

Supply Chains

STRATEGIC INTELLIGENCE BRIEFING

Curated with Kühne Logistics University

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Contents

3	Executive summary
4	1 Latest insights
4	1.1 Current perspectives
7	2 Strategic context
7	2.1 Human Resource Issues
8	2.2 Trade Flows and Value Chains
9	2.3 E-commerce and Logistics
9	2.4 Decarbonizing Supply Chains
10	2.5 Digital and Hardware Innovation
10	2.6 Humanitarian and Health Supply Chains
11	2.7 Prioritizing Resilience
11	2.8 Infrastructure and Real Estate
13	3 Further exploration
15	About Strategic Intelligence
17	Contributors
17	Acknowledgements
18	References

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Executive summary



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online

Supply chains are the circulatory system of the global economy, providing access to the things we need to support commerce and sustain life. Despite their vital importance, most people have traditionally had little appreciation of the complexity of supply chains, and only noticed them when they were disrupted during the pandemic. Even prior to COVID-19, their vulnerability and environmental impact had become major sources of concern. The responsibility for much of the physical movement, handling, and storage of products has been outsourced to specialized logistics service providers, whose operations are growing ever more complex.

This briefing is based on the views of a wide range of experts from the World Economic Forum's Expert Network and is curated in partnership with Professor Alan McKinnon and colleagues at Kühne Logistics University.

The key issues shaping and influencing Supply Chains are as follows:

Human Resource Issues

The pandemic has accentuated deep-rooted problems in terms of recruitment and retention of logistics labour and management

Trade Flows and Value Chains

There is little hard evidence to suggest significant de-globalization is underway

E-commerce and Logistics

Cities have become fertile terrain for innovation, much of it to increase the speed and convenience of last-mile delivery

Decarbonizing Supply Chains

More decisive policies and fuller exploitation of technology are required for necessary emissions reductions

Digital and Hardware Innovation

Freight transport is on the eve of a technological revolution that will spur greater use of renewable energy

Humanitarian and Health Supply Chains

The pandemic has exposed the vulnerability of medical supply chains in developing countries

Prioritizing Resilience

The pandemic has exacerbated pre-existing deficiencies in infrastructure and labour practices

Infrastructure and Real Estate

In many places space used for offices or parking is being repurposed for last-mile delivery

Below is an excerpt from the transformation map for Supply Chains, with key issues shown at the centre and related topics around the perimeter. You can find the full map later in this briefing.



1

Latest insights

A synthesis of the most recent expert analysis.

Below are your latest updates on the topic of Supply Chains spanning 17 different sources.

1.1 Current perspectives



Lowy Institute

Chips, subsidies, security, and great power competition

28 May 2023

Motives in the tech competition between the United States and China pose increasingly difficult policy issues for other economies.



LSE Business Review

Why multi-stakeholder initiatives for sustainable supply chains need a rethink

26 May 2023

Large networks of stakeholders from the public, private and not-for-profit sectors have been created to deal with the complexities of sustainability in global supply chains. However, power and influence are not distributed equally among the individual members of these so-called multi-stakeholder meta-organisations.



IESE

Reducing returns in online shopping

16 May 2023

IESE Insight

Reducing returns in online shopping

Receiving goods in one batch – even at the expense of fast shipping – leads to greater satisfaction and fewer returns.

Consumers want their online orders, and they want them now. That's the received wisdom anyway, with previous studies showing that companies who deliver quickly can expect to be rewarded with

greater spending and word-of-mouth recommendations.



Institute of Developing Economies,
Japan External Trade Organization

Japan's Dependence on China in Supply Chains: Diversion of Imports from China to ASEAN Countries - Institute of Developing Economies

10 May 2023

This study empirically investigates changes in Japan's dependence on China in supply chains from 2012 to 2021.



Brookings

The CHIPS and Science Act won't build inclusive innovation ecosystems on its own

03 May 2023

Since the early 1980s, the U.S. has embraced a predominantly laissez faire approach to economic development. Recently, however, there has been a momentous shift to embrace place-based industrial policy and an intentional effort to reshore "critical industries" through a multitrillion-dollar wave of legislation, including the CHIPS and Science Act (CHIPS), Inflation Reduction Act (IRA), and Infrastructure Investment and Jobs Act (IIJA).



VoxEU

The impact of export controls on international trade: Evidence from the Japan-Korea trade dispute in the semiconductor industry

27 April 2023

Trade restrictions have increasingly been used for national security reasons in recent years. This column studies the impact of export controls in the semiconductor industry applied by Japan on South Korea in 2019.



Cities Today

'Fewer lane miles, fewer problems,' says Houston's transport chief

20 April 2023

Photo: Veronica-Davis

'Fewer lane miles, fewer problems,' says Houston's transport chief

20 April 2023

by Christopher Carey

On the sidelines of the recent Cities Today Institute City Leadership Forum in Houston, Director of Transportation and Drainage Operations Veronica Davis explained how she sees transport evolving.



Raconteur

How to reduce cyber attacks in the global supply chain

21 April 2023

How to reduce cyber attacks in the global supply chain

Last year, 39% of businesses in the UK discovered that they had been the target of cyber attacks.

Those findings, published by the National Cyber Security Centre (NCSC) in its 2022 Cyber Security Breaches Survey, highlight the ever-present, pervasive and persistent nature of cybercrime.

One attack stands out above all others. According to Brad Smith, vice-chairman and president of Microsoft, the attack on US management software company SolarWinds was "the largest and most sophisticated attack ever".



GreenBiz

A tectonic shift in supply chain governance

08 May 2023

A transition is underway to redirect 30 years of corporate strategy that outsourced business operations to lower wage nations with fewer regulations. Newer realities have intruded, including rising geopolitical risks in the Asia-Pacific region, disruptions to extended supply chains during and after the COVID-19 pandemic, accelerating climate change risks, and rising business subsidies from the United States and Europe to re-locate assets closer to home. As a result, major global companies are rethinking procurement and product development for their own facilities and those of related supply chains.

As a practical matter, companies are seeking to optimize all of the above business drivers into a common strategy to both strengthen customer relationships and mitigate business risks.

C-suite executives — including CEOs, CFOs, CSOs and chief supply chain officers — are evaluating at least three major, interrelated supply chain issues:



War on the Rocks

The Art of Supply Chain Interdiction: To Win Without Fighting - War on the Rocks

26 May 2023

In response to drone proliferation and growing risks posed to U.S. ground forces, the U.S. Army tasked the Asymmetric Warfare Group, and later the Threat Systems Management Office, to procure similar drones to those used overseas for counter-drone training.

aPriori



Actionable Digital Transformation Strategies for Manufacturing

11 May 2023

Key Takeaways: Get digital transformation examples across the product development lifecycle. Learn how digitalization applies to product design, manufacturing processes, [...]

The post Actionable Digital Transformation Strategies for Manufacturing appeared first on aPriori .



Science Daily

The future is foggy for Arctic shipping: Warming temperatures and melting sea ice increase fog in the Arctic, creating a costly obstacle for trans-Arctic shipping

27 April 2023

As the Arctic warms and loses sea ice, trans-Arctic shipping has increased, reducing travel time and costs for international trade. However, a new study finds that the Arctic Ocean is getting foggier as ice disappears, reducing visibility and causing costly delays as ships slow to avoid hitting dangerous sea ice.



Observer Research Foundation

Down to the Nanometre: The US-China Chip Race

17 May 2023

China's high economic growth rate in the past several decades has meant bigger military budgets. In turn, its military rise threatens security in the Indo-Pacific region where China seeks to dominate, from the Himalayas to South China Sea and East China Sea. Yet, the China challenge is multifaceted

and covers the nexus between the domain of tech and the military.



Carnegie Endowment for International Peace

The Biden Administration's New Vision for Global Trade and Investment

22 May 2023

In two landmark speeches in recent weeks, Treasury Secretary Janet Yellen and National Security Advisor Jake Sullivan articulated the core principles of a new international economic order centered on industrial policy. In this vision, the U.S. government will take an active role in reshaping supply chains to ensure its national security, fight climate change, and reduce inequality.



World Economic Forum

Why the battle for net-zero may be won or lost by corporate Asia

21 April 2023

Asia now hosts more than half of the world's population and is responsible for more than half of global primary energy consumption. Asia's energy consumption has afforded it accelerated economic growth and a significant emissions burden compounded by the region's position in the global supply chain. A new white paper explores how businesses mitigate the risks from Asia's role in the

climate crisis and the hidden opportunities in their value chains.



Global Investigative Journalism Network

Tips for Using Satellite Imagery in Forensic Investigations, from Amnesty International's Evidence Lab

08 May 2023

When the Myanmar military started conducting airstrikes on its citizens, researchers at Amnesty International began a forensic investigation into the supply chain, using satellite imagery to find out how aviation fuel was getting into the country, and who was supplying it.



Boston Consulting Group

For Chipmakers, the Decarbonization Challenge Lies Upstream

16 May 2023

The semiconductor industry is living a paradox. On the one hand, continuous advances in chip capabilities are propelling the global effort to reduce carbon emissions through electrification and energy efficiency improvements in devices and all types of equipment, from appliances to heavy machinery. On the other hand, semiconductor manufacturing causes significant emissions itself, responsible for as much CO₂ output as half of US households.

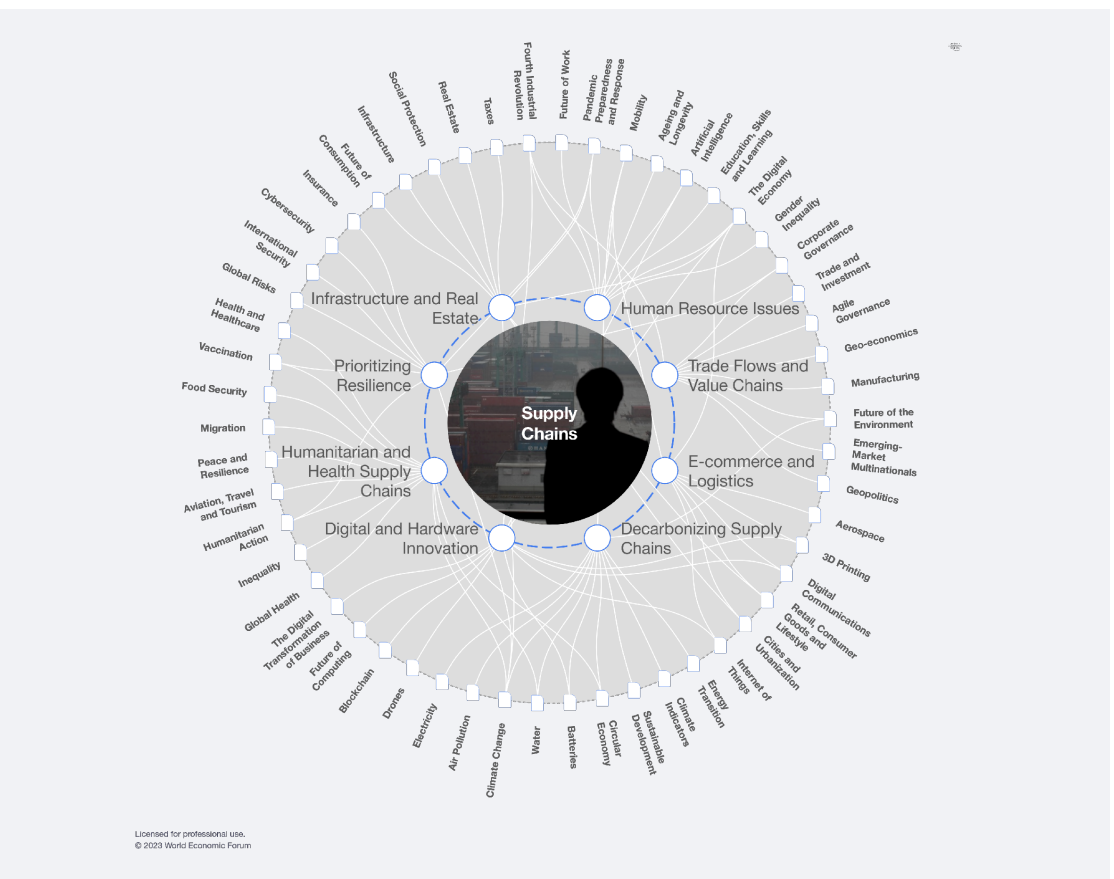
2

Strategic context

The key issues shaping Supply Chains.

The following key issues represent the most strategic trends shaping the topic of Supply Chains. These key issues are also influenced by the other topics depicted on the outer ring of the transformation map.

FIGURE 1 Transformation map for Supply Chains



2.1 Human Resource Issues

The pandemic has accentuated deep-rooted problems in terms of recruitment and retention of logistics labour and management

Despite extensive mechanization and automation, logistics very much remains a labour-intensive activity. It depends heavily on a healthy flow of workers at different occupational and skill levels, but in many countries this flow has been failing to meet demand for many years. The pandemic has exacerbated logistics worker and skills shortages, particularly in countries such as the US and the UK, where they have been responsible for much of the supply chain disruption. A Business Continuity Institute survey indicated that in 2020, 46% of supply chain disruptions were due to “a loss of talent/skills.” The vulnerability of the logistics workforce to the

coronavirus has accentuated deep-rooted problems in terms of recruitment and retention, especially of truck drivers. Following a global review of the truck driver shortage, the International Road Transport Union concluded that the “driver shortage threatens the functioning of road transport, supply chains, trade, the economy, and ultimately employment.” And the human-resource crisis in logistics extends well beyond truck drivers. Logistics service providers also report difficulty in maintaining staffing levels in their warehouses. Shortages can be particularly acute in the fulfilment centres for online retailing, where item-level order-picking is inherently labour-intensive.

E-commerce has also created a huge demand for last-mile delivery drivers that, in many places, has proved hard to satisfy. Increases in the technological sophistication of logistics operations and complexity of supply chains call for new and varied skills at operational and managerial levels. Yet training existing employees and recruiting fresh talent can be difficult during times of tough competition in labour markets. For several years, companies have been reporting a shortage of qualified managers for supply chain roles in both developed countries and emerging markets. These shortages have been attributed to several factors. For workers, they include uncompetitive pay, poor working conditions, an ageing workforce, an image problem for the sector, and a lack of training and career progression. Meanwhile the growth in demand for logistics services has been unrelenting. Efforts to professionalize employment have been undermined by the growth of the gig economy, which has fostered a pool of casual, part-time logistics workers. As one McKinsey report noted, wage inflation in the logistics sector will not correct the problem. Instead, a redefinition of the “employee value proposition” will be required to entice more skilled workers into logistics and supply-chain management roles.

Related topics: [Fourth Industrial Revolution](#), [Future of Work](#), [Pandemic Preparedness and Response](#), [Mobility](#), [Ageing and Longevity](#), [Artificial Intelligence](#), [Education, Skills and Learning](#), [The Digital Economy](#), [Gender Inequality](#)

2.2 Trade Flows and Value Chains

There is little hard evidence to suggest significant de-globalization is underway

The pattern of global trade is an aggregation of the “value chains” of myriad individual businesses, which run all the way from conception and production to distribution. Predicting trade flows therefore requires some understanding of how these value chains are being restructured in response to economic, corporate, geopolitical, and environmental forces. There is currently much debate about the longer-term impact of the pandemic on value chains and, by implication, global trade. According to World Bank data, the ratio of international trade to global GDP rose from 25% in 1970 to a peak of 61% in 2008, tracking the increasing globalization of value chains. Over the next nine years it remained at about 56%, before dropping to 51.5% in 2020 - partly due to COVID-19-related lockdowns. The future course of this key indicator is being debated; its relative stability prior to the pandemic could be interpreted as meaning value chains were already fully extended, signalling an end to the long-term process of globalization. Alternatively, it could have been a temporary phenomenon resulting from trade taking longer than expected to recover from the 2008 financial crisis, amid a suspension of trade-liberalization efforts and growing protectionism.

Pressures to shorten and simplify value chains are mounting. During the pandemic, the speed and reliability of global transport services have sharply declined while their cost has escalated - according to the online international freight marketplace Freightos, average container freight rates increased seven-fold between April 2020 and February 2022. In reaction to record levels of supply chain disruption and product shortages, particularly of semiconductors, some companies have tried to increase their future resilience by near-shoring (bringing closer to home) production and the sourcing of materials. As Chatham House has observed, governments in the US and Europe have harnessed “an array of public policy tools to protect strategic supply chains without sliding into protectionism,” using a mix of approaches “ranging from re-shoring production to establishing stockpiles of critical inputs, while collaborating at bilateral, regional and global levels to reinforce the international trade system.” There is still little hard evidence in global trade statistics and business survey data to suggest that significant de-globalization is underway. The post-pandemic reconfiguration of value chains may simply be taking longer than some experts expected.

Related topics: [Fourth Industrial Revolution](#), [Corporate Governance](#), [Trade and Investment](#), [Agile Governance](#), [Geo-economics](#), [Manufacturing](#), [Future of the Environment](#), [Emerging-Market Multinationals](#), [Geopolitics](#)

2.3 E-commerce and Logistics

Cities have become fertile terrain for innovation, much of it to increase the speed and convenience of last-mile delivery

The pandemic has hastened a retail revolution that was already well underway around the world, shifting sales from physical shops to online channels. According to eMarketer estimates, during 2020 the share of global retail sales attributable to e-commerce rose from 13.8% to 17.8%, and it is expected to grow to 24.5% by 2025. Retail supply chains are being transformed not only to cope with the growth in internet sales but also to meet online customers' changing delivery expectations. These expectations have been partly conditioned by e-tailers competing on the basis of speed of delivery, product range, and ability to offer many delivery and collection options. Home delivery has increasingly been supplemented by the distribution of online orders via locker banks, petrol stations, transport terminals, and even conventional retail outlets - many of which now offer a "click and collect" service. Servicing such a diverse range of delivery points within tight deadlines has required the development of "omni-channel" distribution systems. For traditional retailers developing an online capability, this has involved adapting their legacy logistics infrastructure.

A relatively recent addition to the online food delivery market has been the ultra-fast food delivery service, designed to distribute small orders often within minutes. City logistics has become fertile terrain for technological and service innovation to increase delivery speed and convenience. Small delivery robots (or droids) play niche roles in some cities, though distribution of online orders by drone has yet to develop at scale. The Internet of Things, in the form of internet-enabled refrigerators and cupboards, offers the potential for automated replenishment of grocery items. Meanwhile, within the gig economy, online "crowd-shipping" platforms are engaging ordinary people in the delivery of parcels, sometimes in the course of their everyday travel. The growth of e-commerce is having extensive global supply chain impacts - a survey of over 2,000 online shoppers in the US, the UK, Germany, and Australia by Logistyx Technologies found that 57% had made a cross-border purchase over the previous year. Manufacturers and small traders are increasingly using both the web platforms and logistical systems of large online retailers, such as Amazon and Alibaba, to extend their own geographical reach.

Related topics: [Mobility](#), [Aerospace](#), [3D Printing](#), [The Digital Economy](#), [Digital Communications](#), [Retail](#), [Consumer Goods and Lifestyle](#), [Cities and Urbanization](#), [Internet of Things](#)

2.4 Decarbonizing Supply Chains

More decisive policies and fuller exploitation of technology are required for necessary emissions reductions

Businesses have come under mounting pressure from governments, shareholders, and consumers to reduce the environmental impact of their logistics and supply chains. Upwards of 80% of many companies' greenhouse gas emissions originate in their upstream supply chain. International Transport Forum data indicate that freight transport accounts for 10% of all energy-related CO₂ emissions, and will be particularly difficult to decarbonize because of a heavy dependence on fossil fuels. According to the ITF, full implementation of current policies would actually result in freight-related emissions rising by 22% by 2050, while more decisive policy initiatives and fuller exploitation of technology could mean a 72% reduction. The movement of goods by road accounts for two-thirds of freight CO₂ emissions globally (the subject of the World Economic Forum's Road Freight Zero initiative) and will be decarbonized primarily through repowering with low-carbon electricity. The International Maritime Organisation says it wants greenhouse gas emissions from shipping to drop by 50% between 2008 and 2050. It expects two-thirds of this reduction to come from a switch to low-carbon fuels like e-methanol, green ammonia, and bio-LNG; the use of bio- and e-fuels will also be the main means of decarbonizing air cargo operations.

However, the long asset life of ships, aircraft, trucks, and locomotives, and the need to transform freight energy supply systems, will slow this decarbonization process. It will be faster for warehousing, port, and terminal operations, as the carbon intensity of grid electricity declines and on-site micro-generation of zero-carbon electricity expands. While they await the mass deployment of new technology and cleaner, low-carbon energy to help hit "net zero" targets, businesses can focus sustainability efforts on managerial and operational changes - which can yield substantial emissions reductions often with relatively low, or even negative, carbon-mitigation costs. Such changes include freight modal shift, improved vehicle loading and energy efficiency, and the application of circular-economy principles to minimize waste and maximize recycling across the supply chain. The resulting emissions reductions can be significantly enhanced when companies collaborate. Many externalities, like air and water pollution, traffic accidents, noise irritation, and a

loss of biodiversity can be targeted through corporate ESG (environmental, social and governance) policies and government legislation. Fortunately, some initiatives can alleviate several of these environmental problems and at the same time yield economic and social benefits.

Related topics: [Energy Transition](#), [Mobility](#), [Climate Indicators](#), [Future of the Environment](#), [Sustainable Development](#), [Circular Economy](#), [Batteries](#), [Water](#), [Climate Change](#), [Air Pollution](#), [Electricity](#)

2.5 Digital and Hardware Innovation

Freight transport is on the eve of a technological revolution that will spur greater use of renewable energy

The digital transformation of logistics, already well underway, was accelerated by the pandemic. Service providers and freight forwarders with relatively strong digital capability could compete more effectively as remote working grew more prevalent, and better cope with COVID-19-related supply chain disruptions. The portion of logistics business that is transacted through online platforms continues to rise, while big data, artificial intelligence and machine learning are being increasingly deployed to improve trading outcomes, maximize the utilization of logistics capacity, and mitigate risk. Shared intelligence is increasingly viewed as an enabler of resilience and trusted trade. The proliferation of sensors and tracking devices is rapidly expanding the availability of real-time data on logistics operations - giving companies the visibility they need to manage assets, inventory, and product flows more effectively. Breaking down many of the information silos that exist across supply chains will also require a change in corporate culture, however. Supply chain applications for blockchain, the Internet of Things, and digital twinning are still at a relatively early stage and projected to increase significantly. Meanwhile the digitization of physical products in the news, entertainment, and education sectors is steadily replacing freight consignments with data transfers.

3D printing is having a tangible impact on supply chains, after being used more broadly during the pandemic. Logistics hardware is also undergoing major change; within distribution centres, materials-handling operations are increasingly mechanized and automated. The growth of online retailing is expanding the use of robots in item-level picking, while wider uptake of augmented-reality devices is improving the productivity and accuracy of manual picking operations. The speed and efficiency of container handling in ports, which has been impaired by staff shortages during the pandemic, is being further automated and digitalized. The truck driver shortage has meanwhile stimulated greater interest in the automation of road-freight vehicles. Freight transport is on the eve of a technological revolution, as a new generation of trucks, locomotives, and ships is being designed to run on renewable, low-carbon energy. The battery electrification of vans is progressing rapidly, and the first battery-powered, heavy-duty trucks are hitting the market (mass production and adoption of battery- and hydrogen-fuel-cell-trucks is expected by the late 2020s). The first fleet of zero-carbon, deep-sea container vessels is under construction, and at the local level cargo cycles, both manually- and electric-powered, are handling much short-distance, small-order distribution.

Related topics: [Batteries](#), [Digital Communications](#), [Drones](#), [The Digital Economy](#), [Artificial Intelligence](#), [Fourth Industrial Revolution](#), [Blockchain](#), [Future of Computing](#), [Internet of Things](#), [3D Printing](#), [The Digital Transformation of Business](#)

2.6 Humanitarian and Health Supply Chains

The pandemic has exposed the vulnerability of medical supply chains in developing countries

A combination of climate change, conflict, and the coronavirus has sharply increased demand for humanitarian relief. And nearly three-quarters of the spending on this relief is supply chain-related. The World Food Programme reports that there were 45 million people in 43 countries at the “emergency phase” of food insecurity in 2021; the WFP’s operations involve the daily use of 5,600 trucks, 30 ships, and 100 planes. Such logistics assets must be available both for immediate deployment in an emergency, and for supporting longer-term economic and social development in highly-vulnerable communities. The UN Refugee Agency estimates that in 2019, weather-related hazards displaced 24.9 million people in 140 countries - and it forecasts that “climate-related disasters could double the number of people requiring humanitarian assistance to over 200 million each year by 2050.” The annual cost of this assistance could reach \$20 billion by 2030. Supply-chain disruptions and travel restrictions have hit humanitarian operations harder than businesses, due to the vulnerability and volatility of the environments where they operate. Lengthening lead times, inflated costs, and a widening funding gap mean relief agencies are struggling to meet rising demand.

These agencies are under constant pressure to use their assets and resources as efficiently as possible, to

maximize benefit from the donations that fund much of the sector. They are also now expected to maintain relatively high environmental standards for the ways they source, store, and deliver supplies. Purchasing more goods and services locally can help agencies achieve their goals, while also supporting local businesses in stricken regions. Since 2005, a World Economic Forum-initiated, public-private collaboration between relief agencies and four major logistics providers has been pooling resources and transferring logistics expertise. Accelerating digitalization can improve humanitarian response times and efficiency, while increasing agility and resilience. In terms of the humanitarian effort to distribute COVID-19 vaccines, there are formidable challenges for developing countries - particularly when it comes to vaccines that require stringent temperature controls. The vulnerability of medical supply chains in these countries has been critically exposed in this regard; however, the upgrading of logistics systems and cold chain infrastructure to support vaccination programs may bring lasting benefits to many communities, and set a good example for future supply-chain investment in the humanitarian sector.

Related topics: [Circular Economy](#), [Global Health](#), [Water](#), [Inequality](#), [Climate Change](#), [Humanitarian Action](#), [Aviation, Travel and Tourism](#), [Peace and Resilience](#), [Migration](#), [Food Security](#), [Vaccination](#), [Health and Healthcare](#)

2.7 Prioritizing Resilience

The pandemic has exacerbated pre-existing deficiencies in infrastructure and labour practices

The pandemic has thoroughly stress-tested the resilience of supply chains. It has vividly demonstrated how vulnerable globalized, low-inventory supply chains have become to such a high-impact, low-probability event - particularly when its adverse effects are prolonged and geographically extensive. Purchasing managers in Europe and North America reported that average delivery times more than doubled as the health crisis worsened, while the World Bank's indicator of global supply chain stress rose seven-fold between the end of 2019 and mid-2021. The crisis has exacerbated pre-existing problems such as deficiencies in infrastructure capacity, worker shortages, and poor labour practices. It also caused businesses to reassess some of the fundamentals of supply chain management. Only 14% of 1,000 managers surveyed by the Capgemini Research Institute in 2020 expected their supply chains to return to a "pre-COVID normality," 62% saw resilience becoming a key supply chain priority after the pandemic, and 57% were planning investment to enhance it. Implementation of these survey responses would increase protection against a range of threats, including climate change, cyberattacks, geopolitical tension, and financial crises - in addition to future medical emergencies.

Companies can reduce the exposure of their supply chains to these risks in several ways. One much-debated option is to shorten supply chains by re-shoring production, and sourcing from less-distant locations. Some companies are regionalizing and diversifying their supply base to spread risk, though so far there has been little evidence of a pronounced reversal of globalization. Geographically re-sourcing supplies can be a slow process. Some relaxation of the just-in-time principle is now underway - with many companies increasing their inventory levels, and lengthening order-cycle times. The pandemic has also demonstrated the need for greater end-to-end supply chain visibility. The Business Continuity Institute estimates that about 40% of COVID-related supply-chain disruptions occurred at or above the second tier of suppliers, and according to McKinsey, only 2% of businesses have actual knowledge about operations above this second tier. Surveys suggest that as the pandemic has progressed, a general commitment to prioritize resilience has remained strong - though managerial thinking on how exactly to achieve this has partly shifted from re-shoring to inventory-based risk management responses.

Related topics: [Climate Change](#), [Global Risks](#), [International Security](#), [Pandemic Preparedness and Response](#), [Corporate Governance](#), [Cybersecurity](#), [Insurance](#), [Humanitarian Action](#), [Vaccination](#)

2.8 Infrastructure and Real Estate

In many places space used for offices or parking is being repurposed for last-mile delivery

As economies have sought to recover from the pandemic, infrastructure bottlenecks have caused serious supply chain disruptions. For example, a lack of capacity at major hub ports has contributed to a doubling of average container transit times, and some countries have experienced acute shortages of warehouse space. The health crisis has highlighted the need for greater investment both in transport networks, and logistics real estate. Public funds have been committed in the US, Europe, and in many developing countries for

substantial investments in road, rail, and port infrastructure. This should help relieve congestion, improve the speed and reliability of freight services, and generally better facilitate trade. In some countries, environmental policies are prioritizing investment in facilities that promote a modal shift to rail and waterborne services. The spatial structure of logistical systems and supply chains will adjust to changes in the patterns of accessibility across road, rail, and waterway networks. This is likely to induce further clustering of logistics property in the vicinity of major terminals and highway intersections.

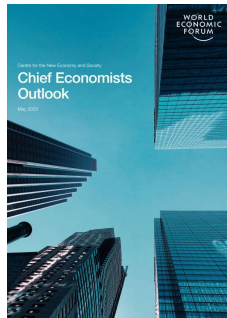
In many countries, logistics real estate markets have been booming, driven mainly by the need for new fulfilment centres to support the accelerating switch from bricks-and-mortar to online retailing. CBRE has estimated that every additional \$1 billion in online spending requires a further 116,000 square metres of warehouse space; it has also anticipated “further demand coming from the reconfiguration and expansion of supply chains, in order to better prepare them for future disruptions and consumer demand shocks.” Within some urban areas, space used for retail, offices, and parking is beginning to be converted to micro-hubs for the last-mile delivery of online orders. This re-purposing of urban real estate for logistics uses has been further accelerated by the pandemic-induced increases in online retailing and working from home. Meanwhile the decarbonization of supply chains requires a transformation of energy supply infrastructure, a proliferation of recharging and refuelling points for renewable energy and the electrification of rail (and possibly highway) networks. Adaptation to global warming will require the climate-proofing of transport and logistics infrastructure against extreme weather and sea-level rise.

Related topics: [Pandemic Preparedness and Response](#), [Future of Consumption](#), [Retail](#), [Consumer Goods and Lifestyle](#), [The Digital Economy](#), [Cities and Urbanization](#), [Infrastructure](#), [Social Protection](#), [Climate Change](#), [Real Estate](#), [Taxes](#)

3

Further exploration

Explore the latest World Economic Forum reports related to Supply Chains.



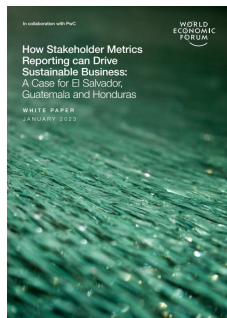
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[Chief Economists Outlook: May 2023](#)



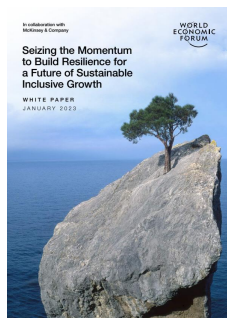
30 April 2023

[The Future of Jobs Report 2023](#)



17 January 2023

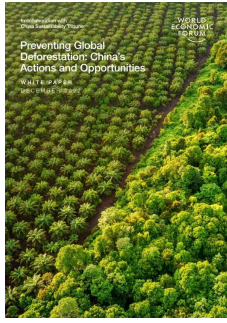
[How Stakeholder Metrics Reporting can Drive Sustainable Business: A Case for El Salvador, Guatemala and Honduras](#)



16 January 2023

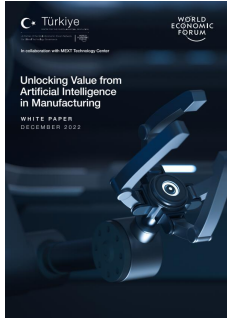
[Seizing the Momentum to Build Resilience for a Future of Sustainable Inclusive Growth](#)





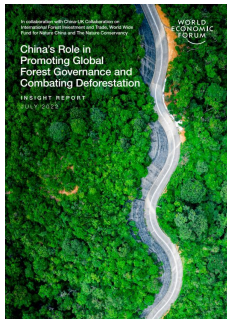
16 December 2022

Preventing Global Deforestation: China's Actions and Opportunities



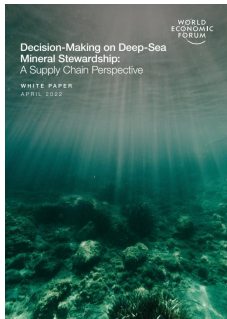
12 December 2022

Unlocking Value from Artificial Intelligence in Manufacturing



19 July 2022

China's Role in Promoting Global Forest Governance and Combating Deforestation



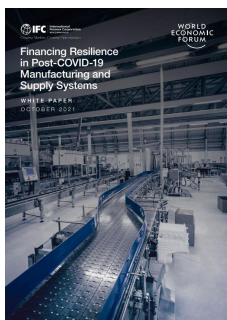
12 April 2022

Decision-Making on Deep-Sea Mineral Stewardship: A Supply Chain Perspective



18 January 2022

Charting the Course for Global Value Chain Resilience



14 October 2021

Financing Resilience in Post-COVID-19 Manufacturing and Supply Systems



About Strategic Intelligence

Our approach

In today's world, it can be difficult to keep up with the latest trends or to make sense of the countless transformations taking place. How can you decipher the potential impact of rapidly unfolding changes when you're flooded with information - some of it misleading or unreliable? How do you continuously adapt your vision and strategy within a fast-evolving global context? We need new tools to help us make better strategic decisions in an increasingly complex and uncertain environment.

This live briefing on Supply Chains, harnesses the World Economic Forum's [Strategic Intelligence](#) platform to bring you the very latest knowledge, data and context from our 300+ high quality knowledge sources. Its aim is to help you understand the global forces at play in relation to Supply Chains and make more informed decisions in the future.

Each day, our Strategic Intelligence platform aggregates, distills and synthesizes thousands of articles from around the world. We blend the best of human curation with the power of machine learning to surface high-quality content on over [two hundred global issues](#) to our one million users globally. Our hand-picked network of [content partners](#) from around the world means that we automatically exclude much of the noisy clickbait, fake news, and poor quality content that plague the Internet at large. We work with hundreds of think tanks, universities, research institutions and independent publishers in all major regions of the world to provide a truly global perspective and we are confident that our data are well positioned when it comes to the intrinsic biases inherent to open text analysis on uncurated content from the Internet. For further context on our approach, you may be interested to read [Strategic trend forecasting: anticipating the future with artificial intelligence](#) and [These Are The 3 Ways Knowledge Can Provide Strategic Advantage](#).

↓ A leading expert presenting a transformation map at our Davos Annual Meeting



Transformation maps

Our [Transformation Maps](#) are dynamic knowledge visualisations. They help users to explore and make sense of the complex and interlinked forces that are transforming economies, industries and global issues. The maps present insights written by experts along with machine-curated content. Together, this allows users to visualise and understand more than 250 topics and the connections and inter-dependencies between them, helping in turn to support more informed decision-making by leaders.

The maps harness the Forum network's collective intelligence as well as the knowledge and insights generated through our activities, communities and events. And because the Transformation Maps are interlinked, they provide a single place for users to understand each topic from multiple perspectives. Each of the maps has a feed with the latest research and analysis drawn from leading research institutions and media outlets around the world.

At the centre of each map is the topic itself. This is surrounded by its "key issues", the forces which are driving transformation in relation to the topic. Surrounding the key issues are the related topics which are also affected by them. By surfacing these connections, the map facilitates exploration of the topic and the landscape within which it sits.

Continue online

Our suite of Strategic Intelligence tools are available to help you keep up to date across over 300 topics.

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