



(re)globalization

Anticipating the future state of global economics and geopolitics requires more than an extrapolation of current trends.



“In the 21st century,
no country in isolation
can create a strong and
sustainable economy
for its people.”

Janet Yellen

U.S. Secretary of the Treasury

Everyone is talking about de-globalization, and with good reason. After decades of increasing global trade volume and falling barriers between countries, a pause or even rewind of political and economic connectedness looks poised to be a driving force behind industry development, inflation dynamics, and the path of the global economy ahead.

Recent events have spurred the narrative, with de-globalization and expanding security needs going hand in hand. The COVID-19 pandemic, Russia's invasion of Ukraine, U.S.-China competition, and the increasing visibility of climate change have highlighted that the previous global economic model, globalization-driven cost reduction and efficiency, may no longer match countries' primary national interest: security and access to resources.

Proponents of de-globalization say the new political and economic world order will look very different

from that in evidence today. And they're right: The U.S.-led economic and financial system will continue to be challenged. Scarcity of resources will remain a key focus of government and private sector competition. And in a world where countries' tendency toward cooperation is lessened and competition for scarce resources rises, conflict may be more likely.

But the story doesn't stop there. As we explored the shift toward self-reliance over efficiency, we found that the term "de-globalization" only scratches the surface of a complex trend. **We looked at three of the world's most sensitive supply chains — access to technology, energy, and the global financial system — and found that de-globalization may be a knee-jerk reaction rather than a final result. Instead, re-globalization is likely to happen as countries run into the following roadblocks to turning inward:**

Roadblocks for de-globalization



Technology

National self-sufficiency in semiconductor production for any one country is an impractical, and likely impossible, goal.



Energy

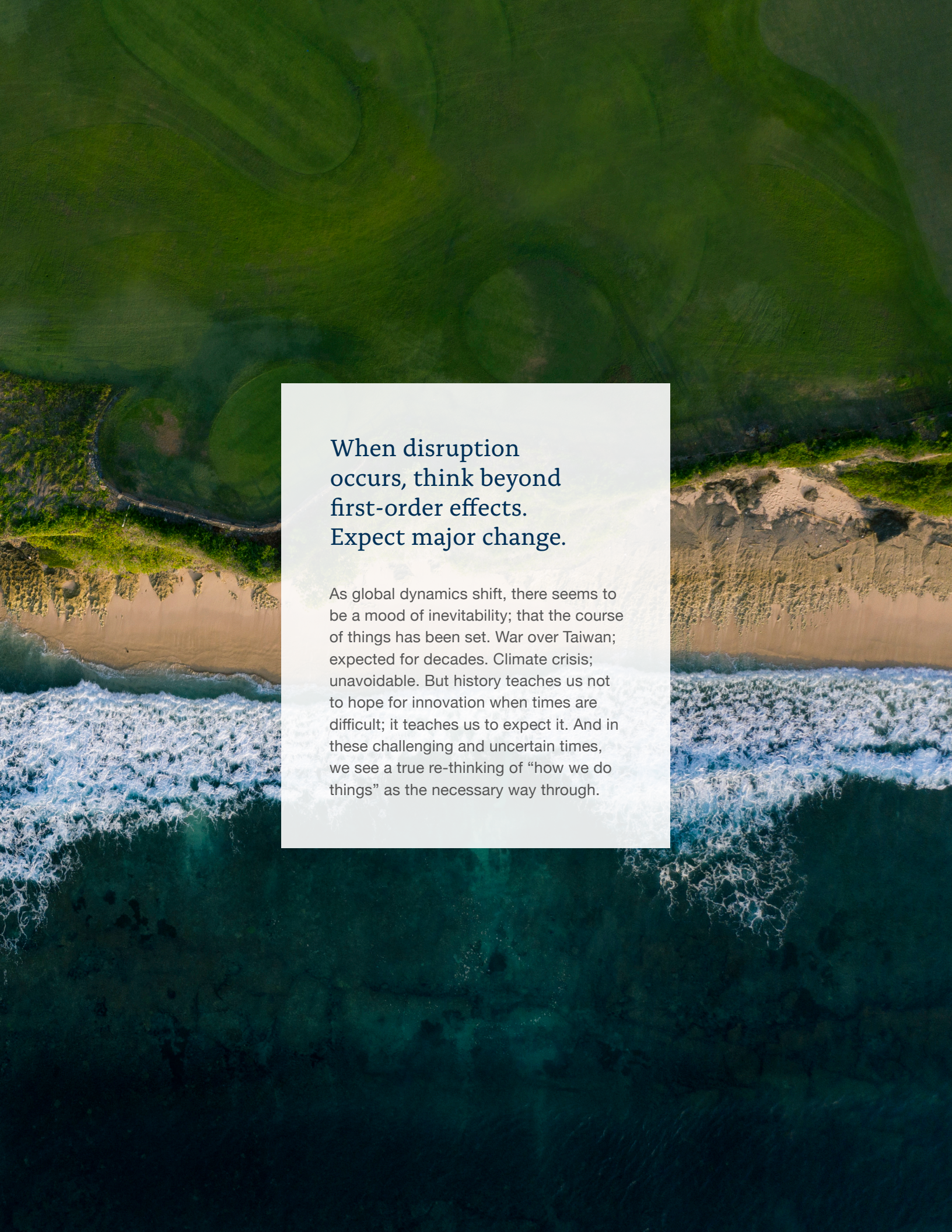
As it stands today, there may not be enough raw materials on earth to achieve a green energy transition with current technology.



Finance

De-dollarization is accelerated by innovation, not geopolitical change alone.

If we're right in saying that true de-globalization is improbable, for the host of reasons we will describe in this report, there is much work ahead. What political, economic, and financial reimagination and innovation will be required to address shifts in the most important and most sensitive supply chains in the world?

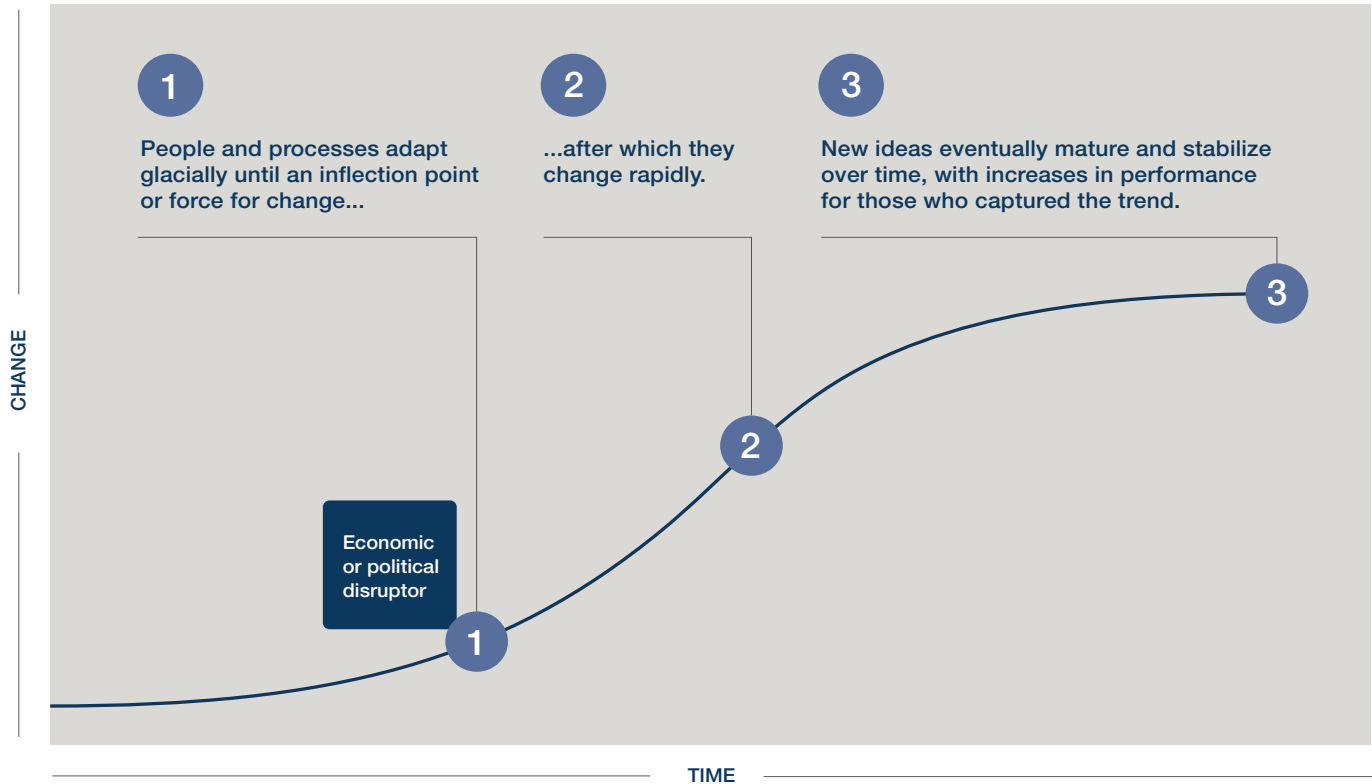
An aerial photograph of a coastline. At the top, a river flows through a lush green landscape. Below the river, a sandy beach is bordered by a high, eroded cliff face. The ocean waves are breaking onto the shore, creating white foam. The water is a deep, dark blue-green color.

When disruption
occurs, think beyond
first-order effects.
Expect major change.

As global dynamics shift, there seems to be a mood of inevitability; that the course of things has been set. War over Taiwan; expected for decades. Climate crisis; unavoidable. But history teaches us not to hope for innovation when times are difficult; it teaches us to expect it. And in these challenging and uncertain times, we see a true re-thinking of “how we do things” as the necessary way through.

In business and technology, we speak of the S-curve, the concept that people and processes adapt glacially until an inflection point or force for change, after which they change rapidly. New ideas eventually mature and stabilize over time, with increases in performance for those who captured the trend.

The S-curve of innovation



Source: New York Life Investments Multi-Asset Solutions, 2023. For illustrative purposes only.

Changes to the global economy are certain, but we challenge the frequent refrain that they skew negative. Opportunities abound. And in capacities so essential to national interest as tech, energy, and financing, it's critical to think both imaginatively and realistically about where, when, and how seismic shifts in production and process may occur. We find it likely that the new world order will look *even more* different than current investment thought allows.

For investors, the key message is to look beyond conversations around de-globalization and a multipolar world, which miss an important component of the *instability* of this megatrend. In this piece, we explore how re-globalization will shape investment opportunities of the future.



(re)negotiating technology relationships

**“Without strategy, execution is aimless.
Without execution, strategy is useless.”**

Morris Chang
Founder, two-time CEO and retired Chairman of TSMC



Self-sufficiency in semiconductor production is an impractical and nearly impossible goal for every country. Accordingly, it's not a question of *if* countries cooperate on tech, but *how*.

Sector

- Technology: highly fragmented supply chains

Shock

- COVID-19 pandemic demonstrates the risk of a highly concentrated semiconductor sector

Response

- Technological self-sufficiency

Limitations

- High costs
- Prohibitively complex supply chain

Necessary innovations

- Political and economic cooperation based on economies of scale and monopolies in portions of the supply chain

In recent years, many have seen conflict between the United States and China as inevitable. Countries are always competing for economic influence, and that competition has historically been an important driver of political and economic progress. Within that context, China's rapid economic development — both in size and in the reduction of poverty for millions of its people — and its alternative economic system can easily be framed as a threat to U.S. hegemony. An increasing volume of public disputes, whether over human rights abuses, trade practices, or technology transfer, increases the sense that change is negative for the global economy.

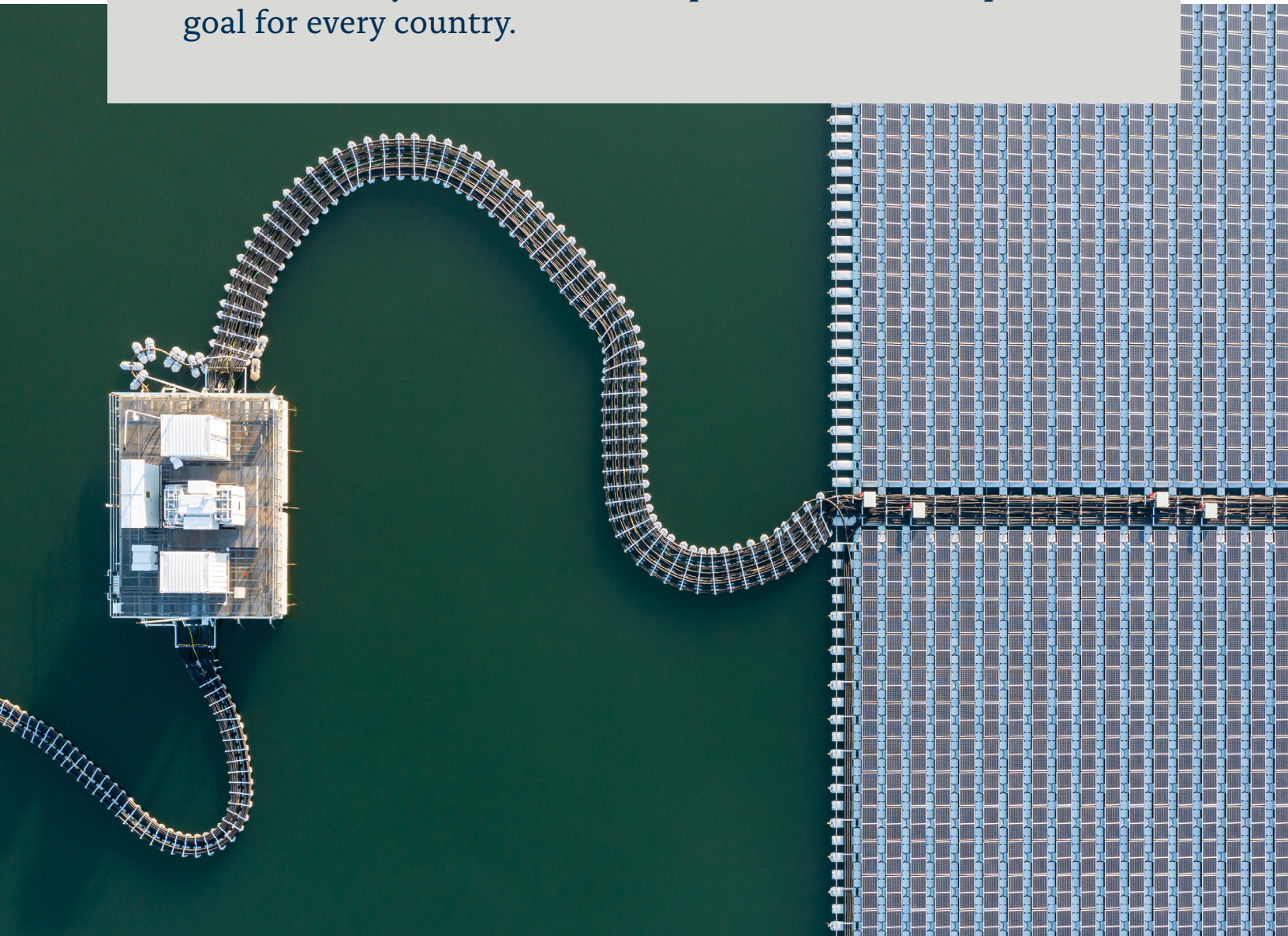
The COVID-19 pandemic made this dynamic felt more globally, by making it abundantly clear that supply chains were vulnerable; perhaps more concerningly, they were controlled by potential adversaries. While this vulnerability extends beyond the U.S. and China (60% of global vaccines are produced in India; 75% of the world's disposable gloves are made in Malaysia), the concentration of the semiconductor supply chain — 60% of the world's computer chips are made in Taiwan — is among the most strategic.

Semiconductors, and the technology they fuel, are the key to competitiveness, even survival, in the new economy. The world as we know it could not function without the Taiwan Semiconductor Manufacturing Company (TSMC), which produces over 50% of all semiconductors and over 90% of all advanced processing capacity. These chips power everything from our cars to our refrigerators to ChatGPT. The other semiconductor giant, Korea, is not a backup for Taiwan. Korea specializes in memory chips, while Taiwan specializes in logic chips — the production processes are not interchangeable.

As the world is waking up to its vulnerability to an event in Taiwan, the race toward self-sufficiency — or at least to establish a working backup plan — is on. As of now, most countries' response has been to spend: \$280B in the U.S., \$47B in Europe, \$422B in Korea, \$6.8B in Japan, and a proposed \$1.4T in China. But most of this spending is focused on incentivizing TSMC to expand their own production capacity overseas (U.S.), trying to replicate some of TSMC's processes (China), or building up portions of the supply chain that support TSMC (Europe).

But there's a catch:

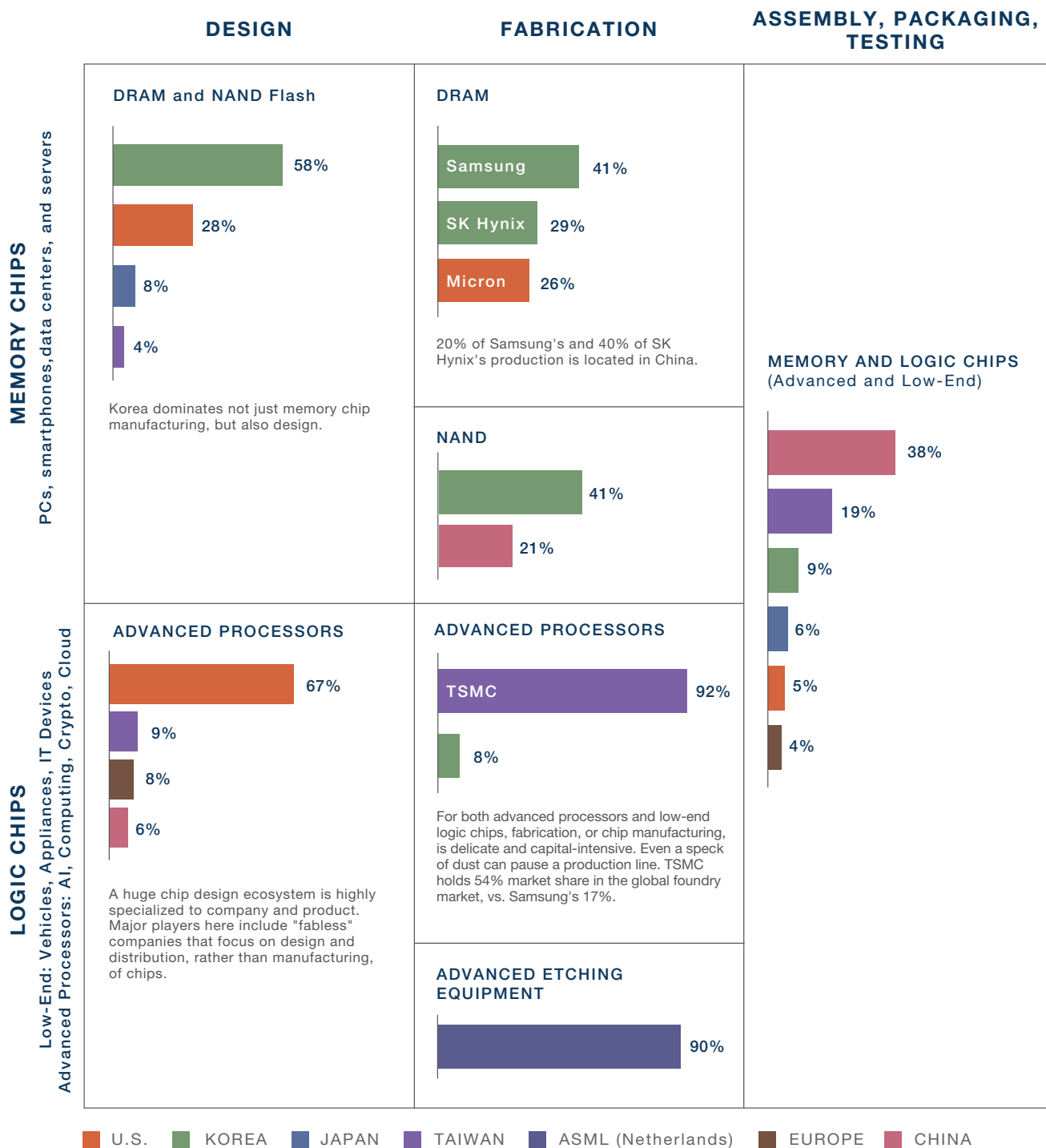
self-sufficiency in semiconductor production is an impractical goal for every country.



We need only examine the semiconductor industry structure to understand why. Not only is semiconductor production perhaps the most delicate process in the world, but the monopolies that feed portions of it are deeply entrenched. *Even Taiwan and Korea are not self-sufficient in tech production, because they are so specialized.*

The global semiconductor industry: a tale of fragmented fabrication

Key countries' and companies' share in major components of the semiconductor supply chain.



Sources: New York Life Investments Multi-Asset Solutions, Semiconductor Industry Association, Bloomberg Finance LP, Boston Consulting Group, Statista, Seeking Alpha, Time, Visual Capitalist, Nikkei, Business Korea. Data sourced April 2023, ranging from 2020 to 2022. TSMC: Taiwan Semiconductor Manufacturing Co. ASML: Advanced Semiconductor Materials Lithography (lithography is light-based silicon wafer etching). SMIC: China's Semiconductor Manufacturing International Corporation.

As the image on the previous page makes clear, technological self-sufficiency is not, and cannot be, about reshoring. This is not so simple as de-globalization. It is about a rethinking and fortifying of a complex and highly technical process. Is innovation the answer here? Yes, but not in the sense that tech firms must somehow outpace the already mind-boggling Moore's law. The real innovation necessary in the tech space, more likely, is political — in international cooperation and trade relationships.

Assuming that true tech self-sufficiency is not possible, the question is not *if* countries must cooperate on tech, but *how*. To this end, the billions the U.S., Asia, and Europe are investing have not been wasted. There is ample room for countries to domesticate *some* tech production — in some ways diversifying the extremely concentrated yet fragmented supply chain of today, but also likely opening up new spheres of specialization and driving future trade disputes.

How can turning inward on tech worsen trade disputes?

U.S. policy has potentially already determined what these spheres will be. In a dramatic policy move in 2019, the U.S. leveraged its influence over TSMC, among many other firms, to cut off sales first to Huawei, and then to a large number of Chinese firms, nearly stranding the Chinese domestic chip-making industry with its existing production capability: low-end logic chips.

Assuming this policy is not reversed, it may exacerbate the already fragmented nature of the tech supply chain, forcing cooperation while making relationships more contentious. China may well use its powers of scale to corner the high-volume lower-end logic chip market. TSMC's and the U.S.' areas of focus are advanced processors (TSMC's new Arizona fab will produce 4nm and 3nm chips), which bode well for leadership in AI and quantum computing. But the U.S. should be wary of the consequences of isolating the Chinese semiconductor market, in large part because it may end up stranding itself. Lower-end chips are perhaps more or equally critical to daily life than advanced processors, used in cars and appliances and personal devices. On the memory chip side, Korean powerhouse Samsung looks unwilling to choose between China and the U.S., its two biggest clients. And let's not forget about leverage: China dominates about 70% of global silicon production and is the major global processor of critical raw materials used in energy and industrial capacity. The end result we expect: a renegotiation of tech spheres between major powers.

Can China keep up with Moore's Law?

The smaller the chip, the more advanced its processing capacity. Moore's Law governs the tech hardware industry, positing that the number of transistors on a microchip doubles every two years. China's semiconductor giant SMIC primarily produces 14nm chips and took 2 years to advance to 7nm chips with the machinery used for the 14nm. But there are significant barriers to maintaining this pace of progress. TSMC — and therefore the U.S. — focus on 5nm and 3nm chips, which use different types of machinery and production to which China is unlikely to have access. In March 2023, for example, Japan announced it would limit the exports of 23 types of chip-making tools in line with U.S. policy goals.¹

True tech self-sufficiency cannot be any single country's goal, but comprehensive strategies for trade and cooperation across the supply chain should be. These strategies will remain international. To this end, countries will need to reimagine their approach to the tech race, with a better eye toward the structural interdependence between major chip producers. Of course, there are astronomical costs to consider, and for an industry where pace and efficiency of innovation are paramount, countries must consider not only investment needs but also their tech companies' global competitiveness.

The sheer value of the semiconductor supply chain makes it likely that processes will continue to evolve and change. Certainly, conflict over those inputs would have an important impact on investors. The innovation that occurs as countries attempt to move around or beyond that threat may be even more impactful.



(re)generating energy supply

“It is not the strongest of the species that survives, nor the most intelligent. It is the one that is most adaptable to change.”

Charles Darwin
English naturalist, geologist, and biologist



Energy security, not to mention a green energy transition, will require meaningful change in political process and resource access.

Sector

- Energy: reliance on a few countries' non-renewable resources

Shock

- Increasing impact of climate change
- Russia invades Ukraine

Response

- Energy independence
- Green transition

Limitations

- More easily achievable for the U.S. than Europe
- Lack of political will to invest in green capacity
- Natural resources and materials required

Necessary innovations

- More efficient energy production and storage in both traditional and green capacity
- Political buy-in

Concern about energy supply is not new; wars have been waged for centuries over how to keep the trains moving. But a combination of developments has driven new urgency to building security around — and alternatives to — energy access. Russia's invasion of Ukraine highlighted just how sensitive the global economy still is to the energy supply chain, and concerns about the impact of climate change have shifted focus from oil exporting countries to a combination of brown and green energy modernization.

As it stands, current raw materials production may not be sufficient to achieve an energy transition with our current technology. This is why we see energy access, and its primacy to nearly every country's national interest, as a major driver of

re-globalization. Every country needs energy, but they are diverse in their access to, public opinion toward, and innovation around various elements of the energy supply chain.

Importantly, after decades of investing in — and developing around — a global energy supply chain divided by carbon importers and exporters, access may soon be completely reimagined. Innovations in both the process around, and inputs to, the energy supply chain will be essential to meet global needs in the coming decades. The global economy may find itself reorganized around the countries, companies, and inputs that drive those ideas.

Innovation in resources: climbing the energy s-curve

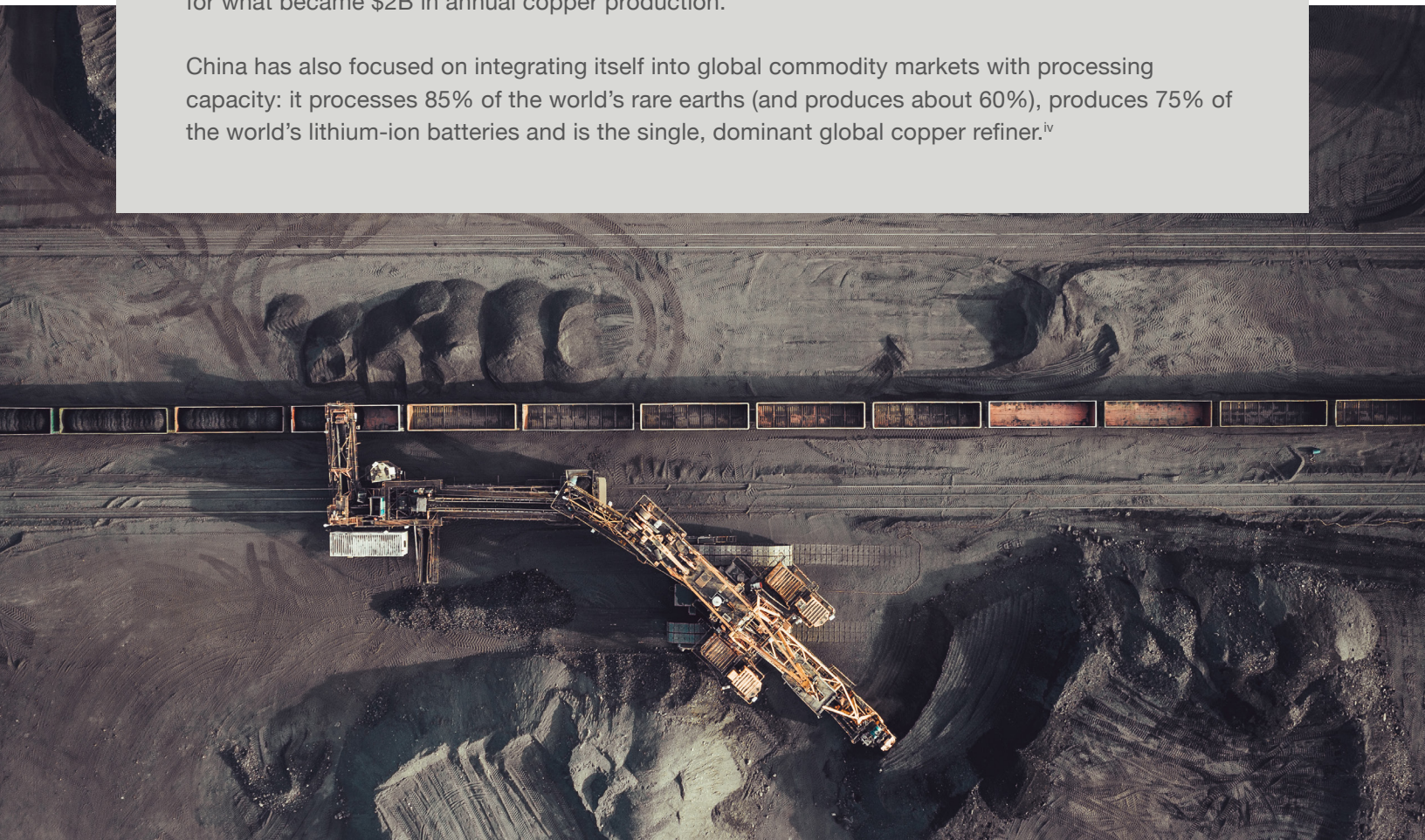
It's a jarring thought, but there might not be enough raw materials on earth to achieve a green energy transition with our current technology. If the absolute level of supply is sufficient, many constraints remain: the concentration of critical mineral production in select countries, a 17-year average lead time from discovery to production of these commodities, and a current lack of recycling capacity to maximize longevity of supply.

China is so far ahead of other countries in building up raw materials supply and processing capacity that it has the potential to hinder goals of energy independence elsewhere — a possibility that other nations are catching on to. In January 2023, the U.S. signed a joint agreement with the DRC and Zambia to support them in building a complete lithium-ion battery supply chain, from mining to assembly.ⁱⁱ The U.S. and Europe are also negotiating a minerals agreement among themselves.ⁱⁱⁱ But whether the minerals “arms race” leads the world deeper into developing nations or even to the moon, governments are increasingly burdened by the realities of exploitation, forced and child labor, and corruption in the energy supply chain.

China is playing the materials long game.

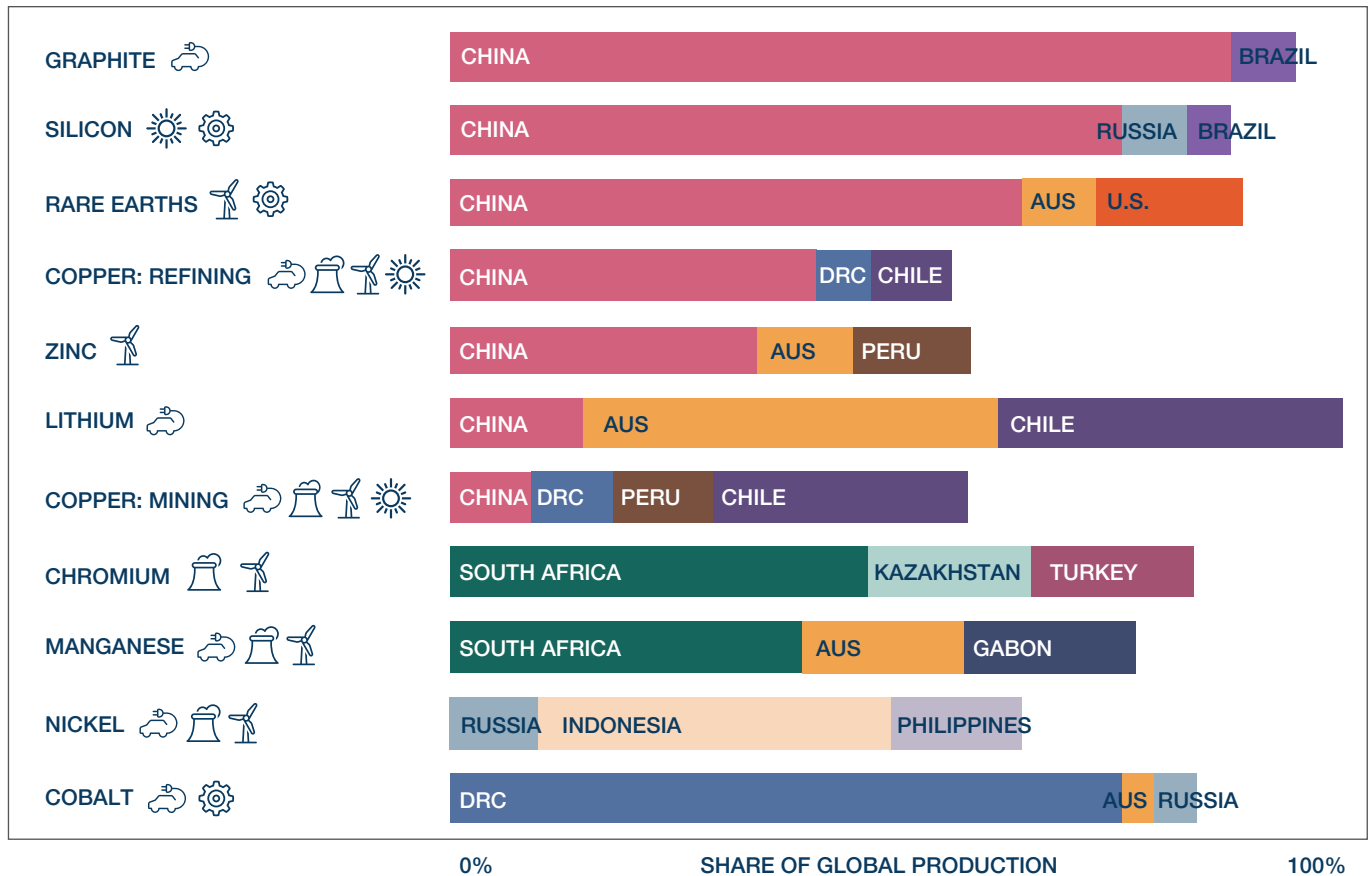
It is the world's largest producer of gold, rare earth minerals, zinc, and lead, and has acquired mining and land assets across Latin America and Africa in critical minerals where it lacks domestic capacity. But this model can come with much human cost — for example, Toromocho, the Peruvian mountain that Chinese mining firm Chinalco began mining in 2012, displaced residents for what became \$2B in annual copper production.

China has also focused on integrating itself into global commodity markets with processing capacity: it processes 85% of the world's rare earths (and produces about 60%), produces 75% of the world's lithium-ion batteries and is the single, dominant global copper refiner.^{iv}



Critical minerals: countries must grapple with their dependence on the raw materials that make an energy transition possible

Top global producers of select critical minerals used in renewable energy capacity



Sources: New York Life Investments Multi-Asset Solutions, U.S. Geological Survey, International Energy Agency. Data as of 2021. DRC: Democratic Republic of the Congo.

Fortunately, the contest over critical minerals may force a virtuous cycle. Shortages and prohibitively high pricing of select inputs may well induce innovation by necessity — a hypothesis first set out by Sir John Hicks in 1932. Aside from the perennial quest to find cheaper, cleaner, more scalable energy sources, we see an intense need to innovate the lithium-ion battery, both to enhance storage and reduce the mineral intensity of the electric vehicle expansion.

We also see a critical need for innovation across the entire nuclear energy supply, production, and disposal process. Nuclear energy is controversial, particularly in Europe and Japan, for sensible reasons including a history of nuclear accidents,

the question of how and where to dispose of radioactive waste, and the potential for increased nuclear energy production to encourage nuclear weapons proliferation. These exact concerns present opportunities for comprehensive innovation in this space: the world’s approach to nuclear energy is over 30 years old and antiquated by many measures. Innovation across the nuclear energy supply chain can and should include everything from sourcing uranium to accident prevention to waste disposal — and in so doing, countries may be able to diversify away from Russia’s total monopoly over the type of fuel used in newer, advanced nuclear reactors.

Why is Russia so dominant in nuclear energy services?

Meet Rosatom, the main exception to Western sanctions on Russia. This state-owned giant is one of just five organizations that process uranium (the four others are American, Canadian, French, and Chinese) and is the leader in nuclear power plant construction across the globe. In 2021, it supplied the U.S. and Europe with 14% and 20%, respectively, of the uranium used to power their nuclear power plants, and accounted for 28% of U.S. enriched uranium needs. The raw commodity is on Rosatom's side: Kazakhstan produced almost half the world's uranium in 2021.

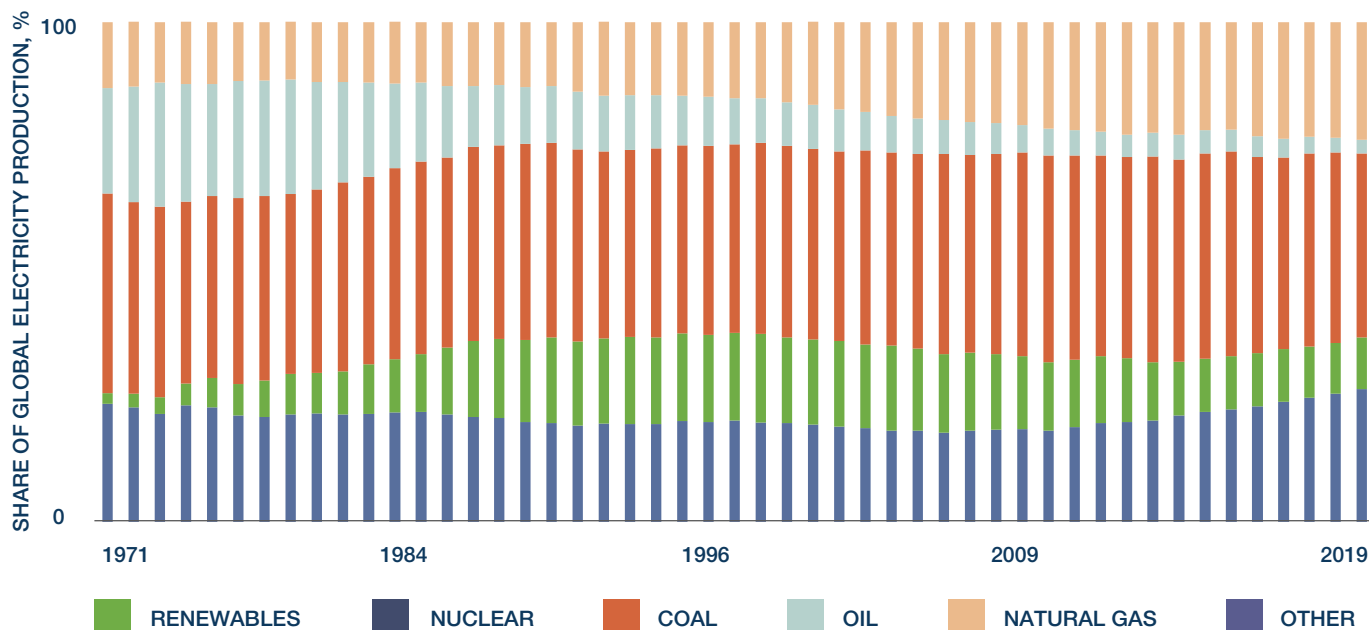
The real clincher in Russian dominance in this space is called HALEU: high-assay, low-enriched uranium, which is more enriched than the uranium required for older generation reactors. Rosatom is its only commercial supplier, and for this reason, Rosatom has not been sanctioned by the U.S. or Europe. But the U.S. is scrambling to build

its own supply chain. To address this dependence there must be innovation, either in uranium supply chains, in the younger nuclear reactor design, or in the Western-Russian relationship.

With belief that innovations can alleviate major areas of controversy around the use of nuclear power, let's explore the essential role of nuclear power in achieving energy independence and a green transition. Note that the innovation we've discussed is not solely for the purpose of adding *new* nuclear capacity, *but to safely maintain what still exists of the world's single largest renewable energy resource.* The average age of nuclear facilities in the U.S., Europe, and Russia is 35-40 years old, versus a standard nuclear power plant lifetime of 50-80 years after license renewals around the 40-year mark. As nuclear plants have been decommissioned and not been replaced — deepening “nuclear fade” — the fall in nuclear's share of global electricity generation has fallen from 18% in the 1990s to 10% in 2018, *more than offsetting the rise in renewable capacity.*^{vi}

The decline in the use of nuclear power has more than offset the rise of renewables

Share of energy sources in global electricity production



As of 2019, the share of renewable + nuclear power in global electricity production is less than in the 1990s.

Source: IEA (2019), Nuclear Power in a Clean Energy System, IEA, Paris <https://www.iea.org/reports/nuclear-power-in-a-clean-energy-system>, License: CC BY 4.0

An aerial photograph of a vast solar farm at sunset. The rows of solar panels stretch across the landscape, reflecting the warm orange and red light of the setting sun. The sky is a gradient of colors from deep orange to a pale, hazy blue. The solar panels are arranged in neat, parallel lines, creating a strong sense of perspective and scale. The overall atmosphere is serene and hopeful, symbolizing clean energy and sustainable development.

Innovation in process: political grit and public- private partnership

If countries could take meaningful steps toward cost-effective and secure energy access, it would seem like a no-brainer. So why hasn't it happened?

The first answer has to do with political will — both domestic and international. Solid and committed leadership is particularly crucial to the goal of energy security because it requires extensive spending, nuanced education of public opinion, and international cooperation.

We learned during the pandemic that in the case of a true emergency, money is no object — not only for developed nations, but also for many emerging markets. But even within that context, McKinsey's oft-cited estimate that an energy transition would cost as much as \$3.5T^{vii} in additional, annual global spend through 2050 is daunting. Sharing this investment across developed markets, considering that the FY 2023 budget of the U.S. Department of Defense was \$2T^{viii}, seems feasible. But countries' ability to dedicate themselves to this spending is likely to be challenged when international needs enter the equation.

Investors will need to adjust to shifting regulatory dynamics

Related but distinct from political will is how a true energy shift might be coordinated and executed across government and the private sector. Government investment is certainly a driver of the energy transition, but the private sector has a meaningful role to play in the execution of, and investment in, an energy transition. This role will vary based on culture. In Europe, for instance, a larger government role in energy policy has already been accepted. In the U.S. and on a global coordination level, this level of political reach is likely to be resisted.

Will the private sector play ball?

The global shipping industry provides an example demonstrating the need for innovative, specific, and agile regulatory oversight. In 2020, an International Maritime Organization regulation attempted to reduce airborne pollution by 77% in port cities by forcing shipping companies to cut sulfur emissions in ship exhaust. There were two ways to meet this mandate: purchase fuel with lower sulfur content —

up to 50% more expensive — or install “scrubbers,” which essentially move pollution from the air into the sea. As of 2021, approximately 4300 scrubber-equipped ships release 10 gigatons of wastewater into the oceans each year^x.

Accordingly, investors should be prepared for a shifting and more demanding regulatory atmosphere for companies. Governments may incentivize companies with spending and investment, tax breaks, and even hiring incentives for the energy industry. More punitive measures could involve not just regulation but also export bans of energy infrastructure components, input requirements, and fines (potentially in line with a carbon credit system, so that companies not meeting clean or domestic energy goals are penalized). There will likely be an increased back-and-forth between regulators and companies as the corporate sector focuses on rising costs and how they may impact global competitiveness.

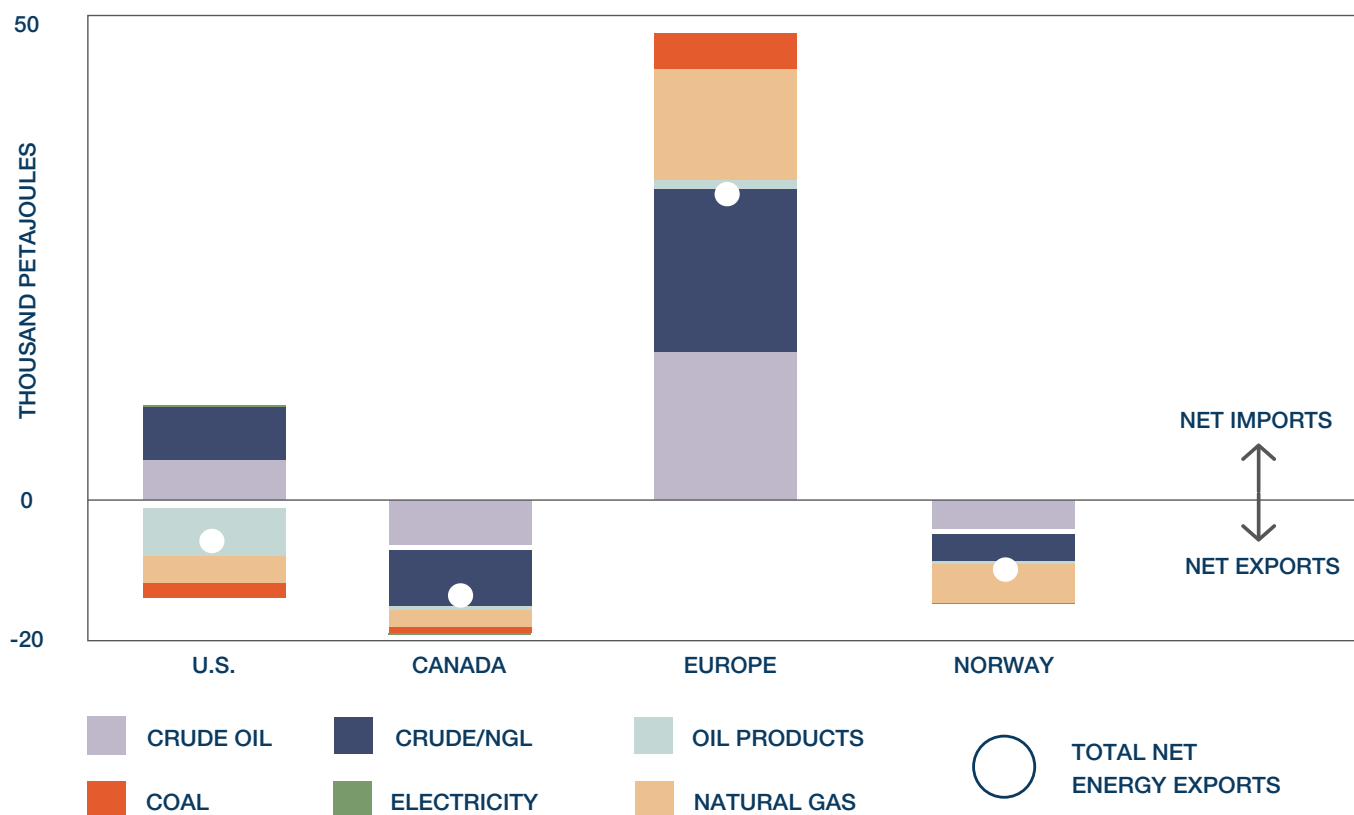


Different starting points, different finish lines.

As the energy sector transitions — as countries seek secure and greener access — global political structures are likely to transition as well. Some countries are closer to independence, for example, and risk leaving others behind. Some countries, including the U.S., Canada, and Norway, are closer to energy independence but continue to use imports to fill gaps in domestic demand and supply, which are often regional, seasonal, or subject to weather events affecting drilling and processing. Others, including Europe, Japan, and Korea, have a much longer road due to scarcer domestic, traditional energy resources and processing capacity.

While the U.S. is closer to energy independence than Europe, net exports mask significant import needs in crude oil products

Annual net imports/exports by energy product, U.S. and Europe



Sources: New York Life Investments Multi-Asset Solutions, IEA, April 2023. Data as of 2020.

Nations lacking in traditional domestic energy resources will likely see increased reliance on renewables, nuclear, and traditional capacity imported from allies (increasing positive externalities of other nations achieving energy independence). We then must consider that developing countries are likely to need and want assistance in shoring up their own energy security. In the Global Clean Energy Action Forum in 2022, 16 countries committed \$94B to fund and incentivize clean energy projects globally* — but

ongoing support may face pressure if spending needs rise at home in developed markets.

The daunting uphill climb of the policy, political, and popular efforts required to achieve an energy transition drives home the importance of innovating, not just in the classic technological sense, but potentially even more so when it comes to the processes by which the world accepts change.

(re)imagining global finance

“All money is a matter of belief.”

Adam Smith
Scottish economist and philosopher



There's plenty of legitimate pushback to a dollar-dominated global financial system. But it'll take more than geopolitical shifts to see true globalization of the international financial landscape.

Sector

- Finance: global financial system dominated by the U.S. dollar and other U.S. systems

Shock

- Western sanctions on Russia
- Global pandemic's effect on trade flows

Response

- Diversify own country's access (around the U.S. dollar) to the global financial system

Limitations

- Lack of dollar alternatives
- Entrenched U.S. currency and systems dominance

Necessary innovations

- Dynamic financial plumbing
- Regulatory technology
- Adapting to new trade flows

On nearly every available metric, the U.S. dollar dominates global finance. The dollar makes up 59% of global foreign exchange reserves. Foreigners comprise 35% of the U.S. sovereign debt market, and 64% of foreign debt issuance is done in U.S. dollars. The dollar is highly convertible and is the nearly ubiquitous measure for global commodities

contracts. Other important reserve currencies, such as the euro or the yen, fall short of these statistics. The renminbi is hardly on the ladder.

The U.S. dollar dominates global finance

REQUIREMENTS FOR A GLOBAL RESERVE CURRENCY				
REQUIREMENT	U.S. DOLLAR	EUROPEAN EURO	JAPANESE YEN	CHINESE RENMINBI
Trust in the central bank <i>Share of global FX reserves</i>	59%	20%	6%	2%
Liquidity <i>Foreign holding of government debt</i>	35%	38%	30%	9%
Broad acceptance <i>Share of foreign currency debt issuance</i>	64%	24%	3%	1%
Convertibility <i>FX transaction volume</i>	45%	16%	9%	4%
Open capital account <i>Capital controls</i>	None (Open)	None (Open)	Some (Restrictions)	Tight (Closed)
Floating exchange rate regime <i>Exchange rate regime</i>	Floating	Floating	Managed (Yield curve control)	Managed (against a basket of currencies... including the U.S. dollar!)

Sources: New York Life Investments Multi-Asset Solutions, Federal Reserve, Bank for International Settlements, Bloomberg Finance LP. FX refers to foreign exchange. The Chinese currency can be referred to interchangeably as the renminbi or the yuan.

This dominance provides benefits on many levels; that is how it has become so entrenched in the first place. Dollar dominance provides a predictable and transactable system for countries where businesses operate in less stable currencies. Countries experiencing severe currency volatility have seen their citizens rush to U.S. dollars. In the face of hyperinflation or economic collapse, entire economies can switch to the U.S. dollar. Ecuador adopted the U.S. dollar as its official currency in 2000 in response to a financial crisis, and as early as 2019, the Lebanese economy began dollarizing amid the country's economic crisis.

But for as long as the dollar has been dominant in the global financial system, it has also been clear that this system does not work for everyone — at least not all the time. High foreign issuance of U.S. dollar-denominated debt, for example, puts

countries at risk of painful and sudden increases in debt servicing costs when the dollar strengthens. The Argentine monetary crisis of 2018 is just one of many examples. In this case, an already struggling economy faced an even more acute crisis when the Federal Reserve began hiking interest rates; roughly 70% of the country's government debt stock was denominated in U.S. dollars^{xi}.

Despite occasional moves to diversify away from the dollar, it has been difficult to unseat. Consider 2023's events in the Middle East. Saudi Arabia has discussed with the Gulf and China the potential to price some oil contracts in renminbi. These events have raised questions about the future of U.S. dollar dominance ahead, but without a meaningful alternative to the U.S. dollar, these moves are only on the margin, likely to evolve over decades rather than years.

We believe recent calls for de-dollarization may be missing the point. De-dollarization isn't likely to come from geopolitical competition alone. In fact, changes in dominant currencies have historically come from *innovation*, perhaps accelerated by

conflict, rather than a single event. If the dollar is to be unseated, it will be by an alternative system that provides more benefits than those reaped by dollar dominance—and at a lower cost.

It takes more than conflict to unseat a dominant currency

Historical examples of currency transition

DOMINANT CURRENCY	MAINSTREAM VIEW FOR DOMINANCE	INNOVATION CATALYST
<p>Venetian ducat (12th century - 16th century)</p>	<p>The Fourth Crusade and other medieval military conflicts</p>	<p>Gold standard, minting and navigation technology</p>
<p>Spanish dollar (16th century - 1800)</p>	<p>Spanish Armada's defeat of the English navy in 1588</p>	<p>Mining and transportation technology</p>
<p>British pound (1815-1920)</p>	<p>The Seven Years' War and the Napoleonic Wars</p>	<p>Steamship industry expansion</p>
<p>U.S. dollar (1920 - ?)</p>	<p>WWI, WWII</p>	<p>Early adoption of telegraph, federal reserve system, development of aviation industry</p>

What might this innovation look like? It is unlikely that an alternative system exists in perfect form today, but we can take clues from recent developments. Blockchain, for example, represents a significant potential disruptor to global finance.

Digital currencies have the potential to disrupt money and banking in unpredictable ways. Alternatively, dollar replacement could come from a country that develops and commercializes some economy-shifting technology—whether that be in artificial intelligence, quantum computing, or clean energy—that increases its importance to the global economy. Suppose South Korea were to create and deploy the most secure and reliable blockchain technology. In that case, it would likely experience a surge in the use of the won due to the enhanced ease and safety of transactions. A faster, more cost-effective, highly secure cross-border transaction

method would likely increase regional trade and remittances involving the won as well, increasing both Korea's and the won's influence on the world stage.

Taking this argument a step further, innovation beyond the dollar may begin from outside of currency or foreign exchange itself. The dollar's primacy, after all, is built on a broad range of financial structures, including regulatory frameworks, global influence, contracts, and even sanctions.

It is the latter category that we are watching most closely. The United States has a long history of using its economic weight as a foreign policy tool, but the increasing use of financial sanctions is now accelerating the construction of non-U.S. dollar transaction networks. For instance, U.S. sanctions on Russia after the invasion of Ukraine, which cut

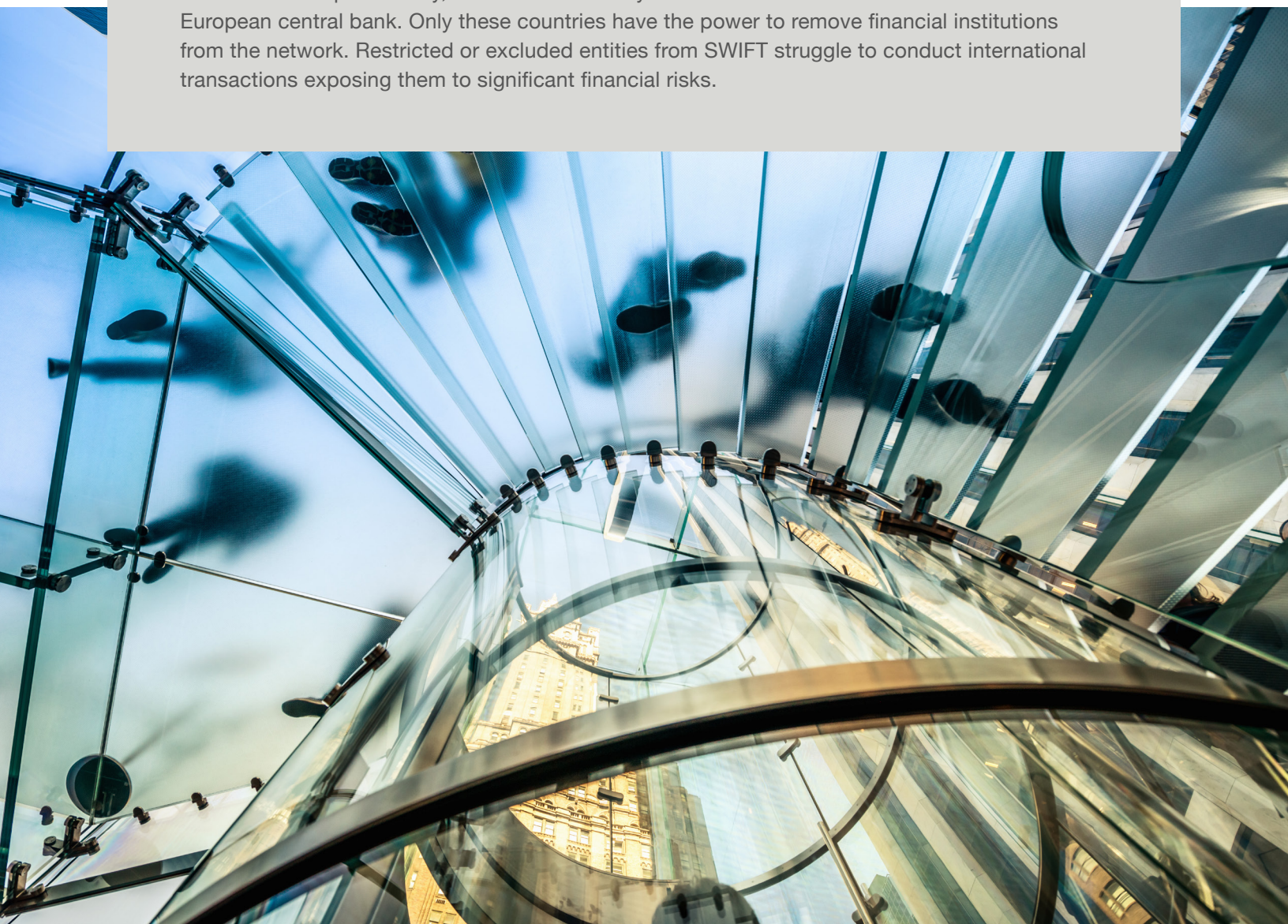
Russia off from the dollar and excluded Russia from the SWIFT payments network, have raised a serious question: if the owner of the world's dominant currency does not agree with another country's actions, will it be frozen from the global financial

system? This concern, as with the concerns about access to energy or semiconductors, has driven countries to consider alternatives to this essential element of financial plumbing.

What is SWIFT?

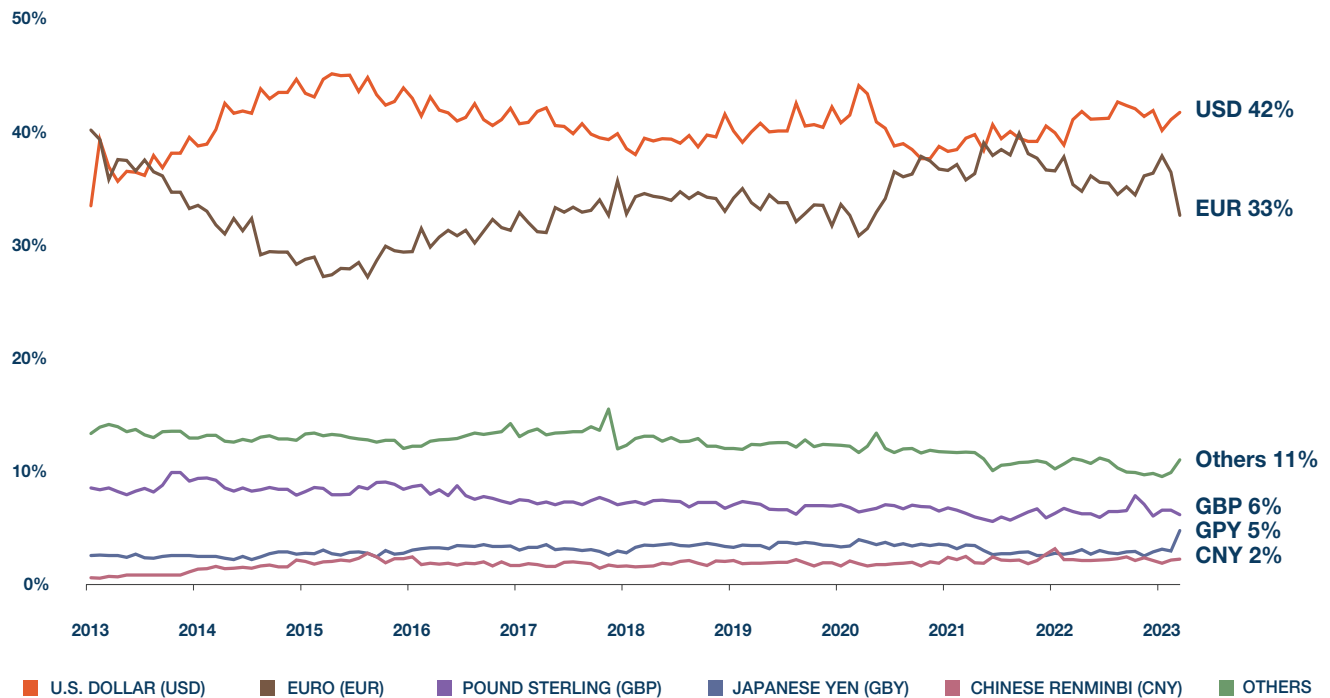
SWIFT, the Society for Worldwide Interbank Financial Telecommunication, is a global messaging network that facilitates secure cross-border transactions between thousands of financial institutions. Playing a crucial role in the global financial system, SWIFT enables banks to communicate and process payments efficiently, expediting international trade and finance. Without SWIFT, transaction communication would occur over error-prone emails or through slow moving telegraphic transfers ("TELEX," like fax machines).

SWIFT is a non-profit entity, but it is overseen by the G10 central banks as well as the European central bank. Only these countries have the power to remove financial institutions from the network. Restricted or excluded entities from SWIFT struggle to conduct international transactions exposing them to significant financial risks.



The U.S. dollar and euro consistently maintain a dominant share of global transactions

Composition of currencies in SWIFT transactions



Source: New York Life Investments Multi-Asset Solutions, SWIFT, Macrobond, January 2012 through March 2023. Others: Australian dollar (AUD), Canadian dollar (CAD), Chilean peso (CLP), Danish krone (DKK), Egyptian pound (EGP), Hong Kong dollar (HKD), Hungarian forint (HUF), Malaysian ringgit (MYR), Mexican peso (MXN), New Zealand dollar (NZD), Norwegian krona (NOK), Polish zloty (PLN), Russian ruble (RUB), Singapore dollar (SGD), South African rand (ZAR), Swedish krona (SEK), Swiss franc (CHF), Thai baht (THB), Turkish lira (TRY), Venezuelan bolivar (VEF).

This is not the first time that SWIFT has been challenged.

In 2015, the People's Bank of China launched the CIPS (China International Payment System) banking network, which is a payment clearing and settlement system designed to facilitate cross-border transactions denominated in renminbi and promote the internationalization of the Chinese currency. Even U.S. allies have had to manage the difficulty of relying on the dollar. In 2019, following Iran's loss of access to SWIFT due to U.S. sanctions, France, Germany, and the United Kingdom established the Instrument in Support of Trade Exchanges (INSTEX). This special-purpose vehicle was designed to enable non-SWIFT transactions with Iran. INSTEX gained support from other EU nations and was made accessible to all member states. Though its use is restricted to humanitarian purposes, it serves as an important reminder that allies — and not just competitor countries — sometimes need alternatives to SWIFT in order to circumvent the risk of sanctions imposed by another nation.

De-dollarization is a complex trend whose origins are likely to be found in innovation, and whose implications could span many sectors of the economy. Investors focusing on the loss of any system of the past may miss the opportunity of systems paving the future. For investors willing

to look beyond the overhyped de-dollarization narrative, the evolving financial landscape is ripe with opportunities, from changing trade dynamics to blockchain development. By embracing these emerging systems, investors may be able to position themselves for a more secure financial future.

(re)investing for the future

**“Change? Change? Aren’t things
bad enough already?”**

Lord Salisbury
Former Prime Minister of the United Kingdom

Major changes in global economic structures are often nonlinear in nature. But that can't deter investors; being ahead of the curve in spotting and interpreting these trends can generate meaningful portfolio value. How can investors seek to position for the very long term?

It's the economy.

Building redundancy and resilience necessarily means higher costs in the global economy. Higher costs likely result in two things: inflation and debt. Here, the question of the productivity of any investment — whether in critical infrastructure, process, or product — becomes critical. If investing in energy and tech resilience is deemed productive and accretive to potential economic growth and labor opportunities, the upward impact on prices and debt across countries, local governments, and companies can be more easily digested. But if this investment is seen as redundant and less efficient, without benefiting long-run activity, higher inflation and debt levels may be difficult to stomach.

Investment opportunity: rebalance portfolios to meet a new macroeconomic regime of moderate inflation and interest rates

Labor and social policy work with a long lag.

Innovation creates significant change for workers — and it is difficult to foresee exactly how, where, and by how much, workers will be affected by innumerable sources of innovation. But history tells us this: Innovation will make some jobs redundant — even jobs requiring extensive education — while creating new ones as infrastructure and industries expand. The trick is in the handoff. Industry is often organized regionally, meaning that displacement in certain sectors can impact full communities that may not seamlessly fit into new roles. We've written in this piece about the political will required to make sizable and long-term transitions. When it comes to labor mobility, the cost of innovation comes not only in terms of training, but also in terms of physical and mental health.

Investment opportunity: healthcare

Know your spots.

Not all long-term trends are immediately investable. Here, time horizon is key: Strategies geared toward slow-simmering themes are likely to take years to see impact, and price action in the short term is likely to be dominated by the current economic cycle.

Investment opportunity: find the overlap of cyclical and structural trends

Question foundational assumptions.

This piece has illustrated that changes in the global economy will be accompanied by changes in process, product, and industry composition. Don't lose sight of how those changes may impact the underlying facets of investment. For example, index composition may change, requiring investors to reassess and rebalance.

Investment opportunity: implement a regular (annual) assumptions-testing process

Look beyond the obvious beneficiaries.

Consider the invention of the automobile. Even knowing this technology could change global supply chains, an investor might not have guessed which car manufacturers would appear, grow, and excel over time. Investing in the “plumbing” for that invention — the rubber, tires, asphalt, materials, and energy that propel the automobile — provides a more diversified approach. Also consider the “less likely” winners of innovation: Offshore wind farms, for example, require specific types of ships to build and service them. Thinking broadly: as new capacity is created, think about who may supply that capacity.

Investment opportunity: digital, green energy, brown energy, and utility infrastructure, via global listed infrastructure equity or municipal bonds

Diversify.

There are winners and losers for every megatrend. Investors may benefit from diversification rather than placing bets with one horse, whatever that horse may be — one mining company, one country's debt, one chip manufacturer, or one REIT.

Investment opportunity: thematic equity in areas like clean transport, innovation

Keep scanning the horizon.

We believe there is a great need for enhanced portfolio agility in the years ahead, to take advantage of increased opportunities (stemming from investment and innovation); to mitigate risk (potential for conflict may be higher as countries turn inward and compete for scarce resources); and to navigate the uncertain (including how governments will incentivize companies to work toward national goals). The process of re-globalization is a transition. It may not be that investors abandon the old and pile into the new, but rather consider the ways that this long-standing trend can change the very foundations of business today.

Investment opportunity: multi-faceted risk management approach (ESG), careful credit analysis, regular scanning of the structural investment landscape



The Multi-Asset Solutions team is New York Life Investments' specialist in multi-asset investing.

The team leverages the depth and breadth of New York Life Investments' platform to seek to deliver strong investment opportunities across multi-asset strategies, market intelligence and insights, and customized solutions to its strategic partners.



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Sources

- ⁱ Maki Shiraki and Joyce Lee. “Samsung considering chip test line in Japan for advanced chip packaging -sources.” Reuters, 2023.
- ⁱⁱ “U.S. lays out possible critical raw materials agreement with EU -Handelsblatt.” Reuters, 2023.
- ⁱⁱⁱ Arianna Skibell. “Biden turns to Africa to counter China.” Politico, 2023.
- ^{iv} Office of the Spokesperson, U.S. Department of State. “The United States Releases Signed Memorandum of Understanding with the Democratic Republic of Congo and Zambia to Strengthen Electric Vehicle Battery Value Chain.” 2023.
- ^v Patricia Cohen. “Why Russia Has Such a Strong Grip on Europe’s Nuclear Power.” The New York Times, 2023.
- ^{vi} IEA. “Nuclear Power in a Clean Energy System.” 2019. https://iea.blob.core.windows.net/assets/ad5a93ce-3a7f-461d-a441-8a05b7601887/Nuclear_Power_in_a_Clean_Energy_System.pdf
- ^{vii} McKinsey Global Institute in collaboration with McKinsey Sustainability and McKinsey’s Global Energy & Materials and Advanced Industries Practices. “The net-zero transition: what it would cost, what it could bring.” 2022.
- ^{viii} USAspending.gov. Department of Defense (DoD) FY 2023 Summary.
- ^{ix} Eric Stokstad. “Shipping rule cleans the air but dirties the water.” Science, 2021.
- ^x U.S. Department of Energy. “United States Announces \$94 Billion Of Global Public Funding To Accelerate Clean Energy Worldwide.” Energy.gov, 2022.
- ^{xi} IMF Country Report No. 18/219. July 13, 2018.



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