Atlantic Council

WORLD ECONOMIC FORUM

The Foresight Brief: Chokepoints Past, Present and Future

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Preface

The Foresight Brief is a concise, regular publication that helps leaders understand what they should be watching next. It achieves this not only by identifying emerging phenomena and weak signals, but by interpreting the deeper driving factors, convergences and second-order implications that may be underappreciated.

In this edition

The global economy depends on physical and digital systems that are often overlooked until they fail. Chokepoints are not simply narrow passages on a map; they are concentrations of economic value, political influence and systemic vulnerability. Their significance is shaped by geography, technology, ecological conditions, security dynamics and governance.

This edition of *The Foresight Brief* examines how chokepoints have shaped the past, underpin the present and may evolve in the future. It shows why strategic resilience requires more than responding once disruption occurs. Policy-makers and business leaders must understand dependencies in advance, recognize where alternatives are limited and build the capacity to act as conditions change.

The Atlantic Council is pleased to contribute to this continuing examination of the forces shaping the global future.

Executive summary

As chokepoints remain central to the global economy, organizations must identify and manage the strategic vulnerabilities and opportunities that result.

Chokepoints are strategically important connectors through which goods, resources, services or information flow, often with limited alternatives. Their significance depends not only on the volume they carry, but also on the consequences of disruption and the availability of substitutes.

This paper argues that chokepoints remain central to the global economy despite the growth of digital technologies. Maritime straits, canals, ports, rivers, subsea cables, data centres and cloud infrastructure all demonstrate the importance of physical systems and concentrated points of connection.

Their significance is changing as supply chains evolve, geopolitical competition intensifies and climate change affects canals, rivers, ports and production sites. New vulnerabilities may also emerge in digital infrastructure and, potentially, in space.

For business leaders, chokepoints reveal strategic dependencies. Understanding where critical systems are concentrated – and how they may interact under stress – can help organizations assess exposure, identify alternatives and strengthen their capacity to act before disruption occurs. Chokepoints are therefore not only vulnerabilities; they can also create opportunities for investment, cooperation and competitive advantage.

Introduction

Chokepoints concentrate influence and vulnerability. Their disruption can create cascading consequences across interconnected economic, social, political and security systems.

“ For decision-makers, the central question is not only which chokepoints matter today, but which emerging dependencies could become the next critical checkpoints in the global economy.

The partial and complete closures of the Strait of Hormuz in 2026 have demonstrated how quickly disruption at a single chokepoint can spread through the global economy. These passages and connectors carry the resources, goods and information that communities, firms, sectors, regions and governments depend on. When they operate normally, their importance can remain largely invisible. When they are disrupted, the consequences can include higher costs, delays, shortages and wider economic, humanitarian and security pressures.

Chokepoints are not simply relics of the past. Strategists, planners, traders and shippers have recognized their importance for centuries, because they concentrate flows and leave users with few immediate alternatives. The Strait of Hormuz illustrates their continuing relevance: a geographically narrow passage can have consequences that reach far beyond its physical boundaries, affecting energy markets, supply chains, national economies and geopolitical relations.

This brief examines chokepoints across the past, present and future. It argues that, despite the growth of digital technologies and increasingly globalized markets, the world economy remains deeply dependent on physical and institutional systems. It also looks ahead to how chokepoints may evolve as climate change alters established routes, digital infrastructure creates less visible points of concentration, and the space economy opens the possibility of entirely new strategic locations. For decision-makers, the central question is not only which chokepoints matter today, but which emerging dependencies could become the next critical chokepoints in the global economy – and what options can be developed before they are tested by disruption.



1 Definitions and prioritization

A strategically critical chokepoint is defined by economic value, geopolitical dynamics, effective governance and ecological conditions.

> Chokepoints are akin to funnels that concentrate the flow of valuable goods, services and information, while being vulnerable to restriction or disruption.

While there are numerous definitions for a chokepoint, all agree that chokepoints are akin to funnels that concentrate the flow of valuable goods, services and information, while being vulnerable to restriction or disruption. According to the United Nations Conference on Trade and Development (UNCTAD), for example, a chokepoint is defined as a strategically important connector in a supply chain, through which large volumes of trade flow with limited alternative routes.[1] A passage or connector becomes a chokepoint when several factors are present, including trade exposure (the volume or percentage of trade flowing through the passage), lack of readily available alternative sources and routes, and the type and scale of consequences, should disruption occur. Such consequences are defined in terms of lost time and capacity, higher cost to shippers and traders, absolute shortages of critical resources and goods, and, in geopolitical terms, reduced security for communities and states.[2] When all of these factors are present, an otherwise ordinary connector becomes an enormously valuable and strategically critical chokepoint.

There is no universally accepted indicator or metric for identifying and measuring the world's most significant chokepoints. This is partly because there are qualitative differences across chokepoints, i.e., the diversity of goods moved through them differs enormously, and therefore individual chokepoints have divergent significance for national, regional and global economies.

A rule of thumb for assessing a chokepoint's importance is to ask about the severity of the consequences – and for whom – if it is disrupted for a significant period. Do delays raise costs and therefore prices for resources and goods, reduce inventories, or affect manufacturing? Do those impacts occur in sectors without adequate substitutes? How far afield are the impacts felt, from local to global? Are the consequences significant enough to have geopolitical implications, requiring a state-led, militarized response?

It is useful to assess a chokepoint's importance by thinking about it along four lines:

1 Economics

Chokepoints have high economic value for firms and states when they facilitate the movement of resources, goods, money and information. Although this category is self-evident, the economic value of chokepoints will fluctuate over time as the economy evolves, and as the types and locations of resources, goods and services traded within the global economy change in response. Technological development is part of this; subsea cables that carry information and data, for example, can be chokepoints under current conditions.

2 Geopolitics

Chokepoints have high geopolitical value for states and militaries if they are critical for movement to strategically valuable territory or, alternatively, provide a key route through which strategically critical resources such as oil flow. The Strait of Gibraltar is a good example of the former, the Strait of Hormuz the latter.

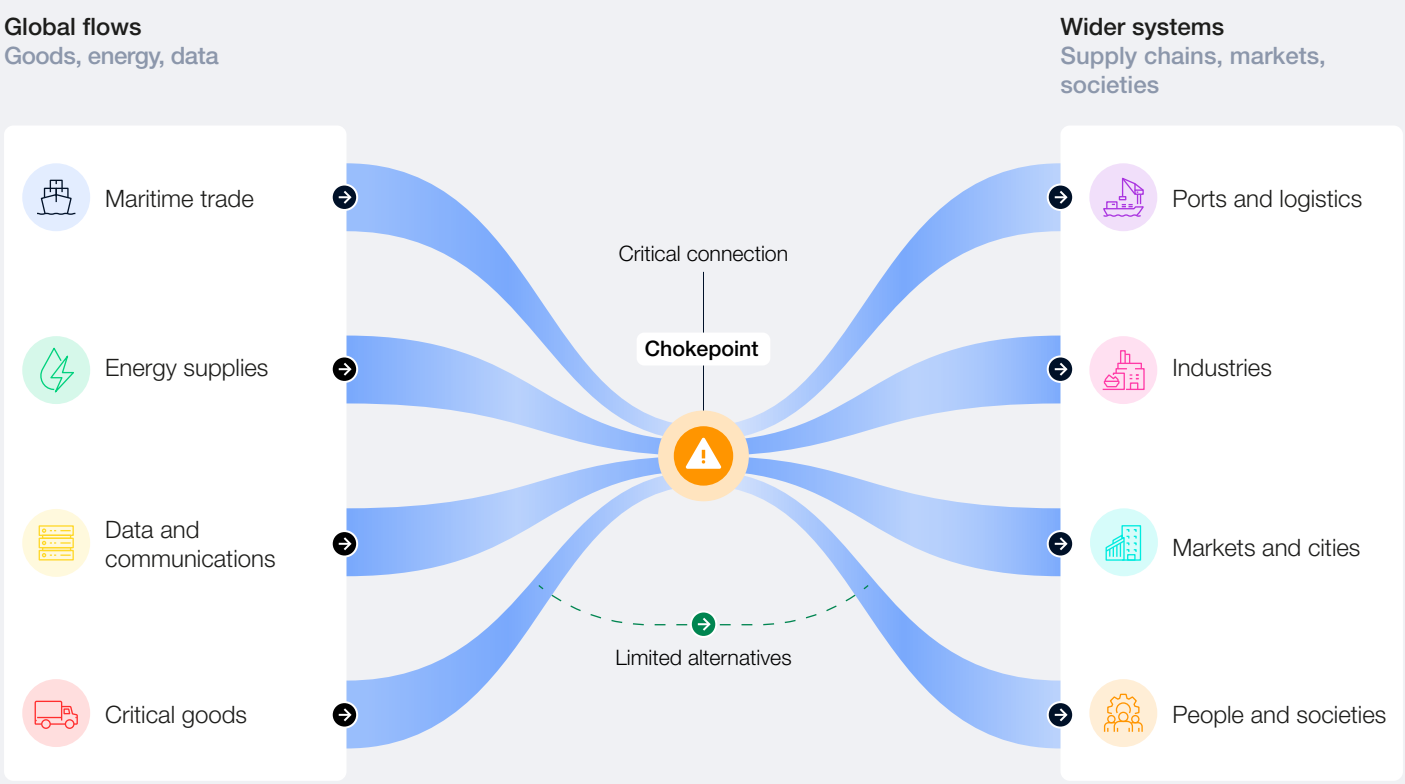
3 Governance

The value of a chokepoint depends on how well or poorly it is governed. "Well-governed" chokepoints are those where a shipper or trader can navigate them without fear of disruption. Chokepoints can be entirely within a well-governed state's territory and hence provide secure passage, at least for as long as that state is willing and able to maintain it. The Bosporus and the Panama Canal are good examples. Such cases contrast with their opposite numbers, where a chokepoint is highly susceptible to intervention and disruption by states or non-state actors such as rebels, organized criminal groups and even pirates. Today, the Bab al-Mandab Strait is the most well-known chokepoint subject to real-time disruption by a rebel group – in this case, the Houthis. Other chokepoints present latent risk, largely owing to their lack of sovereign governance. The Taiwan Strait and the Strait of Malacca are two such examples.

4 Ecology

Shifting ecological conditions can affect the value of a chokepoint over time, raising or lowering it depending on the season or year. Climate-driven changes such as heat, flooding and drought impact infrastructure, ports, manufacturing plants and supply chains. Under the right conditions, these impacts can have significant consequences for chokepoints that are important to national and regional economies, and even to the global economy.

FIGURE 1 **How chokepoints function**



2 Chokepoints in the past

Throughout history, physically constrained locations shaped trade routes and military strategy. Digital technologies were expected to flatten the world.

Many great powers were built upon the logic of controlling or denying access to strategic chokepoints.

Strategists and military planners have long understood the need to control chokepoints while denying them to adversaries. For centuries, castles and fortifications were built at critical junctures along overland trade routes – beside major rivers or overlooking key mountain passes. At these locations, owners could charge tolls, which traders had little choice but to pay to get their goods to market. The revenue supported kingdoms, duchies, principalities, empires and fiefdoms.

Many great powers were built upon the logic of controlling or denying access to strategic chokepoints. In the early 18th century, Great Britain captured Gibraltar, recognizing the strategic importance of the formidable rock guarding the 14-km wide strait between the Mediterranean Sea and Atlantic Ocean. In the late 19th century, Imperial Germany built the Kiel Canal to enable naval vessels to transit between the Baltic Sea and North Sea within Germany's borders. For German strategists, the canal solved the problem posed by the Øresund chokepoint, which was controlled by Denmark and Sweden.

Before World War II, the US invested heavily in defending the Panama Canal, the Western Hemisphere's most important maritime chokepoint, given its vulnerability to submarine and air attack from either the Atlantic or Pacific sides. During the Cold War, the Soviet Union and the US shadow-boxed at numerous chokepoints, including over, on and under the Greenland-Iceland-United Kingdom (GIUK) Gap, through which Soviet ballistic missile submarines had to transit to access the open ocean.

The end of the Cold War helped usher in a new age of globalization, which, for a time, promised a frictionless world. Although places such as the Strait of Hormuz remained potential chokepoints, the risk of conflict-driven closure appeared improbable, as interstate warfare was at a historic low.[3]

As the Cold War was ending, technological change accelerated this new era of globalization. The internet, cell phones, satellite communications and the global positioning system (GPS) were invented during the Cold War but did not scale to commercial applications until the 1990s and 2000s. Their expansion helped create the digital economy, which has since become a dominant and inherent part of life.

At the beginning of the 21st century, rapidly scaling digital technologies began to enable business to be conducted remotely from anywhere in the world. That new reality, combined with the apparent end of great-power rivalry in geopolitical terms, suggested to many that the global economy had become frictionless. Thomas Friedman's bestselling book, *The World Is Flat*, published in 2005, captured this Zeitgeist perfectly.[4] His central thesis was that digital technologies were "flattening" the world, allowing firms and people to compete on an equal footing from anywhere to anywhere. Both the book's title and its core thesis asserted that geography had become irrelevant – economically, at least, if not culturally.[5] The future, Friedman said, belonged to a tech-infused, market-driven globalization largely freed from physical constraints.

3 Chokepoints in the present

Despite digitization, physical infrastructure is still critical to the global economy.

Over the succeeding two decades, this view has crumbled. In 2026, the global economy has not escaped physical reality. The physical infrastructure that underpins it, such as straits, canals, pipelines, cables, ports and hubs, remains central to its success.

Some of the most important historical chokepoints remain so today. Others are newer. The world's maritime straits are obvious examples, with their significance today, as in the past, rising to a level of geostrategic importance. The list includes:

- The straits of Hormuz and Bab al-Mandab, which transit much of the world's oil and natural gas
- The Taiwan Strait and Strait of Malacca, which together transit a significant percentage of the world's maritime trade by value
- Key canals, including the Suez and Panama Canals, which allow shippers to shortcut enormous continents in a matter of hours.[6]

Key ports and transshipment nodes, likewise, are critical for global commerce today just as they were in the past (see Appendix). Ports in Africa, for example, including those at Mombasa, Durban and Djibouti, have much significance for their respective regional economies; disruptions to them, or even closures, would reverberate far inland, extending beyond the borders of Kenya, South Africa and Djibouti, respectively. However, the list of ports that qualify as key chokepoints in regional and global economies does change over longer periods because economies and the supply chains on which they depend evolve.

Even in cyberspace, home to Friedman's "flat world" and the reason he was inspired to write about a global economy divorced from geography, physical chokepoints remain real and important. Duncan Wood, a fellow at the Wilson Center in Washington, DC, argues that "digital chokepoints are less apparent but no less consequential" for the global economy than are straits and canals.[7] The digital economy, he observes, is as reliant on physical reality as the rest of the global economy, because digital chokepoints "are embedded in the physical and institutional architecture of the internet: subsea cables, data centers, cloud platforms, and network infrastructure."[8]

For years now, both state and non-state actors have been eyeing the physical infrastructure underpinning the digital economy and, in some cases, attacking it. As far back as 2013, for example, Egypt arrested three divers who had used explosives to cut the South East Asia–Middle East–Western Europe 4 (SEA-ME-WE 4) internet cable.[9] More recently, in 2024 and 2025, Houthis in Yemen were blamed for cutting several critical subsea internet cables in the Red Sea, resulting in degraded and disrupted internet connections between Europe, the Middle East, Asia and Africa (though the Houthis denied the accusation).[10]

4 Chokepoints in the future

Chokepoints will remain relevant, with climate change reshaping existing constraints and space activity potentially creating new chokepoints beyond Earth.

In the future, the Lagrange Points could prove valuable for commercial, scientific and security purposes, potentially becoming strategic chokepoints.

The future of chokepoints is likely to be remarkably similar to the present, in that maritime, subsea, overland and nodal chokepoints will continue to exist, with the mix of their importance evolving as the global economy and its supply chains evolve.

Yet the future of chokepoints also will be different from today. One reason is that the planet itself is changing in real time, owing to a changing climate, which is altering the often-delicate dependence that societies have on specific features of the physical world. Those changes have already begun to affect existing chokepoints and even create new ones. Recurring drought over the past several years in Central America, for example, has caused low water levels in the Panama Canal, which in 2023–2024 and again in 2026 had to reduce the number of ships passing through it.[11] The same pattern of drought and heat has caused low water levels on major freight-carrying rivers around the world, effectively creating new (if temporary) chokepoints. Over the past few years, this has happened to the Mississippi-Missouri River system in the US, the Rhine and Danube Rivers in Europe, and the Yangtze River in China.[12] Nor is drought the only possible disruptor to the world's economic infrastructure. Flooding does much the same; floods that struck Thailand in 2011 closed hundreds of factories, causing huge ripple effects across global supply chains in the automotive and electronic sectors, among others.[13]

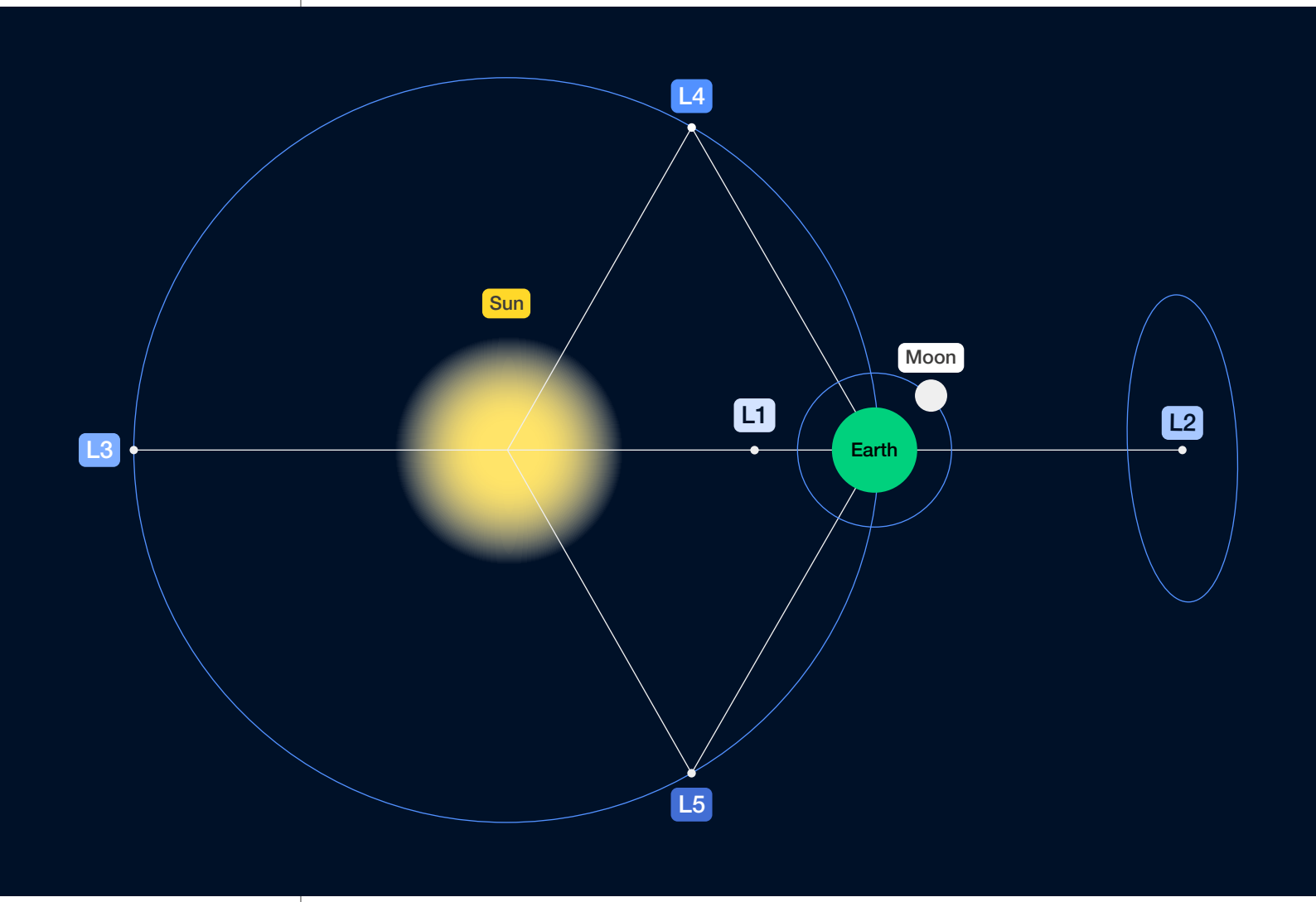
Such climate-induced disruptions will almost certainly become more frequent, continuing to affect chokepoints and the regional and global supply chains that depend on them. Climate change likely also will create new permanent economic passages, for example the Northern Sea Route (NSR) to connect Asia and Europe via the Arctic Ocean – that passage, which Arctic ice melt will open up, will present a chokepoint problem of its own owing to "climate variability, limited infrastructure, high operating costs, Russian regulatory control and, above all, a lack of predictability and operational reliability," according to a 2026 report by the Dutch think tank Clingendael.[14]

Secondly, as the space economy matures, chokepoints may begin to migrate to outer space. Humankind might contest a few precise locations in outer space. Specifically, one or more of the five Lagrange Points (Figure 2) – positions in space where the gravitational pull among the sun, Earth and moon is balanced in such a way that spacecraft do not have to expend much fuel to remain stationary for long stretches. Because of this quality, the Lagrange Points have already proven their value for scientific exploration. America's James Webb Space Telescope (JWST), for example, is positioned at Lagrange Point L2, about 1.5 million km from Earth, opposite the Sun. L2 allows the JWST to maintain a stable orbit while generating high-quality images of the universe, unobstructed by the Earth's light and heat.[15] China, for its part, has sent several research and exploration satellites to L2, including its most recent, the Chang'e-6 orbiter, which collected the first lunar samples from the moon's far side.[16]

In the future, the Lagrange Points could prove valuable for commercial, scientific and security purposes, potentially becoming strategic chokepoints, owing to their unique positional value. Moreover, the Lagrange Points themselves are quite large and theoretically could accommodate many spacecraft.[17] Nonetheless, it is possible that these sites could be contested by the major space powers to both control access to them and deny it to rivals – the same logic that has been applied to terrestrial chokepoints for millennia. This observation is not far-fetched; a bipartisan report issued in 2023 by a US House of Representatives select committee argued that the US government should counter China "by ensuring the US is the first country to permanently station assets at all Lagrange Points."[18]

The upshot is that it is difficult to envisage a world in which chokepoints disappear, despite the desire to believe that the future economy may be freed from the constraints of physical reality. Chokepoints are an enduring feature of global geopolitics and the global economy and will remain so well into the future.

FIGURE 2 | **Map of the five Lagrange Points relative to Earth**



There are five Lagrange Points – positions in space where the gravitational pull between the sun, Earth and moon is balanced in such a way that spacecraft do not have to expend much fuel to remain stationary for long stretches.

Conclusion

This brief shows that chokepoints have been critical features of the past, present and future – and that organizations should treat them as continuing sources of both vulnerability and opportunity. Physical resources and goods will remain essential, even as new technologies appear to distance economic activity from physical reality. Resources and goods will continue to be mined, drilled, manufactured, grown and produced in one part of the world and shipped to another, while the quirks of physical and economic geography – including, potentially, the geography of outer space – create strategically and economically valuable chokepoints.

For governments, businesses and non-profit organizations, the task is to identify the chokepoints on which their objectives depend, understand how those dependencies might change and assess where disruption could constrain their room for action. This means testing assumptions about access, reliability and substitutability; monitoring the signals that established or emerging chokepoints are becoming more vulnerable; and building options before a crisis occurs. Chokepoints will continue to present strategic challenges, but organizations that understand their dependencies early will be better placed to protect essential operations, seize emerging opportunities and act with greater choice as conditions change.

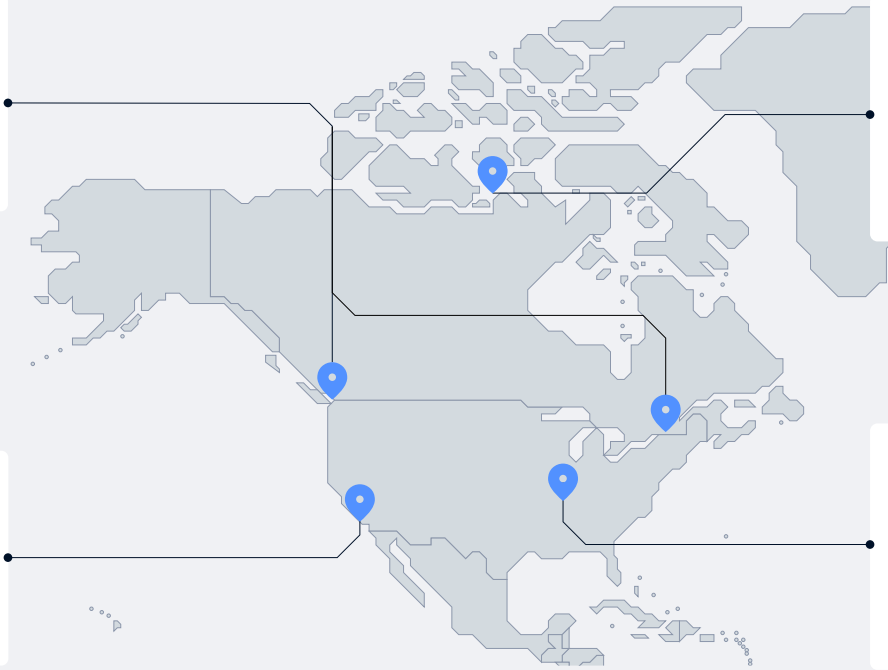
What this means for business

This analysis helps business leaders identify where dependence, concentration and limited alternatives could restrict strategic decisions. Businesses depend on physical, digital, ecological and geopolitical systems; mapping them can reveal where assumptions are no longer true and where disruption in one area could affect the entire business.

Therefore, the practical task is to strengthen options before crises happen. This approach – strategic anticipation – considers which options to preserve, create or discard as conditions change; it is particularly useful for leaders facing uncertainty in decision-making. This may mean diversifying suppliers and routes, investing in adaptable capabilities, developing stronger partnerships or setting clear trigger points for actions. If businesses adopt this foresight perspective alongside market intelligence, risk analysis and commercial judgement, they can develop more adaptable strategies as conditions change.

Appendix: Chokepoints by region

FIGURE 3 **Chokepoints in North America**



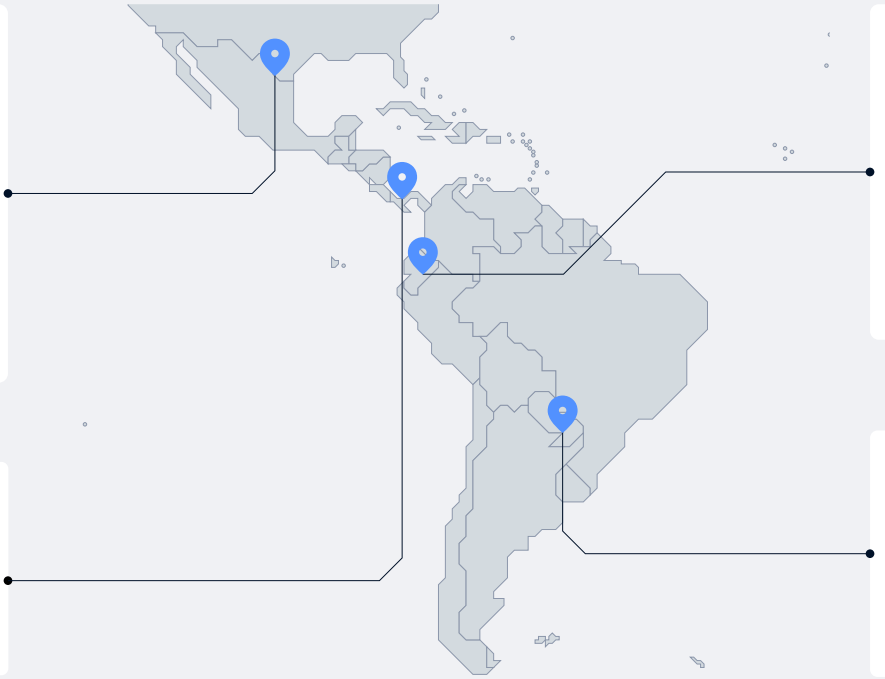
Vancouver and Montreal ports
Canada
Key threats:
Railroad and port worker strikes, storms

Northwest Passage
Canada
Key threat:
Ongoing disputes between Canada and the US regarding status

Long Beach, Los Angeles
United States
Key threats:
Storms, flooding, fire, port strikes

Mississippi-Missouri-Ohio River system
United States
Key threats:
Drought, flooding, ageing infrastructure

FIGURE 4 **Chokepoints in Latin America and the Caribbean**



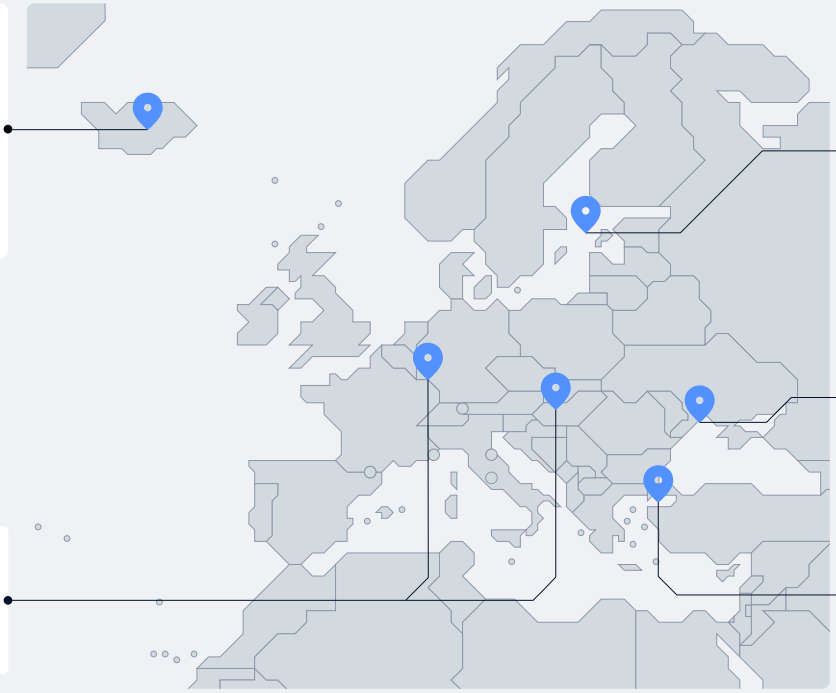
Laredo–Nuevo Laredo International Border Crossing
Mexico
Key threats:
Heightened security measures, storms and floods, peak traffic volumes and customs processing software outages

Heavy Crude Oil Pipeline (OCP) and Trans-Ecuadorian Pipeline System (SOTE)
Ecuador
Key threat:
Sabotage, theft, poor maintenance, flood damage

Panama Canal
Panama
Key threats:
Drought, low water levels in the canal, possibility of geopolitical conflict

Paraguay-Parana Waterway System
Paraguay
Key threats:
Drought, competition between China and the US for investment

FIGURE 5 | **Chokepoints in Europe, the Mediterranean Sea and North Africa**



GIUK Gap
Greenland
Iceland
UK

Key threat:
Shifting geopolitical priorities

Rhine and Danube rivers
Key threats:
Drought, low water levels

Finland–Estonia Undersea Cable Network
Finland
Estonia
Sweden

Key threat:
Sabotage

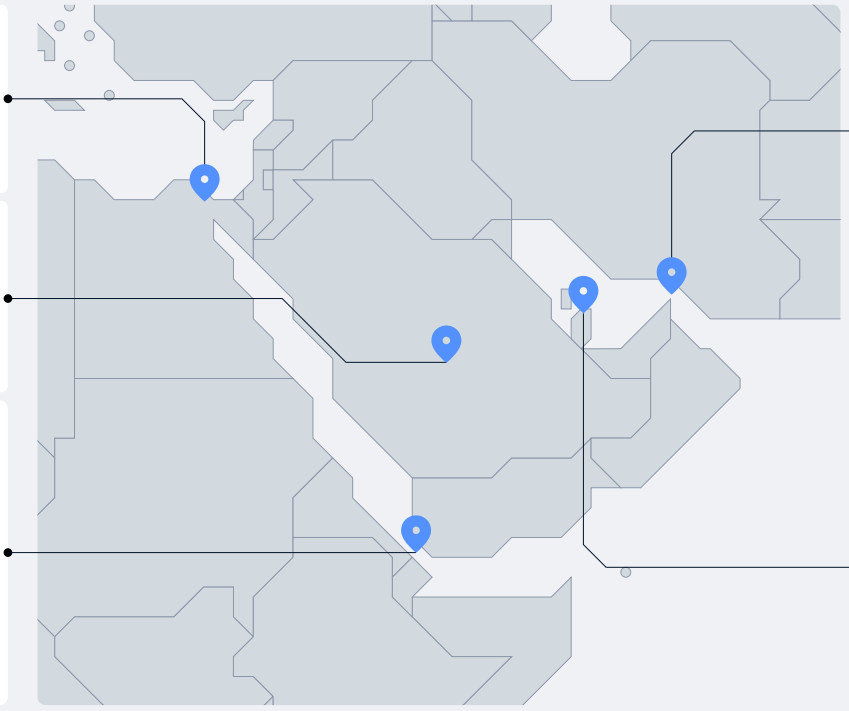
Odesa and Black Sea ports
Ukraine

Key threat:
Warfare

Turkish Straits
Turkiye

Key threats:
Disruption of passage, unilateral control

FIGURE 6 | **Chokepoints in the Middle East**



Suez Canal
Egypt

Key threats:
Vessel accidents, blockages

East-West Pipeline
Saudi Arabia

Key threats:
Attacks on pumping stations, sabotage

Bab al-Mandab Strait
Yemen
Djibouti
Eritrea

Key threats:
Houthi attacks, shipping disruption, undersea cable damage

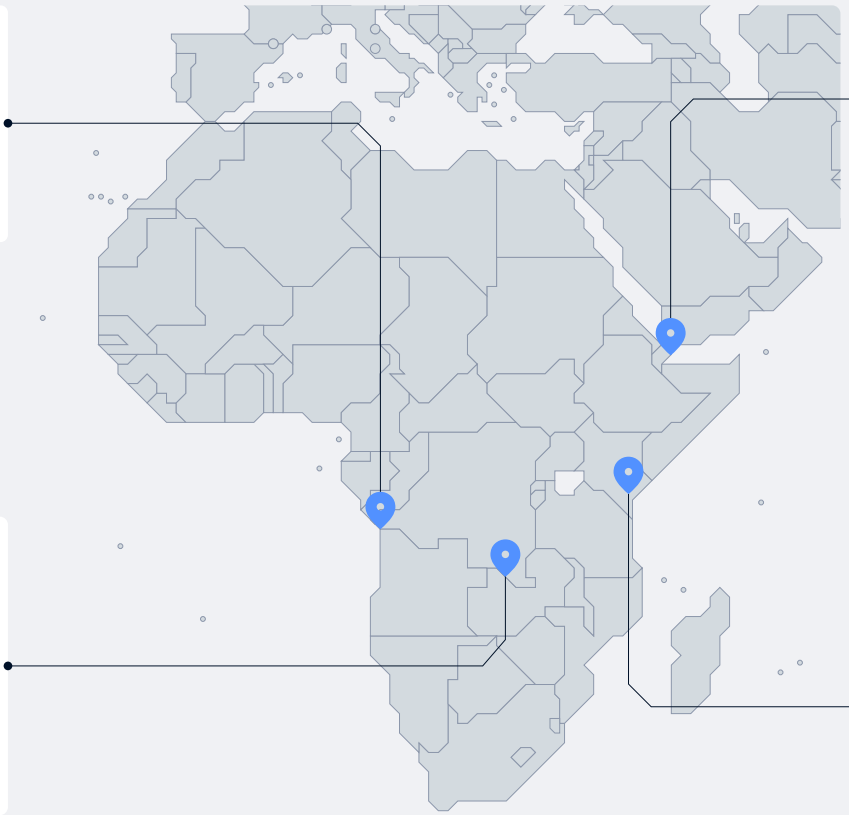
Strait of Hormuz
Iran
Oman
United Arab Emirates

Key threats:
Military conflict, shipping disruption

Ras Laffan Industrial City
Qatar

Key threats:
Military attacks, shipping disruption

FIGURE 7 | **Chokepoints in Africa**



West African Subsea Cables (WACS, SAT-3, ACE)

Key threats:
Seabed disturbances, cable cuts

Port of Djibouti

Djibouti

Key threats:
Port closure, regional instability

Kasumbalesa Border Post

Zambia

Democratic Republic of the Congo

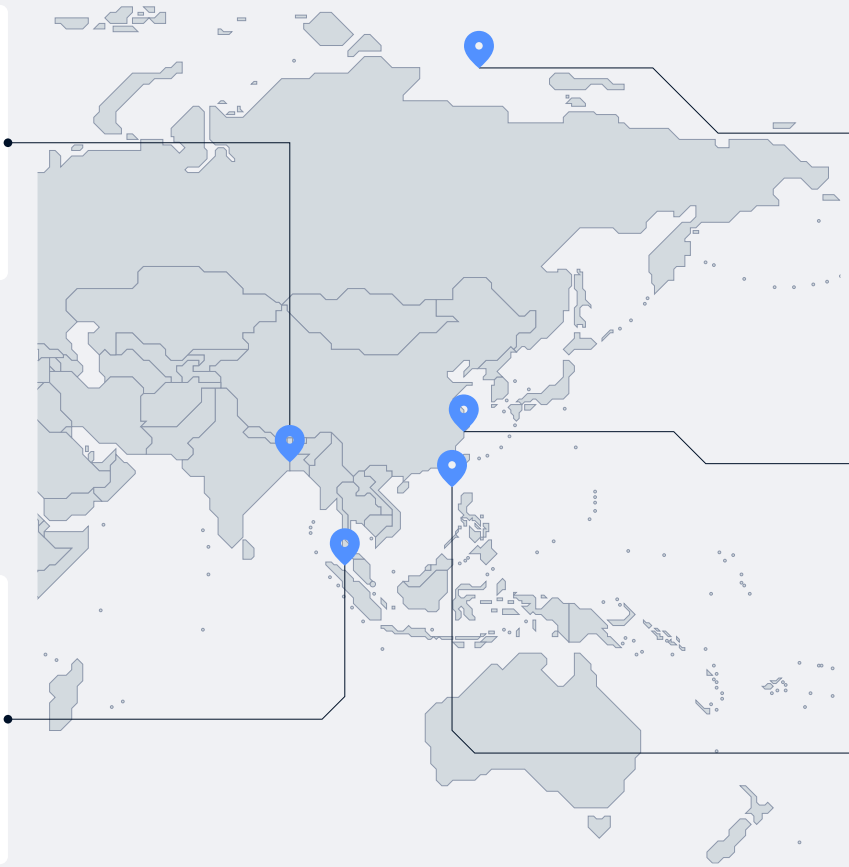
Key threats:
Border closure, copper and cobalt supply disruption

Mombasa and the Northern Corridor

Kenya

Key threats:
Blockages, supply disruption

FIGURE 8 | **Chokepoints in Asia-Pacific**



India–Bangladesh Border

India

Bangladesh

Key threats:
Migration tensions, smuggling, security restrictions, congestion

Northern Sea Route

Russia

Key threats:
Environmental hazards, logistical constraints, geopolitical tensions

Shanghai and Ningbo-Zhoushan Ports

China

Key threats:
Typhoons, congestion, geopolitical conflict

Strait of Malacca

Malaysia

Indonesia

Singapore

Thailand

Key threats:
Shipping disruption, costly alternative routes

Taiwan Strait

China

Taiwan, China

Key threats:
Cross-strait conflict, trade disruption

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Endnotes

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