

GERMAN INFRASTRUCTURE BULLETIN

The US Inflation Reduction Act and the EU Green Deal Industrial Plan – Infrastructure’s Big Bang!

5 March 2024

EXECUTIVE SUMMARY

- The IRA is truly revolutionary, its predictability, scale, and the transferability of project ‘tax equity’ combine into a powerful bankable fiscal support package. It is unashamedly protectionist and precisely because of this will also accelerate clean tech deployment in the EU and beyond.
- The level of US fiscal participation is unprecedented. The EU has pre-existing funding programmes and is responding to the IRA with its Green Deal Industrial Plan, additional fiscal firepower is envisaged in the form of State aid.
- This subsidy race is a part of the global competition for a share in emerging technology industries.
- Germany is facing headwinds. Its self-imposed ‘debt brake’ will need to be lifted so that it can comfortably provide the State aid required to close its production cost gaps. In our view competitive pressures will force Germany to act, the storm will clear.
- The new enabling industrial policies, associated fiscal intervention, energy sovereignty, monetary policy, persistent inflationary pressures, and a measured loosening cycle, are aligning in such a way as to herald what could become a golden era, this is green infrastructure’s big bang.

1. INTRODUCTION

We’re living in grave yet interesting times. Climate tipping points feel close whilst industrial policy landscapes are beginning to shift dramatically. The page has turned to a new economic chapter shaped by fiscal intervention, trade fragmentation, and persistent inflationary pressures. Navigating this new environment poses both challenges and opportunities.

In May 2020 our paper, ‘[The Great Corona Reset](#)’, ventured to predict that: (i) Germany would leverage the pandemic crisis to direct the post crisis journey to accelerate decarbonisation and compete for leadership in emerging technologies; (ii) inflation would

rise significantly; (iii) nominal interest rates would rise but real rates, adjusted for inflation, would be kept low; (iv) supply chains and globalisation would come under scrutiny; and (v) a new increasingly sustainable era of infrastructure investing would emerge.

The ferocity of the interest rate hikes when they came in 2022 quickly reaching restrictive levels was, however, not foreseen. These rises marked a more abrupt end to the preceding zero-interest-rate policy economic chapter and led, amongst other things, to a stemming of capital commitments to infrastructure funds and to a slowing of fund deployment.

The strong German position alluded to in our paper is in jeopardy, its green transition threatened cumulatively by: (i) the radical US economic and trade policy shift; (ii) the consequences of the war in Ukraine; and (iii) a national budgetary crisis triggered by a [recent constitutional court ruling](#)¹. The enactment of the US Inflation Reduction Act of 2022 (the **IRA**) sounded alarm bells in European capitals. Early panic has moderated, however serious concerns remain that EU industry will be hollowed out - electric vehicle (**EV**), solar panel, battery cell, and hydrogen production would relocate to the US.

In this bulletin we cast a wide net pulling together the competing US and EU green industrial policies before overlaying these with a macro-economic investment outlook to peer into the future.

CONTENTS

↓	THE INFLATION REDUCTION ACT	Section 2
↓	THE EU POLICY STATUS QUO	Section 3
↓	THE EU POLICY EVOLUTION	Section 4
↓	GERMAN HEADWINDS	Section 5
↓	INFRASTRUCTURE’S BIG BANG	Section 6
↓	CONCLUSION	Section 7

¹ BVerfG, Urteil des Zweiten Senats vom 15. November 2023 - 2 BvF 1/22 -, Rn. 1-231

2. THE INFLATION REDUCTION ACT

2.1 Design

The IRA² (see [useful guidance](#)) and associated legislation including the [Chips and Science Act of 2022](#)³ (the [Chips Act](#)) (see [useful FAQs](#)) represent the most radical post war shift in US trade, industrial, and climate policy. Viewed through a domestic lens the goals include reindustrialisation, the creation of a skilled work force, decarbonisation, implementation of standards, public health, and social equity as a bulwark to populism. The geopolitical statement of intent is to break China dependencies by onshoring supply chains whilst simultaneously moving to net-zero.

The ‘inflation reduction’ piece is to be achieved through the withdrawing of purchasing power from the US economy through increased taxation. Tax increases have included a selective minimum 15% corporate tax rate for companies with over USD 1bn annual profits and a 1% excise tax on share buy backs. The new tax revenue is to be used to fund the IRA tax credits. However, despite the label and the purchasing power withdrawal mentioned above, the broader effects are in our view likely to be predominantly inflationary. Its protectionism, the onshoring of production supply chains, plus any required new sovereign debt issues tend towards inflation. The disinflation that globalisation brought about is reversing.

The jaw dropping level of Federally funded tax credits, loans, and grants are aimed at shifting production to the US. A base investment tax credit (ITC) of up to 30% of capex is available, with an additional bonus credit of up to 10% available for projects located in energy communities, and a further 10% where US local content requirements (LCRs) are met. The production tax credits (PTC) are similarly structured including base and bonus credit rates, however, the unit values used in the relevant production credit type differ depending on the nature of ‘product’ produced. The production of electricity, hydrogen, carbon oxide, solar modules, wind turbines, battery cells and modules, and critical minerals processing are supported. Estimates on the value of IRA tax credits over 10 years range from USD 633bn to USD 1.2tn⁴, the funding available is technically unlimited and is capped only by demand. This uncapped nature means that it is conceivable that new US sovereign debt may need to be issued to supplement the tax revenue increases.

The IRA LCRs are in clear breach of the [most-favoured-nation principle of the WTO rules](#)⁵. The EU has not yet formally responded to the discrimination.

² Public Law 117-169, 136 Stat. 1818 (August 16, 2022)

³ Public Law 117-167, 136 Stat. 1366 (August 9, 2022)

⁴ Committee on Oversight and Accountability, ‘McClain: Americans are Worse Off One Year After the Inflation Reduction Act’, United States House of Representatives, 14 September 2023.

A response could take the form of filing an WTO complaint or to attempt to negotiate exceptions. In any event, this radical policy shift can be seen as an end of US post war WTO compliant liberal trade policy. The offshoring of strategic industries is in retreat, the global economic order is in flux.

2.2 High Potential

The simple and predictable access to [operational](#) subsidies is a key difference to the pre-existing EU support. Huge fiscal resources are being mobilised into cleantech deployment for a rapid ramp up. In the EU by contrast, assessing eligibility to available subsidies, which are usually focussed on the pre-commercialisation phase, can be difficult and application processes and outcomes are complicated and uncertain.

The two new IRA tax credit delivery systems are gamechangers, ‘elective pay’, otherwise also known as ‘direct pay’, and transferability will allow project participants to benefit fully from available tax credits:

- ‘elective pay’ can be chosen by businesses for three credits: Advanced Manufacturing (45X)⁶; Carbon Oxide Sequestration (45Q); and Clean Hydrogen (45V); and
- all or any portion of the 11 clean energy credits may be transferred to a third party in exchange for tax free immediately available funds.

This is a boon to bankability and means that projects can now take advantage of tax incentives even if they ultimately do not generate sufficient tax liability to fully utilise credits. Previously, this uncertainty raised costs and created challenges for project financing. Transferability underpins financing as it gives project owners opportunities to monetise their tax credits including by allowing the raising of early-stage project level capital without the complexity of a conventional equity partnership.

2.3 Risks and Challenges

To meet its full potential the IRA must overcome some risks and challenges, including:

- the length and complexity of permitting processes to be coordinated at both Federal and State level;
- the lack of appropriately skilled workforce;
- deficient or non-existent US supply chains (see US offshore wind illustration in section 2.4.3 below);

⁶ ‘Principles of the trading system’, World Trade Organisation website, last accessed on 15 February 2024.

⁵ Unless otherwise expressly stated, numbered references to statutory sections in this bulletin are to Sections of the US Internal Revenue Code of 1986.

- increased demand including from financial institutions is required to facilitate a vibrant US ‘tax equity’ market;
- investors must be able to adequately mitigate audit and ‘recapture risk’. The US Inland Revenue Service can “recapture” i.e. claw back tax credits from failed or otherwise ineligible projects (most clean energy tax credits are pegged to the value of investment into the project in the year it begins operating);
- tax credits are probably not as well suited to supporting long-lived industrial decarbonisation projects relying on infant technologies such as green hydrogen and carbon- capture, utilisation and storage (CCUS) to remain competitive once the subsidies have dried up; and
- ‘Trump Risk’ associated with the US Presidential election and the risk that US Congressional intervention could either dilute or even completely scupper the IRA.

We are confident that the IRA policy framework will continue to evolve to address the challenges. The permitting issue could effectively be addressed by the establishment of ‘single window clearance’. Immigration reform could help bring in the right skills, and recapture risk will be effectively mitigated through due diligence processes (using the new platforms containing relevant project data) and insurance. Encouragingly US authorities seem to be proactive in addressing challenges (see section 2.4.3 below).

2.4 Taking Stock

Whilst current inflation and debt costs have weighed on unsupported projects, the IRA has underpinned vigorous project development. Since the IRA was enacted **more than USD 220bn of new projects have been announced**⁷, including some arguably diverted from the EU. Despite some teething problems, we are confident that the IRA will be a success, it is already working:

2.4.1 Battery Production

There has been a massive increase to US battery production. In the year since the IRA’s enactment, an amount equal to 40% of all US battery investment ever made has been announced. The US battery cell pipeline of 1005 GWh is now almost equal to that of the EU⁸. Freyr (Norway) has taken advantage,

announcing its Giga America battery plant⁹ planned for a site in Georgia.

2.4.2 Hydrogen Production

In terms of hydrogen production, Nel (Norway), has **announced a USD 500m automated gigawatt electrolyser manufacturing facility**¹⁰ in Michigan. When IRA subsidies are factored in, production costs for green hydrogen are likely to be lower in the US. Nevertheless, Europe is well ahead in terms of total announced hydrogen production capacity. It is arguable that European electrolyser producers lead the market so, subject to compliance with US LCRs, such producers are also set to benefit from the US stimulus.

2.4.3 US Offshore Wind

The infant US offshore wind industry is a useful case study. A combination of higher costs, interest rates, permitting delays and supply chain disruptions have blighted the business models of the European developers thus setting back the ambitious plans of US coastal states. The developers have been lobbying hard for the rewriting of the IRA bonus tax credit requirements as they apply to offshore wind, arguing that it is simply not possible to obtain bonus credits as a US component supply chain will not be ready for their procurement schedule and it is difficult to ‘locate’ an offshore wind project within an energy community. Ørsted (Denmark) **announced**¹¹ on 1 November 2023 that it had ceased development of Ocean Wind 1 (1.1 GW) and Ocean Wind 2 (1.15 GW) whilst taking FID on Revolution Wind (704 MW).

Equinor (Norway) have reached an agreement with New York State regulators to cancel the 2022 power purchase agreement (PPA) relating to their Empire Wind 2 (1.26 GW) offshore wind project. The old strike price was USD 107.50 per MWh. An earlier petition to increase the strike price to USD 177.84 per MWh was rejected by the New York Public Service Commission (NYPSC). The cancellation opens the way to a future new solicitation in which Empire Wind 2 could potentially participate. At the same time, Empire Wind 1 is set to benefit from the New York State Energy Research and Development Authority’s (NYSERDA) recent **announcement** of a fourth offshore wind solicitation open to previous participants. A total of six bids for three projects were received and on 29 February 2024 Equinor’s Empire Wind 1 and Ørsted’s Sunrise Wind were awarded for contract negotiation with contracts expected to be executed in Q2 2024¹². The agreement to cancel the Empire Wind 2 PPA and

⁷ A. Chu, O. Roeder, A. Irwin-Hunt, ‘Inside the \$220bn American cleantech project boom’, Financial Times, 16 August 2023.

⁸ M. Elkerbout, E. Righetti, C. Egenhofer, ‘Different Roads, Aligned Goals: How and why the Inflation Reduction Act and EU green industrial policies differ in supporting cleantech deployment’, Centre for European Policy Studies (CEPS), 5 December 2023.

⁹ ‘FREYR Battery Announces Plans for U.S. Gigafactory in Georgia’, FREYR Press Release, 11 November 2022.

¹⁰ ‘Nel plans gigafactory in Michigan’, Nel Press Release, 3 May 2023.

¹¹ ‘Ørsted ceases development of its US offshore wind projects Ocean Wind 1 and 2, takes final investment decision on Revolution Wind, and recognises DKK 28.4 billion impairments’, Ørsted Press Release, 1 November 2023.

¹² New York State Energy Research and Development Authority (NYSERDA), ‘2023 Offshore Wind Solicitation (Closed)’, NYSEDA website, last accessed on 1 March 2024.

to launch a new solicitation encompassing Empire Wind 1 bodes well as it demonstrates US authorities' willingness to address the challenging industry economics.

2.4.4 EV Sales

A serious bone of contention between EU and US is the USD 7500 consumer subsidy¹³ for US produced EVs. Although Member States have their own consumer facing subsidies of a similar order, these do not include LCRs. The acute fear, notably in Germany, was that this would effectively close off the US market to its producers. These fears have been partially vindicated. Sales of US EVs surged by 59% to 528,362 EVs with 80% domestically produced. In the same period imports of EU produced EVs also increased by 82%¹⁴, however, this increase was in the main due to separate looser IRA tax credit rules for leased EVs. This issue is tempered by the fact that many EU manufacturers already have US production facilities and by the hope that a new wide-ranging Critical Minerals Agreement between the US and EU could help level the playing field (see section 4.3 penultimate para).

3. THE EU POLICY STATUS QUO

The EU has long supported renewable energy investments arguably to a similar order as the US is doing now. The fiscal support 'carrot' is combined with a credible 'stick' which is the EU **Emissions Trading System** (the ETS). Under this cap-and-trade mechanism EU companies are obligated to buy permits corresponding to the number of tonnes of CO₂ they emit. The CO₂ price fluctuates according to demand and is hovering at around **EUR/t 52.21 today**¹⁵.

In terms of the potential size of the fiscal support 'carrot', the EU's political reality means that it is institutionally hamstrung by:

→ *limited financial resources* - its budget is limited to 1% of the EU's gross national income - set in the Multi-Annual Financial Framework in seven-year cycles. Most common EU funds are spent on the common agricultural policy (CAP) and cohesion policy. No political consensus exists on structurally increasing EU-level spending for pure industrial policy, the proposed **EU Sovereignty Fund**¹⁶ is dead in the water¹⁷; and

→ *lacking legal competence* - EU Treaties explicitly refer to industrial policy but significantly only as a supporting competence. EU Industrial policy falls more in the domain of the internal market as this is where the EU has legal capacity to act without requiring a dedicated budget.

The EU funding that is available is delivered through a myriad of policies and funding programmes which change over time, these are more dispersed, less predictable and more difficult to access than IRA tax credits. Another crucial difference is that the main focus of EU support has been to the pre-competitive phase, R&D, early deployment, and demonstration against which the IRA directly and generously supports operational production. It is also worth noting that the IRA doesn't expressly create funds whilst the EU relies on debt financed funds. The US is reallocating existing budget resources whilst the EU adds new policy spending without cutting existing spending.

EU support may be available at different technology readiness levels and for different potential cleantech allocations: **Horizon Europe** up to EUR 12bn, **ETS Innovation Fund** up to EUR 40bn, **Modernisation Fund**, and **Social Climate Fund**¹⁸. EU cohesion policy can also benefit industry: **European Structural and Investment Funds**, **Cohesion Fund**, **European Regional Development Fund**, **Just Transition Fund** and the **Connecting Europe Facility**. The complexity and uncertainty of the application processes are not conducive to project planning.

The bottom line is that EU institutional constraints mean that the lions' share of financial support for the green transition will need to be arranged between Member States. This is State aid which becomes the focus of EU industrial policy to counter the distortive effects of national interventions and safeguard the EU's internal market. The **General Block Exemption Regulation (GBER)**¹⁹ defines the criteria that Member State's measures must fulfil for these to be exempt from notification obligations.

In addition to the GBER, the Commission has each year since 2018 approved State aid for at least one integrated Important Project of Common European Interest (**IPCEI**). IPCEIs predominantly cover R&D as well as projects of first industrial deployment. **Eight integrated IPCEIs have been approved to date.**

¹³ Clean Vehicle Credit: Section 30D of the Internal Revenue Code

¹⁴ V. Jack, F. Di Sario, L. Mackenzie, G. Coi, 'EU shrugs off threat from US Inflation Reduction Act - for now', Politico, 24 August 2023.

¹⁵ Ember, 'Carbon Price Tracker: The latest data on EU ETS carbon prices', last accessed on 23 February 2024.

¹⁶ A European Sovereignty Fund for an industry "Made in Europe" | Blog of Commissioner Thierry Breton, European Commission Statement, European Commission website, 15 September 2022, last accessed on 27 February 2024.

¹⁷ Théo Bourgerly-Gonse, 'Commission 'annihilated symbolic value' of EU Sovereignty Fund, leading MEP says', Euractiv.com, 21 June 2023.

¹⁸ Ibid 8

¹⁹ Regulation (EU) 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty

4. THE EU POLICY EVOLUTION

In the aftermath of the pandemic, the war in Ukraine, and most importantly the enactment of the IRA, new spending programmes were created and new policies developed. The Green Deal Industrial Plan (see section 4.1 below) is the EU's major policy response to the IRA.

The original **Recovery and Resilience Facility (RRF)**, a temporary funding at the centre of the pandemic recovery package **NextGenerationEU**²⁰ predates the IRA. The May 2022 **RePowerEU** initiative largely repurposes the RRF mobilising **EUR 225bn loans and EUR 72bn**²¹ grants largely earmarked for the acceleration and scaling of the clean energy transition.

The standard GBER criteria have been temporarily relaxed. The **Temporary Crisis Framework (TCF)**²² was created in March 2022 in response to the war on Ukraine and on 9 March 2023 it was modified and transformed into the **Temporary Crisis and Transition Framework (TCTF)**²³, this was a direct response to the IRA. Under the revised GBER the thresholds have been increased so that in many cases notification will no longer be required. In addition, much more generous 'matching' State aid is permitted, if a Member State can credibly demonstrate that additional aid is necessary to avoid investments from being diverted away from the EU. The current GBER is in force until the end of 2026.

4.1 The EU Green Deal Industrial Plan

The **Green Deal Industrial Plan (GDIP)** announced on 1 February 2023 by the European Commission (the **Commission**) is a new strategy comprising three main initiatives aimed at enhancing the ultimate competitiveness of the EU's net-zero industry. It proposes, amongst other things, to facilitate the domestic production of net-zero technology products, enhance workforce skills notably through the launch of 'net-zero industry academies', and envisages specific regulatory frameworks for the development and validation of innovative technologies known as 'net-zero regulatory sandboxes'.

The Council of the European Union (the **Council**) and European Parliament have recently reached provisional agreements on four draft regulations, the **Net-Zero Industry Act**²⁴, the **Critical Raw Materials Act**²⁵, the legislation establishing **Strategic Technologies for Europe Platform**²⁶, and the **Electricity Market Design Reform**²⁷. The reaching of provisional agreement is a key hurdle, however, each agreement still requires formal endorsement and adoption by both institutions. The hope is that this will occur in the next months prior to the European Parliament elections scheduled for June 2024.

4.1.1 Net-Zero Industry Act

A primary aim of the **Net-Zero Industry Act (NZIA)** is to accelerate production increases of net-zero technologies through more planning certainty for investors. Much of the NZIA is of an enabling nature attempting to address red tape and simplifying processes including provisions on permitting, access to funding, and regulatory sandboxes. Some provisions are arguably protectionist and following in the footsteps of the IRA are indicative of the general move away from global free trade to a much more fragmented system. The NZIA agreement lists 19 net-zero technologies²⁸ in relation to which a manufacturing benchmark of a minimum 40%, of the EU's annual deployment needs necessary to achieve the EU's 2030 climate and energy targets, is set. A second benchmark is the increased EU share for the corresponding technologies with a view to reaching 15% of world production by 2040. Despite not strictly binding, the introduction of benchmarks is far more interventionist than what could have been conceived pre-IRA.

The NZIA includes criteria for Member States to recognise net-zero manufacturing projects as 'net-zero strategic projects'²⁹ and in respect of certain carbon capture and storage (**CCS**) projects prescribes that Member States recognise these as net-zero strategic projects³⁰. Projects categorised as 'net-zero strategic projects' will have priority status with Member States obligated to grant such projects the

²⁰ Regulation (EU) 2020/2094 establishing a European Union Recovery Instrument to support the recovery in the aftermath of the COVID-19 crisis

²¹ Annexes to the Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions; REPowerEU Plan, COM(2022) 230 final, 18 May 2022

²² Official Journal of the European Union of 24 March 2022, 2022/C 131 I/01

²³ Official Journal of the European Union of 17 March 2022, C/2023/1711

²⁴ Ferran Tarradellas Espuny, 'Net-Zero Industry Act: Council and Parliament strike a deal to boost EU's green industry', Council of the European Union Press Release, 6 February 2024.

²⁵ Ferran Tarradellas Espuny, 'Council and Parliament strike provisional deal to reinforce the supply of critical raw materials', Council of the European Union Press Release, 13 November 2023.

²⁶ Liis Jaansalu, Strategic Technologies for Europe Platform: provisional agreement to boost investments in critical technologies, Council of the European Union Press Release, 21 November 2023.

²⁷ Valeria Cozza, 'Reform of electricity market design: Council and Parliament reach deal', Council of the European Union Press Release, 14 December 2023.

²⁸ The list includes: solar technologies, onshore wind/ offshore renewable technologies, battery and energy storage technologies, heat pumps/geothermal energy technologies, hydrogen technologies, sustainable biogas/biomethane technologies, Carbon Capture and storage (CCS) technologies, electricity grid technologies, nuclear fission energy technologies, sustainable alternative fuels technologies, other renewable energy technologies (such as biomass), energy system-related energy efficiency technologies, renewable fuels of non-biological origin, biotech climate and energy solutions, transformative industrial technologies for decarbonisation, CO₂ transports/ utilisation technologies, wind/electric propulsion technologies for transportation, and other nuclear technologies.

²⁹ Article 3 (1) (e) of the Net-Zero Industry Act

³⁰ Article 10 (2) of the Net-Zero Industry Act

highest national significance possible. Maximum permitting process time limits range between 9 and 18 months³¹.

The recent **EU Industrial Carbon Management Strategy** published by the Commission sets out a comprehensive policy approach to deliver on the express NZIA target for the development of 50m tonnes of CO₂ storage capacity by 2030. The Commission has also **communicated**³² that it will be commencing work on a possible future carbon transport and storage regulatory package which will cover issues such as market and cost structure, third party access, carbon quality standards and investment incentives for new infrastructure.

4.1.2 Critical Raw Materials Act

The **Critical Raw Materials Act (CRMA)** aims to secure the supply of critical raw materials including to support the manufacturing of clean technologies. The draft regulation **identifies a subgroup of strategic raw materials**³³ for green applications and which are likely subject to future supply risks. Some key provisions only apply to the subgroup of strategic raw materials. Benchmarks are introduced for minimum annual EU critical raw materials consumption to be covered by domestic extraction (10%), recycling (25%), and processing capacity (40%), as well as a maximum 65% level of import dependency from any single non-EU country. The CRMA focus is on creating enabling conditions for strategic extraction and recycling projects to open and scale in the EU primarily by: (i) streamlining permitting procedures; and (ii) facilitating access to finance.

Under the CRMA, permit granting cannot exceed 27 months for 'strategic projects' involving extraction and 15 months for those involving processing and recycling. Where required by the nature, size, or complexity of a project, Member States can extend these maximum time periods by 6 and 3 months respectively. This could be a game changer representing a dramatic reduction to ordinary permitting timelines. Strategic projects are defined to include projects that would make a meaningful contribution to the security of the EU's supply of strategic raw materials and which are technically feasible within a reasonable timeline with confident estimates of expected production volumes being possible. Project developers can apply to the Commission for 'strategic project' recognition.

The CRMA does not mobilise new funding but provides for a European Critical Raw Materials Board³⁴ made up of Member States' representatives and the

Commission to coordinate existing financing mechanisms.

4.1.3 Strategic Technologies for Europe Platform

The **Strategic Technologies for Europe Platform (STEP)** builds on existing EU funding sources including **InvestEU**, Horizon Europe, the RRF and the ETS Innovation Fund. It is in substitution of the defunct European Sovereignty Fund and includes facilitative State aid rules and additional financing tools.

The STEP scope goes beyond the green transition by aligning with other strategic goals to include 'deep and digital technologies' and 'biotechnologies' in addition to 'clean technologies'. The definitive list of strategic clean technologies will be included in guidance within two months after the entry into force of the STEP and could well differ from the NZIA list. The STEP also comprises environmental technologies that go beyond climate, such as water purification.

The EU has set a production target of 10m tonnes of green hydrogen by 2030 and has launched the **European Hydrogen Bank** aimed at unlocking private investment in hydrogen value chains by closing the price gap between green hydrogen and the price the market is willing to pay. The exact amount of the premium will be ascertained through competitive auctions, the producers bidding for the lowest amount of support in EUR/kg win.

Germany has recently become the first Member State to participate in the new **Auctions-as-a-Service** scheme under the European Hydrogen Bank by making EUR 350m available from its national budget for production in Germany. This support is still considered State aid, however, the auctions benefit from a streamlined approval process as they are designed at EU level in line with the **Guidelines on State aid for climate, environmental protection and energy**.

4.1.4 Electricity Market Design Reform

The merit order pricing for the day ahead market linking the cost of fossil fuels used in electricity generation with the day ahead power price exacerbated the recent energy crisis.

The proposed structural reform of the EU Electricity Market Design (**EMD**) aims to make electricity prices less dependent on volatile fossil fuel prices by introducing longer term contracts, shield consumers from price spikes, and accelerate the deployment of renewable energies.

Under the reform:

³¹ Article 13 (1) (c) of the Net-Zero Industry Act

³² T.McPhie, G. Bedini, A. Crespo Parrondo, Commission sets out how to sustainably capture, store and use carbon to reach climate neutrality by 2050, European Commission Press Release, 6 February 2024.

³³ Infographic - An EU critical raw materials act for the future of EU supply chains, Council of the European Union website, last accessed on 8 February 2024.

³⁴ Under Article 34 of the Net-Zero Industry Act, the European Critical Raw Materials Board is established; shall have an advisory role to the Commission and perform the tasks set out in this Regulation.

- standardised PPAs will allow Member States to exclusively support the purchase of new renewables generation;
- two-way contracts for difference (CfDs) are, post the lapsing of a 3-year transition period, to be used, as the model for public funding of long-term direct price support schemes for new power generating facilities³⁵:
 - ↘ revenue stream stabilization through a price floor but also introducing a maximum price capping excess returns (revenues generated may be redistributed³⁶);
- the trading of renewable energy generated locally will increase access to renewable energy backed by supplier of last resort mechanisms; and
- transparency obligations for system operators and enhanced ability to monitor the energy market should make the prediction of renewables generation both easier and more accurate.

4.2 EU Carbon Border Adjustment Mechanism

The EU is under pressure to retain competitiveness. In addition to the energy price itself, the rising cost of polluting under the ETS is making EU based manufacturers uncompetitive. The **EU Carbon Border Adjustment Mechanism (CBAM)** is seen as way of preventing 'carbon leakage' through the offshoring of carbon intensive production.

The CBAM will come into force in 2026 initially covering carbon intensive imports of cement, iron, aluminium, fertilisers, electricity, hydrogen, and steel. Importers will be obligated to purchase certificates to cover the cost of their emissions as if they were part of the ETS.

Potential risks and challenges include:

- trade flows disruption which could provoke Chinese retaliatory measures against the new 'green trade barriers';
- circumvention risk through 'resource shuffling' could, in the case of steel, allow in cheaper dirty steel and/or equally the EU could become seen as a demand centre for green steel and thereby face competition from cheaper green steel third countries;
- the CBAM arguably won't on its commencement cover a wide enough range of products to protect EU manufacturers building green infrastructure such as electricity cables, wind turbine

generators, and solar panels. There is a risk that Industry supply chains become distorted; and

- the ETS has been extended to shipping and could therefore indirectly lead to increases in the price of shipped LNG (adverse to energy cost reduction).

4.3 Taking Stock

The EU policy framework is complex but evolving positively within its institutional constraints. The GDIP, once adopted, in combination with the TCTF are very positive developments. The lack of a fiscal union and significant difference in Member States funding capacity means that there is no simple equivalent to the huge fiscal firepower wielded by the US Federal Government.

Matching aid, under the State aid TCTF, has for the first time been successfully evoked by Germany in the **clearance of its EUR 902m State aid**³⁷ provided to the Swedish battery maker Northvolt. This and the general State aid flex provided including under the European Hydrogen Bank permits fiscal support on the Member State level. Only time will tell if this in totality will be an adequate response to the IRA to preserve EU competitiveness. It is likely that, the EU policy set will need ongoing calibration to achieve the right balance. In the medium term, the divergent fiscal capacities of Member States could develop into a political problem. The IRA has intensified the old EU internal debate on fiscal governance between those in favour of the single market, advocating the reestablishment of greater controls, and those in favour of a more active industrial policy.

A US-EU Task Force on the Inflation Reduction Act was created on 25 October 2022 to address specific EU concerns, and a **Clean Energy Incentives Dialogue**³⁸ which is part of the **EU-US Trade and Technology Council (TTC)** has been opened to coordinate incentive programmes to be mutually reinforcing where possible. Negotiations on a **targeted EU-US critical minerals agreement**³⁹ are ongoing and the pressure is on to achieve an agreement prior to the US Presidential Elections. From the EU perspective a key aim of such an agreement would be that of allowing critical minerals processed in the EU to count towards requirements for the Clean Vehicle Tax Credit (30D).

US and EU policy objectives are similar, common goals beyond the path to net-zero include securing access to critical raw materials, reducing dependencies, and onshoring strategic industries such as

³⁵ Applicable technologies include wind, solar, geothermal, hydropower without reservoir, and nuclear.

³⁶ Member States may redistribute revenues to consumers or use these to finance the costs of direct price support schemes or to finance investments to reduce electricity costs for consumers.

³⁷ N. Ferreira, D. Ferrie, 'Commission approves €902 million German State aid measure to support Northvolt in the construction of an electric vehicle battery

production plant to foster the transition to a net-zero economy', European Commission Press Release, 8 January 2024.

³⁸ Christian Scheinert, 'EU's response to the US Inflation Reduction Act (IRA)', Policy Department for Economic, Scientific and Quality of Life Policies (IPOL), 2 June 2023.

³⁹ MG. Ferrer, R. Verbanac, 'EU moves forward with Critical Minerals Agreement negotiations with the US', European Commission Press Release, 14 June 2023.

semiconductors⁴⁰. There seems even to be a good chance that deeper mutually beneficial forms coordination and cooperation between the US and EU could develop, also dependent of course, on the path taken post the US Presidential Election.

4.4 China (the elephant in the room)

It is in the EU's interest to find creative and mutually beneficial ways to cooperate with China with respect to China's "new green three" industries (EVs, solar energy products, and lithium batteries). The justified fear is that subsidised low-cost Chinese imports will flood the market wiping out jobs and industry. Anti-subsidy investigations have been launched which could lead to punitive tariffs with some form of Chinese retaliation pre-programmed. Emergency EU support measures being considered for panel manufacturers include State aid rules, resilience auctions, and credit guarantees. The alternatives are bankruptcy or a move across the Atlantic to benefit from IRA 'tax equity'. In October 2023, the EU announced a "**wind power package**" which included accelerated permitting procedures and European Investment Bank (EIB) financial guarantees for wind turbine manufacturers. The solar industry is keen for something similar.

It seems to us that using Chinese overcapacity and permitting calibrated levels of its cheap imports could help balance general inflationary pressures as well as help defuse trade tensions. In addition, Chinese direct investment into the EU, it is effectively locked out of the US market, could also be beneficial. Bold new mutually beneficial partnerships with countries in the global south should be forged. These partnerships could encompass critical minerals extraction, green hydrogen production, each underpinned by utility scale renewable energy projects.

5. GERMAN HEADWINDS

5.1 Die Zeitwende (a watershed moment)

The German government did a pretty good job of managing the pandemic health crisis and it was confidently directing the post pandemic journey.

The unleashing on 24 November 2022 of Russia's kinetic war on Ukraine brought home in brutal fashion that a more challenging era had begun. The post war peace dividend evaporated and a reliable security partnership with the US can no longer be taken for granted. Direct aid to Kiev plus the new **EUR 100bn defence fund**⁴¹ are novel forms of budgetary pressure. Germany's 'Ostpolitik' towards Russia of '*Wandel*

durch Handel', ('change through trade'), has been shown to have been a glorious policy failure.

The mysterious sabotage of Nordstream 1 and 2, meant that Germany had to act quickly, it skilfully replaced Russian gas with that of Norway, the US, and Qatar. Notwithstanding the recent sharp drop in natural gas price⁴² which has provided some respite, the high and volatile energy price has become a structural problem and vulnerabilities remain. The fear in Germany is of a creeping de-industrialisation. Adding more pain to misery is the profound industrial competitive challenge posed by the IRA, German industrial warning lights are flashing red.

In addition, the full economic and geopolitical effects of the catastrophic eruption in the Middle East are yet unclear, increased regional conflagration could further pressure the energy price whilst global trade, including LNG deliveries, has already been disrupted in the Red Sea. In any event, the situation is demanding uncomfortable and perhaps complex calculations of Germany balancing its history, domestic and international commitments, and the values it ascribes to itself.

This all against the domestic backdrop of a fractious government coalition and festering political crisis. The 'traffic light' coalition has been fast losing popularity with the FDP and Greens spending much of 2023 in open conflict. The coalition is split on how to solve the budget crisis. The recent scrapping of an agricultural diesel subsidy, in response to the 'debt brake' ruling (see below) unleashed virulent farmer protests and public sector strikes have brought the country to a standstill. Populism and the extreme right are on the rise with a shocking AfD (at the time **23% in the polls**⁴³) 'deportation plan' coming to light. Division and discontent feel omnipresent. Germany is in recession, inflation has ticked up again, and the European Central Bank (ECB) is managing expectations of a quick rate cut.

5.2 The 'Debt Brake' Ruling

During the pandemic the sacred 'debt brake' (*Schuldenbremse*) which limits the budget deficit to 0.35% of GDP was suspended under emergency rules. A substantial emergency fund was created and subsequently repurposed as the EUR 60bn Climate Transition Fund (*Klima Transformation Fond* – KTF). There are nearly 30 such 'off balance sheet' funds which have to date provided fiscal flex without a requiring a constitutional amendment.

The German constitutional court (*Bundesverfassungsgericht*) **ruling in November**

⁴⁰ Also evidenced by the new EU Chips Act Regulation ((EU) 2023/1781 establishing a framework of measures for strengthening Europe's semiconductor ecosystem and amending Regulation (EU) 2021/694 (Chips Act)).

⁴¹ 100 billion euros for a powerful Federal Armed Forces', Bundesregierung Press Release, 3 June 2022.

⁴² Currently trading at EUR 23 MWh, down from highs of EUR 319 MWh in August 2022.

⁴³ Institut für neue soziale Antworten, Wöchentlicher Trend, 5 February 2024, last accessed on 9 February 2024.

2023⁴⁴ found that the KTF breached the 'debt brake'. This exacerbated the political crisis and threatens to derail the German green transition⁴⁵. The coalition quickly announced⁴⁶ a deal whereby the EUR 17bn 2024 budget shortfall will be plugged by:

- abolishing climate damaging subsidies including the scrapping of diesel subsidies for agricultural vehicles;
- cutting the 2024 KTF spending by EUR 12bn to EUR 48bn (bringing the total KTF budget for 2024 – 2027 down to EUR 160bn);
- abolishing certain electric car subsidies; and
- selling the international freight and logistics business of DB Schenker.

The current compromise attempts to minimise cuts to the climate strategy, however, without further action severe budgetary cuts are needed for 2025.

5.3 Consummating the Transition

Germany has long supported renewable energy investments with some of the most generous subsidies in the EU. It is by far the leader in relative and absolute terms having the largest share of GDP spent on environmental support and accounting for 60% of the EUR 480bn spent on EU environmental aid between 2014 and 2021⁴⁷. The legislator continues to be busy with swath of new climate related legislation which, amongst other things, allocate additional resources and increases deployment targets⁴⁸. The statement of intent is clearly that the green transition is to further accelerate.

There is also a growing realisation in Germany that a rapid transition will need the deployment of bridging technologies such as CCS. Germany is a signatory to the London Protocol⁴⁹ which means that it needs to ratify Article 6⁵⁰ before it can export CO₂ to third countries such as Norway or the UK. We are confident the necessary changes to allow the export of CO₂ for storage abroad will soon be implemented. Polluting industries subjected to ETS costs would also benefit from fiscal support, in the form of State aid, with their CCS projects.

An internal debate is underway as to the permitted scope of CCS, some advocate that the use of CCS be restricted to 'difficult to avoid' emissions (yet undefined) and that not all CCS applications should be

permitted. These demands cannot easily be reconciled with the ETS under which certificates do not need to be purchased for captured CO₂. The hope is that the expected German Carbon Management Strategy ultimately clarifies the German position in such a way that doesn't delay the implementation of an EU wide carbon management regime.

It is our strong view that IRA 'angst' combined with energy price vulnerability are overwhelming pressures that will accelerate the green transition. Germany will resolve its budgetary crisis to lift the 'debt brake' and use State aid flex to make selected industries and projects cost competitive. Despite the painful interest rate environment, substantial deficit spending is now required. Industrial competitiveness, post war prosperity, the climate, and perhaps even democracy depend on it. Reform to address structural vulnerabilities will be implemented to achieve long term competitiveness. The current storm will pass.

The establishment of a new German climate fund enshrined in the constitution would quickly bring the green transition back on track.

6. INFRASTRUCTURE'S BIG BANG

Drawing on an analogy to the UK's 'big bang' regulatory liberalisation in the 1980s which set the conditions for a decades long boom in financial services to take hold, it seems to us, that the radical new enabling and supportive industrial policies described herein, the associated fiscal intervention, and monetary policy support are aligning with other factors in such a way as to herald what could become a decades long boom in green and sustainable infrastructure.

The current rate hiking cycle seems to have peaked, rates should begin coming off restrictive levels later in the year. Having said that, onshoring, protectionism and the fragmentation of global trade, shrinking workforces, volatile energy prices, wars, and increased public deficits mean that inflationary pressures are likely to remain – there will be no quick return to an era of ultra loose monetary policy. These persistent inflationary pressures are one of the key factors making the 'real asset' and inflation protection attributes of infrastructure attractive.

As rates begin to come off restrictive levels, which all things being equal should begin soon, cash will

⁴⁴ BVerfG, Urteil des Zweiten Senats vom 15. November 2023 - 2 BvF 1/22 -, Rn. 1-231

⁴⁵ The ruling is arguably also in conflict with a previous constitutional court ruling which found that German climate legislation fails and potentially violates the fundamental rights of future generations.

⁴⁶ M. Martinez, A. Rinke, S. Marsh, 'Ampelkoalition einigt sich auf Haushalt für 2024', Frankfurter Allgemeine, 13 December 2023.

⁴⁷ Ibid 8

⁴⁸ Examples include: (i) the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz -EEG), latest version effective as of 29 December 2023; (ii) Offshore Wind Energy Act (Windenergie auf See-WindSeeG) latest version

effective as of 1 January 2023; (iii) the Act on the Acceleration of Approval Procedures in the Transport Sector (Gesetz zur Beschleunigung von Genehmigungsverfahren im Verkehrsbereich), effective as of 29 December 2023; and (iv) the Solar Package 1 (Entwurf eines Gesetzes zur Steigerung des Ausbaus photovoltaischer Energieerzeugung Photovoltaik-Strategie), a package of legislative proposals for the expansion of PV generation, part of the Photovoltaic Strategy (PV Strategy), published on 5 May 2023.

⁴⁹ 1996 Protocol to the convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972

⁵⁰ Resolution LP.3(4) on the Amendment to Article 6 of the London Protocol (Adopted On 30 October 2009)

CONCLUSION

gravitate up the risk curve. The descending rate trajectory and the working out of non-performing loans and refinancings should assist asset price discovery. The post pandemic inflation has in the meantime provided some relief to nominal asset prices. Interest and other project costs will need to be managed, however, qualifying projects will also benefit from enabling regulatory, fiscal, and **monetary policy support**. We would expect to see steadily increasing infrastructure investment activity once the loosening cycle commences.

7. CONCLUSION

It may be true that a “human behavioural crisis”⁵¹ is the root cause of climate change and that until the level of resource consumption is addressed, our planet is doomed. Nevertheless, the path now set by the EU and US policy packages will accelerate global clean tech deployment and lead ultimately to a more circular economy. Effective cooperation with China, India, and the global south is imperative for the achievement of a net-zero world⁵².

The IRA is truly revolutionary, its predictability, scale, and the transferability of project ‘tax equity’, combine into a powerful bankable fiscal package supporting the deployment of operational production. It marks a profound shift in US economic and industrial policy and should largely be welcomed in the EU as a positive competitive challenge. The EU is responding proactively and effectively within the confines its fiscal and political realities. If fully adopted in its current form, the Green Deal Industrial Plan will, in combination with adequate use of the new State aid flex, effectively drive an acceleration of the green transition and address specific challenges posed by the IRA. Lessons could perhaps still be learned in the EU with respect to the IRA’s simplicity, certainty and the associated benefits to project bankability. The potential for State aid delivery mechanisms to take on the form of transferrable tax credits should be explored. Over time the IRA may even be seen as the galvanising challenge that ultimately operated to accelerate change in the EU and beyond.

Infrastructure assets, including non-core assets further up the risk curve, having the right protected cash flows can provide anti-cyclical performance and stable real returns through extended periods of inflation. The new enabling and supportive green industrial policy frameworks considered in this bulletin, the associated fiscal intervention, energy sovereignty, monetary policy support, macro structural trends, persistent inflationary pressures,

and a measured loosening cycle, combine into green infrastructure’s big bang!

* * *

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⁵¹ J. Merz, P. Barnard, W. Rees, D. Smith, M. Maroni, C. Rhodes, J. Dederer, N. Bajaj, M. Koy., T. Wiedmann, R. Sutherland, ‘World scientists’ warning: The behavioural crisis driving ecological overshoot’, Sage Journals, 20 September 2023.

⁵² The ‘UAE Consensus’ deal coming out of the UN COP28 in Dubai late last year for the first time provided for a transitioning away from fossil fuels.

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