical Guide for Continuous Improvement ¹

- **Visibility and insight:** Technology that provides timely information will ultimately support swift adaptation and disruption recovery. Enable agile, predictive manufacturing by adding end-to-end visibility throughout your supply chain.
- **Legal and regulatory compliance:** Meeting and supporting international principles for sustainable business practice.
- **Corporate social responsibility ambitions:** Companies are increasingly taking actions that result in better social, economic and environmental impacts due to societal pressures and the associated business benefits of doing so.

In addition to business drivers, we are seeing a change in consumer behaviour and how manufacturers engage with customers. This is causing a blurring of the lines between manufacturing and retail, leading to innovative consumption models that are creating new avenues for value by providing a path for manufacturers to engage with customers directly and bypass retailers. This impacts the traditional supply chain engagement model. This is also making the manufacturer much more visible to the consumer with companies embracing sustainability to influence brand awareness and attracting investment.



¹ Supply Chain Sustainability Report, BSR, 2020

Why is now the time to act?

For decades, supply chains have had to deal with unforeseen events (economic, environmental and cultural) yet companies are somehow still being caught off guard by the complexity and interconnectedness of the challenges they now have to deal with. The increasing unpredictability and complexity of events is particularly problematic for supply chains, which must interact closely with external as well as internal parties in order to perform effectively.

In the World Economic Forum's Global Risks Report², extreme weather events, natural disasters, and failure of climate change mitigation and adaptation topped the list of risks with the highest likelihood and impact, and are seen as long-term trends that will continue. These all can impact supply chain management through:

- Increasing the cost, and variability of cost, of producing goods and services.
- Disrupting the delivery of goods and services in a speedy and timely fashion.
- Reducing the quality of goods and services provided.
- Increasing the uncertainty and magnitude of supply chain disruptions.

² The Global Risks Report 2018, World Economic Forum
³ Press Release, Circular Economy Solutions for Modernizing Manufacturing

The ongoing impact of COVID-19 has affected manufacturing production, altered supply and demand predictability, and created unforeseen gaps with suppliers. Manufacturers are responding by paying increasing attention to the resilience of their supply chain. So much so, that 'resilience' as a concept has grown from a little-used term to a core requirement of any modern and intelligent supply chain.

"The manufacturing industry faces increasing cost pressures and heightened risk exposure from commodity price volatility, customer preferences, regulatory environments, and geopolitical conditions."

Rafael Go, Senior Research Analyst, Navigant Research ³

While the long-standing macro forces continue to drive an overarching need to rethink the supply chain, there is an increasing urgency to modernise practices. As a result, business leaders are taking immediate steps to build resilience into every aspect of planning and execution in the supply chain, driven by three concurrent forces: the impact on the workforce, short-term pressures on their business, and the intersection of demand-side pressures with supply-side intelligence.

We have seen global supply chains impacted (food, pharmaceutical, medical, construction, and utility maintenance) because businesses encroached too far into the planet's natural environment and were far too linear in nature. The recovery over the next two years and beyond will be about achieving a competitive, sustainable proprietary advantage.

Sustainable business and finance is now an imperative for the global economy, and for building a better society as a whole.

Andrea Stone, Chief Customer Proposition Officer, Refinitiv.



A NEW APPROACH TO THE SUPPLY CHAIN

In the past, supply chains were linear, push-based, and placed an extensive focus on ad-hoc production and stocking. Systems that were not fully integrated across the value chain sometimes made them reactive in nature. Linear supply chains have proven sufficient over time, but they are not the most sustainable option. The circular supply chain model – as an extension of the circular economy - encourages businesses to loop their supply chains to achieve cost efficiencies, facilitate product innovation, create less waste, less excess inventory and minimise their environmental impact.



those needs in real time. Businesses with a consistent technology platform underpinning connected, proven solutions in areas like planning and execution systems connected through control towers, can now sense, predict and pivot to address customer changes immediately and proactively make decisions that will pre-emptively solve against the changing pressures in their supply chain. This also allows the ability to much more tightly link people, process and technology together – across partnerships – to allow real-time intelligence sharing across the value chain.

As forecast downturns or emerging unmet needs are communicated across the entire chain, manufacturing and transportation plans can be instantly adjusted as well, leading to opportunities to reuse materials, reduce money spent on raw materials, and decrease waste of all kinds including labour, food and fuel. The application of advanced tools to design the supply chain for circularity is a central tenet of sustainability.



THE ROLE OF DIGITAL TECHNOLOGY

One of the key enablers of supply chain evolution is technology and its use across the entire value chain. It is incredibly important to be prepared for both internal and external changes, as optimised supply chains are critical to getting people everything from food and medicine, to water and supplies. This goes beyond manufacturing and business – it has implications for broader society.

Widespread adoption of technology, including automation, across the value chain is essential to build the resilience needed for the future supply chain.

BSR (Business for Social Responsibility) Future of Supply Chains 2025

A 2018 WEF report found that due to the increasing decentralisation of supply chains, the efficient performance of a supply chain requires a high degree of visibility, on-time sharing of accurate data throughout the entire supply chain, and coordination amongst supply chain partners. This decentralisation can only be achieved through the use of digital technologies including big data analytics, the internet of things (IIoT) and advanced robotics, 3D printing, machine learning and AI – can take supply chain visibility, coordination and performance to new levels.

Benefits of digital adoption in the circular supply chain:

- Better inventory control; reduced friction
- Fewer barriers that do not waste of resources on procedures that are less than add value
- Increased functional and procedural synergy between participants
- Better monitoring of customer behaviour and faster response to changing market demands
- Shorter order fulfilment lead times
- Greater logistics flexibility and improved delivery and logistics asset performance
- Lower capital investment in excess capacity

World Economic Forum, Supply Chain 4.0

The use of AI and automation can help drive sustainable supply chains. The ability to gain real-time and predictive insights across supply chains based on external factors such as weather, consumer spending, and trends together with your internal data such as customer habits, performance, and stock offers the ability to make faster decisions, serve customers better, and manage warehouses. AI can help identify areas of operational efficiency, predicting and prevents disruptions, reducing waste and promoting sustainable practices.

Sustainability supports the resilient supply chain by reducing costs through energy efficiencies, improving processes by reducing packaging and re-using materials and waste in products and processes. To be more resilient manufacturers can recycle and re-use parts through re-manufacturing processes as part of a circular supply chain approach, rather than relying on suppliers.

"The key thing is sustainability—AI is a gamechanger, and we are embedding it in innovative, groundbreaking digital solutions that help our customers meet their sustainability targets as well as deliver real business value."

Stuart Bashford, Digital Officer, Bühler Group.

The digital supply chain creates a supply chain with visibility, orchestrated processes, insights, and resilience. It enables you to make faster and better decisions with data and AI. It allows you

Importantly, it brings together the previously mentioned talent, processes, technology, and partnerships that are needed to be successful in the current economic climate, leading to a future-ready supply chain that is both sustainable and resilient.

WHERE DOES THE JOURNEY START?

Historically, companies have been disconnected from their upstream and downstream partners, so it's easy to understand why many of the world's supply chains have acquired a negative reputation regarding sustainability ⁶. Manufacturers have struggled to balance competition and economic fluctuations with the complexities of environmental and societal challenges from their suppliers and customers.

The time to act is now. Not only is there a financial and a moral case, available technology solutions exist that can deliver real balance sheet and sustainability improvements today and in the future.

Today every business can contribute to the United Nations sustainability vision. Challenge ready and armed with connectivity, control, autonomy and a spirit of collaboration, today's globally complex, circular end-to-end supply chains can make the right decisions, to become true environmental and social champions.

Microsoft and BlueYonder are partnering collaboratively to enable the transition to the resilient and sustainable supply chain of the future.

- Balancing business sustainability with social and environmental sustainability
- Moving from cost and service to environmental care
- Embedding sustainability and resiliency in the supply chain
- Digital enablement of the sustainable supply chain
- Moving from linear to circular supply chains
- The importance of ecosystems

⁵ Creating a Blueprint for UK Competitiveness
⁶ Starting at the source: Sustainability in supply chains, McKinsey

To continue the conversation on the key themes in this paper please visit:

<https://www.microsoft.com/en-us/industry/manufacturing/intelligent-supply-chain>

<https://blog.blueyonder.com/category/sustainability>

<https://blueyonder.com/knowledge-center/collateral/supply-chains-save-the-world-wp>

Additional links:

<https://info.microsoft.com/www-landing-intelligent-supply-chain.html?cid=en-us>

<https://www.microsoft.com/en-us/industry/manufacturing/intelligent-supply-chain>