Inflation Reduction Act – a blessing or a curse for global growth?

As the global economic cycle is making a downturn, there is growing concern about how countries could boost growth going forward. Investing in the green transition not only serves as a crucial step to curtail global warming but also represents a way to boost economic growth. Industrial policy such as the US Inflation Reduction Act (IRA) is a current example. However, while industrial policy can be a powerful tool for promoting economic growth, it may also create barriers to trade and thereby harm growth. Here's a short Q&A on the IRA and the EU response, followed by our analysis.

Q&A US Inflation Reduction Act (IRA)

1. **What is the IRA?**
   The IRA is a government bill and climate law, considered to be the most significant climate legislation in US history, allocating $400 billion (1.5% of nominal GDP in 2022) in federal funding over 10 years. Enacted in 2022, the primary objective of the law is to accelerate the transition to a greener economy by, curtailing carbon emissions, promoting domestic production of clean technology and countering China's dominance in this area. It also aims to fight inflation by, e.g., reducing energy costs, hence the bill's name. Yet, while it will boost manufacturing in the US, it poses a series of possible risks.

2. **Will the IRA fuel the green transition?**
   Experts regard the IRA as a transformative initiative that could propel the green transition by generating clean energy technology, mitigating greenhouse gas emissions, and enabling the US to reach its net-zero objectives by 2050. Given that the US is the world's third-largest contributor to global emissions, the efforts of the IRA towards reducing the country's carbon footprint are key for reaching global targets. The IRA might also serve as a catalyst in motivating other countries to ramp up their green investments. Nonetheless, the IRA also builds on protectionism, which induces a trade-off between national and global green transitions. For the EU, the transition may already have been delayed due to the reallocation of investments towards the US.

3. **Is IRA important for other countries as well?**
   The IRA is undeniably crucial, not just for the US economy but for other countries as well. The legislation promotes green tech investments and incentivises companies to relocate to the US and restructure supply chains, thereby reducing reliance on China. Moreover, the inclusion of "local-content requirements" in the IRA disqualifies companies outside of North America from receiving subsidies for components. Hence, the IRA could lead to a "race to the top," wherein the competitive emphasis is placed on who can provide the most substantial subsidies. While the US and the EU are potentially equipped to engage in such a contest, it is crucial to recognise that this may have harmful implications for the greater global community.

4. **What has been the EU's response?**
   As a response to the IRA and its local-content requirements, the EU has presented two climate legislation proposals: the Net-Zero Industry Act (NZIA) and the Critical Raw Materials Act (CRMA). Together these proposals set a benchmark for self-sufficiency of green technology capacity within the EU, and for raw material supply chains. The EU also has a goal of reducing reliance on China. No

tax credits or grants are specified within these proposals but are part of earlier climate legislation (REPowerEU will mobilise up to €300 billion for green investments). EU subsidies for renewable energy amount to more than the IRA, but the crucial difference is rather the IRA's discrimination against producers outside of North America and the lower EU transparency. The EU has also adopted the world's first carbon border tax and sharpened the Emission Trading System (ETS) to include more sectors and reduce overall emission allowances within the EU, which will have an effect on both sectors and countries with less ambitious emission reduction strategies.

5. What are the risks associated with the IRA?

First, a compressed timeline for decoupling from China may lift component prices, causing "greenflation" in the short term (see our analysis, p. 19). Second, these regulations could harm global trade, which is a risk to global growth. Trade distortions driven by protectionism, in turn, risk hampering the green transition on a global scale, especially if other countries turn to protectionism and if investments are permanently crowded out. Finally, geopolitical risks may lead China to halt exports of essential components for the energy transition, making the IRA's implementation more challenging in the short term.

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Industrial policy: instruments and their effectiveness

Over the years, governments across the globe have presented various industrial policies to encourage and support the development of specific industries or sectors within their economies. A notable instance of such a policy in action would be the promotion of the automobile industry in Germany and Japan. Such policies are often characterized by regulations designed to facilitate the growth of selected industries, which may include subsidies, higher tariffs on competing imported products, tax incentives, restrictions on foreign investment, and other similar measures.

The efficacy of industrial policies has been a topic of continued debate and remains controversial. On the one hand, there are instances where such policies have led to growth and resulted in the emergence of "national champions" (as seen in Germany), creating numerous job opportunities, driving the development of new technologies and supporting economic growth.

On the other hand, there are also examples when these policies have failed to achieve the desired outcomes and instead led to market distortions and inefficiencies. For example, German government's *Energiewende* (energy transition), where industrial policy has been full of wrong turns. Despite aims to transit from nuclear to renewable energy and substantial financial support from the government, Germany had to rely more heavily on gas, especially imported from Russia. There are also several examples throughout the previous century that illustrate the potential negative consequences of industrial policy. For instance, in the 1960s and 1970s, the Indian government introduced a series of industrial policies aimed at promoting domestic manufacturing, which ultimately resulted in inefficiencies and distortions in the economy.

Hence, overall, while industrial policy can be a powerful tool for promoting economic growth and development, its effectiveness is highly dependent on a multitude of factors and requires careful consideration and implementation.

The US *Inflation Reduction Act* is yet another try of industrial policy, aiming to counter China's dominance, fuel domestic manufacturing and promote energy transition.

What is the US Inflation Reduction Act and why has it drawn so much global attention?

The IRA is a government bill and climate law that was signed in 2022, with the aim to increase US investments in domestic energy production and reduce carbon emissions. The law also aims to reduce the total government deficit by raising taxes, reforming transfers, and reducing energy costs, to indirectly fight inflation, which gave the bill its name.

The IRA directs nearly $400 billion in federal funding to climate-related spending over 10 years as clean energy and storage, clean transportation, and electric-vehicles incentives. This makes the IRA the largest clean energy package in economic terms in US history and is estimated to enable the US to reach the net-zero goals by 2050. The legislation largely consists of incentives rather than regulation — carrots instead of sticks — and aims to bolster U.S. energy security and domestic manufacturing via tax credits (that make up two-thirds of IRA spending) and domestic content requirements.

The "local-content requirements" have caused a stir on a global scale because companies that produce components outside North America will not qualify for the tax credits. Officials from the battery manufacturer Northvolt has mentioned that up to 30% of a company's production cost could be compensated by the IRA tax credits if they locate their production in the US. As a result, this could lead to unfair competition in the global market when only companies within the US will be eligible for such tax credits. The IRA thereby diverge from World Trade Organisation rules and have triggered

discussions about protectionism and fears of a potential trade war between global powers as China, the US and the EU.

IRA's producer tax credits

$45	$30	$15	$3
Per kilowatt-hour of a battery's production costs	Per MWh for zero carbon electricity generation placed into service after 2024; reduces to $23 in 2034 and $15 in 2035	Per MWh for power produced at a qualifying nuclear facility (nuclear production tax credit)	Per kilogram for the production of qualified clean hydrogen (clean hydrogen tax credit)

Sources: Bruegel, Bloomberg & McKinsey

Moreover, companies are concerned that the EU may not be able to enact clear and long-term legislation to achieve a balance to the tax credits in the IRA. Hence, the European perspective has grown increasingly fearful of investors redirecting their investments to the US. And fears seem to be justified - following the announcement of the IRA, Swedish companies Volvo and Northvolt have expressed their intention to reconsider planned investments in Europe and potentially redirect them to the US. In addition, companies such as Volkswagen, Siemens, Audi, ABB, IBM, and Micron have cited the IRA as a motivating factor for their recent investment decision in the US. The companies now expect demand for green technologies (as electric vehicles) to grow faster in the US due to the design of the IRA, which incentivized moving investments there.

IRA's consumer tax credits

$1,200	$2,000	$7,500	$4,000
Qualifying home improvements are eligible for a tax credit of up to 30 percent of the total cost, capped at $1,200 per year	Per year consumer tax credit for the purchase of heat pumps, heat pump, water heaters, biomass stoves, and boilers (25C, non-business energy property credit)	Per vehicle consumer tax credit for electric vehicles (EVs) (that complies with several conditions, as local content requirements)	Per vehicle consumer tax credit for used electric vehicles (EVs)

Sources: Bruegel & McKinsey

EU response: Net-zero industry act and focus on critical raw materials

The EU had a multitude of policy initiatives covering the green transition before the IRA and has since added even more. Unlike the IRA, EU green subsidies are not gathered in one clean-tech scheme and is more difficult to survey. The *Next Generation EU Recovery and Resilience Facility*, is distributing grants of up to €338 billion (2.1 % of nominal GDP in 2022) towards initiatives such as clean technology and renewable energy, renovations of buildings, sustainable transportation systems and charging stations. Additionally, the funding will also be allocated towards other initiatives as digitalisation and broadband services. Furthermore, it is anticipated that REPowerEU will mobilise up to €300 billion (1.9 % of nominal GDP in 2022) of investment in renewable energy, storage and energy efficiency. This will help to achieve the proposed 2030 target of a 45% in renewable energy production (current target 32%). The different initiatives are sometimes overlapping, and it is not fully clear how they limit one another. Within the EU there are also national subsidies, as on electric vehicles, covering up to €6,000 per car. According

to the Bruegel compilation, IRA and EU subsidise for electric vehicles and clean-tech manufacturing are of similar size, however, EU subsidies for renewable energy are higher. The crucial differences between the IRA and EU subsidies are not related to their amounts. Rather, the foremost difference between them, that will affect producers and investors is firstly, that the IRA contains local content requirements. Secondly, the EU subsidies are less transparent because they are not gathered in one place, thus making it more difficult for producers and investors to know what applies.

Green subsidy levels in the US and the EU, 2022-2031

Category	IRA	EU
Electric car purchases	$7,500/car	€6,000/car
Clean-tech manufacturing	$37 billion	€35 billion
Renewable energy subsidies	$208 billion	€800 billion

Sources: Bruegel paper. Note: For comparability reasons the table focus on aid (grants and tax credits etc).

As a response to the IRA and its local content requirements, the EU presented two proposals aimed at advancing climate legislation; the *Net-Zero Industry Act* (NZIA) and the *Critical Raw Materials Act* (CRMA) that will come into effect after being discussed and decided in the EU parliament.

With the NZIA, the EU aims to strengthen resilience and competitiveness of the net-zero technologies industry in the EU. The NZIA sets the goal that the EU should have the capacity to produce at least 40% of the needed net-zero technologies, as an aggregate annually (as solar, wind power and batteries, and components of these) by 2030. This is to reduce the EU's reliance on imports (EU is currently a net importer), especially those that are highly concentrated to certain countries, and wants to become an industrial leader in this market. In REPowerEU, the goal is to reach 1,236 GW of renewable capacity by 2030, up from 513 GW of installed capacity in 2021. So, the EU needs to add about 723 GW of renewable capacity which is an ambitious goal that might be challenging to reach until 2030.

The NZIA also includes initiatives to boost investments in green technology, as the intention to speed up permitting times for e.g., solar, wind and batteries. Member states get the ability to grant projects priority status and "these projects could then be considered of overriding public interest and benefit from even shorter permitting deadlines of 9 to 12 months", according to the vice president of the EU commission. That can be compared to actual permitting times of between 30 to 120 months for onshore wind power plants in the EU according to an Ember study.

The CRMA, aims to improve the EU's self-sufficiency of critical raw materials and processes along the full supply chain by 2030 and mitigate dependency on single countries for raw material supply. It sets specific benchmarks for domestic capacities, that will be voluntary to follow as industrial policy is not within the EU's legislative power. For example, by 2030, at least 10% of the EU's annual consumption of strategic metals and minerals should be extracted within the EU, compared to current 3%. Whether the owner should be domestic is however not mentioned. Similarly, the act sets a benchmark that no more than 65% of the Union's annual consumption of each strategic raw material, at any relevant stage of processing, should be from **a single** third country (e.g., China). These strategic raw materials include e.g. cobalt, magnesium, rare earth metals, platinum and borate.

Setting up a European Hydrogen Bank is also on the agenda, to initiate hydrogen auctions and increase the production within the EU by direct subsidies. The first auction this year would offer around €800 million and reaching the target of 150 – 210 GW power from green hydrogen could cost about €471 billion according to estimates.

Since the proposals are not in effect yet, the environment is still rather uncertain for investors and producers, especially as another climate related proposal recently was blocked last-minute by Germany. Also, the NZIA and CRA does not include any specified tax credits or grants, as in the IRA, which can be seen as a drawback as it is less transparent. However, the REPowerEU funding can be used for these purposes and another important climate legislation was very recently adopted.

In April 2023, the EU parliament adopted key legislation within the *Fit for 55* package, which establishes that EU emissions should decrease by 55% to 2030 and that the EU shall be climate neutral by 2050. Free carbon emission allowances in the Emission Trading System (ETS) will be phased out from 2026, sectors of road transport, aviation and buildings will be included in the ETS, and the number of allowances will be cut by 60%. The EU will also have the world's first carbon border tax (CBAM), with import duties on goods like iron, steel, cement, aluminium, fertilisers, electricity, and hydrogen, to match the carbon price paid in the EU ETS. This will affect countries with less ambitious emission strategies and adjust the price of their products to match the related emissions. The CBAM will be phased in from 2026 at the same speed as the free allowances in the EU ETS are being phased out. There are also talks about an EU *Chips Act* for semiconductor industry.

The trade relations between the EU and the US so far, doesn't seem to be as frosty as first feared and reportedly, there are conversations about a US-EU partnership on critical minerals and potentially, that EU minerals could be included in the IRA EV tax credit requirements. The relations to China, however, have become more tense.

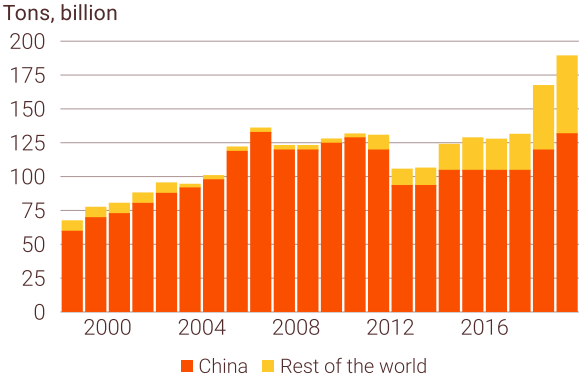
The dependency on China: implications and challenges

More than 70% of the rare earth metals that are crucial for producing a wide range of cutting-edge technologies, including batteries and solar panels, are sourced from China. Furthermore, China is producing approximately two-thirds of all batteries utilized in electric cars globally and nearly three-quarters of solar modules.

According to a report by the International Energy Agency (IEA), China's dominance in the manufacturing of solar technology is estimated to surpass 80% across various stages, ranging from polysilicon production to the final panel assembly. Moreover, the report suggests that this percentage may rise to 95% by 2025 in certain stages of the manufacturing process. "The world will almost completely rely on China for the supply of key building blocks for solar panel production through 2025" – the report states. Consequently, China has established itself as the preeminent cleantech superpower in the world. To fuel its energy transition, the Chinese government has also made significant investments, with Bloomberg NEF approximating that more than 50% of total world's renewable investment of $500 billion, was spent in China.

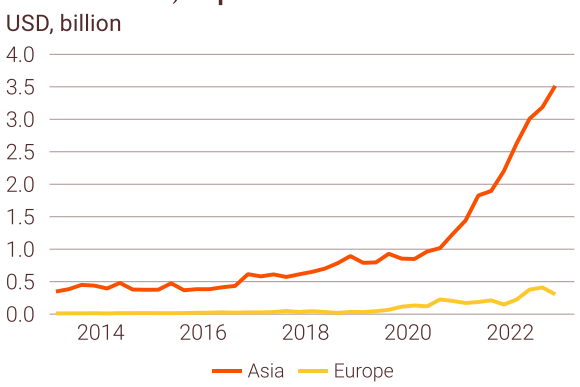
Despite efforts in the IRA to decrease reliance on China by promoting domestic projects, the energy transition sector remains heavily dependent on China in the short term. According to Wood Mackenzie's projections, the United States is anticipated to account for only 13% of lithium battery manufacturing by the end of the decade, representing a modest 3% increase from pre-IRA forecasts. In contrast, the Asia-Pacific region will continue to dominate, accounting for two-thirds of lithium battery manufacturing. Lithium batteries, with lithium-ion as the most common type, are predominantly used in electric vehicles and energy storage systems, with the majority of these batteries being imported from China.

Rare-earth metals, mining & quarrying



Sources: Swedbank Research & Macrobond

United States, import of lithium ion batteries



Sources: Swedbank Research & Macrobond

Furthermore, the IRA intends to promote local production by imposing domestic requirements. For instance, the $7500 consumer tax credit is only applicable to electric vehicles that undergo "final assembly" in North America. Additionally, starting in 2024 and 2025, the use of batteries and critical minerals from China, Russia, Iran, and North Korea will disqualify a vehicle from receiving the consumer tax credit.

Notwithstanding, the long-term implications of the IRA may be a shift away from reliance on Chinese inputs. By compelling the restructuring of supply chains, the IRA could potentially enhance the competitiveness of the European Union and other economies compared to China.

China has been providing subsidies for years, to support its clean-tech sector and achieve its goal of reaching peak emissions before 2030 and ultimately - zero emissions by 2060. However, the country is expected to further increase its subsidies in response to the IRA. In March of this year, it was revealed that China will provide an additional 63 billion in subsidies to address the outstanding payments owed to renewable energy developers.

However, the IRA carries various risks. Firstly, attempting to decouple from China within a compressed timeline may lead to an increase in component prices, resulting in more expensive final products and the onset of "greenflation" (see our greenflation analysis, page 19) Secondly, as these regulations conflict with the policies established by the World Trade Organization (WTO), they may negatively impact global trade and prosperity. Finally, given the geopolitical risks that could prompt China to cease exporting crucial components necessary for the energy transition, the implementation of the IRA may prove considerably more challenging in the short term.

Assessing economic impacts, supply chain shifts and geopolitical rifts

Despite the numerous facets, uncertainties, and risks associated with the IRA, it is an indisputable fact that it holds immense significance not only for the United States' economy, but other countries as well. The legislation not only fosters the investments in green technologies but also incentivizes enterprises to establish their operations within the United States and restructure their supply chains, particularly in a manner that reduces dependency on China.

Thus, it is likely that IRA will have a detrimental impact on global trade, which has experienced a decline in its share of GDP since the global financial crisis.

Since IRA is based on protectionism and economic security, the trend to regionalise supply chains, that began in the aftermath of the covid-19-pandemic and with Russia's war on Ukraine, will likely be enhanced. The IRA and the EU response is also a step in the direction of further global fragmentation

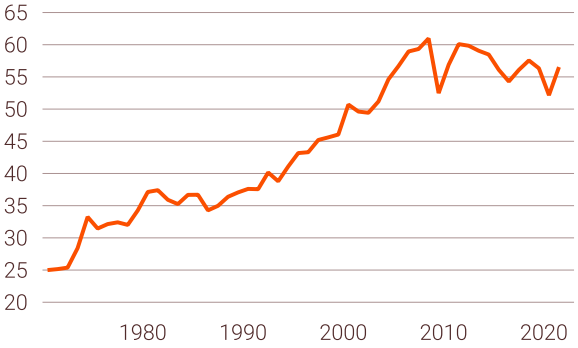
aimed at "reshoring" (bring production home) and diversifying supply chains. The ECB president Christine Lagarde, recently spoke about these concerns, and the following consequences for central banks and monetary policy. With increased geopolitical fragmentation, trade partnerships will be less certain, while global trade is poised to undergo a pronounced polarization, likely accompanied by a contraction in overall volume, dampening global growth. In addition, the restructuring of supply chains presents the possibility of more frequent supply disruptions, leading to elevated costs and a further diminished growth outlook. According to the ECB analysis, fragmentation of supply chains could lead to a surge in global consumer prices, ranging from approximately 5% in the short term to roughly 1% in the longer term. This in turn may affect the ability of central banks to ensure price stability, as their monetary policy is typically designed to counteract inflationary pressures stemming from demand-side factors.

Global fragmentation also risks hampering the green transition in the short run – as it may become more difficult and expensive to obtain necessary components. There is potentially also a price-dampening effect of the IRA and the EU response on consumer prices, with tax credits and higher competition among producers. However, these benefits may be countered by a restricted supply of commodities in the short run, depending on the level of consumer tax credits and the level of price elasticity.

Over the long run, increased climate action by both the US and the EU represents a favourable development for the green transition. Notably, the tax credits offered by the IRA have already boosted investments, while the EU's sharpening of the emission trading system could incentivise sectors and countries to engage in further reduce emissions.

World trade

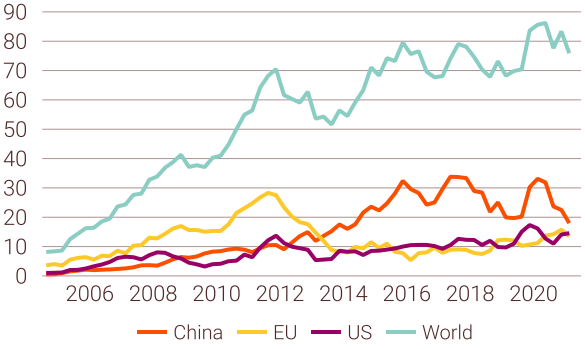
% of GDP



Sources: Swedbank Research & Macrobond

Renewables and CCS investments

USD bn, 3qma



Sources: Swedbank Research & Macrobond

With a globally larger sector for renewable energy, other sectors as mining, mineral recycling and energy storage will also see increasing demand. For example, the demand for energy storage solutions is expected to grow in tandem with the growth of renewable energy. Additionally, the need for materials used in battery production, such as lithium, nickel, and cobalt, will lead to an uptick in demand for mining and mineral recycling. The upswing in demand for raw materials might not only lead to price hikes and a potential shortage in supply, but could also have a ripple effect on related industries such as manufacturing and construction. Especially, if supply is slow to adjust. Furthermore, it is worth noting that price pressures may also come from the wage front, particularly in light of the fact that an upsurge in demand is likely to exacerbate the already constrained labor market conditions.

Looking more strictly to the US, the IRA will, in addition to bolstering US manufacturing capabilities, attract foreign and domestic investments. Several prominent companies, including industry behemoths such as Volkswagen and the Italian energy group Enel, have already indicated their intentions to reconsider their investment strategies and prioritize the United States as a destination for their capital.

As IRA includes tax credits for both companies and households, investment will come not only from companies, but households as well. According to Christopher Seiple, a consultant at Wood Mackenzie, the IRA is anticipated to augment the overall expenditure on renewable energy by an estimated $300 billion by 2035 when contrasted with existing policies, thereby raising the total investment in this sector to more than a trillion dollars. Hence, IRA should not only make green technologies more affordable but also to create thousands of “green” jobs. Furthermore, it will contribute to the increasing pool of capital invested in the development and implementation of renewable energy sources and carbon capture and storage technology (CCS).

“This is the culmination of decades-long efforts and will have a transformative impact on the years to come," remarked Fred Krupp, the chief executive officer of the Environmental Defence Fund, highlighting the monumental implications of the IRA.

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