

EU's response to the US Inflation Reduction Act (IRA)

The [US Inflation Reduction Act \(IRA\) of August 2022](#)¹ is a budget reconciliation measure comprising eight titles, which cover a very large spectrum of US policies. In essence, IRA aims to curb inflation and to invest into domestic clean energy production. The law represents the largest effort into addressing climate change in US history. It aims to achieve a reduction of around 40% of greenhouse gas emissions in 2030 compared to 2005. The IRA represents a radical departure from the politics of the Trump era and remains controversial within the US political establishment. Outside the US, its resolute pro-climate aspects have been broadly hailed, yet a number of its measures, most notably local-content requirements (LCRs), such as 'Made in America' requirement for cars and batteries, have come under severe criticism.

This paper will concentrate on the IRA's main aspects that have sparked a severe trans-Atlantic dispute, and that might have consequences not only for the bilateral trade relations and a possible diversion of direct foreign investments, but also on the possible re-shaping of EU policies, including a shift in the balance between the Single Market and industrial policy. EU reactions will be outlined, such as the adaptation of State aid rules and the [Green Deal Industrial Plan](#). Beyond US-EU relations, LCRs also have the potential to undermine the free trade principles that are at the core of the World Trade Organisation (WTO).

US Inflation Reduction Act - A new paradigm

Successive US administrations went in and out of international climate agreements, with President Clinton signing the Kyoto protocol, President Bush not pursuing that policy, President Obama signing its follow-up, the Paris protocol, President Trump reversing these policies, and finally President Biden opting back into the Paris protocol. He then instrumentalised climate policies through several measures, including the IRA. However, the IRA contains very heterogeneous measures and is more than just about climate.

The essence of the IRA is in its name, i.e. an intended reduction of inflation achieved through **withdrawing excess purchasing power from the economy by way of increased taxation**. It therefore comes in addition to the Fed's efforts to curb inflation. **Much of the intended climate-enhancing is achieved through targeted tax brakes**, such as subsidising the purchase of electric vehicles through a reduction of sales taxes.

[Over a period of 10 years](#), the IRA is estimated to raise revenue of around USD 739 billion from prescription drug price reform to lower prices, imposing a selective 15% corporate minimum tax rate for companies with higher than USD 1 billion of annual financial statement income, increased tax enforcement, imposing a 1% excise tax on stock buybacks and a 2-year extension of the limitation on excess business losses.

¹ For full text of the bill, see <https://www.congress.gov/bills/117/congress/house-bill/5376/text>, for more details, see Analysis by the Committee for a Responsible Federal Budget <https://www.crfb.org/blogs/whats-inflation-reduction-act>, White House, Guidebook to the Inflation's Reduction Act's Investments in Clean Energy and Climate Action, <https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/>.



In the same time-period, the IRA provides for spending this revenue on addressing domestic energy security and climate change, deficit reduction, extending the Affordable Care Act subsidies originally expanded under the American Rescue Plan Act of 2021 for three years, and increases funding for the Internal Revenue Service (IRS) for modernisation and stricter tax enforcement.

Climate issues, which are a declared priority of the Biden administration, are dealt with in a large number of pieces of legislation and government policies. Besides the IRA, other US policies and acts introduced under President Biden are related to climate.

The [CHIPS and Science Act](#) of August 2022 aims at **strengthen American manufacturing, supply chains, and national security, and invest in research and development, science and technology, and the workforce of the future** to keep the United States the leader in the industries of tomorrow, including nanotechnology, **clean energy**, quantum computing, and artificial intelligence.

In June 2022, President Biden [authorised](#) the use of the Defense Production Act (DPA) to **accelerate domestic production of clean energy technologies**. Five [key energy technologies](#) are concerned: (1) solar; (2) transformers and electric grid components; (3) heat pumps; (4) insulation; and (5) electrolyzers, fuel cells, and platinum group metals.

The variety of issues that touch upon climate is demonstrated by the [Infrastructure Investment and Jobs Act](#) of November 2021, which addressed climate in several ways well before the IRA was decided:

- by **repairing and rebuilding roads and bridges** with a focus on climate change mitigation;
- by **improving transportation** options and reduce greenhouse emissions through the largest investment in public transit in U.S. history, considering that the transportation sector is the largest single source of greenhouse gas emissions in the US. Amongst others, the legislation will replace thousands of deficient transit vehicles, including buses, with clean, zero emission vehicles;
- by **upgrading airports and ports and waterways** to address repair and maintenance backlogs, reduce congestion and emissions near ports and airports, and drive electrification and other low-carbon technologies;
- by positioning **rail** to play a central role in transportation and a climate-friendly alternatives for moving people and freight;
- by building a **national network of electric vehicle (EV) chargers**, as a critical step in the President's strategy to fight the climate crisis. The legislation will provide funding for deployment of EV chargers along highway corridors to facilitate long-distance travel and within communities, aiming at building a nationwide network of 500 000 EV chargers to accelerate the adoption of EVs, reduce emissions, and improve air quality, by upgrading the power infrastructure to deliver clean, reliable energy across the country and deploy cutting-edge energy technology to achieve a zero-emissions future;
- by making the infrastructure resilient against the impacts of climate change, cyber-attacks, and extreme weather events;
- by investment in **tackling legacy pollution** by cleaning up Superfund and brownfield sites, reclaiming abandoned mines, and capping orphaned oil and gas wells.

Concentrating on the IRA's State aid aspects, **the main instruments will be in form of tax credits and tax deductions.** To a lesser extent it will also provide grants, loans as well as offer loan guarantees. The various measures differ considerably in duration, with **some expiring as early as September 2024**, such as the grants for the domestic production of heat pumps, while other measures are permanent, such as the tax credit for domestic manufacturing of critical minerals. For details on the measures, see Annex I.

The heavy leaning on tax brakes may however have deep and unpredictable consequences, as it is not possible to know the precise amount the measures will have on the public coffers. By its design, the IRA may have a significant impact on the level of US sovereign debt should there be a high uptake of the programmes.

EU and Member States programmes

It can be [argued](#) that the Green Deal Industrial Plan is an answer to the IRA, in an attempt to avoid clean-energy companies to leave the EU for the US. It builds predominantly on relaxing State aid rules further, thus allowing more national support, including through tax benefits. When comparing US and EU action in favour of climate, it is necessary to also consider measures introduced before the IRA was adopted. In this respect, the EU [Recovery and Resilience Facility \(RRF\)](#) plays an important role, as it concentrates on the green and digital transition, with most of the subsidies allocated to the green part.

The Commission's **Green Deal Industrial Plan**, which was [presented](#) on 1 February 2023, is destined to enhance the competitiveness of Europe's net-zero industry and support the fast transition to climate neutrality. The Plan aims to provide a more supportive environment for the scaling up of the EU's manufacturing capacity for the net-zero technologies and products required to meet Europe's ambitious climate targets. It is based on four pillars: a predictable and simplified regulatory environment, speeding up access to finance, enhancing skills, and open trade for resilient supply chains. It proposed the [Net-Zero Industry Act](#), to provide a regulatory framework suited for quick deployment of a net-zero industrial capacity, ensuring simplified and fast-track permitting, promoting European strategic projects, and developing standards to support the scale-up of technologies across the Single Market. It also announced the [Critical Raw Materials Act](#), and a [reform of the electricity market design](#). The Commission announced it would be proposing a **European Sovereignty Fund**.

Other instruments have also to be taken into account. Launched in May 2022, [REPowerEU](#) is helping the EU to save energy, produce clean energy, and diversify its energy supplies following the adaptation of EU's energy supply to the war in Ukraine. The [InvestEU](#) Programme supports sustainable investment, innovation and job creation in Europe.

After IRA was enacted, the EU, to counter the IRA's negative effects on EU industry, decided upon additional support to industry to be made available through the **relaxation of EU State aid rules**. This is based on an extension of the more generous [application](#) of State aid rules in response to the Russian invasion of Ukraine, for which the [Temporary Crisis Framework](#) was created in March 2022. On 9 March 2023, its latest modification transformed it into the [Temporary Crisis and Transition Framework \(TCTF\)](#), which *de facto* also made it a response to the IRA. The framework uses the flexibility foreseen under State aid rules to support the economy. In 2022, the Commission declared specific categories of State aid compatible with the Treaty if they fulfil certain conditions. Under the TCTF, in most cases State aid still has to be notified, however, if certain conditions are fulfilled, the aid will be declared compatible. Under the revised General Block Exemption Regulation (GBER) the respective thresholds have been increased to allow that many cases of aid do not need to be notified anymore. The actual policy measures, i.e. subsidies, are then handed out at national level, using national resources.

In the [words](#) of Commissioner Vestager, when starting this approach in March 2022, the Temporary Crisis Framework 'complements the existing State aid toolbox with many other possibilities already available to Member States, such as measures providing compensation to companies for damages directly suffered due to exceptional circumstances, and measures outlined in the Commission Communications on energy market developments. The new framework will enable Member States to (i) grant limited amounts of aid to companies affected by the current crisis or by the related sanctions and countersanctions; (ii) ensure that sufficient liquidity remains available to businesses; and (iii) compensate companies for the additional costs incurred due to

exceptionally high gas and electricity prices. These types of measures will be available also to companies that qualify as being in difficulty, as they may face acute liquidity needs due to the current circumstances, arriving on the heels of the coronavirus pandemic. Sanctioned Russian-controlled entities will be excluded from the scope of these measures.'

The Temporary Crisis Framework was already [prolonged](#) and amended on 28 October 2022, before being transformed into the TCTF on 9 March 2023. On the same day, the Commission also [amended](#) the **General Block Exemption Regulation (GBER)** to further facilitate and speed up the green and digital transition. It mainly [increased](#) the limit on Member States' aid in line with inflation and introduces allowances of larger sums of State aid in the EU's less-developed periphery. The GBER will now be in force until the end of 2026. The TCTF also enables governments to discourage companies from moving overseas by authorising them to match the subsidies offered by a third country, but only for a limited period. While it is exclusively in the Commission's competence to take such decisions, a number of Member States signed a letter [urging](#) the Commission to use 'great caution' in loosening State aid rules.

The **Recovery and Resilience Facility** is a temporary financing instrument that is the centrepiece of [NextGenerationEU](#). It was put in place to counter the economic consequences of the COVID-19 crisis, and has a very strong climate component. It is therefore part of the EU's climate response, introduced a couple of years before the IRA was decided, making the EU first in providing large climate subsidies. The Commission is funding up to EUR 250 billion (or 30%) of NextGenerationEU by issuing NextGenerationEU Green Bonds. This should make the Commission the largest green bonds issuer in the world.

The RRF comprises grants and loans. Together with other NGEU contributions, their total amount is **capped at EUR 750 billion**, but inflation adjusted it would be in excess of EUR 800 billion. The repayment of the Commission borrowing will be spread from 2028 to 2058.

Designing the RRF was a legal challenge. It was created based on [Article 122 TFEU](#), which is a legal base for action in crisis situations. As the EU Treaties do not allow the EU budget to be financed by debt (Articles [310](#) and [311](#) TFEU), the RRF had to be run outside the EU budget's framework. Following a thorough legal analysis, Eurostat [categorised](#) the debt taken up for provisioning the RRF as Commission debt contracted on behalf of the EU, not common debt of the Member States.

The EU has [legal personality](#), making it an independent entity in its own right. The EU can take up debt, something the Commission is routinely doing on behalf of the EU, albeit only for small amounts. For the RRF (and for the programme [SURE](#)), the Commission was exceptionally, and as a one-off measure, [authorised](#) to take up a considerable amount of debt. It is to be noted that under the RRF, in order to satisfy the requirements of the no-bail-out clause ([Article 125 TFEU](#)) the Member States do not guarantee another Member State's debt. Rather, the RRF guarantees are solely covering liquidity problems the Commission may encounter, and the guarantees need to be paid back by the Commission to the Member States as soon as the EU institution's RRF-related liquidity problem is solved.

In the absence of common debt, what makes the RRF special is the high level of debt the Commission is allowed to go into, as well as the redistributive effects of the grants part, where a substantial difference exists between what individual Member States will get from the RRF, and what they will later contribute to the Commission's reimbursement of its debt. At the present juncture, it is not yet possible to say how strong the redistributive effects will be, as three years after the inception of the RRF, it has not yet been decided how the Commission will collect the amounts necessary for reimbursing its debt. The loans part of the RRF does not contain such redistributive effects, as each Member State contracting a loan from the Commission will have to reimburse the entirety to the Commission.

Consequently, despite the high amounts involved, the RRF will cease to provide grants and loans at the end of 2026, and due to its exceptional character, being conceived as an Article 122 TFEU based crisis

mechanism, it cannot be easily prolonged or replicated in the absence of a major crisis. This will **diminish the amounts available for combating climate change**.

At the present juncture, the EU instruments in favour of climate as well as serving to counter the IRA are substantial.

Cross-Atlantic comparison and effects

Although the resolutely pro-climate stance of the Biden administration and its main instrument, the IRA were welcomed by the EU as a valuable alignment on the world-wide trend to fight climate change, the amounts involved as well as several of the instrument's specifications sent shock waves through the EU. The first impression was that a new, major shock was about to hit the EU, after those of COVID-19 and the Russian invasion of Ukraine. As a consequence, numerous calls to react were made. However, the range of the requested actions varied considerably.

Before designing and implementing remedial action, it is necessary to estimate the effects the IRA would have on the EU and its industries, and to compare, where possible, US and EU climate-related action. In this part, a number of aspects are analysed.

Tax breaks vs. debt financed funds

The main difference between the US and EU is that the IRA doesn't create funds, and even less so debt-financed funds, while the EU is mainly relying on funds, and these are being financed by debt. Yet, in case of a large uptake of the programmes in the US, massive tax relieves may create a substantial reduction in government tax collection which needs to be compensated by sovereign debt.

The different approaches reflect a difference in philosophy. The US administration is trying to re-allocate existing resources within its budget, by cutting on old priorities in favour of new ones, in this case climate. The EU's approach, in and around the RRF, is adding policy priorities without cutting on old ones, with the additional expenses mainly being burdened on taxpayers in some distant future.

The macroeconomic effects also differ, with the IRA poised to fight inflation, as its name implies. By increasing taxes it supports the Fed's efforts to curb inflation by removing purchasing power from the economy. In contrast, the EU's approach involving debt financed funds increases the current purchasing power, thus contravenes the Eurosystem's endeavour to lower the inflation to a level near 2%, and might force to conduct an even more restrictive monetary policy. Philip Lane, the ECB's chief economist, has already [called](#) on governments to reduce their support for gas and electricity bills, which he says are fuelling price increases.

Achilles heels

How viable are the two approaches, both financially and politically? Both the US and the EU are establishing policies and funding with a possible Achilles heel.

The **US programme**, by mainly and massively relying on tax brakes, is **not capped** and might therefore become a victim of its own success. It bears the potential of substantially increasing debt in a country where the government is already highly indebted, thus might have to take corrective action in case of pressure from the financial markets. The UK recently came under such pressure, as experienced by the Truss government in 2022.

A Hertie School study by Jansen, Jäger and Redeker [warns](#) that USD 370 billion for security and climate change programs for the next ten years - a number based on an [estimate](#) from the Congressional Budget Office (CBO) - may be too conservative. Should industries request more than the CBO calculated, then the amounts would increase in a dramatic way. In a Brookings study, Bristline, Mehrota and Wolfram [warn](#) that up to USD 1.200 billion dollar could be reached because of non-capped tax relieves, as incentives in the energy markets span the entire energy sector, from producers of raw materials to end-use consumers, and will set considerable new forces in motion.

Another danger to the IRA programme is political. First, through Republican opposition to additional debt expressed during the [bi-annual debt ceiling negotiations](#). It was only in May 2023 that an agreement was reached. Failure to agree on a higher debt ceiling, the US would have defaulted on its debt, with potentially deep consequences on the IRA. Second, an electoral defeat by the incumbent president would also impact IRA in a major way. In view of the fundamental divergences of views on climate change, it should be expected that a Republican administration sets new priorities and discontinues Biden's climate programmes, or at least cuts them to size. IRA's long term future cannot be taken for granted.

A possible Achilles heel in the **EU programmes** stems from trying to establish permanent funds that are using a temporary source of income. The RRF is planned to dry up at the end of 2026, when the last RRF disbursements will be made. The RRF was established as an instrument that is exceptional, capped, time-limited, and a one-off. There is also cognitive dissonance at work, as the RRF was specifically established to soften the blow to the economy due to the COVID-19 pandemic and its lock-downs, which occurred in the 2020-2021 period, while the RRF subsequently morphed into something different, trying to satisfy further goals, such as digitalisation and combating climate change, where the time horizon goes well into the medium and long term. Strictly speaking, the RRF made its first disbursements when the COVID-19 induced economic downturn it was meant to counter was already over.

An Achilles heel **common to the US, the EU and the Member States' programmes** is inflation and the increase in interest rates, which make the taking up and servicing of debt more difficult for high-debt countries, and more expensive for all countries. When the RRF was launched in 2020, interest rates were near zero and the mantra of 'low for long' was prevailing. Nearly unlimited access to cheap capital seemed to be certain. Despite [warnings](#), many EU governments felt that there was no limit to increasing debt, mainly due to the ease by which sovereign bonds could be monetised through the central banks' quantitative easing (QE) programmes, as well as near-zero costs for servicing that debt. Now, three years later, rates are [expected](#) to stay 'high for long'. Servicing debt is getting substantially more expensive. Already, high debt countries are being downgraded by credit rating agencies, most visibly France in April 2023, which Fitch [justified](#) by citing amongst others its relatively large fiscal deficits and only modest progress with fiscal consolidation.

How do the US and EU programmes compare in numbers and quality?

It should be borne in mind that an exact comparison of numbers is more than difficult, almost impossible. This is not only due to the **divergences in time horizons and instruments**, especially tax brakes as opposed to debt financed funds, but also to open issues such as the known unknowns of the uncapped uptake of tax brakes. Further, there are the unknown unknowns of the political struggle in the US concerning the recurring debt ceiling negotiations, as well as possible changes of administration following elections, which may put an abrupt end to some key instruments, especially those involving taxation and subsidies. In the EU, the unresolved issue of large scale financing of funds beyond 2026, thus the ability to create or not permanent funds, provides for another unknown. In addition, even if the financial aspect may be solved, there might not be a consensus amongst Member States for creating these funds in the first place.

It has been [argued](#) that new funds, such as a European Sovereignty Fund, would need to draw from existing EU funds for clean-tech industries, by unifying existing funds. This would make bureaucratic sense, but will fall short of what the Commission initially promised.

An additional challenge stems from the range of government structures that need to be considered. It would neither be sufficient nor useful to solely compare the measures of the US federal level with those of the EU's supranational level. Doing so would leave out all the measures taken at Member State level as well as those taken at state and local levels in the US. To give an example: in the EU subsidies for the purchase of electric cars and their batteries are a Member State matter, each subsidising by using their own budget and doing so along their [own rules](#), while since the inception of the IRA, US measures mainly stem from the federal level, yet most US states also provide their own [support](#).

Providing exact numbers for each of the fields concerned would go further than what can possibly be provided in this paper. However, estimates were made, and it is useful to have a look at them, albeit with caution, as analyses are often tainted, mostly to justify political action of some kind. Also, for the outcome of measures, qualitative aspects may often be more important than quantitative ones. Simply looking at the level of subsidies may not help in comparing the efficacy of the measures on both sides of the Atlantic.

A comprehensive [analysis](#) was undertaken by a large team from the Bruegel think tank, which also gains credibility by clearly stating the limitations of its own findings. The authors conclude that *'while the EU has no flagship green subsidy scheme like the IRA, it has a multitude of initiatives at EU and national levels that use subsidies for broadly similar purposes.'* They further conclude that *'EU and expected IRA green subsidies are of about similar size, except in renewable energy production, where the EU subsidies remain larger. However, there are significant qualitative differences. Some IRA subsidies discriminate against foreign producers while EU subsidies do not. IRA clean tech subsidies are simpler and less fragmented. These also focus mainly on mass deployment of green technologies, whereas EU-level support tends to be more focussed on innovation and new technologies.'*

To stay with electric cars subsidies, which is the field that created a substantial conflict between the US and the EU, the IRA subsidises for vehicle purchases, including a USD 7 500 consumer tax credit for electric cars and a tax credit for companies, including leasing companies that buy clean vehicles. On average, EU Member States subsidise around EUR 6 000 per vehicle, while they typically do not discriminate between different producers. However, beyond numbers other aspects need to be taken into account: by design, US electric car subsidies avoid subsidising electric car purchases by the rich. Bruegel's authors' takeaway is that IRA and EU subsidies for electric vehicle purchases are of similar size.

Concerning the efficacy of the instruments, the Hertie study comes to the conclusion that *'the US will deliver subsidies to green manufacturers much faster and more predictably than what is available in the EU. Most EU support programs are project based and require lengthy notification and application procedures, making it especially challenging for small and medium-sized enterprises to receive funding. They also mostly focus on capital expenditures, helping with the initial investment needed to build up production and research capacity. In contrast, the new US subsidies operate largely through the tax code and focus on operation expenditures. That means that they are directly available and help push down the costs of production for the next ten years. As a result, they send a direct signal to manufacturers how much they can benefit from moving investments and production to the US.'*

Effects on the WTO's international trade order

The IRA's protectionist elements in form of local content requirements (LCRs) came as a shock. By any standards, this can be considered as a frontal attack on the World Trade Organization's (WTO) international trade order. As shown in Annex I, many of IRA's subsidies are subject to LCRs.

For convenience, here is the annexe's example of clean vehicles (electric vehicles, but other technologies such as hydrogen and biofuels also qualify): Subject to income requirements (maximum USD 300 000 gross income for couples or USD 150 000 for singles), a **clean vehicle credit** provides buyers with a tax credit of USD 3 750 for vehicles for which a minimum percentage of critical minerals has been extracted or processed

in the US or a country with which the US has a free trade agreement, and an additional USD 3 750 tax credit for vehicles meeting the requirement that a threshold percentage of battery components are manufactured or assembled in North America. Vehicles must meet other requirements to qualify, including final assembly in North America and vehicle retail price limits of USD 55 000 for cars and USD 80 000 for vans, SUVs and pickups.

In essence, this represents a continuation of President Trump's hard-nosed 'America First' approach. The US are one of the founding members of the WTO, yet the IRA makes no effort to abide to elementary [trade rules](#) such as non-discrimination, as defined by the WTO's most-favoured-nation (MFN) principle.

Canada and Mexico were granted exemptions, as were countries which signed free trade agreements with the US. With no agreement on TTIP, the EU does not qualify for exemptions, but negotiations between the two parties may correct that.

It is not clear yet what collateral damage the disregards of the MFN nation principle by the US will have on world trade, the international division of labour and to world-wide wealth creation, but it may have created a precedent for those who would like to see multilateralism end, or who are keen to introduce their own protectionist policies. The IRA and other pieces of legislation, such as the CHIPS and Science Act are **trade distortive** and further contribute to accelerate the ongoing **subvention race**, which, if it goes on unchecked, might spiral out of control.

The impact of IRA on the EU

To analyse the impact of the US measures on the EU, and to put things into perspective, two points need to be taken into account:

First, the EU was running its climate programmes and mobilising finance through the RRF together with action at Member States level well before the US started with the IRA and related programmes like the CHIPS and Science Act. The EU is not in a situation where it is now forced to 'react' by introducing similar funding, as national and the EU's mechanisms are already in place and running, cf. the clean car subsidies.

Second, contrary to the two shocks of COVID-19 and the Russian invasion of Ukraine, which were massive and impacted the whole of the world, the effects of IRA are of limited size. The EU economy is not expected to go into recession because of the IRA.

The largest impact will stem from trade distortions, including by further fuelling an already ongoing subvention race with high stakes, such as that of attracting enterprises producing car batteries or microchips. The trade distortions are further exacerbated by IRA's local content requirements. *According to Bruegel, 'the IRA's \$7500 consumer tax credit on electric cars could reduce the cost of an eligible vehicle of average price by about one fifth, to the detriment of electric vehicles presently excluded from the credits. This could have a substantial impact on the ability of foreign automotive producers to maintain their present shares in the US market. For the EU, the consequence could be large losses of exports to the US.'*

However, a Hertie Schools study takes a slightly different view on this. It [states](#) that 'while the EU initially focused on the protectionist consumer credits for EVs, these subsidies likely have a limited impact in practice, at least in the short term. EU exports of EVs to the US are small in quantity. Many European manufacturers already have or are building up production facilities in the US and can benefit from the handouts. Moreover, most EU EV exports are in the upper price segment, making them ineligible for the IRA subsidies in the first place. However, in other sectors, the IRA could have substantial effects. For example, if US producers can make use of all subsidies within the legislation, batteries could become 30% cheaper in the US than in the EU, production costs for solar panels could fall by two-thirds relative to the EU, and prices for producing renewable hydrogen could fall to zero by 2030. Moreover, in many of these sectors, the fact that the US provides direct production subsidies instead of

merely supporting capital investments will make scaling the production of advanced technologies much more attractive than in the EU.'

LCRs will not only reduce international trade, but should also impact foreign direct investment, especially through the possible relocation of EU firms to the US. The questions are, whether IRA will trigger some relocation, or massive relocation? Or if subsidies are the main factor that determine relocation, or if they are one amongst many other factors?

Relocations of EU firms to the US started well before the recent crises, and certainly before the IRA came into existence. Factors such as substantially cheaper energy in the US, the pushing back on multilateralism that started under Trump, and the trend to produce in the proximity of the markets rather than exporting into them, all this weights on location and re-location decisions. Firms like certainty and long-term planning. It is questionable that companies will move business to the US if the subsidies are limited in time, or even worse, if they might be terminated on political grounds without notice. Further, it is possible that negotiations or a trade agreement open up again specific segments of the US markets to EU products, thus negating some of the benefits of relocation.

There is another side to the coin: both the EU and its firms may also profit from IRA. Firms that already decided to relocate part of their production to the US will happily take up the new subsidies and compete on equal footing with US firms. Further, to again cite the Bruegel study, *'the IRA will likely harm Europe through its competitiveness effect, while it will likely benefit climate transition in Europe and most of the rest of the world. However, the magnitude of both effects is very uncertain, partly because the IRA will induce substitution away from Chinese inputs. By forcing the reorganisation of supply chains, the IRA may make the EU and other economies more competitive relative to China. It may also initially slow the green transition. But in the longer run, this effect should be outweighed by the reduction in the cost of clean tech driven by the IRA.'*

Nicolas Crawford's [conclusions](#) are that the *'The Biden administration's geopolitical internationalism is at odds with its geo-economic nationalism. The fact remains, however, that Europe is unlikely to be severely affected by the IRA. Moreover, European political leaders have threatened more aggressive responses to the IRA than they can deliver. A trade war is unlikely. It is more likely that booming green industries in the EU and US will open new avenues to cooperation between them.'*

How to react to the IRA? - Single Market vs. industrial policy

The IRA is generally seen as a US vs. EU topic, yet one might argue that finding responses to the external challenge is very much depending on the perception of what the markets should do, and what the state should be doing. Finding responses to the IRA is deeply linked to the fundamental discussion on the future of European economic and industrial governance. Amongst others, it is accelerating the debate on whether or not a successor to the RRF should be created.

At the risk of simplifying, the IRA has exacerbated the struggle between supporters of the Single Market and associated free market economy, and those in favour of a stronger role of the state, instrumentalised in form of an EU industrial policy. The main trigger of this discussion were very strong initial demands by the Commission to create new policy instruments, to create, prolong or increase various European budgets and funds, to shift economic decision-making from the national to the European level, and at European level, to shift power from the Council to the Commission. This requested power shift is best exemplified by the Commission proposals for reforming the EU's fiscal rules, which would give the Commission the right to negotiate individual fiscal plans with the Member States. Under present rules, all decisions are taken by the Council. [Article 126 TFEU](#) only foresees the right for the Commission to send a warning to a Member State that didn't comply with Council decisions.

This discussion was amplified by strong positions taken by some governments immediately after the announcements of IRA, although their positions might not be identical to that of the Commission on a number of points, notably by their opposition to the curtailing of national competences. Amongst others, issues that were taken up concerned strategic autonomy, national/EU preference on trade, curtailing competition policy, and increasingly leaning on EU financing of programmes. The discussion on whether and how to modify European fiscal rules is also linked to these topics.

This is a continuation of a debate that already got amplified during the COVID-19 pandemic, when the RRF was created, providing the Commission with a strong role in the coordination of the national economic and fiscal policies. Before the RRF, in the framework of the European Semester, the Commission would make country specific recommendations to the Council, which the Council could amend at will before transforming these into Council recommendations destined to the individual Member States. The latter were not obliged to follow the recommendations, except where they concern a serious breach of the fiscal rules.

With the RRF, the Commission has therefore gained time-limited powers that go far beyond what the EU Treaties conferred upon the institution. Although the EU is not a state, and the Commission is not a government, *de facto*, in economic and fiscal matters, it is currently close to what can be considered a government. This is facilitated by the [absence of countervailing action](#) by the Member States, which have essentially stayed passive in view of the Commission's actions and also by keeping the European Parliament out of the loop, the latter due to the RRF having been created based on [Article 122 TFEU](#), which is a legal base for action in crisis situations. Parliament is only informed after decisions were taken.

However, once the RRF disbursement phase comes to an end, the Commission's new powers will be curtailed, as the Commission's 'carrot and stick' powers concerning economic coordination will come to an end.

It should have been expected that the Commission would propose new instruments that would serve as an anchor for its current level of power. The debate on the responses to the IRA could be serving as a justification for maintaining the institution's powers. The Commission President's since called to create a European Sovereignty Fund.

[According](#) to Commissioner Breton, *'the future Sovereignty Fund must be granted with the right budgetary means to be credible. Its design should allow for direct, fast and flexible budgetary support to well-identified projects of interest for EU sovereignty across any sector of our industrial spectrum.'* Should his plan be realised, the fund would have the potential become an instrument for carrying out industrial policy in each and every segment of the EU's economy, across all Member States. The Commissioner further stated that the fund should also *'play an important role in preserving the integrity of the Single Market by collectivising investments, while maintaining a necessary level playing field between Member States who do not have the same fiscal space to help de-risking investments in future technologies and industrial production capacities.'* This indicates that the fund may prioritise those Member States whose capacity to support investment is impaired due to a high level of sovereign debt. The proposal met immediately [opposition](#) from a coalition of Member States. In March, Commissioner Breton [announced](#) that joint debt for green transition was no longer a priority.

It should be reminded that prolonging the RRF, or the creating another RRF-type instrument is not an option, as its legal basis was Article 122 TFEU, where measures can only be taken to support Member States in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences. These circumstances cannot be invoked in the case of the IRA.

The other aspect that will shape EU's response to the IRA is how the EU understands its position on free markets vs. interventionist economic policies. In this field, the Member States' positions differ widely.

In economic matters, by its Treaties the EU is essentially tuned towards free market economy, free international trade, competition between enterprises, and entrepreneurship. Its main instruments are the Single Market, a common competition policy also covering State aid that is enforced by the Commission, a common trade policy based on WTO principles, and a common currency run by an independent and stability-oriented system of central banks. A limited number of EU prerogatives and policies come in addition to this, conferred upon EU institutions by the Treaties and based on the principles of subsidiarity and proportionality.

However, this framework is increasingly being challenged, including through notions such as strategic autonomy, industrial policy, national/EU preference in trade, and calls for a relaxation of competition rules. The Commission proposals for the Net-Zero Industry Act, the European Chips Act, and the Critical Raw Materials Act all contain targets and numerical limits reminiscent of state dirigisme, which is a new approach for the EU. Especially in relation with the support of Ukraine, the Commission would like to gain direct powers on some industries concerning production priorities.

Competition rules are being eased at the possible expense of the Single Market, and for the first time opened to other policy goals than effective competition on the internal market. Further, a European Sovereignty Fund would be created to correct the possible market distortions due to the easing of European State aid rules. This should be the first time the Commission openly justifies the creation of a fund on the grounds that this would be necessary to correct the negative consequences of one of its own decisions, in this case the relaxation of EU competition rules.

A study by Holzhausen from Allianz Research [considers](#) that the Commission ‘has struck a Faustian bargain: It opened the floodgates for national subsidies that will inevitably tilt the playing field in Europe – and thus strengthen the case for supranational remedies such as a new common fund underpinned by common debt. This is a hazardous strategy. There is a real danger that the EU Commission will end up empty-handed: State aid rules remain a mere fig leaf, but the hoped-for sovereignty fund never sees the daylight.’

The common purchases for a range of products are envisaged in an increasingly wide range of products, especially raw materials and energy, which may infer in free markets.

Taken together, recent measures that were enacted, like the Next Generation EU, and many others that were proposed, may end up straining the legal framework on which the EU is based. Leino-Sandberg and Ruffet, from Helsinki University, [warn](#) that, ‘while explained as exceptional and justified with reference to the pandemic, in substance, the NGEU is not a crisis measure. It will change the reading of EU law permanently by establishing a new type of instrument for redistribution between the Member States and funding this through debt.’ They argue that ‘consensus among large Member States and key institutional stakeholders is insufficient for disregarding key Treaty principles.’

There are alternatives to these policies, which also have the benefit of being in line with the EU's traditional positions and be safely anchored in the EU Treaties. The actions could include the following: completing the Single Market, improving education and training, spurring R&D, reaching a trade agreement with the US, filing a complaint with the WTO against the IRA's local content requirements, implement encompassing CO2 taxes to avoid and correct climate problems, reducing bureaucracy, reform company taxation, and streamline and accelerate vetting procedures for businesses.

The Bruegel study advises that ‘in responding to the IRA, the EU should not just seek to protect its competitiveness relative to the US but to pursue broader aims, including competitiveness in general, speedy decarbonisation and broad foreign policy and development policy goals. These aims imply that the EU should not impose local-content requirements of its own, should not loosen state-aid rules and should not mimic the IRA's approach to manufacturing subsidies. Rather, it should focus on boosting its structural competitiveness, formulate a trade policy response that includes reform of the international subsidies regime, and develop an

instrument for EU-level subsidies that focuses on early-stage development and increasing EU resilience to trade disruptions.'

A [study](#) for the EP by Amighini, et al. advises that 'the EU should also provide a proper industrial policy response to the IRA. More specifically, the Commission should review the state aid framework in a targeted way. It could consider allowing for additional subsidies focused on sustainable innovation. Anyway, the EU should refrain from mimicking the IRA with some kind of "Made in EU" Act as this would be incompatible with the WTO, and detrimental to the EU's credibility as a trading partner. As a rule, the EU should refrain from entering a subsidy race, but rather maintain and shape the rules-based multilateral trading system.'

The Hertie School study [suggests](#) that 'the IRA will undercut European production costs in several sectors. This does not mean the EU must mimic the US program. However, it does mean that the EU needs to turn its piecemeal Green Deal Industrial Plan into a coherent strategy. This requires a greater focus on green industries in which Europe can develop a competitive edge and more joint financing at the EU level.'

Negotiation channels between US and EU on climate and IRA

The election of Biden was seen in the EU as a major relief from its predecessor's openly aggressive stance vis-à-vis the EU. Biden may use a more moderate tone, yet he resolutely maintains his predecessor's 'America First' approach, also in view of internal politics, which leave him little margins for concessions. A number of channels for discussion and negotiation, both already established and newly created, can be used to defuse possible conflicts.

The **EU-US Energy Council** is the lead transatlantic coordination forum on strategic energy issues for policy exchange and coordination at political and technical levels. It was created in 2009 and last met on 4 April 2023, to [re-affirm](#) the common commitment to achieving net zero emissions by 2050, and working jointly with the global community to keep a 1.5 degrees Celsius limit in global temperature rise within reach, while pursuing a just and inclusive energy transition to climate neutrality.

The **Joint Energy Security Task Force** was [set up](#) in March 2022 by Commission President von der Leyen and US President Biden with the aim of supporting the rapid elimination of the EU's reliance on Russian fossil fuels by diversifying its natural gas supplies, taking steps to minimise the sector's climate impact, and reducing the overall demand for natural gas. A progress report was [published](#) on 3 April 2023. The Task Force has facilitated engagement with the U.S. LNG industry on the EU Energy Platform and its upcoming implementation to attract U.S. LNG to Europe.

More specifically, a **US-EU Task Force on the Inflation Reduction Act** destined to address specific concerns raised by the EU related to the IRA, was [created](#) on 25 October 2022. In a Joint Statement by US President Biden and Commission President von der Leyen on 10 March 2023, they reaffirm that the US and the EU are committed to addressing the climate crisis, accelerating the global clean energy economy, and building resilient, secure, and diversified clean energy supply chains. Both parties recognise that these objectives are at the heart of the U.S. Inflation Reduction Act and the EU Green Deal Industrial Plan. They announce the begin of negotiations on a **targeted critical minerals agreement** for the purpose of enabling relevant critical minerals extracted or processed in the European Union to count toward requirements for clean vehicles in the Section 30D clean vehicle tax credit of the Inflation Reduction Act. They announced the launch of the **Clean Energy Incentives Dialogue** to coordinate the respective incentive programs so that they are mutually reinforcing. Both sides vow to take steps to avoid any disruptions in transatlantic trade and investment flows that could arise from their respective incentives.

The **Clean Energy Incentives Dialogue** will become a [part](#) of the **EU-U.S. Trade and Technology Council** where it will also facilitate information-sharing on non-market policies and practices of third parties - such

as those employed by the People's Republic of China (PRC) - to serve as the basis for joint or parallel action and coordinated advocacy on these issues in multilateral or other fora. Five areas of cooperation were agreed at the inaugural meeting on 29 September 2021: export controls; foreign direct investment screening; secure supply chains (especially regarding semiconductors); technology standards, including cooperation on Artificial Intelligence; and global trade challenges.

For negotiations on IRA, the guidelines that are being established are more important than the original act, as there may be some leeway left in the technical part. However, the chances to achieve large breakthrough are limited. As [described](#) in the Hertie School study, the *'main political goal of these Made in America requirements is to reduce US dependencies on Chinese imports in critical sectors of the green transition. However, they also discriminate against European producers and violate World Trade Organizations (WTO) rules.'* Concerning the negotiations, it concludes that they have led to *'some carve-outs, for example for leased vehicles, and both sides are eyeing targeted free trade agreements that could broaden the scope of the US subsidies EU manufacturers can qualify for.'* However, the study warns that *'most protectionist elements for green tech industries are hard-wired into the law and impossible to change ex-post.'*

Some results were achieved in December 2022: guidance on the relevant IRA provisions [published](#) by the US Treasury would make commercial clean vehicle credits available to EU companies.

When solely concentrating on the IRA topic, the failure to agree on the EU-US trade agreement TTIP is now a distinct disadvantage for the EU, resulting in being treated less favourably than Canada or Mexico. A solution would be to find an agreement that is as encompassing as possible, e.g. a trade agreement.

However, some advice to refrain from negotiating exceptions for the EU within the IRA, in order to avoid taking part in measures that are in violation with the principles of the WTO, notably the most-favoured-nation clause. A [study](#) for the EP by Amighini, et al. advises that *'regarding United States' IRA policy, the EU might try to search for a bilateral solution within the newly established IRA Task Force to remove the local production content requirements in the law itself. However, we would discourage the EU from asking for an exemption, as provided in the IRA for Mexico and Canada, as this would continue to flout WTO rules. Instead, the EU should file a case at the WTO, possibly together with other concerned partners. Filing such a complaint is not an act of unfriendliness, but rather a necessary step to keep the WTO as the key institution for GVC governance. If the EU does not file a complaint against the IRA, it would damage its own trade policy strategy and the credibility of the multilateral trading system. In addition to filing a WTO case, the EU should work with allies and countries also affected by the IRA, such as South Korea, Australia, New Zealand, and Japan.'*

Conclusions

The EU went through two major crises recently. COVID-19 forced lockdowns, disrupted production chains and brought much of the world's economy to a standstill. Then, as the world economy was just about to recover from the pandemic, the Russian war of aggression in Ukraine disrupted international trade and brought an energy crisis to large parts of the EU. Compared to these two events, IRA is not a crisis, but an issue. As shown above, the IRA should not have the potential to cause a recession in the EU.

The EU's reaction to the IRA should not be expected to be as massive as that to the major crises. This is also due to the EU having started with climate action and related subsidies earlier than the US, so much of the 'reaction' to IRA was already in place before President Biden launched its own climate package. This concerns both the Recovery and Resilience Facility created in the aftermath of COVID-19 and the loosening of State aid rules through the Temporary Framework as well as the revised General Block Exemption Regulation.

Additional relaxation of State aid rules were decided after the inception of IRA, and further programmes, such as the Commission's Green Deal Industrial Plan, encompassing in particular proposals for a Net-Zero Industry Act and a Critical Raw Materials Act was presented.

However, the several hundred billion Euro Recovery and Resilience Facility (RRF) is limited in time, and due to its exceptional character as a crisis-fighting instrument based on Article 122 TFEU, cannot be prolonged beyond 2026 or emulated in a different form. The Commission has since announced that it would make proposals for a European Sovereignty Fund, however the reception of this plan by the Member States has been muted, with a number of countries strongly opposed to such plans. The Commission did not yet explain how this fund would be financed.

The US is now on track for fighting climate change, which, from the European point of view is a major breakthrough. After strong initial fears about profoundly negative effects of the IRA on the EU, which led to a wide range of often strong demands to counter the IRA, academic research, as shown above, now identifies the emergence of a more nuanced appraisal. This includes acknowledging that the EU and its Member States already had put in place instruments with similar aims and financial support, e.g. for the support of clean vehicles. Further, a range of positive effects from the IRA for the EU and its industry has been identified.

European firms operating in the US will benefit from the IRA. It has also been advanced, that the IRA may make the EU and other economies more competitive towards China. After an initial slowdown of the green transition, in the longer run, this slowdown should be outweighed by the reduction in the cost of clean tech driven by the IRA. Rather than triggering a trade war, it is more likely that growing green industries in the EU and US will open new avenues to cooperation between them.

The biggest issue with the IRA are its local content requirements (LCR), the embodiment of an 'America First' mentality, which many in the EU thought to be overcome since the last US elections. LCRs come in gross violation of the international trade architecture that is enshrined in the WTO statutes, of which the most-favoured-nation principle is blatantly disregarded. This is both a problem for European exporters, as they can be discriminated against by US subsidies to the extent of becoming uncompetitive on US markets, as well as for the stability of the international trade order based on multilateralism, which is central to EU's concept of trade policy as well as to the EU's capacity to export. A further issue is a possible relocation of EU industries to the US, although there is no consensus on the expected level of relocalisations, due to many other factors influencing direct foreign investment decisions.

Concerning the LCRs, three main trade policy options are possible. First, by setting up a similar policy of EU/national preference, which may however have profound consequences for EU's exports once third countries retaliate, as well as for EU's credibility in upholding free trade and multilateralism. Second, by trying to negotiate exemptions from the IRA, similar to those granted to Canada and Mexico. Although negotiations are ongoing, with the aim of softening-up IRA implementing measures, and some concessions were actually made by the US side, little additional progress is to be expected, as LCRs are hard-wired into the main IRA act. Here too, the EU's credibility might suffer, as it would accept that the US maintains discrimination vis-à-vis third countries. Third, the EU may decide to file a complaint with the WTO.

The IRA and similar US policies further increased an ongoing subvention race in sectors like clean cars, and the manufacturing of batteries and microchips.

The IRA anchors a debate on the EU's economic and fiscal governance structure, opposing supporters of the Single Market to those of an active industrial policy. The Commission and some Member States are requesting a stronger industrial policy, which may include elements of state dirigisme, are advocating community preference, and ask for a strengthening of EU funding, e.g. through a European Sovereignty Fund. Others are opposing these positions, and some are also sceptical about the Commission's action to loosening competition rules.

For the Commission, there is much to lose once the disbursement phase of the RRF will come to an end. The facility gives the institution a central role in the determination and coordination of the economic and fiscal policies of the Member States, which goes well beyond the procedures foreseen in the European Semester. The RRF provides the Commission with a carrot and a stick, while within the European Semester framework, it can merely issue a recommendation (of the Commission) for a recommendation (by the Council) to the Member States, which in addition is generally not binding.

Most experts advise not to react dramatically to the IRA, an opinion that is also shared by those experts who did identify strong discriminations against the EU in some fields.

Much can be done leaning on current EU policies, such as completing the Single Market, improving education and training, spurring R&D, streamlining and accelerating permitting processes for green investment, reaching a trade agreement with the US, as well as pursuing broader aims, including competitiveness in general, speedy decarbonisation and formulating broad foreign policy and development policy goals, and review the state aid framework in a targeted way. The EU could consider allowing for additional subsidies focused on sustainable innovation, and turn the EU's piecemeal Green Deal Industrial Plan into a coherent strategy. A multitude of further actions are possible.

A fundamental question will be whether the climate-related investments are to be financed by public debt, or if the new priorities, mostly climate, should replace some of the old priorities within existing budgets or funds, i.e. lead to a reallocation of resources rather than their increase.

Finally, the macroeconomic environment is changing. Many of the current programmes, as well as some that are proposed, are financed by debt. The return of inflation reminiscent of what the European Community went through 40 years ago, as well as high interest rates have fundamentally altered the perception on sovereign debt. While until recently it was possible to finance climate change related expenditure via seemingly costless debt, the soaring interest rates have triggered a major re-thinking, with increased attention paid to the sustainability of state finances.

ANNEX I - Key Provisions of the IRA

Source: Boehm, L. and Scalamandrè, C.: [EU-US climate and energy relations in light of the Inflation Reduction Act](#), EPRS, European Parliament, January 2023.

Key provisions for [manufacturing and industry support](#) include:

- A **tax credit for investments into advanced energy projects** including projects which expand or establish manufacturing facilities for the production of clean energy equipment and vehicles, as well as projects which re-equip manufacturing facilities with equipment reducing GHG emissions by at least 20 % (IRA statutory provision: 13501).
- A production tax credit for domestic manufacturing of components for solar and wind energy, inverters, battery components, and critical minerals (IRA statutory provision: 13502). The credit for critical minerals is permanent, starting in 2023. For other items the full credit is available between 2023-2029, phases down over 2030-2032, and varies by technology.
- **USD 250 million in grants for the domestic production of heat pumps** (IRA statutory provision: 30001), to remain available to September 2024.
- **USD 5.8 billion in grant support to energy-intensive industry** for the installation of advanced technology to reduce facilities' GHG emissions (IRA statutory location: 50161).

The IRA places specific emphasis on zero-emission vehicles to support the Biden administration's goal of at least half of all new passenger cars and light trucks sold in 2030 being [emission free](#):

- Subject to income requirements (maximum USD 300 000 gross income for couples or USD 150 000 for singles), a **clean vehicle credit** (IRA statutory location: 13401) provides buyers with a tax credit of USD 3 750 for vehicles for which a minimum percentage of critical minerals has been extracted or processed in the US or a country with which the US has a free trade agreement, and an additional USD 3 750 tax credit for vehicles meeting the requirement that a threshold percentage of battery components are manufactured or assembled in North America. Vehicles must meet other requirements to qualify, including final assembly in North America and vehicle retail price limits of USD 55 000 for cars and USD 80 000 for vans, SUVs and pickups.
- The **purchase of second-hand clean vehicles** (IRA statutory location: 13402) is bolstered by a tax credit of USD 4 000 or maximum 30% of the sales price, subject to household income limits. Businesses are to benefit from a **tax credit for purchases of commercial clean vehicles** (IRA statutory location: 13403) while consumers and business alike can benefit from a **tax credit for alternative fuel vehicle refuelling and charging property** (IRA statutory location: 13404) including electricity, ethanol and biodiesel.
- **Domestic production of clean vehicles is to be bolstered by a USD 2 billion grant programme** for the manufacture of hybrid, plug-in electric hybrid, plug-in electric drive and hydrogen fuel cell electric vehicles (IRA statutory location: 50143).
- A USD 3 billion purchase programme for the federal government to acquire **US Postal Service zero-emission vehicles** (IRA statutory location: 70002).

Key provisions on clean energy include:

- **Tax credit for production of electricity from renewable sources**, for projects beginning construction before 1 January 2025 (IRA statutory location: 13101), as well as a tax credit for investment into renewable energy projects (IRA statutory location: 13102). Additional tax credit is granted for small-scale solar and wind facilities in low-income communities (IRA statutory location: 13103, 13702(h)).

- **Tax credit for electricity produced at a qualified nuclear power plant** (IRA statutory location: 13105).
- A 'technology neutral' **tax credit for production of clean electricity** (IRA statutory location: 13701), as well as investment in facilities that generate clean electricity (IRA statutory location: 13702), until at least 2032, or in case US GHG emissions from electricity fall below 25 % of 2022 emissions.
- A **USD 27 billion greenhouse gas reduction fund** providing grants for clean energy and climate projects especially in low-income communities (IRA statutory location: 60103).
- A **USD 3.6 billion loan guarantee programme for innovative clean energy technologies** (IRA statutory location: 50141).
- A **USD 5 billion loan guarantee programme to invest in new energy infrastructure** including carbon capture, utilisation and storage (IRA statutory provision: 50144).
- Loans and loan guarantees for the upgrade and provision of **renewable electricity in rural communities**, including **USD 1.7 billion in grants for agricultural producers** to invest in renewable energy and clean technology (IRA statutory provision: 22002(a)).
- Provisions for the development and use of transportation fuels such as tax credits for biodiesel and renewables diesel (IRA statutory location: 13201), tax credits for the domestic production of sustainable aviation fuels (IRA statutory location: 13704) and the sale or use of sustainable aviation fuel (IRA statutory location: 13203), grants for biofuel infrastructure (IRA statutory location: 22003).
- **A tax credit for the production of clean hydrogen** (IRA statutory location: 13204).
- **USD 2 billion for energy research.**
- **Grants for climate justice and air pollution monitoring and reduction programmes**, with an emphasis on low-income and disadvantaged communities.

In terms of **home improvement and household and commercial building support**, the IRA will provide, inter alia:

- Tax credits for **energy-efficient home improvements** (IRA statutory location: 13301), such as insulation or efficient heating and a tax credit for the purchase of residential clean energy equipment such as battery storage (IRA statutory location: 13302), as well as the construction of new energy efficient homes (IRA statutory location: 13304).
- Tax deductions for **energy efficient commercial buildings** (IRA statutory location: 13303).
- Grants to develop energy saving **house retrofits** (IRA statutory location: 50121) and high-efficiency electric home rebates (IRA statutory location: 50122).
- Grants for state and local government to adopt **energy-efficient building codes** (IRA statutory location: 50131).

In addition, the IRA will invest in the US energy grid with:

- A **USD 2 billion loan programme for transmission facilities** (IRA statutory provision: 50151).
- **USD 760 million in grants to speed-up the construction of interstate transmission lines** (IRA statutory provision: 50152). Grants are aimed at the examination of alternative siting corridors in particular, as well as the participation in regulatory proceedings in other jurisdictions.
- **USD 100 million to plan interregional and offshore wind electricity** (IRA statutory provision: 50153).

Furthermore, the IRA will provide billions of dollars to **US agriculture, fisheries and local communities**, for example in the form of:

- USD 8.45 billion in **technical assistance grants** for the conservation of ground water and reduced soil erosion (IRA statutory location: 21001(a)(1)), USD 3.25 billion in grants to agricultural and forest producers who adopt conservation activities (IRA statutory location: 21001(a)(2)), and further grant programmes aimed at environmental protection.
- To support **coastal restoration and marine resources**, a USD 2.6 billion federal spending programme will benefit coastal communities (IRA statutory provision: 40001), while a USD 4 billion **drought mitigation programme** (IRA statutory provision: 50233), coupled with related initiatives is directed at regions in the American South-West and far West suffering from extreme heat and low rainfall.

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