

Made in America

Protecting US infrastructure and independence

27 June 2023

Chief Investment Office GWM

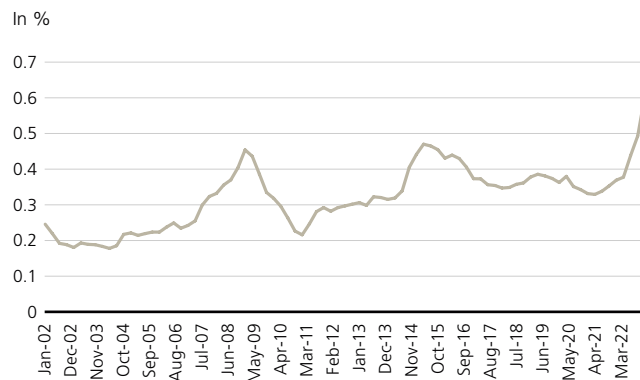
Investment Research



At a glance

Over the last three years, the US Congress has successfully passed three acts aiming to upgrade US infrastructure and boost domestic manufacturing of critical resources: the CHIPS and Science Act, the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act. Together, these pieces of legislation set the nation up to embark on one of the most significant government investment spending plans we have seen in years.

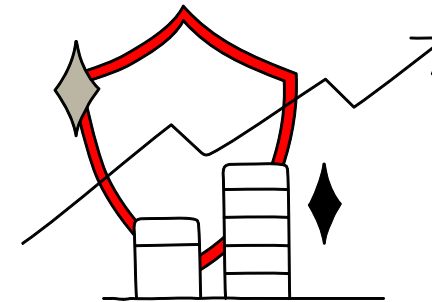
Figure 1
Manufacturing construction as a share of GDP hits highest level in decades



Source: Federal Reserve Economic Data (FRED), UBS, as of 1 January 2023

In 2021, the government appointed its first-ever director for the newly created Made in America Office within the Office of Management and Budget. Reshoring efforts are further supported by a renewed desire to build resilient supply chains and reduce reliance on global partnerships, after both the pandemic and the war in Ukraine served as reminders that global supply chains carry severe geopolitical risks.

While US manufacturing sentiment measures have been weak recently, we are seeing increases in factory construction, which grew over 35% in 2022, reaching a multi-decade high as a percentage of GDP. Bringing back manufacturing to US shores has limitations, but some areas of investment need are likely to remain in focus following the passage of the three acts, namely infrastructure, energy security, technological leadership, and critical minerals. These efforts should be positive for several companies that we have identified, and more broadly for our longer-term investment themes “Automation and robotics” and “Energy efficiency.”



A note on US reshoring
 Some offshore manufacturing is unlikely to return to the United States, but we do believe certain areas will remain strategic focuses for national security and investors alike.

To set expectations, we do not anticipate a large step-change in US manufacturing overall. Past attempts at reshoring US manufacturing have failed in favor of global trade and competitive advantages. Any potential resurgence of American manufacturing will take years and face labor constraints, alongside other challenges such as the often-lengthy process of regulatory review. We also expect plans for supply chain resiliency to focus more on diversification rather than an outright move back to the United States, as we have seen in chipmakers’ plans to build new production facilities both in the country and abroad. Still, new US factory announcements have made it clear that the new government initiatives are making an impact on companies’ capital spending plans. In this report, we review the key points of each piece of legislation, discuss their strategic focus areas, and provide investment takeaways around three topics: sector-level impact, municipal bonds, and thematic equity ideas.

Contents

Editor-in-chief

Michelle Laliberte

Authors

Kevin Dennean

Jay Dobson

Nathaniel Gabriel

Michelle Laliberte

Jeannine Lennon

Tom McLoughlin

Eric Potoker

Brian Rose

Jon Woloshin

Editors

Abe De Ramos

Mark Boehme

Design

Cheryl Seligman

Project management

John Collura

Matt Siegel

Allie Gorin

Photos

Getty Images

04

Part 1

Legislation and strategic focus areas

05 Key pieces of legislation

- ★ Infrastructure Investment and Jobs Act
- ★ Inflation Reduction Act
- ★ CHIPS and Science Act

06 Strategic focus areas

- ★ Critical infrastructure
- ★ Energy security
- ★ Technological leadership
- ★ Critical minerals
- ★ Permitting reform

09 Economic and labor considerations

- ★ The labor challenge

11

Part 2

What does this mean for investors?

12 Sector impact

- ★ Energy/Utilities
- ★ Healthcare
- ★ Industrials/Materials
- ★ Real estate
- ★ Technology

15 Municipal bonds

17 Thematic equities

- ★ Made in America
- ★ Automation and robotics
- ★ Energy efficiency



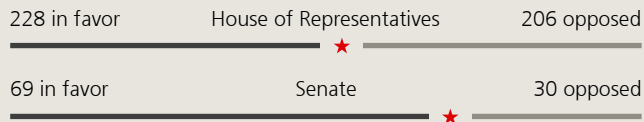
Part 1

Legislation and strategic focus areas

Key pieces of legislation

Infrastructure Investment and Jobs Act

Enacted on 15 November 2021



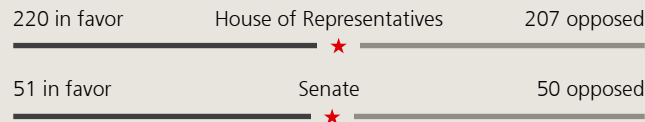
Purpose: The Infrastructure Investment and Jobs Act (IIJA) authorized USD 1.2 trillion in total expenditures and USD 550 billion in new infrastructure spending over five years. The incremental new spending, which otherwise would not have occurred, was divided more or less evenly between surface transportation and a variety of other infrastructure projects.

Priorities: Often called the Bipartisan Infrastructure Law, the legislation runs to 2,700 pages. Among other investments, it includes provisions for surface transportation, public transit, broadband, grid reliability and resiliency, cybersecurity, and water quality. Electric vehicle (EV) charging infrastructure and the electrification of school and transit buses received initial funding.

Progress: The federal government thus far has committed USD 220 billion in IIJA funds for 32,000 projects in 4,500 communities across the country. The act provides more than USD 60 billion for investments in broadband infrastructure through four programs managed by the Department of Commerce. The Federal Communications Commission has convened a task force to investigate the feasibility of colocating broadband fiber with new electricity transmission and distribution lines.

Inflation Reduction Act

Enacted on 16 August 2022



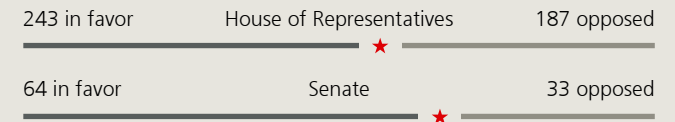
Purpose: The Inflation Reduction Act (IRA) of 2022 was a budget reconciliation measure. Among other provisions, it extended and increased tax incentives to promote the adoption of renewable energy, increase the production of electric vehicles, and boost domestic production of solar panels and wind turbines. Funding was also dedicated to the elimination of electricity transmission across regional power grids.

Priorities: The IRA prioritizes decarbonization, energy transition, production tax credits, and domestic manufacturing. It also authorized Medicare negotiation of drug prices, imposed excise tax on stock repurchases, and introduced a 15% corporate alternative minimum tax rate.

Progress: The act contains provisions for a 30% tax credit for renewable energy facilities, with a bonus worth an additional 10% of the project cost for using domestic content. The Department of the Treasury issued a Notice of Intent to publish a formal rule to allow photovoltaic cells used in the manufacture of solar panels to be made overseas, so long as the domestic content cost threshold is met by other components. The Department of Energy (DOE) expects solar power generation to account for 17.8 GW of new capacity, followed by wind at 11.2 GW and natural gas at 9.2 GW.¹

CHIPS and Science Act

Enacted on 9 August 2022



Purpose: The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act was designed to expand the ability of federal agencies to make strategic investments in emerging technologies, promote scientific innovation, strengthen existing supply chains, and promote domestic production of critical components. Better known as the CHIPS Act, it also provided funds to promote STEM education and modernize aging infrastructure at national labs and universities.

Priorities: The act prioritizes artificial intelligence, quantum computing, robotics and automation, semiconductor manufacturing, biotechnology, advanced materials science, and workforce development.

Progress: Congress has provided almost USD 53 billion to boost semiconductor fabrication capacity, according to the Congressional Research Service. Programmatic funding in other areas is running behind schedule. According to the Federation of American Scientists, the FY 2023 Consolidated Appropriations Act did not meet the agency funding commitments established in the CHIPS Act. FY 2023 omnibus funding was nearly USD 3 billion short of the authorized targets for the National Science Foundation, for example.

¹More guidance and clarification on domestic content tax credits is expected later this year.

Strategic focus areas

The three plans we have outlined share a common thread: They aim to secure American independence by protecting critical infrastructure and reducing US reliance on other nations for the inputs that power our economy. Below we provide some additional context on key areas of investment need that the three acts intend to address. This is not a comprehensive list of what these spending plans include, but instead we put a spotlight on areas where we expect to see investment, and include a discussion on permitting reform that is critical to the speed of the energy transition. Some of these areas may have a greater likelihood of continued political support stemming from a desire for national security, whereas spending on solutions that are simply “nice to have” rather than “need to have” are more likely to see repeal efforts.

Critical infrastructure

Infrastructure is a broad term for the vast network of roads, bridges, electrical grids, water pipes, and transport rails that allow our economy to function as expected. Failing to address infrastructure poses risks for both businesses and households that rely on it to transport goods and provide services. The spending plans we have identified attempt to address a wide range of infrastructure challenges. We highlight transport and water below.

Transport: Both traditional and new electrified transport infrastructure are included in the three spending plans—and for good reason. For just one example, about 42% of all bridges

in the United States were at least 50 years old as of 2021, and 7.5% were labeled “structurally deficient” by the American Society of Civil Engineers. Separately, efforts to build out infrastructure for electrification will be necessary for electrified transport to take hold. The Charging and Fueling Infrastructure Discretionary Grant Program (CFI) and the National EV Infrastructure (NEVI) plan were both established by the IIJA, and will invest in transport infrastructure to facilitate electrification. The NEVI plan included a mandate to source 55% of the cost of components from the United States, but this piece of the law was deferred until 2024. While EV-related provisions could be a topic of political debate moving forward, traditional transport infrastructure should be less controversial.

Water infrastructure: The average US water-network pipe is 45 years old, but some skew much older, according to the American Society of Civil Engineers’ Infrastructure Report Card 2021. The average lifespan of water pipes is 50–100 years, depending on how they are made and the amount of pressure they are meant to withstand, indicating that on average US water infrastructure is coming due for upgrades. The IIJA allocated about USD 50 billion to address lead service lines, emerging contaminants like PFAS, and geographic water sources.

Energy security

Energy is the lifeblood of our economy. We believe an all-hands-on-deck approach to energy security will be needed



to maintain affordability and reliability, and this requires investment across the entire energy supply chain. Each of the spending plans has laid significant incentives pertaining to the areas below.

Energy production: Deeply intertwined with economic growth, global energy demand has fallen only twice over the last 30 years—2009 and 2020, both particularly bad years for the economy. Fossil fuels still account for the majority of energy supply, yet global oil and gas capital spending has declined about 56% since 2014.² Clean energy resources such as wind and solar have garnered a lot of attention following the IRA and are growing rapidly, but the spending plans also include provisions that should benefit traditional energy companies, such as tax credits for carbon capture. Despite the incentives built into the plans, reshoring clean energy supply chains will be no small feat. Even if the IRA's tax credits make US solar panel manufacturing less expensive, the US currently has little to no capacity to manufacture solar wafers, and only a small footprint in trackers and modules.

Grid resiliency: Energy security cannot be fully achieved without a reliable electric grid. Added power capacity does little without a way to transmit the power to the end user, and according to the DOE, more than 70% of the nation's grid transmission and power transformers are over 25 years old. The Transmission Facilitation Program was launched alongside the Bipartisan Infrastructure Law to develop new transmission lines, and the DOE's Building a Better Grid Initiative will dedicate over USD 20 billion of investment in the years ahead. The Inflation Reduction Act followed these initiatives with about USD 3 billion in investment for building out new high-capacity lines.

Battery and storage technology: Complex and globally integrated supply chains for battery manufacturing indicate it is unlikely that batteries will be made 100% in the United States. However, we are already seeing several announcements related to battery recycling that should eventually help reduce the nation's reliance on virgin input materials. The 45 times manufacturing tax credit in the IRA aims to build a more robust battery supply chain and includes significant incentives for battery packs, cells, and modules made in the United States, but investors are awaiting clarification on this rule that is expected to come from the Department of the Treasury later this year.

The spending plans also include incentives for energy efficiency solutions. We include energy efficiency in the investment takeaways section of this report as one area that should benefit from the spending plans and reshoring efforts.

Technological leadership

Semiconductors are ubiquitous in our daily lives and integral to our economy as one of the nation's largest exports, but the world's biggest chip exporters are reliant on one another for inputs due to specializations between regions and companies. The CHIPS Act includes USD 100 million per year over the next five years as part of the International Technology Security Fund earmarked for programs that bolster global security in key technology sectors.

Semiconductor manufacturing as a whole is not necessarily a concentrated industry; however, if we drill down to a more granular industry classification, concentration becomes more evident. Fig. 2 on the next page shows three industries where

the top corporation accounts for over 70% of the revenue, and the top five account for over 90%. Even in categories where a US company is a leader by revenue, these companies still rely on one another as suppliers—meaning a US market leader in microprocessor semiconductors may still rely on the Taiwanese market leader for semiconductor foundry services. The US is likely to prioritize maintaining technological leadership more broadly, too. We expect cybersecurity to remain a priority, and governments are increasingly focused on artificial intelligence as well, driving opportunities for select companies.

Critical minerals

“Critical minerals” are defined by the Energy Act of 2020 as nonfuel minerals or mineral materials essential to the economic or national security of the United States. They are also described as relying on vulnerable supply chains. The US is 100% net import reliant on 12 of the minerals deemed critical, and more than 50% reliant on imports for another 31. Fig. 3 on the next page shows the minerals for which the US is 100% reliant on imports, not including minerals lacking enough data on imports and producers.

Demand for minerals is expected to rise driven by both digitalization and decarbonization—a typical electric vehicle, for example, requires about six times the mineral inputs of a conventional car, according to the International Energy Agency (IEA). This introduces a unique challenge. The US is aiming to incentivize US manufacturing by embedding domestic sourcing requirements in legislation, but bringing mining back to the US will be difficult at best. Three reasons for this are geographic limitations, the time required to bring new capacity to market, and environmental or community concerns.

²Wood Mackenzie

Figure 2

Three semiconductor manufacturing industries where the top firm accounts for over 70% of the revenue

And where the top five firms account for over 90% of the revenue

Industry categorization	Industry subset	Top firm's revenue share	Revenue share of top 5 firms	Domicile of top player by revenue share
Semiconductor manufacturing services	Semiconductor foundry services	72%	92%	Taiwan
Semiconductor manufacturing services	Diversified semiconductor manufacturing services	75%	97%	Taiwan
Processor semiconductors	Microprocessor semiconductors	89%	99%	United States

Source: FactSet RBICS

Figure 3

Minerals for which the US is 100% reliant on imports

Excluding minerals lacking enough data on imports and producers

Critical mineral	How it's used	Net import reliance as % of apparent consumption	Primary import source
Arsenic	In semiconductors	100%	China
Fluorspar	In the manufacture of aluminum, cement, steel, gasoline, and fluorine chemicals	100%	Mexico
Gallium	For integrated circuits and optical devices like LEDs	100%	China
Graphite	For lubricants, batteries, and fuel cells	100%	China
Indium	In liquid crystal display screens	100%	South Korea
Manganese	In steelmaking and batteries	100%	Gabon
Niobium	Mostly in steel and superalloys	100%	Brazil
Scandium	For alloys, ceramics, and fuel cells	100%	Europe
Tantalum	In electronic components, mostly capacitors, and in superalloys	100%	China
Yttrium	For ceramic, catalysts, lasers, metallurgy, and phosphors	100%	China

Source: US Geological Survey, "Mineral commodity summaries 2023," p. 210, <https://doi.org/10.3133/mcs2023>

Still, the incentives to use more US materials especially in batteries has spurred a number of battery recycling projects in the country, and we are likely to see companies continue to make partnerships in an attempt to secure materials. We may also begin to see more focused efforts related to materials where other countries have outside influence, even for minerals not deemed "critical." For example, China currently controls nearly all of the market for polysilicon, which is used in the vast majority of solar panels. If relations between the US and China deteriorate, it could favor alternatives to polysilicon solar panels, such as thin film. Similarly, lithium is an abundant mineral of which the United States does have the geographic capabilities to expand mining.

Project times vary depending on the mineral, but the IEA estimates it has taken about 16.5 years on average to move mining projects from discovery to production, underlining the inherent challenge in increasing US mining capacity.

Permitting reform

To accomplish the stated objectives of the three spending plans, permitting reform—the effort to shorten the process of project approvals—will need to adapt to facilitate a faster rollout of new energy infrastructure. The recent debt ceiling negotiations resulted in small changes to permitting reform, but industry consensus indicates more is needed. The growing regulatory burden and the complexity of tax and grant programs risk stemming their progress overall. In a survey by the National Association of Manufacturers, 94% of producers said increased regulatory burdens are making it difficult to invest in new equipment and expand facilities. The approval process for transmission lines can take nearly two decades, for example.

Economic and labor considerations

The latest economic data is showing a pickup in US manufacturing construction, but not necessarily manufacturing more broadly yet. We would also caution that manufacturing and construction data can be volatile, and the industry overall is inherently cyclical. In terms of reshoring, however, any efforts to increase US production will take several years and likely face labor challenges, as we explain on the next page.

Many of the areas addressed earlier are the same areas driving the growth in manufacturing construction. Within this category, the computer/electronic/electrical segment grew 217% in 2022, the highest increase since the US Census Bureau started collecting the data. Looking at total construction

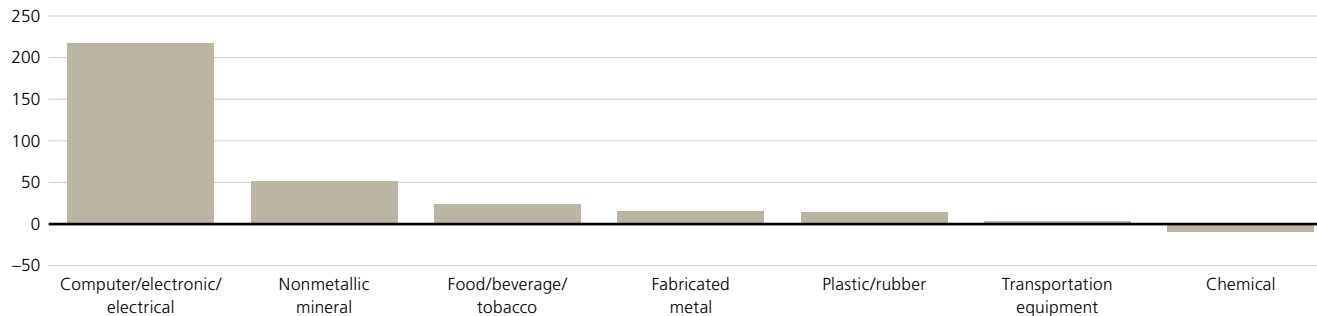
more broadly, the top five growth areas seem to relate to the plans outlined earlier, outside of commercial construction. Growth in water supply construction is also the highest since data collection began, and conservation and development, which include construction on projects like coastal adaptation, was another driver of construction growth.

The idea of reshoring supply chains has been touted before, particularly when it is viewed as politically favorable. In more recent years, the concept has resonated more strongly in some sectors than others. Not surprisingly, the sectors that saw the largest increases in reshoring announcements from 2020–22 are information technology, energy, and industrials.

Figure 4

Drivers of growth in manufacturing construction in 2022

Year-over-year growth, in %



Source: US Census Bureau, UBS, as of 31 December 2022



The labor challenge

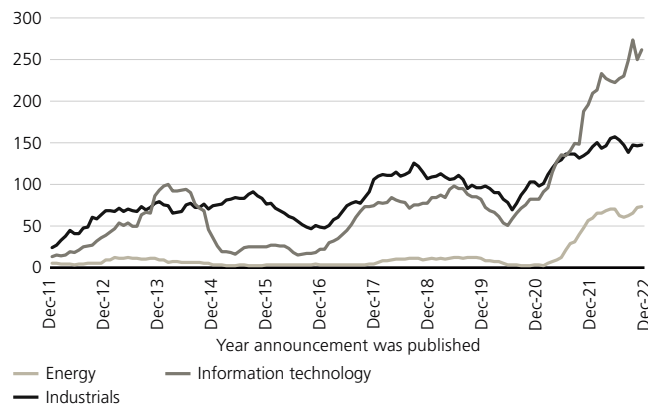
Any efforts to reshore US manufacturing are likely to run into one key challenge: labor. Infrastructure spending can create jobs, but the difficulty is likely to arise from filling those jobs. Each piece of legislation has embedded labor requirements, adding to complexity. The IRA includes an apprenticeship and prevailing wage requirement, and companies will need to submit waivers if they are unable to fill these requirements due to lack of supply. Similarly, the CHIPS Act is requiring applicants to outline a plan for workforce development, including plans to recruit, train, and retain construction and semiconductor facility workers in a manner that is in line with the “Good Jobs Principles” outlined by the Departments of Commerce and Labor.

The five-year moving average of growth in the US working-age population has trended down since the early 2000s, with the most recent spike likely due to the removal of immigration restrictions put in place during the COVID-19 pandemic. Even despite this spike, the labor challenge does not just stem from the absolute number of workers, but also from the imbalance between unfilled jobs and the right type of worker to fill them. This is because reigniting US manufacturing will shift supply and demand dynamics for certain industries, and skilled labor is needed to operate complex factories.

For the construction industry specifically, according to the Bureau of Economic Analysis, the percentage of construction workers aged 55 and over nearly doubled between 2003 and 2020, surpassing 20% of the total.

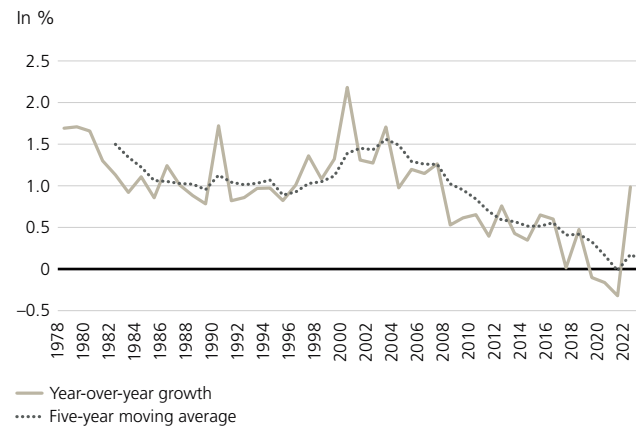
In our view, labor limitations should bode well for automation providers. Companies are likely to make new facilities as automated as possible to reduce their reliance on high-cost labor that is increasingly hard to find. The US lags other developed markets in robot density, particularly countries like Germany with large manufacturing sectors.

Figure 5
Supply chain movements to the US
Number of announcements (12-month trailing sum)



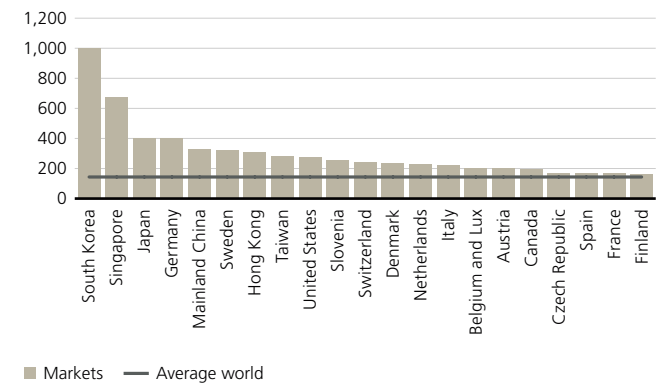
Source: UBS Evidence Lab

Figure 6
Growth in working-age population
In %



Source: FRED, Federal Reserve Bank of St. Louis, UBS, as of 2022

Figure 7
Robot density
Robots per 10,000 employees in manufacturing by market or region, 2021



Source: International Federation of Robotics, “World Robotics 2022,” UBS, as of December 2022



Part 2

What does this
mean for investors?

Sector impact

Energy/Utilities

The IRA and IIJA are positive for the energy and utilities industries in the US. Although the level of impact varies by industry and subsector, both laws promote investment in clean energy facilities, emerging low-carbon technologies, and the collection and sequestration of carbon emissions generated from combusting fossil fuels. The laws also incentivize building energy infrastructure to support ongoing modernization and decarbonization efforts.

Specifically, we consider the wind, solar, battery, hydrogen, and carbon capture tax credits and associated incentives as driving energy and utility companies to accelerate investments in new energy facilities and associated infrastructure. We expect the IRA to accelerate clean energy capital spending over the next 5–10 years, which should in turn accelerate carbon emission reduction efforts while also maintaining energy reliability, security, and affordability.

The IRA includes tax incentives to support existing US nuclear plants and prevent premature plant closures. There are also incentives to support investment in new nuclear plants, but we believe most of this investment will come later in the decade and primarily be in small modular nuclear plants. Smaller plants have the potential to standardize design and bring additional economies of scale to nuclear plant manufacturing. With no direct carbon emissions, nuclear power, in our view, will have a role in the energy transition.

With US electricity demand rising with electrification, electric utilities have a clear benefit from investing in utility-scale clean energy to meet the additional demand. Energy companies, specifically integrated oil and oil-field service companies, also appear well positioned to benefit from the laws given their competitive advantages in energy refining, engineering, subsurface geology, energy distribution and energy systems, and development and permitting.

Overall, we believe the energy and utilities industries will benefit from the IRA and IIJA laws.

Healthcare

The healthcare sector is unlikely to shift a material amount of manufacturing onto US soil, but changes to prescription drug pricing were proposed within the Inflation Reduction Act to raise revenue. The Congressional Budget Office estimates about USD 150 billion in price reductions over 10 years, but legal challenges are beginning to rise in opposition to the plan. In the near term, we do not believe this will have a material impact on earnings in the healthcare sector.

Industrials/Materials

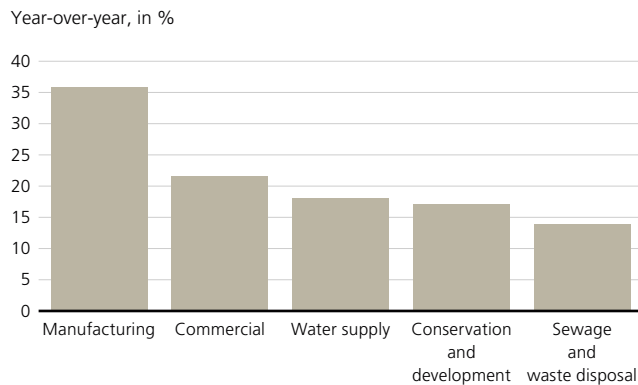
Overall, we view the IIJA, IRA, and CHIPS Act as boons to the industrial and material sectors, providing a tailwind to



investment activity in the US for years that may offset some degree of broader economic softness. The very early stages of these initiatives, combined with the need to make supply chains shorter and more resilient in the wake of the pandemic, have already made manufacturing the fastest-growing category in nonresidential construction.

The IJA targets categories such as road and bridge construction, public transit, power infrastructure, and environmental remediation, which will all require metals, construction materials, heavy machinery, industrial equipment, program management services, and more. In addition, the legislation mandates that qualifying projects source iron, steel, manufactured

Figure 8
Top five growth categories in construction

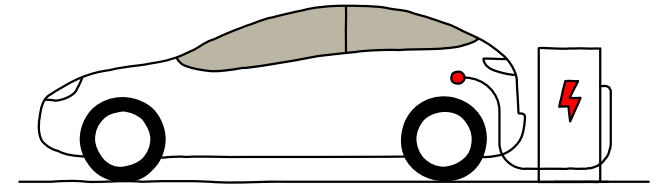


Source: US Census Bureau, UBS, as of 31 December 2022

products, and other construction materials from the United States, providing pricing power to domestic participants. We expect allocated funding to show up first in design and engineering company backlogs, then in construction materials and machinery, and finally in later-stage HVAC, fire and security products, and coatings in a slow, multiyear wave.

The IRA has made the US the destination of choice for companies around the world looking to make investments in sustainable energy. While industry participants were already planning investments in blue and green hydrogen, sustainable aviation fuel, and electric vehicles, these new incentives significantly improve project economics and will likely accelerate capital deployment to capture the tax credits. We expect both US and non-US companies to reconsider plans to participate in non-US projects, given the newly elevated hurdle rate. While the benefits of tax credits are likely to propagate along the value chain, we see the most opportunity for companies producing green or blue hydrogen or ammonia, electrolyzers, wind turbines, process automation systems, and heat pumps. In addition, as the electrification of mobility and power generation progresses, we anticipate continued demand for electrical components, power storage solutions, and key metals such as copper and lithium.

The CHIPS Act is primarily focused on research and development, but earmarks funding to expand semiconductor manufacturing in the US. The construction of semiconductor plants is highly resource-intensive, with significant use of steel, concrete, climate control equipment, and discrete automation technology. Once up and running, they consume industrial gases and specialty materials on a recurring basis.



The IRA has made the US the destination of choice for companies around the world looking to make investments in **sustainable energy**.

Real estate

In the real estate sector, the ongoing diversification of global supply chains should benefit the industrial and warehousing sector. In addition, an increase in US manufacturing would likely support increased demand for industrial space. Further, warehousing, logistics, and distribution facilities should also benefit from a shift from “just in time” inventory to “just in case.” It remains to be seen how sticky these trends will be. The pandemic may have highlighted the fragility of global supply chains, but reshoring is complex and will take several years to see any meaningful shift in production capacity. There is also the potential for higher housing demand in regions where new facilities are being built, benefiting multi-family and single-family rentals, but this will not necessarily lead to higher homeownership rates due to affordability and supply challenges.

Technology

“Designed by Apple in California, assembled in China” is emblematic of the technology sector. Apple has become the world’s most valuable company on the strength of the iPhone, a marvel of supply chain management, with components sourced across the globe but ultimately assembled in China.

Apple is not alone. Technology is the most global of sectors. Relentless innovation and cost optimization have driven outsize profit growth that has stretched the IT value chain across the globe.

IT outsourcing companies capitalize on world-class talent in low-cost geographies. Software companies have 24/7 development teams that span every time zone. Many of the world’s largest semiconductor companies design their chips in Silicon Valley, but use third-party manufacturers in Taiwan and other parts of Southeast Asia for the actual manufacturing.

However, the quest for efficiency now faces the reality of operational and geopolitical risks. Corporate boards and management teams, politicians, and regulators have grown increasingly concerned about overly concentrated and geographically imbalanced supply chains. In the wake of the pandemic, governments have realized the economic insecurity posed by outsourcing, and we expect to see a continued focus on keeping the US competitive in technology. This should spur investments in automation to offset the higher costs of US production, and cybersecurity to protect national interests. Staying competitive also means maintaining a leadership

position in emerging technologies like artificial intelligence, which could be used as a tool for companies trying to increase productivity, for example by optimizing supply chain logistics.

The CHIPS Act and its European counterpart aim to rebalance chip manufacturing. Japan has also committed public funds to its domestic chips industry. Across the globe, total funds committed to such efforts are currently well above USD 100 billion.

Is this enough to rebalance 50 years’ worth of regional specialization? Probably not. Investment in manufacturing equipment alone has totaled more than USD 200 billion over the past decade, and that does not include non-equipment costs.

Will the US semiconductor industry completely reshore? Also unlikely, but that may not be the key goal. Key constituencies instead are looking for more security and stability in chip manufacturing more so than full redundancy. That said, governments around the world would certainly like the industry’s strong growth, which has been roughly three times the pace of global GDP growth over the past decade. Additionally, many regions will have to invest in acquiring and training the skilled workforce required for advanced manufacturing.

What is the likely impact? Overall, we think the global chip industry will have to adjust to lower profit margins and higher capital intensity as years of outsourcing and specialization are reversed.



Growth in the semiconductor industry has been roughly **three times the pace** of global GDP growth over the past decade.

Municipal bonds

For investors looking for ways to invest in public infrastructure, look no further than the USD 4 trillion US municipal bond market. The United States has addressed 75% of its infrastructure needs via this market for over 100 years,³ providing governmental entities access to capital to fund public infrastructure projects. Municipal bonds can be issued by

states, cities, school districts, counties, and towns, as well as by special districts and agencies for transportation, utility, and healthcare purposes, to name a few. The proceeds are generally used to build public infrastructure including schools, airports, hospitals, libraries, and a host of other projects for the benefit of residents (Fig. 9).

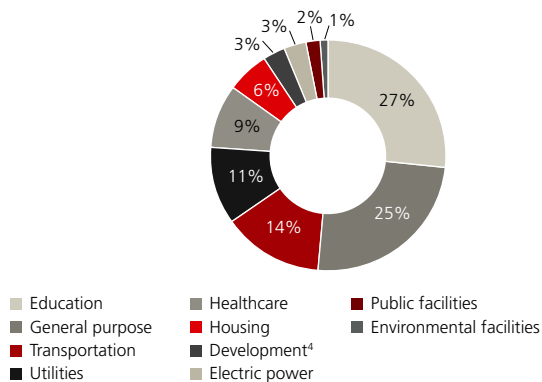
The estimated USD 1.2 trillion in combined new spending from the IIJA, IRA, and the CHIPS Act will help municipal governments finance investment in public works, either directly or indirectly. In the absence of these federal monies, municipal issuers would either need to issue debt, substantially increase their rates to directly pay for capital improvements, or defer costly infrastructure projects and improvements. The significant boost in federal funding may help change the overall landscape of US infrastructure funding, given that state and local governments have historically shouldered an increasing share of these costs (Fig. 10, next page).

The benefits of each infrastructure package will vary by municipal sector, with the IIJA largely bolstering transportation-related sectors, and the IRA and CHIPS Act principally advancing the utility sector. Increased investment in public infrastructure often spurs job creation and boosts economic activity. States and local governments will benefit from a positive economic environment, in addition to freeing up monies that otherwise would have been directed toward

Figure 9

10-year average municipal issuance by sector

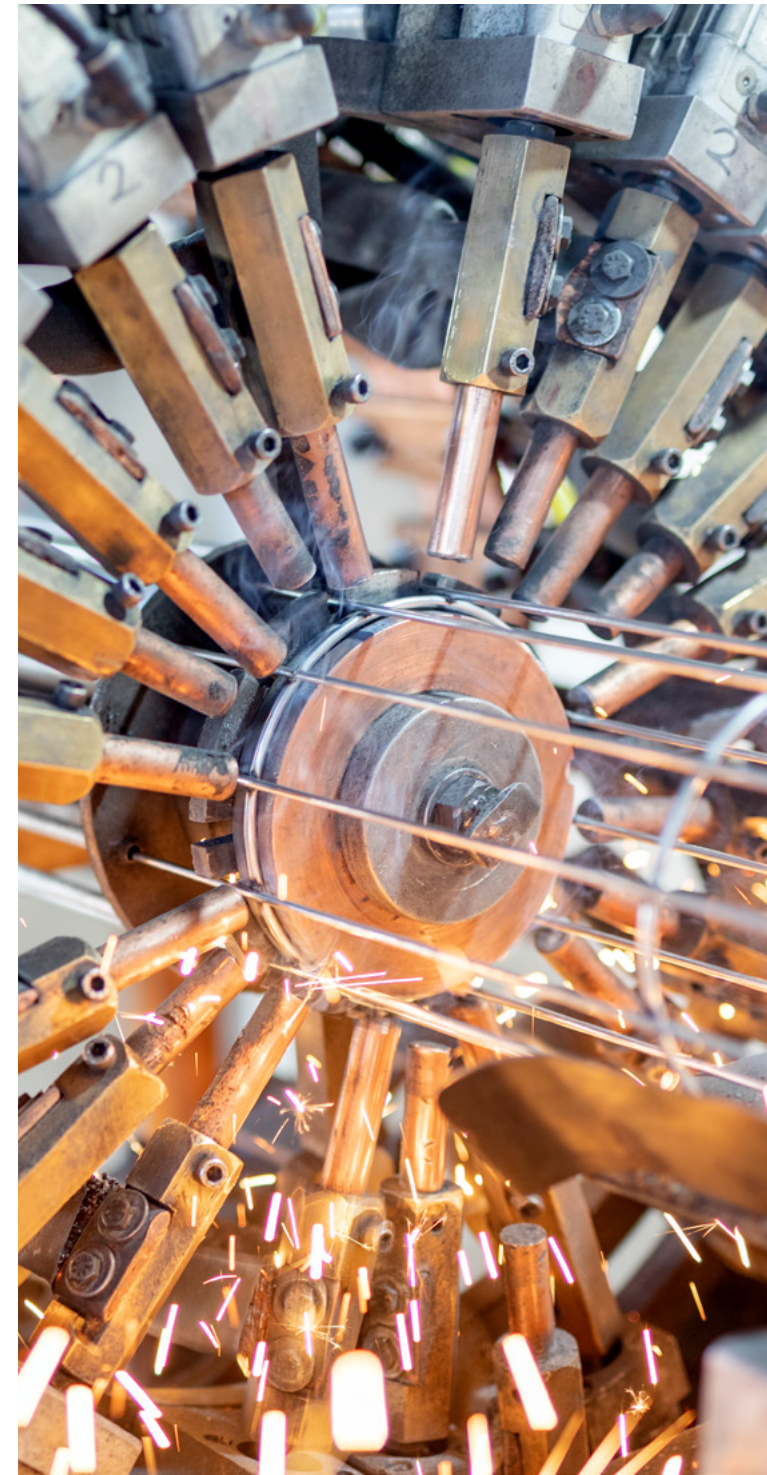
In %



Source: Refinitiv, Bond Buyer, UBS, as of 1 June 2023. Numbers do not add up to 100% due to rounding.

³Elizabeth McNichol, "It's Time for States to Invest in Infrastructure." Center on Budget and Policy Priorities, 10 August 2017

⁴Development: Industrial development, economic development, nongovernment office buildings

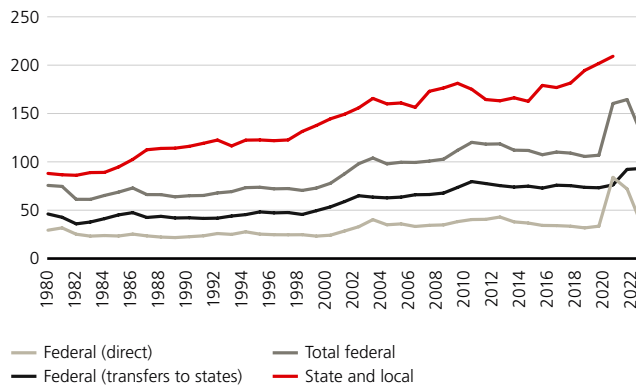


debt service. In an economic slowdown—a phase the US is likely to face in the coming quarters—individual credits within each sector will vary substantially in both credit quality and investment performance, but the municipal sector has exhibited remarkable resilience during past economic cycles. We expect this to continue, and we currently favor

positioning muni assets in high-quality sectors rather than lower-rated high yield munis in the face of recessionary risks. Municipal electric utilities, state governments, and essential service water and sewer debt are all good examples of muni sectors that we believe should exhibit credit quality resilience in an uncertain economic environment.

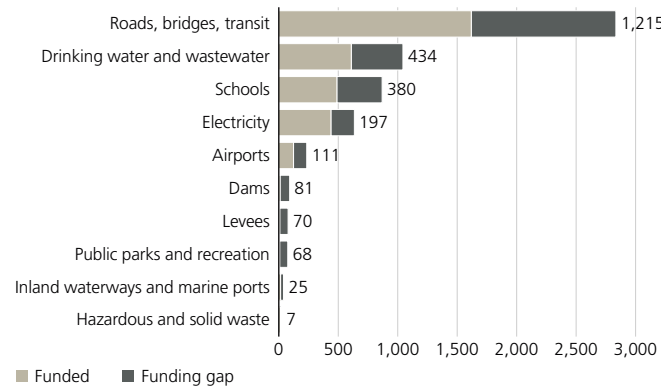
Leaders will need to leverage all the federal funding during a time of economic uncertainty, but the municipal market stands to benefit from the federal fiscal stimulus, which should help reduce the USD 2.6 trillion funding gap identified by the American Society of Civil Engineers in its 2021 Infrastructure Report Card (Fig. 11).

Figure 10
Infrastructure and transportation spending
Adjusted for inflation (FY 2022 dollars, in USD billions)



Source: USAFacts

Figure 11
Cumulative infrastructure investment needs
2020–29, in USD billions



Source: American Society of Civil Engineers 2021 Infrastructure Report Card

Figure 12
Investing in municipal bonds

Benefits

- High credit quality (low probability of default)
- Stream of predictable income
- Diversification to overall portfolio
- Liquidity (for stronger obligors)
- Tax benefits (for US investors)

Risks

- Call or reinvestment risk
- Interest rate or market risk
- Liquidity risk (for the weaker obligors)

Source: UBS

Thematic equities

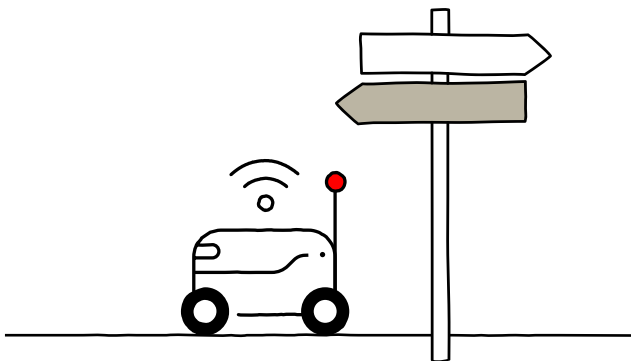
Made in America

We have put together a stock list of companies that look well positioned to tap into the three government spending plans described earlier. Our list has exposure to infrastructure beneficiaries and areas of technology that we believe are fundamental to US competitiveness: semiconductors, cybersecurity, and artificial intelligence.

Two of the longer-term investment themes we have already identified look well positioned to tap into reshoring and US manufacturing trends: "Automation and robotics" and "Energy efficiency."

Automation and robotics

We believe automation companies will benefit from the efforts to diversify and reshore supply chains, with added



support from demographic factors, higher labor costs in the United States, and the drive for productivity gains. The push to bring more investments closer to home should accelerate the transformation to more digitalized and contactless manufacturing.

Energy efficiency

We believe energy efficiency solutions will be a critical part of any new US manufacturing capacity, as building management systems that centralize controls and manage lighting, heating, ventilation, and air conditioning can be a way for businesses to reduce costs. According to the US National Institute of Building Sciences, the operating costs of a building account for 60–85% of the total life-cycle costs, underlining the benefit from investing in energy-efficient solutions from the onset. New construction will also need to adhere to more stringent regulations on building emissions in several states.

A note on our thematic franchise

CIO's thematic franchise goes into more depth on several of the industries discussed earlier. These broad long-term themes are not necessarily direct beneficiaries of US reshoring, but they describe the global opportunity in the industries that are a major part of the spending plans previously outlined. For more information on these global secular trends, please see the full reports "Clean air and carbon reduction," "Enabling technologies," "Smart mobility," and "Water scarcity."



Disclaimer

UBS Chief Investment Office's ("CIO") investment views are prepared and published by the Global Wealth Management business of UBS Switzerland AG (regulated by FINMA in Switzerland) or its affiliates ("UBS").

The investment views have been prepared in accordance with legal requirements designed to promote the **independence of investment research**.

Generic investment research – Risk information:

This publication is **for your information only** and is not intended as an offer, or a solicitation of an offer, to buy or sell any investment or other specific product. The analysis contained herein does not constitute a personal recommendation or take into account the particular investment objectives, investment strategies, financial situation and needs of any specific recipient. It is based on numerous assumptions. Different assumptions could result in materially different results. Certain services and products are subject to legal restrictions and cannot be offered worldwide on an unrestricted basis and/or may not be eligible for sale to all investors. All information and opinions expressed in this document were obtained from sources believed to be reliable and in good faith, but no representation or warranty, express or implied, is made as to its accuracy or completeness (other than disclosures relating to UBS). All information and opinions as well as any forecasts, estimates and market prices indicated are current as of the date of this report, and are subject to change without notice. Opinions expressed herein may differ or be contrary to those expressed by other business areas or divisions of UBS as a result of using different assumptions and/or criteria.

In no circumstances may this document or any of the information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following purposes (i) valuation or accounting purposes; (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or (iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees. By receiving this document and the information you will be deemed to represent and warrant to UBS that you will not use this document or otherwise rely on any of the information for any of the above purposes. UBS and any of its directors or employees may be entitled at

any time to hold long or short positions in investment instruments referred to herein, carry out transactions involving relevant investment instruments in the capacity of principal or agent, or provide any other services or have officers, who serve as directors, either to/for the issuer, the investment instrument itself or to/for any company commercially or financially affiliated to such issuers. At any time, investment decisions (including whether to buy, sell or hold securities) made by UBS and its employees may differ from or be contrary to the opinions expressed in UBS research publications. Some investments may not be readily realizable since the market in the securities is illiquid and therefore valuing the investment and identifying the risk to which you are exposed may be difficult to quantify. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, divisions or affiliates of UBS. Futures and options trading is not suitable for every investor as there is a substantial risk of loss, and losses in excess of an initial investment may occur. Past performance of an investment is no guarantee for its future performance. Additional information will be made available upon request. Some investments may be subject to sudden and large falls in value and on realization you may receive back less than you invested or may be required to pay more. Changes in foreign exchange rates may have an adverse effect on the price, value or income of an investment. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information.

Tax treatment depends on the individual circumstances and may be subject to change in the future. UBS does not provide legal or tax advice and makes no representations as to the tax treatment of assets or the investment returns thereon both in general or with reference to specific client's circumstances and needs. We are of necessity unable to take into account the particular investment objectives, financial situation and needs of our individual clients and we would recommend that you take financial and/or tax advice as to the implications (including tax) of investing in any of the products mentioned herein.

This material may not be reproduced or copies circulated without prior authority of UBS. Unless otherwise agreed in writing UBS expressly prohibits the distribution and transfer of this material to third parties for any reason. UBS accepts no liability whatsoever for any claims or lawsuits

from any third parties arising from the use or distribution of this material. This report is for distribution only under such circumstances as may be permitted by applicable law. For information on the ways in which CIO manages conflicts and maintains independence of its investment views and publication offering, and research and rating methodologies, please visit www.ubs.com/research-methodology. Additional information on the relevant authors of this publication and other CIO publication(s) referenced in this report; and copies of any past reports on this topic; are available upon request from your client advisor.

Options and futures are not suitable for all investors, and trading in these instruments is considered risky and may be appropriate only for sophisticated investors. Prior to buying or selling an option, and for the complete risks relating to options, you must receive a copy of "Characteristics and Risks of Standardized Options". You may read the document at <https://www.theocc.com/about/publications/character-risks.jsp> or ask your financial advisor for a copy.

Investing in structured investments involves significant risks. For a detailed discussion of the risks involved in investing in any particular structured investment, you must read the relevant offering materials for that investment. Structured investments are unsecured obligations of a particular issuer with returns linked to the performance of an underlying asset. Depending on the terms of the investment, investors could lose all or a substantial portion of their investment based on the performance of the underlying asset. Investors could also lose their entire investment if the issuer becomes insolvent. UBS does not guarantee in any way the obligations or the financial condition of any issuer or the accuracy of any financial information provided by any issuer. Structured investments are not traditional investments and investing in a structured investment is not equivalent to investing directly in the underlying asset. Structured investments may have limited or no liquidity, and investors should be prepared to hold their investment to maturity. The return of structured investments may be limited by a maximum gain, participation rate or other feature. Structured investments may include call features and, if a structured investment is called early, investors would not earn any further return and may not be able to reinvest in similar investments with similar terms. Structured investments include costs and fees which are generally embedded in the price of the investment. The tax treatment of a structured investment may be complex and may differ from a direct investment in the underlying asset. UBS and its employees do not provide tax advice. Investors should consult their own tax advisor about their own tax situation before investing in any securities.

Important Information About Sustainable Investing Strategies: Sustainable investing strategies aim to consider and incorporate environmental, social and governance (ESG) factors into investment process and portfolio construction. Strategies across geographies and styles

approach ESG analysis and incorporate the findings in a variety of ways. Incorporating ESG factors or Sustainable Investing considerations may inhibit the portfolio manager's ability to participate in certain investment opportunities that otherwise would be consistent with its investment objective and other principal investment strategies. The returns on a portfolio consisting primarily of sustainable investments may be lower or higher than portfolios where ESG factors, exclusions, or other sustainability issues are not considered by the portfolio manager, and the investment opportunities available to such portfolios may differ. Companies may not necessarily meet high performance standards on all aspects of ESG or sustainable investing issues; there is also no guarantee that any company will meet expectations in connection with corporate responsibility, sustainability, and/or impact performance.

External Asset Managers / External Financial Consultants: In case this research or publication is provided to an External Asset Manager or an External Financial Consultant, UBS expressly prohibits that it is redistributed by the External Asset Manager or the External Financial Consultant and is made available to their clients and/or third parties.

USA: Distributed to US persons by UBS Financial Services Inc. or UBS Securities LLC, subsidiaries of UBS AG. UBS Switzerland AG, UBS Europe SE, UBS Bank, S.A., UBS Brasil Administradora de Valores Mobiliarios Ltda, UBS Asesores Mexico, S.A. de C.V., UBS SuMi TRUST Wealth Management Co., Ltd., UBS Wealth Management Israel Ltd and UBS Menkul Degerler AS are affiliates of UBS AG. **UBS Financial Services Inc. accepts responsibility for the content of a report prepared by a non-US affiliate when it distributes reports to US persons. All transactions by a US person in the securities mentioned in this report should be effected through a US-registered broker dealer affiliated with UBS, and not through a non-US affiliate. The contents of this report have not been and will not be approved by any securities or investment authority in the United States or elsewhere. UBS Financial Services Inc. is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule") and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule.**

For country information, please visit ubs.com/cio-country-disclaimer-gr or ask your client advisor for the full disclaimer.

Version A / 2023. CIO82652744

© UBS 2023. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.