



Supply-chain resilience in a disrupted world

Foreword



The pandemic revealed just how crucial resilient supply-chains are to ensure the continued delivery of critical goods for society. Across the globe, governments raced to access finite PPE supplies, which drove up prices and, in some cases, led to the delivery of substandard goods. Even recently, supply-chain difficulties have continued to cause shortages of goods — whether of food or test tubes — that we previously took for granted.

No one can predict every potential source of global instability or spike in demand. Holding excessive stock to fully mitigate against such events is prohibitively costly and unrealistic. Instead, our focus needs to be on building resilience within supply-chains so that governments and businesses can react quickly and effectively when disruption occurs.

Advanced technology is a crucial part of achieving this resilience. At Ligentia, we know from our own end-to-end supply chain platform – Ligentix – just how valuable such technology can be, both to improve the efficiency of supply-chains in normal times and to deliver the agility to respond effectively to unexpected events. Our experience as supply chain experts is that there are significant resilience benefits to using such technology from increased visibility, automation and third-party system integration.

Advanced supply-chain technology can also play a crucial role in reducing emissions and achieving wider ESG objectives. Data-driven analysis can allow governments and businesses to identify high-emissions parts of their supply-chain and find alternative routes and modes, as well as helping them to make efficiencies by minimising shipments. Such technology can also ensure greater transparency across the supply-chain, helping businesses to make responsible decisions and ensure compliance.

The private sector will continue to be the main driver of innovation in supply-chain management technology. But there is an important role for government in optimising the policy environment. Our hope is that the recommendations in this paper provide a basis for discussion as to how best to utilise this technology to the wider benefit of businesses and society. They reflect our experience of having spent 25 years supporting companies and governments in tackling supply-chain challenges and making the most of opportunities across the globe. I look forward to continuing to engage with colleagues across government and the private sector on these issues.

DAN GILL,
Chief Customer Officer

FOREWORD	2
POLICY RECOMMENDATIONS	4
THE CHALLENGE	5
THE IMPORTANCE OF RESILIENCE IN SUPPLY-CHAINS	8
ESG-DRIVEN SUPPLY-CHAINS	11
INVESTING IN ADVANCED TECHNOLOGY	13
OPTIMISING THE POLICY RESPONSE	16

Policy recommendations

The government should consider the following:

TECHNOLOGY

- 01** Launch a review of the use of advanced technology in supply-chain management in both the public and private sectors
- 02** Establish an expert working group on technological innovation in supply-chains

DIGITALISATION

- 03** Extend existing digitisation programmes to fund technological upgrades for public-sector organisations, including the NHS
- 04** Introduce incentives to upgrade the digital capabilities and capacity of UK ports, especially outside the Greater South East
- 05** Upgrade existing freeports to create 'digital freeports' through a digital platform linking them

INFRASTRUCTURE

- 06** Develop a landside strategy to improve the efficiency of UK ports, including considering land use and rail-freight capacity

INVESTMENT

- 07** Introduce incentives, such as tax reliefs, to encourage investment, in particular by SMEs, in supply-chain technology

INTERNATIONAL AGREEMENTS

- 08** Explore the possibility of negotiating supply-chain agreements with other countries and major trading centres

NET ZERO

- 09** Set a specific target to reduce UK supply-chain emissions and develop a strategy with industry to achieve it

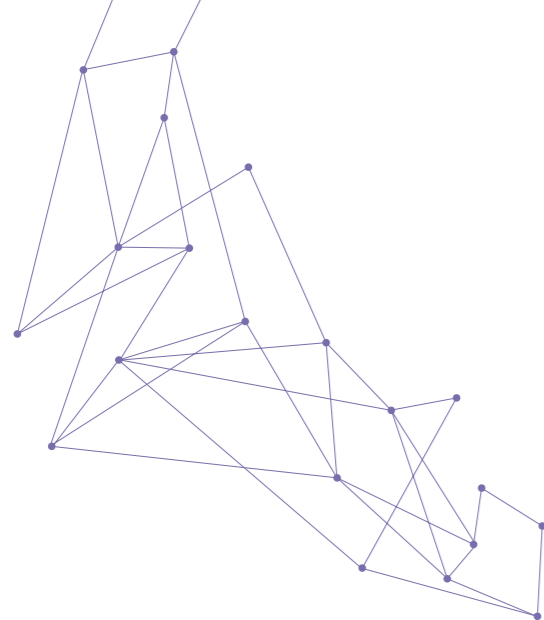
ESG

- 10** Establish an industry-led body to gather authoritative data and information, and provide analysis on ESG developments and risks within major UK supply-chains



The challenge

The pandemic has triggered a debate on how to make supply-chains more resilient in an increasingly volatile world.



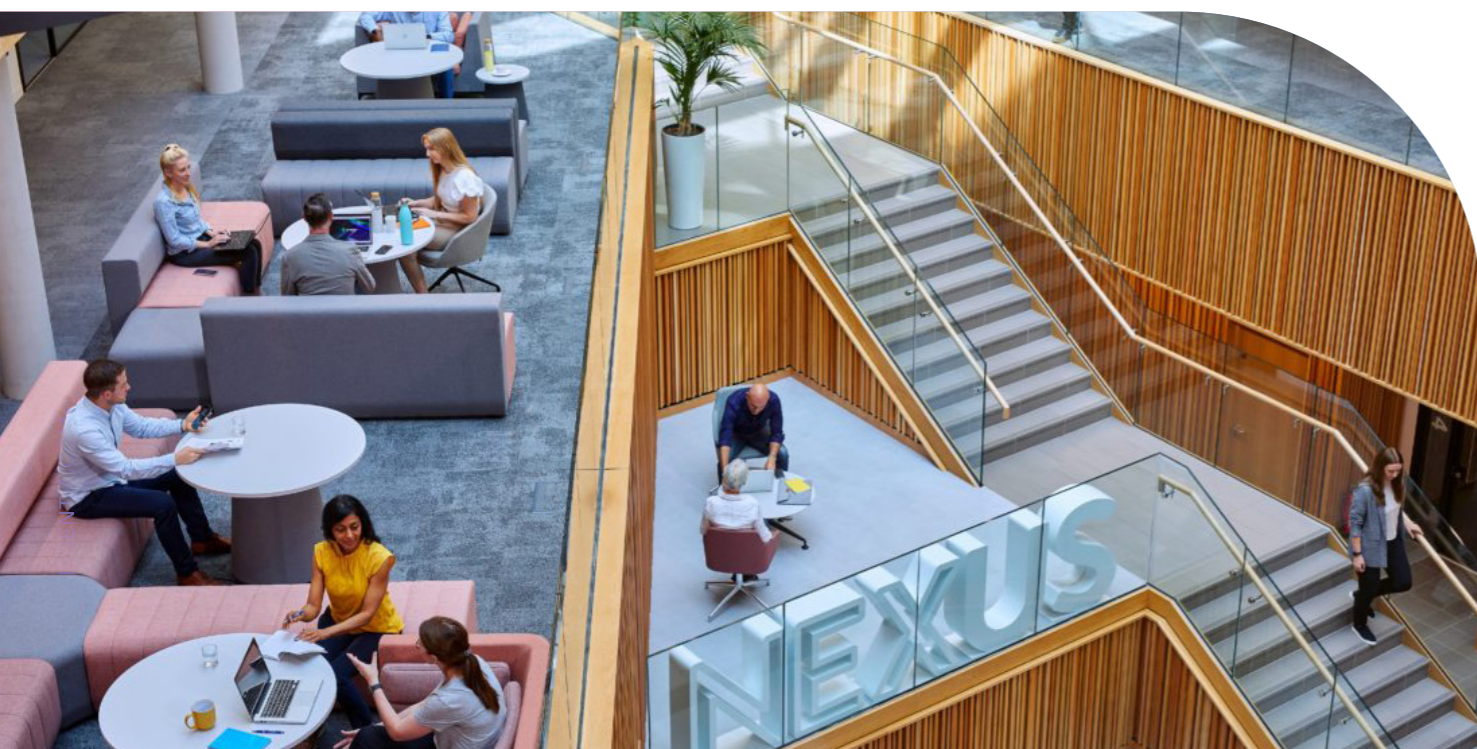
From extreme climate events to rising geopolitical tensions and economic shocks, governments and businesses are re-thinking how their operating models can weather an array of challenges while continuing to serve customers effectively and competitively. This is in part because the pandemic imposed a range of unique supply and demand shocks on global supply-chains, and in part because it exposed underlying vulnerabilities of 'just-in-time' supply models that prioritise low inventories and cost reduction over security of supply.

This debate has evolved over the past 18 months, from initial calls for reshoring and nearshoring towards a more nuanced debate on how to strengthen resilience while maintaining global supply-chains. The average Tier 1 company has over 5,000 suppliers spread across diverse markets, which complicates efforts to bring supply-chains closer to 'home'.¹ Moreover, policymakers have increasingly recognised the costs of reshoring supply-chains. These stem from the fact that many industries depend on economies of scale, lower labour costs and raw materials that can only be sourced abroad. A higher geographical concentration of supply-chains also risks increasing vulnerabilities to localised shocks. Reflecting on these drawbacks, the resiliency debate is now broadening to consider the role of other policy measures and business strategies to help supply-chains weather disruption and maintain operations during crises. These include leveraging technology to enhance real-time visibility of operations across markets, forecasting and simulating disruptions to better prepare for real-life events, adding embedded elements of redundancies to absorb disruptions, and increasing flexibility to quickly switch suppliers.

Modern-day challenges facing supply-chains can be analysed through five main lenses: physical and societal; economic; geopolitical; digital; and environmental challenges.



'Just-in-time' models, which can be highly sensitive to delays, experienced particularly acute challenges during the pandemic.



PHYSICAL AND SOCIETAL CHALLENGES

Physical and societal challenges can disrupt supply-chain nodes where products are processed, distributed and sold. These external shocks include social restrictions adopted in response to surges in Covid-19 cases, labour disputes shutting down factories or ports, and man-made accidents such as the blockage of the Suez Canal in March 2021, which disrupted an estimated £7 billion in global trade. The combination of Brexit and tightened UK immigration policy, coupled with the pandemic and structural labour challenges, contributed to the UK's 100,000 HGV driver shortage by summer 2021.² This, in turn, contributed to panic buying by consumers, which caused over a third of petrol stations to temporarily run out of fuel in early autumn and further exacerbated bottlenecks and delays.³

Businesses need timely visibility to respond to these shocks. Moreover, geographically concentrated production and distribution hubs, as well as long supply-chains where products frequently change hands, can exacerbate the impact of these shocks. 'Just-in-time' models, which can be highly sensitive to delays, experienced particularly acute challenges during the pandemic. Responding to these disruptions, businesses often feel pressure to pivot supply-chains through alternative nodes, but reliable suppliers and routes can be difficult to find and act upon in a short time span.

ECONOMIC CHALLENGES

Economic challenges can affect demand pressure on supply-chains and reshape the overall context for cross-border trade. Inflationary pressures, fluctuating exchange rates, fiscal crises and asset bubbles can increase the costs of cross-border trade and make demand more volatile. This is especially the case in the wake of the pandemic, with headline IMF inflation rates in 2021 increasing on average globally.⁴ Among advanced economies, such as the UK, inflation has recently outpaced market expectations, with the Consumer Price Index hitting a ten-year high of 5.4% in December 2021.⁵ Corporates and investors are therefore compelled to horizon-scan risks and understand how macroeconomic shocks can manifest into supply-chain disruptions and impact a firm's bottom-line.

GEOPOLITICAL CHALLENGES

Geopolitical challenges can shift trade flows and fundamentally alter the decision-making context for supply-chain planning. Political instability, diplomatic fall outs, border frictions and tit-for-tat retaliatory trade measures can politicise and influence operational decision-making, ranging from market-entry decisions to choices around establishing joint-ventures and managing foreign direct investment (FDI) flows. Trade-intensive industries, along with those deemed 'critical' industries such as life sciences, are more exposed to these trends. Industry and governments alike are thus increasingly forced to consider,

1 McKinsey, 'Effectively implementing President Biden's supply-chain review.'
2 Road Haulage Association, 'A Report on the Driver Shortage.'
3 Petrol Retailers Association, 'Fuel Crisis: latest statement.'

for instance, the implications of rising US-China geopolitical tensions and the potential impact of 'decoupling' on operations. Furthermore, geopolitical risks can also strengthen political forces favouring protectionist policies and raise uncertainty for businesses making long-term strategic decisions.

DIGITAL CHALLENGES

Digital challenges can threaten supply-chain nodes and the logistical links between them. As digitally-enabled transactions transform how goods and services are delivered, businesses have become ever more concerned about cybersecurity risks. Cyberattacks originating anywhere, from individual hackers to state-sponsored entities, can disrupt critical infrastructure, delay deliveries and facilitate intellectual property theft. Moreover, inadequate digital infrastructure and fragmented digital regulatory landscapes between the US, EU, China and emerging markets can impede free and secure data flows. This hinders the ability of companies to engage both suppliers and customers, undermining opportunities brought by digital trade. Additionally, emerging technologies such as 3D printing will likely further disrupt traditional supply-chain models and bring about new policy and commercial challenges.

ENVIRONMENTAL CHALLENGES

Environment challenges can physically disrupt supply nodes and are increasingly reshaping the parameters of global value chains. As the frequency of extreme weather events and other climate-related shocks increases, supply-chains are more exposed to risks of disruption. In 2019 alone, 40 weather disasters resulted in damages each exceeding over US\$1 billion.⁶ Labour-intensive industries such as textiles are particularly vulnerable to environmental risks such as floods and heat waves. Additionally, the rising political impetus to reduce greenhouse gas emissions, as well as to incorporate broader environmental and social standards in supply-chains, has propelled policymakers towards adopting stronger environmental, social and governance (ESG) mandates. Following Germany's new supply-chain due diligence law, for instance, the EU is currently drafting similar legislation that will strengthen compliance obligations for a significant number of businesses and impact operations in third-country markets. Companies increasingly need to be aware of their full operations, as well as those of their suppliers. Businesses may face stronger obligations to intervene in cases of non-compliance, as well as both internal and external pressures to adapt supply-chains to align with ESG objectives.

None of these challenges occurs in a vacuum. The interactions between them can often amplify the operational impact of certain shocks and pose a myriad of challenges to businesses, who must now more than ever consider strategies to reduce vulnerabilities and adapt to new threats.

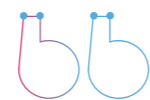
4 IMF, 'World Economic Outlook, October 2021.'
5 Office for National Statistics, 'Consumer price inflation, UK: November 2021.'
6 McKinsey, 'Risk, resilience, and rebalancing in global value chains.'

The importance of resilience in supply-chains

As supply-chain models are reconsidered to meet contemporary challenges, businesses across sectors face difficulties in balancing efforts between generating efficiencies and strengthening resiliency.

Rather than adopting a one-size-fits-all approach, the optimal blend between efficiency and resiliency will depend on the specifics of a business's supply-chain architecture, as well as the nature of the challenges they face. All this points to a need for better data on supply-chain operations, a greater understanding of potential risks and tailored strategies to respond to short- and long-term challenges. Artificial intelligence (AI), and machine-learning in particular, alongside other advanced technologies can boost efforts to simultaneously generate efficiency and strengthen resiliency while optimising upfront investments for long-term impact.

While an array of strategies may be triaged to strengthen supply-chain resilience, advanced technologies can be leveraged in three key ways to: increase visibility, enhance flexibility and embed elements of redundancies.



Advanced technologies can provide timely and accurate information about alternative supply routes and prospective partners to allow for data-informed decision-making.

INCREASED VISIBILITY

Increased visibility across complex supply-chains allows businesses and public-sector organisations to forecast, simulate and effectively respond to disruptions while also improving compliance. Digital tools can serve as early-warning systems, as well as facilitate data-led strategic planning. This can even help companies seeking to shorten supply-chains and regionalise production to mitigate risks stemming from geographical concentration. For instance, Biogen responded more effectively to Hurricane Maria in 2017 than several biotechnology competitors, in part because the company simulated scenarios to identify likely threats to production lines and downstream clinical trials.⁷ Additionally, digital technologies can enhance real-time visibility of supply-chains and help businesses identify non-compliance at source to reduce the number of failures once products arrive at their destination. Moreover, as the trend towards stronger due diligence laws continues, companies will need tools to increase transparency over the extended operations of their suppliers in addition to their own supply-chains.

ENHANCED FLEXIBILITY

Enhanced flexibility can help businesses and public-sector organisations to switch seamlessly to alternative suppliers and distribution centres when primary operators and routes are strained or blocked, as well as to diversify supplier bases in the long term to prepare for a variety of shocks. During the pandemic, for instance, National Safety Apparel managed to sustain its 'just-in-time' system for textile apparel and outperform competitors because the Ohio-based company had previously diversified its suppliers away from single sources and was able to more flexibly pivot operations to trusted secondary partners.⁸ Speed alone is not sufficient to mitigate disruption. Rather, companies need to ensure the reliability of alternative operators or could risk exacerbating a crisis. Advanced technologies can provide timely and accurate information about alternative supply routes and prospective partners to allow for data-informed decision-making.

EMBEDDED ELEMENTS OF REDUNDANCIES

Embedded elements of redundancies enable businesses and public-sector organisations to quickly respond to surges in demand by boosting capacity. Spare production and distribution capacity embedded in supply-chains allows businesses to swiftly ramp up production. While widespread stockpiling can be expensive, strategic increases in critical inventory, as well as the standardisation of components, can reduce relative upfront investment costs and position businesses to be more agile when responding to disruption. Following earthquakes in Japan in 2016 and 2019, for instance, Toyota successfully restarted production processes in two weeks or less compared to two months of production stoppages during

the 2011 earthquake because the company's supply-chains had been transformed to become more resilient, with embedded elements of redundancies.⁹ Toyota standardised some components, regionalised previously global supply-chains to isolate disruptions, and worked with single-source suppliers to disperse upstream production to multiple sites and bolster inventories of critical products.

Companies can triage different forms of resilience to strengthen capacity in order to absorb shocks while keeping costs down. A major high street retailer partnered with Ligentia to successfully blend efficiency objectives with a resilience-oriented strategy, which also generated annual savings of around £400,000 while maintaining high stock availability. As a large company with complex global supply-chains, the company consolidated distribution hubs in China from 15 to three high-volume sites and improved shipping efficiency by reducing the overall number of shipments and eliminated all partial container shipments. This helped to cut logistics costs by 22%. The firm also reduced vulnerability to geographical concentration risks and increased capacity to effectively respond to external shocks by employing our Ligentix™ technology. This allowed our client to ascertain detailed visibility over the company's entire supply-chains and to gain greater control over stock and gauge the reliability of delivery dates. This demonstrates that resilience strategies do not always have to be implemented at the expense of cost sensitivities — indeed, security of supply and efficiency can be two sides of the same coin.

Governments can also leverage advanced technologies to increase the resilience of supply-chains of large public-sector organisations and key sectors of their economies. Increased awareness of intricate supply-chains and vulnerabilities at both micro and macro levels can help policymakers to mitigate disruptions, as well as design policies in a way that minimises potential negative impacts. For example, while policymakers may seek to incentivise nearshoring and onshoring of critical production for national security purposes, reliable data analytics and forecasting models can help decision-makers to develop those policies with precision in order to avoid implementing sweeping regulations that could result in unintended consequences, harming their own economy.

Against a backdrop of increasingly complex challenges to supply-chains in the wake of Covid-19, businesses and governments face mounting pressure to secure supply-chains while keeping costs manageable. The success of resilience strategies that mitigate disruptions and respond effectively to surges in demand, often leveraging advanced technologies to bolster visibility and flexibility, show that striking this equilibrium is possible. Indeed, it is necessary if businesses are to thrive in a post-pandemic landscape.

⁷ McKinsey, 'Risk, resilience, and rebalancing in global value chains'

⁸ Forbes, 'One Manufacturer's Lessons For Handling The Supply-chain Shock Of 2021'

⁹ McKinsey, 'Risk, resilience, and rebalancing in global value chains'

ESG-driven supply-chains



Technology can be used not just to understand where emissions are concentrated in the supply-chain, but also provide insight on ways to reduce these emissions.

One of the biggest challenges facing businesses when it comes to setting ESG strategies is how to engage on sustainability issues within supply-chains. Although best practice for managing ESG issues within a business is increasingly well understood and implemented, there remain opportunities to bridge the gap between government policy and business strategy when it comes to applying this to supply-chains.

In general, there are two key opportunities for how technology could be better utilised within supply-chains in order to drive better outcomes on ESG issues:

- 01 efficiency improvements that support decarbonisation; and
- 02 increased transparency to improve outcomes on environmental and ethical issues.

DRIVING DECARBONISATION THROUGH EFFICIENCIES

For most sectors, the majority of emissions are concentrated in the supply-chain. For example, in the healthcare sector, 71% of healthcare emissions are scope three (supply-chain) emissions, generated through the production, transport, and disposal of goods and services.¹⁰ Indeed, eight key supply-chains (food, construction, fashion, FMCG, electronics, autos, professional services and freight) account for more than 50% of global emissions.¹¹

A key challenge facing businesses is being able to measure the environmental footprint of their supply-chain. In particular, many businesses find it difficult to find sufficiently detailed and transparent information on where emissions are concentrated within their supply-chains. This is often due to major sources of emissions often being 'buried' deep in the supply-chain, potentially in geographies where technologies that enable a greater level of transparency on emissions are poorer.

Technology can be used not just to understand where emissions are concentrated in the supply-chain, but also provide insight on ways to reduce these emissions. For example, technology can provide insight on where emissions are concentrated by country of origin or transport mode. It can also be used to analyse the best route options in terms of emissions, and increase the energy efficiency of supply-chains through simple measures such as ensuring container ships are full before being transported. Furthermore, remote sensors planted in agricultural fields or manufacturing warehouses can be used to gather data on emissions, as well as on other ESG issues such as water use or food safety.

SUPPLY-CHAIN TRANSPARENCY

A second big challenge facing businesses when it comes to addressing ESG in supply-chains is transparency. A high level of supply-chain transparency is needed in order to understand the indirect exposure that a business has to ESG issues such as potential human rights abuses, deforestation and corruption.

Technology can be used to drive greater levels of transparency on these issues, which in turn can help support more ethical and sustainable supply-chains. Multiple tools and resources now exist that enable businesses to have greater levels of transparency into exactly where their products are coming from and the ESG risks that they might be exposed to as a result. Blockchain, for example, and technologies to support enhanced chain of custody verification, can be used across supply-chains to help companies increase their knowledge of the origin, quality and any relevant certifications associated with products.

However, there remain gaps that need to be overcome. For example, there are significant discrepancies between the amount and quality of data collected from different sites, as well as the accuracy and honesty of the data collected.

HOW ENGAGING ON THESE ISSUES CAN SUPPORT UK GOVERNMENT POLICY

Engaging on these issues will help to support government policy in two key areas: Net Zero and human rights.

Net Zero agenda

Transparency on ESG issues within supply-chains, in particular to help increase understanding of where emissions are concentrated and the steps that can be taken to reduce emissions, will be necessary for the UK government to achieve its Net Zero ambitions. With the UK government's target to reduce its emissions by an ambitious 78% by 2035, and reach Net Zero by 2050, addressing the area where the majority of emissions are concentrated will be critical.

Human rights

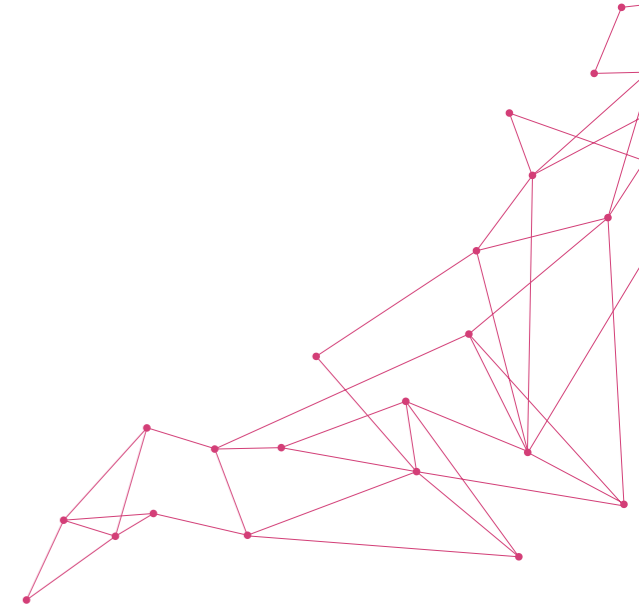
An increased level of transparency across supply-chains is also aligned with the interests of government in addressing the UK's exposure to human rights and forced labour issues. This has recently moved up the political agenda, with a greater awareness of the need to address human rights issues in which UK businesses may unknowingly be complicit. This means that, increasingly, companies are required to report on how they are implementing systems and processes, including technology, to verify claims and reports being made by suppliers.

¹⁰ European Journal of Public Health, September 2020.

¹¹ World Economic Forum, 'Net-Zero Challenge: The supply-chain opportunity'.

Investing in advanced technology

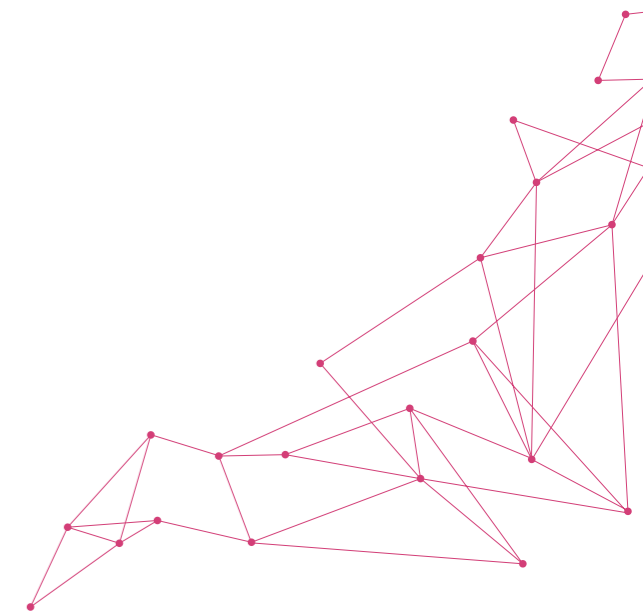
Advanced technology, particularly that which leverages artificial intelligence, can play a major role in mitigating supply-chain risks and taking advantage of commercial opportunities.



Across government, there is already an ambitious agenda to advance the development and adoption of advanced technologies throughout the economy to secure the UK's competitiveness. In the Integrated Review of Security, Defence, Development and Foreign Policy, the government set an aim to cement the UK's position as a 'science and technology superpower' by 2030, with digital technologies identified as a crucial area of UK competitive advantage. The Innovation Strategy identified AI and digital technologies as one of the government's seven priority technology families. The National Data Strategy concluded that expanding access to and use of data across the economy was a key opportunity to boost productivity and trade. And within the NHS, NHS Supply-chain identified strengthening supply-chain resilience as one of its five corporate priorities in its 2021/22 business plan, notably through investing in its technology and systems. This unambiguous support across government for expanding and deepening the adoption of advanced technologies across the economy, within government itself and within supply-chains, is to be thoroughly welcomed.

Investing in advanced technology

Advanced technology, particularly that which leverages artificial intelligence, can play a major role in mitigating supply-chain risks and taking advantage of commercial opportunities.



Across government, there is already an ambitious agenda to advance the development and adoption of advanced technologies throughout the economy to secure the UK's competitiveness. In the Integrated Review of Security, Defence, Development and Foreign Policy, the government set an aim to cement the UK's position as a 'science and technology superpower' by 2030, with digital technologies identified as a crucial area of UK competitive advantage. The Innovation Strategy identified AI and digital technologies as one of the government's seven priority technology families. The National Data Strategy concluded that expanding access to and use of data across the economy was a key opportunity to boost productivity and trade. And within the NHS, NHS Supply-chain identified strengthening supply-chain resilience as one of its five corporate priorities in its 2021/22 business plan, notably through investing in its technology and systems. This unambiguous support across government for expanding and deepening the adoption of advanced technologies across the economy, within government itself and within supply-chains, is to be thoroughly welcomed.

As experienced practitioners who have both developed and deployed such technology in the commercial world, in partnership with businesses with complex global supply-chains, we strongly support the government's commitment in this area. Our first-hand experience of the commercial and ESG benefits that such technology can provide has helped organisations to be both more competitive and more responsible. Advanced supply-chain technology meets many of the challenges we identified above in increasing resilience. There are five main benefits.



FLEXIBILITY

AI-driven supply-chain technology can give organisations visibility of alternative supply routes, shipping patterns and transport methods at all points in the transit journey, allowing them to take account of cost, disruptions and environmental impact



RESPONSIVENESS

Real-time end-to-end visibility over the entire supply-chain allows organisations to respond quickly to disruption at any point in the transit journey, reducing the impact of unforeseen events



TRANSPARENCY

Advanced supply-chain technology can offer visibility over the source origin of goods, the environmental impact of transport and allow organisations to check standards compliance before goods are shipped



EFFICIENCIES

Tech-enabled analysis of supply-chains, alongside the flexibilities that this technology provides, ensures that the transit and storage of goods is rationalised, with greater visibility providing confidence to cut some redundant deliveries



EMISSIONS REDUCTIONS

With greater visibility over the environmental impact of supply-chain activities, organisations can better identify the most emission-intensive aspects of their supply-chains, as well as reducing their overall number of deliveries by rationalising transit movements with greater confidence



PUBLIC-SECTOR USE

At the height of the personal protective equipment (PPE) crisis at the start of the pandemic, being able to leverage our AI-driven technology allowed us to make vital deliveries of PPE to the UK. In May 2020, we chartered aircraft to deliver over 10,000,000 pieces of PPE to the NHS. In April 2020, we moved the first shipment into the UK of Shield Aerosol's Disposable Resuscitation, Intubation and Nebulisation Kit Shield (DRS-INK Shield) to protect frontline staff while treating Covid-19 patients.

Ligentix, our supply chain technology platform, provided end-to-end visibility for the movement of stock, starting from when suppliers placed bookings for shipment, through on-water visibility and delivery management to the final destination in the UK. All documentation, as well as audit trails, were available through Ligentix to allow complete control and compliance management. Ligentix also provided instant reporting functionality, as well as in-depth analytics setting out the performance of all parties in the supply-chain and insights into costs at every stage. All parties had access to Ligentix, allowing complete connectivity and instant visibility, as well as exception management and alerting based on critical paths for all shipments.

PRIVATE-SECTOR USE

At the onset of the pandemic, one of our corporate clients, a UK PPE provider, experienced a sudden surge in orders, which they were not then set up to process. Using our Ligentix technology, in just 48 hours we were able to establish UK warehousing to receive, pick and dispatch over 15,000 orders. Our supply-chain technology gave the firm visibility over their entire supply-chain, allowed them to engage with suppliers in origin countries, and monitor and report on inbound shipments, as well as speed up processing at customs by ensuring the correct documentation before items were dispatched.

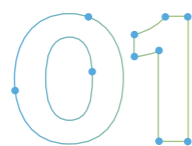
A pandemic is thankfully a rare event. But even since it began there has been substantial disruption to key supply routes and ports across the world. In March 2021, the blocking of the Suez Canal by the Ever Given container ship led to almost 400 vessels being prevented from moving through the canal and billions of pounds of trade disrupted. Throughout the summer of 2021, there was disruption to major Chinese ports, including Yantian, Shekou and Nansha, due to Covid-19 outbreaks, causing weeks of delays and forcing ships to reroute. Air cargo from China was also affected. In September 2021, a number of Chinese factories were forced to shut down due to power rationing, with a knock-on effect on industrial production and supply-chains. In October 2021, the UK's HGV driver shortage led to a serious backlog at Felixstowe port, with some ships rerouting to avoid being delayed in the UK.

With some global disruption from Covid-19 likely to continue for the foreseeable future and the supply-side squeeze continuing to play out, any number of issues could continue to disrupt key supplies to the UK. There is no way to completely mitigate these risks, but advanced supply-chain technology enables governments and businesses to see disruption early, identify alternative supply routes and modes, and minimise the end-market effects in the UK.



Optimising the policy response

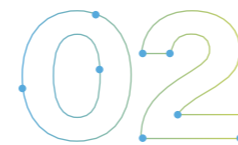
The private sector will continue to be the main driver of technological innovation in supply-chain management. However, the government has an important role to play in optimising the policy environment to better enable private-sector innovation and take up of such technologies. The recommendations below offer a series of practical steps that the government could consider to help deepen and expand the technology base of trading firms in the UK. They are based on our experience as practitioners in the use of technology in supply-chain management and our understanding of where gaps exist that the private sector is unlikely to fill alone. Each recommendation is followed by a short explanatory rationale.



TECHNOLOGY

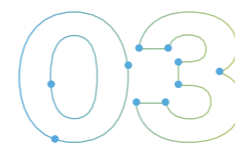
Consider launching a review of the use of advanced technology in supply-chain management among UK firms and major public-sector organisations, including the NHS, to understand the 'state of play.'

Rationale: The first step in improving the digitisation of UK supply-chains is to understand the current use of advanced technology in supply-chain management. Our experience as practitioners is that there are large productivity and resilience gains to be made by using such technology but that it is underutilised. A review would identify the scale of the opportunity and the areas in which government support measures could be best targeted.



Consider establishing an expert working group on innovation in supply-chain management.

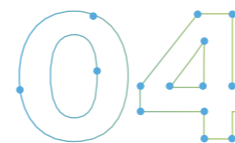
Rationale: Innovation in supply-chain technology is constant. To ensure that policymakers continue to be informed by the latest thinking within the industry, we suggest that the government consider setting up an expert working group on innovation in supply-chain management. It could be established as a standing committee that meets quarterly and also act as an advisory group when major supply-chain disruption occurs that could have a substantial impact on the UK. This would work best as a cross-departmental working group, comprising officials from departments with major interests in UK supply-chain resilience, such as the Department for Health and Social Care and the Cabinet Office, as well as private-sector actors.



DIGITALISATION

For public-sector organisations, such as the NHS, the government could consider funding technological upgrades by extending existing digitalisation programmes.

Rationale: The NHS Long Term Plan identified developing digitally-enabled care as one of its key medium-term priorities to both improve patient outcomes and generate savings and efficiencies. NHS Supply-chain has also identified investing in technological capacity and resilience as one of its main priorities. Advanced supply-chain technology can generate significant savings and help manage more flexible and resilient networks of suppliers in crucial areas of public policy such as healthcare.



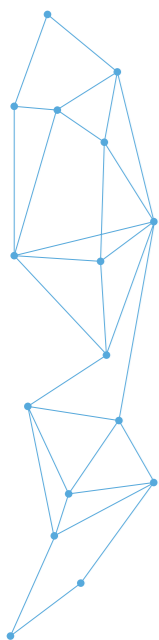
Consider investment to upgrade the digital capabilities and capacity of UK ports, especially those outside of the Greater South East.

Rationale: One of the major vulnerabilities of UK supply-chains highlighted during preparations for leaving the EU was the disproportionate reliance on entry routes in the south east of England. It would serve both UK supply-chain security and bring economic benefits to other regions to ensure that ports in other parts of the country are capable of managing an increased throughput of freight. Our experience shows that there are many benefits of diversifying port use, bringing economic benefits to local economies and reducing road haulage emissions by transporting goods closer to their end destination.



Consider upgrading the existing freeport scheme to create 'digital freeports' through the creation of a single platform linking freeports when they come online.

Rationale: As the government's eight proposed freeports become operational, it is important that they do not become 'islands of opportunity' but are linked to one another and the wider economy. To do that, we suggest that the government consider procuring a single digital supply-chain platform to allow freeports to be interlinked and better connected. This would allow more interaction and collaboration between businesses located in each of the UK's future freeports, ensuring that economic activity does not cluster only in freeports located in the south east of England, for instance.



06

INFRASTRUCTURE

Consider developing a landside strategy to improve the efficiency of UK ports, including reconsidering land use to increase capacity and rail-freight frequency.

Rationale: As evidenced by recent disruption at Felixstowe due to a lack of HGV drivers to move freight out of the terminal, the pinchpoints in supply-chains can often be on arrival rather than the source location of goods. It is important that policymakers consider the entire, end-to-end supply-chain, including domestic capacity. This is crucial to ensure that UK ports remain competitive. Some of the main issues are a lack of capacity due to land constraints around UK ports and insufficient frequency and development of rail-freight services. We suggest the government comprehensively review landside issues around UK ports in order to develop a holistic strategy to alleviate bottlenecks.

07

INVESTMENT

Consider introducing incentives, such as tax reliefs, to encourage uptake of advanced supply-chain technology.

Rationale: Investment in digital technology is often a substantial upfront cost that many businesses are reluctant to commit to. The government has rightly identified the need to upgrade both the UK's public and private capital stock to ensure future economic competitiveness and that low levels of business investment is a longstanding, economy-wide challenge. Given the public interest in ensuring resilient supply-chains, but recognising that individual firms may be willing to withstand disproportionate risk over making such investments, government incentives could play an important role in encouraging private-sector investment.

08

INTERNATIONAL AGREEMENTS

Consider exploring the possibility of negotiating supply-chain agreements with other countries and major trading centres.

Rationale: Cooperation across jurisdictions is a crucial feature of resilient and flexible supply-chains and a challenge that all countries and jurisdictions face. This cooperation could be formalised through international agreements. These agreements could include mutual access to live data on stock levels using advanced supply-chain technology (subject to data protection laws) and agreements to cooperate on sharing stock across borders, where appropriate, to ensure greater resilience. This could take the form of a framework to which private companies from respective jurisdictions join and which is managed by its members.

09

NET ZERO

Consider setting an interim 2035 target to reduce UK supply-chain emissions

Rationale: Although there is both a commercial and environmental benefit to improving supply-chain efficiency, an interim target would send a clear message to the market about the expected direction of travel. This would need to be accompanied by a government strategy setting out the measures required by government and businesses to reach this target. The first step would need to be an assessment of the GHG emissions currently attributable to UK supply-chains in order to identify the priority areas for action.

10

ESG

Consider establishing an industry-led body to gather authoritative data and information, and provide analysis on ESG developments and risks within major UK supply-chains

Rationale: SMEs in particular do not have the resources or capacity to commit to supply-chain intelligence and would greatly benefit from industry-led guidance on best practice. This body could report annually to government and Parliament with the key developments and risks within major origin destinations, and source locations for raw materials, for UK imports. It could also provide recommendations to government and business, setting out best practice in minimising negative social impacts within supply-chains.



hello@ligentia.global
www.ligentia.com
+44 (0)113 344 4000
🐦 @Ligentia

ligentia™

Ligentia UK Ltd
Ligentia House, 6 Butler Way, Leeds, LS28 6EA
© Ligentia Group 2021