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Complementary, Cooperative, or Competitive?

The EU's and China's Engagement in Global Net-Zero Emissions Development

Martin Voss and Maya Kielhorn

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A Policy Paper by Martin Voss and Maya Kielhorn

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Content

Executive Summary

Ten years after the Paris Agreement, the world faces a fundamental transformation of the geopolitical and climate policy landscape. China has emerged as the globally dominant power in clean technology manufacturing, the United States under Trump has withdrawn from the Paris Agreement and is actively promoting fossil fuel expansion, while the US attack on Iran has triggered a global energy crisis that may paradoxically accelerate the clean energy transition. The EU stands at a crossroads: dependent on fossil fuel imports from the US and key technologies from China, yet simultaneously the most ambitious climate actor among major economies.

This study examines how the EU and China interact in Global South countries in support of net-zero development — whether complementarily, cooperatively, or competitively. While China excels through unmatched manufacturing capacity, rapid project delivery, and minimal conditionalities, the EU holds considerable strengths of its own: de-risking financial instruments, regulatory power, technical expertise, and diplomatic capital. Both approaches have gaps: China's model creates dependencies and lacks transparency, while the EU suffers from institutional fragmentation, declining ODA budgets, and slow implementation.

Drawing on case studies from Kenya, South Africa, the Philippines, Namibia, Morocco, and the Democratic Republic of Congo, the the study shows that the dynamics between European and Chinese engagement are rarely straightforward. Where recipient countries act as strategic agents in their own right — orchestrating separate partnerships rather than depending on either power unilaterally — more equitable and effective outcomes tend to emerge. These cases also illustrate where the EU loses credibility through bureaucratic barriers, unfulfilled political commitments, or absent commercial follow-through.

The study concludes with concrete recommendations: the EU should pursue a pragmatic China climate policy that cooperates, complements, or competes depending on context — consistently leveraging its strengths in governance, systems integration, and risk mitigation to build resilient, equitable, and future-proof value chains with partner countries across the Global South.

Foreword

China and the European Union – looking back, looking ahead

The last 50 years have brought enormous changes, both within the EU and within China. In 1976, the European Economic Community, as it was then known, had only ten member states. Following Mao Zedong's death, the new Chinese leadership began to cautiously reform and open up the country's economy and society. In the early 1980s, I had the opportunity to accompany four Chinese professors as they visited family farms and various agricultural processing plants in northern and southern Germany. I witnessed first-hand their dedication to seeing China's economy and people catch up as quickly as possible.

Since then, a close economic partnership has developed between China and the EU. EU companies have invested heavily in China. By 2023, the EU's foreign direct investment stock had reached EUR 232 billion, contributing to China's modernisation. China's economy and infrastructure were vastly revitalised and expanded. With significant public investment, the economy became increasingly productive and competitive. As a result, China's real GDP (in PPP terms) grew more than twentyfold — a staggering and unprecedented development. During this time, the Chinese government invested strategically in novel research, technological development, and industrial processes across entire value chains. Consequently, China's economy became increasingly innovative. Concurrently, its direct investment in the EU economy skyrocketed. By 2023, its capital stock had reached EUR 65 billion.

Following the fall of the Iron Curtain, the European Economic Community developed into the European Union , creating a single market that allows for the free movement of goods and services. The euro was introduced, and the EU expanded its membership to 27 member states, representing a market of 450 million people. Since 1990, the EU's economy has grown by 70%, while its greenhouse gas emissions have fallen by 40%.

Consequently, China and the EU currently account for nearly one-quarter of the global population, around one-third of global GDP and approximately 30% of global trade.

In recent years, the EU has expressed growing concerns about China's rapid government-backed economic expansion and its increasing geopolitical influence. This is due to various factors, including the rapid expansion of manufacturing in advanced technologies, such as renewables and electric vehicles, spreading international access to critical raw materials and their processing, and its central role in manufacturing and exporting advanced electronic appliances – not to mention related cyber security issues. In an increasing number of areas, fair competition is turning into direct rivalry.

Despite facing increasing competition and rivalry, China and the EU share common challenges. For instance:

1. Both economies are highly dependent on imports of fossil fuels, particularly oil and gas. In 2023, the EU imported 64% of the energy it consumed. Since the early 1980s, China's fossil fuel import bill has risen from practically nothing to almost 20% of its total merchandise imports. Over the last few decades, these markets have experienced consecutive crises every few years, causing volatility, uncertainty, inflation and economic hardship. Consequently, both China and the EU have begun to invest heavily in renewable energy sources and energy efficiency. Stepping up these efforts quickly by electrifying industrial processes, household uses, and mobility could vastly improve the overall efficiency of energy use and strengthen energy security.

2. Both societies will be affected by the adverse effects of climate change. This will particularly impact the availability of water for agriculture, industry, and human consumption. Increasing droughts, floods and forest fires are already having severe economic consequences. Therefore, ramping up innovative technological approaches to adaptation and finding novel ways to finance effective action to minimise these adverse effects is in the interest of both China and the EU.

3. The global population is expected to increase by 30% in the coming decades. At the same time, per capita incomes are expected to rise steadily. Overall, this will significantly increase demand for land, food, water, and all other natural and mineral resources, putting further stress on biodiversity, among other things. The path towards sustainable development seems to be moving as quickly as possible towards a circular economy. This will require significant improvements in the efficiency with which resources are used.

However, in an interdependent world, neither China nor the EU will be able to solve problems relating to energy security, climate change, adaptation, and broader sustainable development alone, despite their combined size and economic power. Other partners around the world will have to be brought on board to maximise global action in these and other areas as quickly as possible. Effective, rules-based, plurilateral and multilateral action will have to be sustained for the coming decades.

The authors of this paper are to be congratulated for their practical exploration of how China and the EU engage with third countries, highlighting both opportunities and shortcomings while outlining pathways for stronger joint leadership and collaboration. Hopefully, this contribution will stimulate productive discussions among policymakers, academics, think tanks, and civil society in China, the European Union, and beyond, helping to accelerate international action for equitable and sustainable development within the ecological limits of our planet.

Artur Runge-Metzger
Vice-Chair of the Board of Directors,
Germanwatch

Introduction: The EU at the Crossroads of Climate, Energy, and Economic Security

Ten years after the Paris Agreement entered into force, the global landscape of climate action has fundamentally changed. China is on course to become the world's first electro-state, with green technology sectors designated as core drivers of growth, and renewable energy installations and electric vehicle (EV) sales far outstripping those of the rest of the world. The United States (US) under Donald Trump has retreated from the Paris Agreement, defunded its environmental agencies, and – as one of the world's largest energy exporters – is pressuring countries to buy more oil and natural gas using tariff threats and other means. Its attack on Iran and the subsequent blockage of the Strait of Hormuz have plunged the world into an unprecedented energy crisis due to the sharp disruption of fossil fuel supplies and critical derivatives such as fertilisers. Yet this crisis may accelerate the transition away from fossil energy dependence and towards electrification and renewables – a dynamic reflected in the doubling of Chinese solar exports in March 2026 alone.

The European Union (EU)[1] finds itself dependent on energy-related imports – fossil and green – from both superpowers. Whereas the dependence on US fossil fuels requires a continuous flow, green technologies from China deliver electricity for decades once installed. Nevertheless, even past the point of purchase, vulnerabilities remain in the form of economic pressures and cybersecurity threats, limiting the EU's autonomy in charting a path towards a prosperous, decarbonised, and resilient economic future.

At the same time, accelerating the deployment of renewable energy and electrification in the Global South is in the EU's vital interest. The US attack on Iran has damaged oil and gas production capacity in the Gulf region for the long term, resulting in structurally higher prices. Reducing fossil fuel consumption in both the Global South and the Global North will help ease tensions in international oil and gas markets, dampening inflationary pressures. Many countries are now responding by accelerating electrification and renewable energy deployment, moving the world closer to agreed climate targets.

Failure to reach global net-zero emissions by mid-century could result in catastrophic climate impacts. Europe is already warming faster than any other continent, a trend that may severely escalate due to tipping points such as a collapse of the Atlantic Ocean's currents. China faces equally severe vulnerabilities, namely freshwater resources dependent on Himalayan glaciers and coastal cities threatened by sea-level

1 When not further specified, this paper discusses the actions, ambitions, and opportunities of the EU member states and the EU institutions in Brussels.

rise. For both powers, climate stability is not merely an environmental commitment but an existential imperative.

These major geopolitical shifts, paired with direct climate threats, pose fundamental questions: What are the EU's political, technological, and economic roles in the global race to net-zero emissions development? What technological, financial, and political levers does the EU possess, and where should it deploy them? How can the EU pursue its climate ambitions while maintaining industrial competitiveness? Most critically, how can it navigate between a retreating US fossil superpower and Chinese clean technology dominance to decarbonise and forge partnerships with the Global South?

On its path to net-zero emissions by 2050, the EU and its member states must reduce vulnerability to pressure from US fossil fuel exports while avoiding technological, economic, and ultimately political dependencies on China. This requires engaging strategically with emerging powers and like-minded countries to build alliances that protect human rights and democratic governance, establish resilient value chains for technologies of the future, and reduce the leverage that other nations – in particular autocratic regimes – hold over EU policy and economic interests. The EU retains considerable assets: wealth to make investments and de-risk those of others; policy and technical expertise in key sectors; regulatory power over a major market with the potential to set global standards; and diplomatic capital built through decades of development cooperation.

At a time of geopolitical turmoil and a multilateral system in crisis, only the EU and China remain committed at the national leadership level to international cooperation for climate action. Although the US federal government has withdrawn from the Paris Agreement, the majority of US states and major cities remain committed, representing an important opportunity for EU engagement with subnational actors. Meanwhile, both the EU and China continue shaping their Global South engagements, though their motivations and approaches differ markedly.

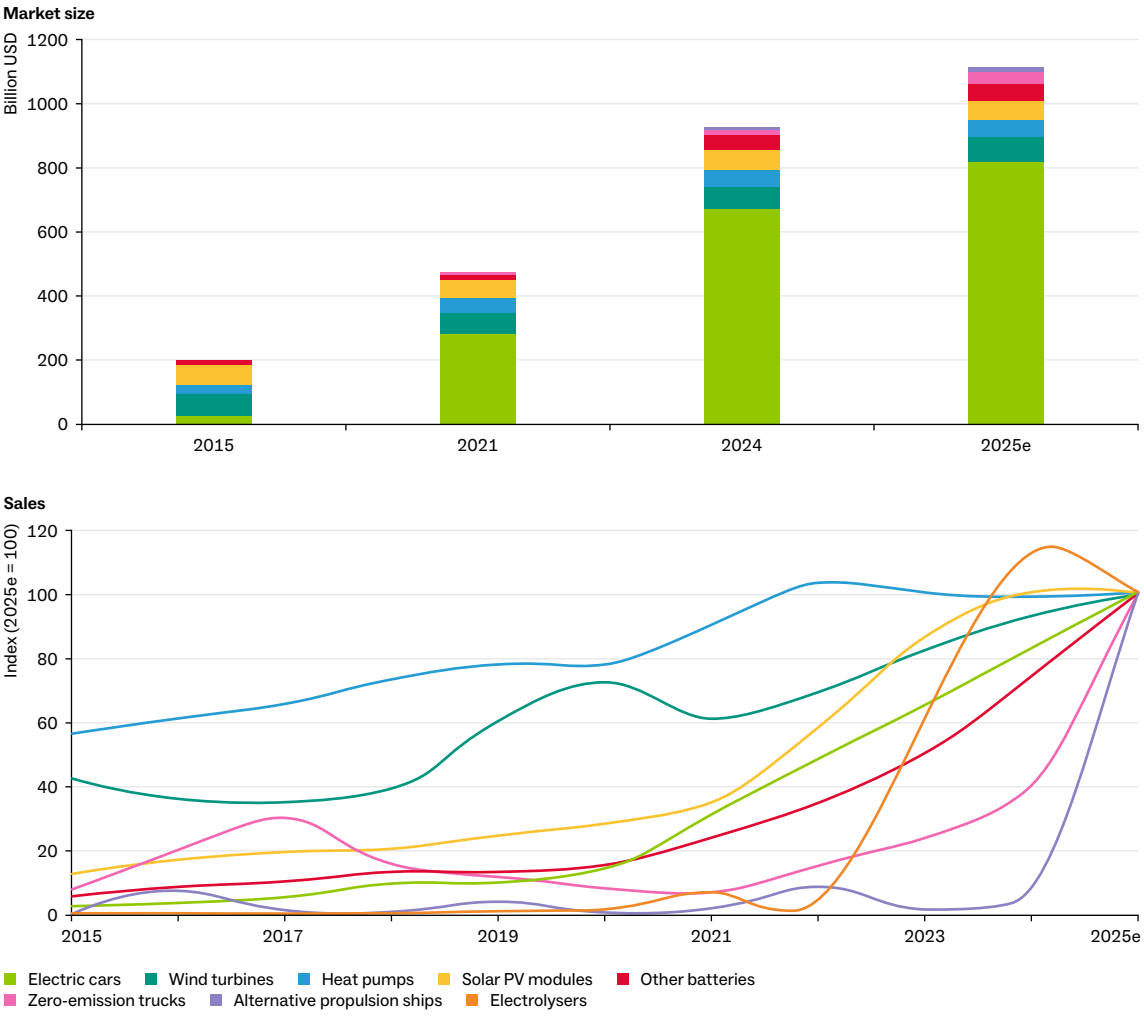
This scoping study examines recent patterns of engagement, assesses the underlying motivations for respective approaches, and explores how interaction unfolds in practice. It seeks to evaluate where the EU retains meaningful influence and how it might deploy it effectively. It concludes with recommendations on strengthening the EU's position by developing a realistic China climate policy – one that engages in some respects cooperatively with China, in others complementarily alongside China, and in yet others competitively against China in economic and political domains – in order to build resilient, equitable, and peaceful value chains with like-minded partner countries for the technologies of the future.

1 Positive Tipping Points: The Electrotech and Electrification Revolution

The Paris Agreement's central ambition of reaching net-zero emissions in the second half of the century requires technological and political cooperation. Collective success depends on Global North and Global South countries shaping their development pathways while collaborating to maximise effectiveness, equity, and efficiency. Since 2015, the global climate regime has underpinned transformations across economic sectors. Thanks largely to China's explosive growth in clean technologies – for many years driven primarily by European demand – an unprecedented opportunity has emerged: Renewable energy and electrification technologies have crossed positive tipping points, entering virtuous cycles of cost decline that are enabling widespread adoption. Solar and – to a lesser extent – wind are now almost always the least expensive and fastest options for new electricity generation, often even when combined with batteries (Walter et al. 2026). In 2024, global renewable capacity grew by 585 gigawatts (GW), accounting for 92.5% of all new power capacity, while clean energy investments exceeded USD 2 trillion for the first time (United Nations 2025). The share of renewables – including wind, solar, hydro, bioenergy, and geothermal – in global electricity generation has already surpassed 30%. They are projected to collectively overtake coal power as the largest source of electricity globally in 2025 or 2026 (IEA 2025a). Electric vehicle sales have exceeded 17 million, representing more than 20% of all car sales globally (United Nations 2025).

This has delivered tangible economic benefits: The clean energy sector contributed approximately USD 320 billion to global gross domestic product (GDP) in 2023, accounting for 10% of global economic growth (United Nations 2025). Clean energy jobs reached 34.8 million, surpassing fossil fuel employment for the first time. More than 40 countries have achieved absolute decoupling, with economic growth continuing while greenhouse gas emissions declined over multiple years. Between 2010 and 2024, deployment of renewables saved an estimated USD 409 billion in fossil fuel costs for the electricity sector alone (ibid.). China's massive domestic investments in particular have driven clean tech costs down 60 to 90% since 2010, fundamentally altering decarbonisation economics worldwide (Yang et al. 2025). According to analysts, the Iran war may boost clean-energy deployment further, resulting in more lasting impacts than the immediate fossil fuel price shock (Chandrasekhar et al. 2026). Before the crisis, wind and solar were already on track to overtake natural gas in global electricity production by the end of the year (ibid.).

Figure 1 Global market for selected clean energy technologies, 2015–2025



Source: IEA 2026

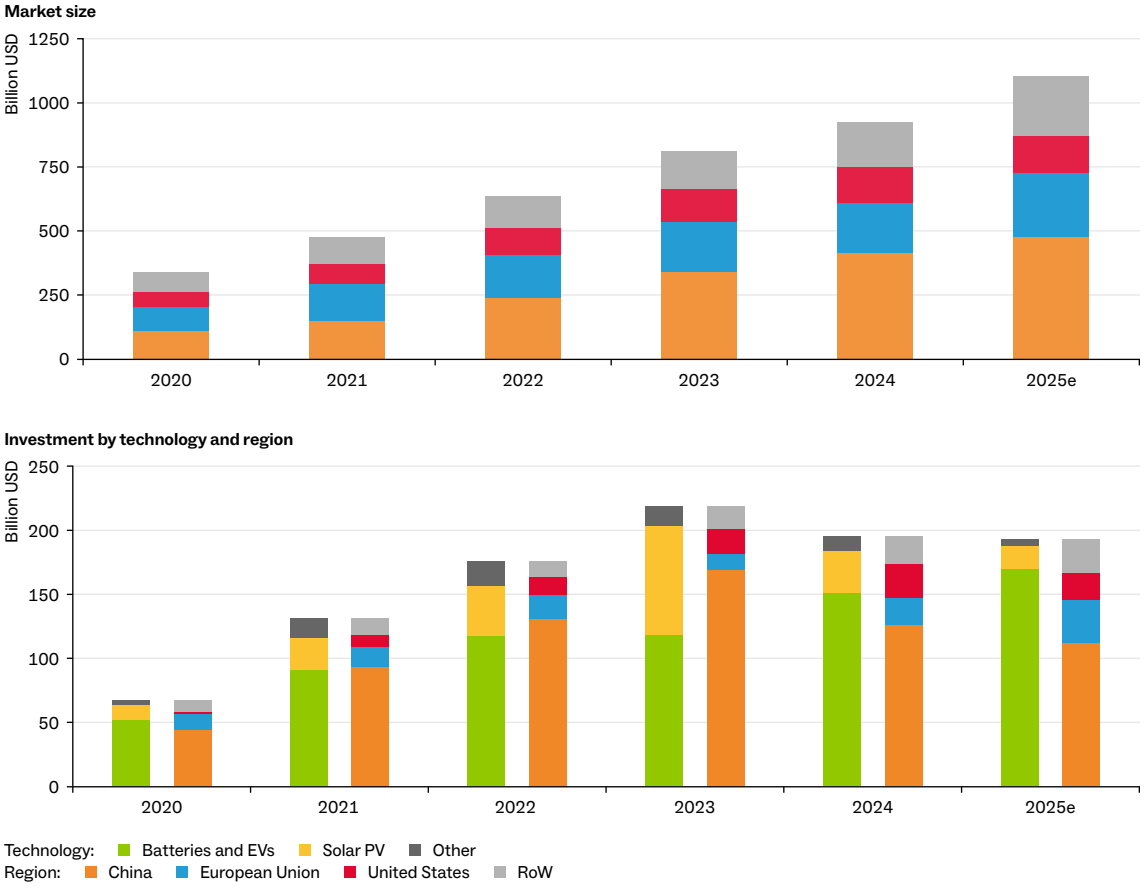
1.1 Bottlenecks: Persistent Disparities and Structural Barriers

Despite this progress, profound geographic disparities persist: Whereas China deployed 41% of global renewable capacity in 2024 and OECD[2] countries 39%, the rest of the world – including all of Africa, Latin America, and most of Asia – accounted for merely 20%. As home to 20% of the world's population and 85% of households without electricity access, Africa received just 2% of global clean energy investment, despite possessing a renewable resource potential that is ten times larger than the continent's projected 2040 electricity demand under 1.5°C scenarios. Since the Paris Agreement entered into

2 The Organisation for Economic Co-operation and Development, an intergovernmental organisation of 38 Global North countries, of which the EU27 comprise a major share.

force, less than one in every five US dollars invested in clean energy has gone to emerging markets and developing economies outside China (United Nations 2025).

Figure 2 Global investment in selected clean energy technology manufacturing and global market size



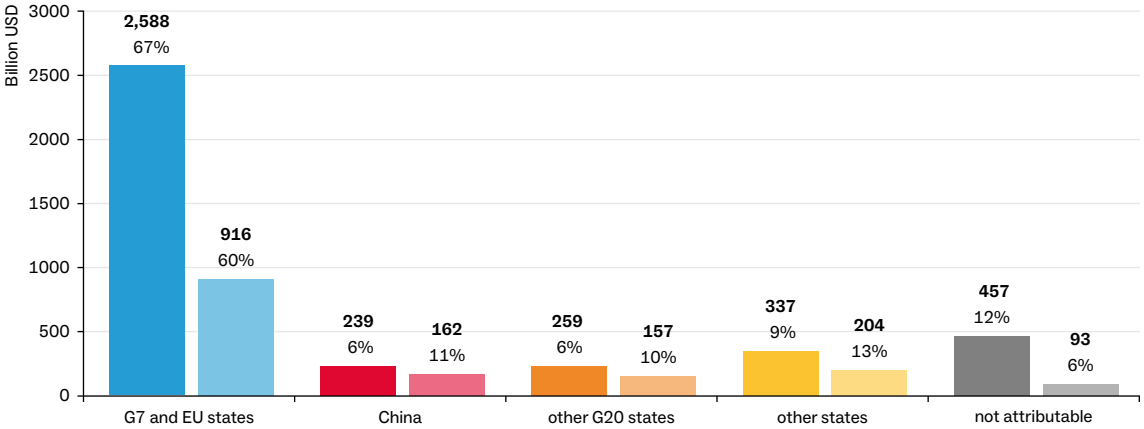
Source: IEA 2026

This stands in stark contrast to the stakes in energy development of the Global South, where large shares of the global population, potentials for economic growth, a massive endowment of critical minerals and renewable energy resources, as well as future energy demand are located. The BRICS[3] countries account for nearly 50% of global energy consumption (Sahay et al. 2025) while contributing approximately 39% of global GDP and accounting for 48.5% of the world's population (BRICS 2025). Meeting the COP28 goals of tripling renewable capacity and doubling energy efficiency improvements by 2030 requires clean energy investment in developing countries – beyond China – in order to increase five to seven times from 2022 levels and reach USD 1.4 to 1.9 trillion annually by 2030 (United Nations 2025).

3 An intergovernmental organisation comprising ten countries: Brazil, China, South Africa, Egypt, Ethiopia, India, Indonesia, Iran, Russia, and the United Arab Emirates.

Several persistent factors explain the lopsided roll-out of global clean energy additions. Until recently, progress of the energy transition in the Global South was inextricably linked to financial support (by way of market-rate loans or official development assistance, ODA), which has led to large debt burdens squeezing the fiscal space of many countries (see Figure 3). The energy crisis resulting from the US attack on Iran has changed the calculus for many countries, including the most vulnerable and poorest, which are now choosing electrotech over fossil fuels as a pathway to electrification (Walter et al. 2026). However, in many cases, debt-service costs still amount to financial outflows large enough to rival ODA inflows (Huber-Grabenwarter et al. 2025), which not only address energy sector development and decarbonisation, but other Sustainable Development Goals as well. An equitable and systemic transformation towards net-zero societies also requires centralised inputs and infrastructure such as grids (see the discussion about Pakistan on page 21). A region heavily affected is Africa, where total debt stocks have more than doubled since 2021 to USD 685.5 billion in 2023, driven in part by the economic fallout of the Covid-19 pandemic, with an increasing cost of capital driving debt payments to record highs (Gerasimcikova et al. 2024). In recent decades, formats of South-South cooperation have become more common, with China in particular establishing itself as a major provider of international loans (Rudyak 2023). Although these new actors have brought about diversification in financial resources, they have added to restrictive debt burdens globally (Bader/Hackenesch 2025). Another reason for the uneven progress in global clean tech deployment, and thus net-zero development, is that – in instances where development finance is not enabling it – standard business calculations create biases which strongly favour the markets and client groups that meet criteria such as solvency, stability, accessibility, and (cultural) familiarity. This is true in particular for non-state commercial actors, who are increasingly active in this space (see section 1.2 on China).

Figure 3 Outstanding claims of sovereign creditors (countries or state groups) on countries in the Global South in 2024



Dark color: all countries of the Global South
Light color: heavily and very heavily burdened countries

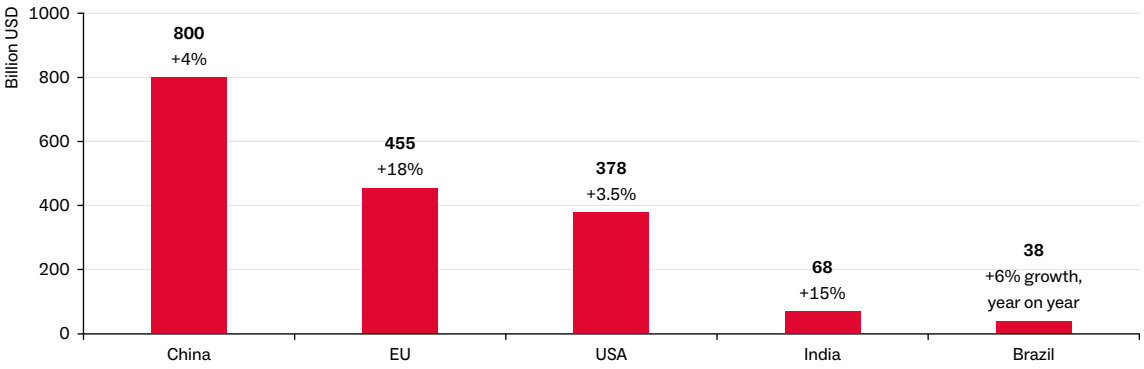
Source: erlassjahr.de and Misereor 2025

1.2 Political and Commercial Motivations: Green Transition Economies in the US, China, and the EU

Although the Global South remains heavily undersupplied, China, the US, and the EU receive the vast majority of investments in clean tech sectors, accounting for 90% of the global share in 2024 (IRENA/CPI 2025). Their respective trajectories and incentives are very different, but all three tell complex stories of the green transition.

At the federal level, the US under Trump effectively rendered the Nationally Determined Contribution (NDC) submission of the outgoing Biden administration irrelevant by leaving the Paris Agreement. This came after a thorough dismantling of the Inflation Reduction Act (IRA), which had constituted the single largest piece of climate policy in US history, addressing both the supply and demand sides of clean tech sectors. The Trump administration also dismisses renewable energy through ideological rhetoric and has doubled down on the oil and gas sector as a guarantor of international influence (e.g. via the EU-US trade deal of 2025). It serves as the backbone of a large, diversified economy that seeks to power data centres in the quest to be a leader in the information technology and artificial intelligence space, although this may impact grid reliability in some regions (Mural et al. 2026). In spite of the sea change in the White House, progressive states such as California, but also fossil-rich Texas, have continued to invest massively in wind and solar, leading to an unexpected uptick in overall investments (BloombergNEF 2026). The protectionist industrial and trade policies at the federal level, reinforced and rebranded under Trump, also impact clean tech sectors internationally. Tariffs designed to shut out Chinese solar PV and EV imports, paired with massive investments under the IRA, have made the US virtually self-sufficient, for example in meeting domestic – a comparatively low and slumping – demand for solar PV and EVs (IEA 2026). This comes at the cost of substantial subsidies and higher energy prices for US consumers, while harming exporters in Southeast Asia and elsewhere (ibid.).

Figure 4 Domestic net-zero transition investment in select countries in 2025, including clean energy, transport, buildings, industry, and grids



Source: BloombergNEF 2026

The modest ambition level of China's NDC, and the subsequent weakening of the emissions intensity target in the 15th Five-Year Plan, are clear signs that climate policy objectives are not a priority in Beijing (Myllyvirta/Schäpe 2026). Decarbonisation is instead something to be achieved indirectly while addressing more pressing economic needs. China has already strategically focused investments into the "new three" technologies of solar energy, batteries, and electric vehicles, and it has scaled these sectors up massively domestically. The recently published 15th Five-Year Plan outlines a similarly aggressive industrial policy for key clean industry sectors such as wind power, hydrogen electrolysis, and heat pumps – notably technologies in which European firms are in the position to command a share of the global market (Qin et al. 2026). Thus, China has attained and continues building upon its global leadership position in clean tech supply chains – including raw materials and processed inputs – driven by three key priorities: economic growth, (energy) security, and geoeconomic leverage.

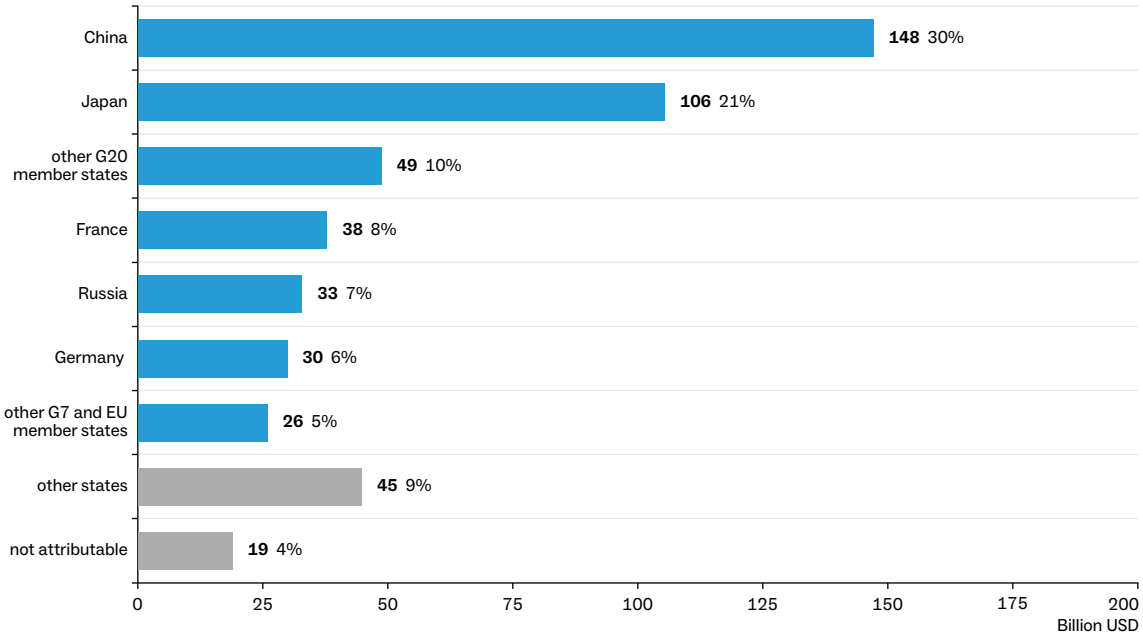
Some of these drivers have also led to continued heavy reliance on coal in the power and industrial sectors. The political economy around coal power is firmly entrenched in China, fed by regional employment demands, economic growth considerations, and cheap and secure domestic reserves. Overall, CO^2 emissions are on a slight downward trajectory, yet China, as home to more than half of the world's operating coal power plants, plans to add even more in the coming years. As the utilisation rates of coal power plants are low and declining, this development risks locking in costly structural barriers to China's energy transition (ibid.).

Although climate ambitions are central to EU policy, the transition towards net-zero has become inextricably linked to economic competitiveness and geoeconomic independence. The RePowerEU policy package, launched in response to Russia's invasion of Ukraine, further emphasised renewable energy deployment as a means towards achieving energy security and strategic autonomy. EU clean energy policy thus operates at the intersection of multiple imperatives: meeting climate targets, reducing dependence on fossil fuel imports, maintaining industrial competitiveness in clean technology sectors, and positioning the EU as a credible partner for Global South countries. The Clean Industrial Deal, adopted in 2025, explicitly connects the EU's external climate and energy engagement with its domestic industrial strategy. It seeks to leverage partnerships in the Global South both to advance decarbonisation and to secure the participation of EU stakeholders in emerging clean technology value chains (Makaroff/Kouam 2024). Moreover, the clear economics of renewable energy – with solar and wind now the cheapest option for new power generation – make the transition increasingly attractive from a purely fiscal perspective, particularly for energy-importing EU member states. The Industrial Accelerator Act, proposed by the European Commission, aims to level the playing field of industrial policy across member states and control foreign investments into the EU in key sectors of the green transition (European Commission 2026).

This integration of industrial strategy and geopolitical positioning into climate policy has led to a fundamental shift in the global political economy of clean technology. The

EU and China, in particular, view clean tech leadership not merely as a climate contribution under the UN climate regime, but as a strategy for energy security, economic advantage, supply chain control, strategic sovereignty, and diplomatic influence. Moreover, because the US attack on Iran has sparked a global energy crisis, controlling energy supply chains through electrification and renewable energies is increasingly becoming a sine qua non for policy-makers. On the one hand, this heightened attention to vulnerabilities, and their mitigation, may result in enhanced climate action domestically. On the other hand, additional resources dedicated to defence are less likely to benefit partner countries or the developing world at large, but instead result in competition for scarce public finances.

Figure 5 Outstanding claims of sovereign creditors (countries or state groups) in 2024.



Source: erlassjahr.de and Misereor 2026

Hence, financing the net-zero transition remains a crucial challenge. Even without the recent geopolitical turmoil, both the EU and China have increasingly sought to frame development assistance and South-South cooperation in this space as mutually beneficial partnerships. They have done so by aggressively promoting non-state (business) actors and private finance in the development landscape. This has often led not to debt relief but to a change in composition of the debt (Horn et al. 2022). Solar PV is a case in point: Although it is a cheap source of electricity, its deployment is facing structural barriers. Despite an international financial architecture comprising multilateral and regional development banks, capital costs for utility-scale solar projects in developing countries remain more than twice as high as in advanced economies, significantly slowing deployment where it is arguably needed most (United Nations 2025).

The following sections examine how the EU and China are shaping this landscape with specific offers of development and net-zero cooperation, financial assistance, as well as

trade and investment. The sections thereafter explore how these offers interact, potentially across competitive, cooperative, and complementary modes of engagement. Table 1 provides an overview of key indicators that are meaningful in the context of this paper and referenced throughout the subsequent analysis.

1.3 The EU's Engagement in Net-Zero Development: Ambitions, Assets, and Constraints

The EU's engagement in the net-zero development of the Global South rests on four distinct pillars of influence: a) substantial capital for investment and de-risking, b) sector-specific policy and technical expertise, c) diplomatic and political leverage, and d) regulatory power through market access and standard-setting. Although the EU maintains the highest level of climate ambition among major economies and remains the world's largest provider of development assistance, it faces mounting challenges: declining aid budgets, slow facilitation and implementation of projects that frustrates partner countries, and a strategic contradiction between value-based development rhetoric and market-driven realities. This section examines how the EU deploys its strengths through financial instruments and partnership frameworks while confronting the constraints on its influence in an arena where China's rapid delivery and minimal conditionalities resonate powerfully with Global South governments.

The EU's climate ambitions have long been touted as the most far-reaching among major economies with the potential to lead by example. Commission President Ursula von der Leyen has repeatedly summarised it as becoming the world's first climate-neutral continent, evoking the anticipation of a "man on the moon moment" in her address unveiling the European Green Deal in 2019 (European Commission 2019). In recent years, key elements of the European Green Deal regulation have been partly rolled back, in particular in relation to corporate due diligence and sustainability-related transparency in international supply chains, challenging the EU's claim on climate leadership (De Waal 2025). Yet climate action and clean energy continue to feature in the bloc's external action, for example in the Global Climate and Energy Vision strategy published in 2025 (European Commission 2025b). Although its reputation as the clean technology pioneer is being increasingly challenged by China (Adachi 2025), the EU retains unique expertise in areas central to the energy transition. These include the deployment of technologies, grid services, and system innovation (Schäpe 2025). The EU also has a track record for the highest share of renewables in electricity production of any major economy (47% in 2025), and for advancing the integration of several national grids into one regional grid (IEA 2026). As the largest provider of development assistance, the EU and its member states contributed approximately EUR 105 billion of ODA in 2024, equivalent to 55% of total ODA flows from Development Assistance Committee members, with Germany leading in absolute numbers (Huber-Grabenwarter et al. 2025).

Development Assistance

In the Global South, the EU is valued as a development cooperation partner focusing on social and environmental standards (Di Ciommo et al. 2024). This perception is far from universal, and critics emphasise lost opportunities due to the EU's offers arriving too slowly and being ill-suited to the needs of partner countries (ibid.).

Multiple structural challenges are undermining the EU's development cooperation. The lack of coordination, both within Brussels institutions and between the EU and its member states, creates significant obstacles. This includes unclear lines of responsibility and accountability on the European side, and insufficient levels of communication between EU-level and member state actors. Additionally, the EU's development offers are often criticised for lacking clarity, in particular those regarding climate-related objectives (Goritz 2024), while also being called out for contributing towards an increasingly convoluted landscape of overlapping climate-related EU initiatives (Karaki 2025).

Earlier initiatives under the European Green Deal and the Global Gateway initiative do not align on key implementation details, thereby adding to the confusion (ibid.). Launched in 2021, Global Gateway was intended to revive and substantially increase European investments into sustainable development initiatives. It has since mobilised a total of EUR 306 billion in aid from private and public sources, approximately one-third of which comes from the EU's own budget (Gerasimcikova et al. 2024). In an update in October 2025 announcing that the mobilisation target would be raised to EUR 400 billion by 2027, the European Commission also launched a platform to facilitate European companies' access to the initiative's funding (Council of the EU 2025). Of this total, EUR 150 billion was earmarked for investments into the African continent under the Africa-Europe Investment Package. Within the first three years, the European Commission (2024) reported the mobilisation of EUR 179 billion across 255 flagship projects, of which 110 were in the priority areas of climate and energy (Di Ciommo et al. 2024).

Global South partners report having difficulties identifying Global Gateway's added value. Whereas Morocco, for instance, presents a successful example of bilateral clean energy cooperation, this might be due to the already existing Green Partnership with the EU rather than the newer Global Gateway (ibid.). The difficulty of isolating the initiative's impacts has led to the critique of it being more of a rebranding strategy that uses existing instruments and budgets but does not create the new and much-needed additional financial flows (Goritz 2024). In the same vein, Global Gateway is seen by some as a geopolitical strategy meant primarily to compete with the diplomatic and economic influence that China is exerting through its Belt and Road Initiative (BRI), rather than as a programme focused on development opportunities (Ergenc/Yu 2025). This view of the initiative is increasingly reflected in communications from the EU itself, as stated by the EU's Commissioner for International Partnerships Jozef Síkela (Hancock 2025).

A recent European Parliament report reinforces these critiques, condemning the lack of transparency around the EUR 306 billion mobilisation figure, the excessively centralised project selection process with insufficient stakeholder involvement, and unclear criteria that lead to confusion among both member states and partners. The Parliament stresses that poverty reduction must remain the primary objective, and it is calling for a better balance between ODA and non-ODA funding while noting that the initiative still lacks recognition among partner countries themselves (European Parliament 2026).

The question of who benefits from the EU's flagship initiative is also being asked in relation to one of its core strategies: the promotion and mobilisation of private investments in the Global South. This focus on private finance is challenged by the fact that an increasing amount of, but not all, green investments – such as off-grid energy solutions and green hydrogen-related projects – are profitable business cases. In least developed countries (LDCs), investing in renewables can be particularly risky. In such cases, Global Gateway risks either placing additional debt on already burdened national budgets or excluding them from the scheme (Gerasimcikova et al. 2024).

In view of these challenges, it is of critical importance to pay particular attention to debt restructuring and relief mechanisms alongside the existing development assistance. To alleviate the debt problem, several financial instruments have recently been tabled. One example is debt-for-climate-and-nature-swaps: Although Germany successfully tested them with Kenya and Egypt, they now need to be scaled (Lydén et al. 2025). Another popular approach is that of blended finance, which the EU highlighted as a tool at the Global Gateway Forum in October 2025 to attract potential investors (Ergenc/Yu 2025). Innovative instruments such as public guarantees that de-risk private investments are crucial, yet real debt relief cannot be achieved without an increase in concessional finance and more substantial methods of debt restructuring and forgiveness (Gerasimcikova et al. 2024).

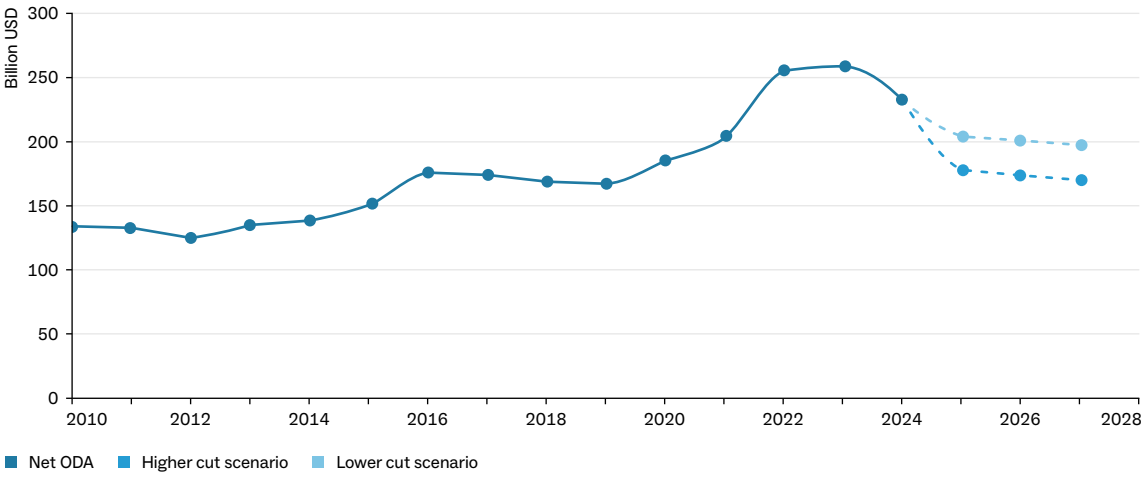
Partnerships and Financial Support

Through initiatives such as Global Gateway, and facilitated in the context of new Clean Trade and Investment Partnerships (CTIP) and other bilateral formats, the EU has increasingly channelled development finance and mobilised direct investments to contribute to the completion of green transition objectives in the Global South. As the EU's main lending arm, the European Investment Bank (EIB) has allocated more than USD 34 billion to green energy, water management, and other sectors across 40 African countries (Goosen 2024). Thus, the EU has had a significant influence on the energy transition in several world regions, such as the Middle East and Northern Africa (Di Ciommo et al. 2024). The strong European engagement on the African continent is partially explained by geographical proximity, as well as familiarity and relations resulting from a shared history, most of it colonial (Di Ciommo et al. 2024). More recently, the EU has established new formats of cooperation with more distant partners, such as the Just Energy Transition Partnership with Indonesia (among other

countries) and a flagship bilateral CTIP with South Africa. It remains to be seen if these new formats can actually deliver on their promises.

Although the EU's motives to advance net-zero development in partner countries are manifest, the results are mixed. One point of contention is concessional finance: On the one hand, the EU remains the largest provider of ODA, but most of its member states, including Germany, had failed to reach the annual target of 0.7% of their GDP in 2024 (after having met it in years prior) (Huber-Grabenwarter et al. 2025). Further cuts in member states' ODA-relevant budgets, as well as the reallocation of significant ODA amounts to Ukraine since the start of Russia's full-scale invasion in 2022, have resulted in overall reductions for two consecutive years now (ibid.). With the unravelling of the US Agency for International Development (USAID) under the second Trump administration and its political ripple effects in Europe, overall ODA flows are expected to have dropped by 9 to 17% in 2025 (compared to 2024), according to the OECD (see Figure 4). Already in 2024 France, Germany, the United Kingdom, and the US had cut their ODA flows compared to the previous year – a development not seen in nearly 30 years (OECD 2026). The projected ODA cuts will impact the poorest countries and vital services hardest, as LDCs are expected to see a 13 to 25% decline in net bilateral ODA inflows through 2026 and 2027 (ibid.).

Figure 6 Net ODA from DAC countries: EU27+1 and USA, UK, Australia, Canada, Switzerland, South Korea and Japan



Source: OECD 2026

As a group, Team Europe (the 27 member states and the EU institutions in Brussels) has long commanded the position as the largest ODA provider, accounting for 42% of global totals in 2022 and 2023 (European Council 2024). In terms of volumes, it remains to be seen how ODA flows from the EU will develop in the future. Pressures felt by member states, be they fiscal or political, have resulted in a stronger focus on quality, effectiveness, and strategic gains, as well as on the role of private finance, which is to be leveraged with public funds.

The EU's offer thus – in theory – combines substantial financial resources and regulatory influence with an explicit commitment to social and environmental standards. Yet its effectiveness is constrained by imminent or factual ODA budget cuts, slow implementation, and a focus on private finance mobilisation that may not serve the needs of most developing countries. As the following section demonstrates, China is pursuing a markedly different model of engagement, one that prioritises engineering and infrastructure development, the provision of technology solutions at low costs, and supply chain integration for commercial and political gain.

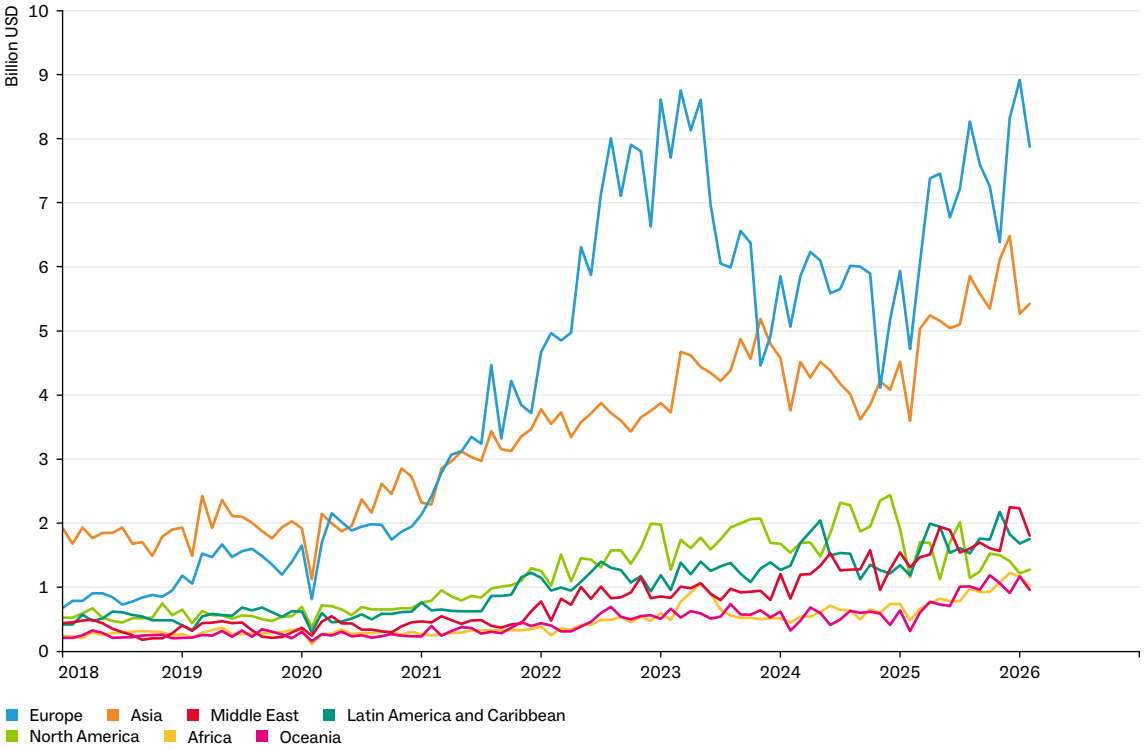
1.4 China's Strategic Clean Technology Expansion: Speed, Scale, and Debt

Whereas Team Europe's approach emphasises partnerships and concessional provisions of finance, China has constructed a fundamentally different model of engagement with countries of the Global South – one that is fundamentally opportunistic and highly adaptive. This approach is characterised by rapid, commercially motivated project delivery, large-scale financing and development, as well as dominant positioning in virtually all global supply chains of clean technologies. China's flexibility in deploying whichever strategy best serves its strategic interests in a given context – whether infrastructure megaprojects or smaller sustainability-focused initiatives – distinguishes it from Europe's more framework-bound engagement.

China's Clean Tech Supremacy

It will not be possible for the EU to reach net-zero emissions by 2050 without China. In fact, the implementation side of this global endeavour is being led by China, at least in commercial terms: In 2024, China invested USD 800 billion in its domestic energy transition, followed by Europe, with USD 455 billion, and the US, with USD 378 billion (BloombergNEF 2026). In the solar sector, China is the undisputed leader, with nine of the world's top ten solar PV manufacturers in 2024 being Chinese; the situation is similar with regard to wind power (six of ten) and batteries (mostly China, then only South Korea and Japan). China has also managed to outcompete the EU in its traditional stronghold sector of clean tech research: Whereas EU countries filed the most patents from 2017 to 2021, accounting for nearly 27% of the global total, China attained the lead in 2022 (Adachi 2025). This technological leadership serves as a means to China's strategic priorities of economic growth, energy security, and geoeconomic leverage.

Figure 7 China's aggregate clean tech exports to select world regions in USD millions (batteries, EVs, grid technology, heating and cooling systems, solar PV and wind)



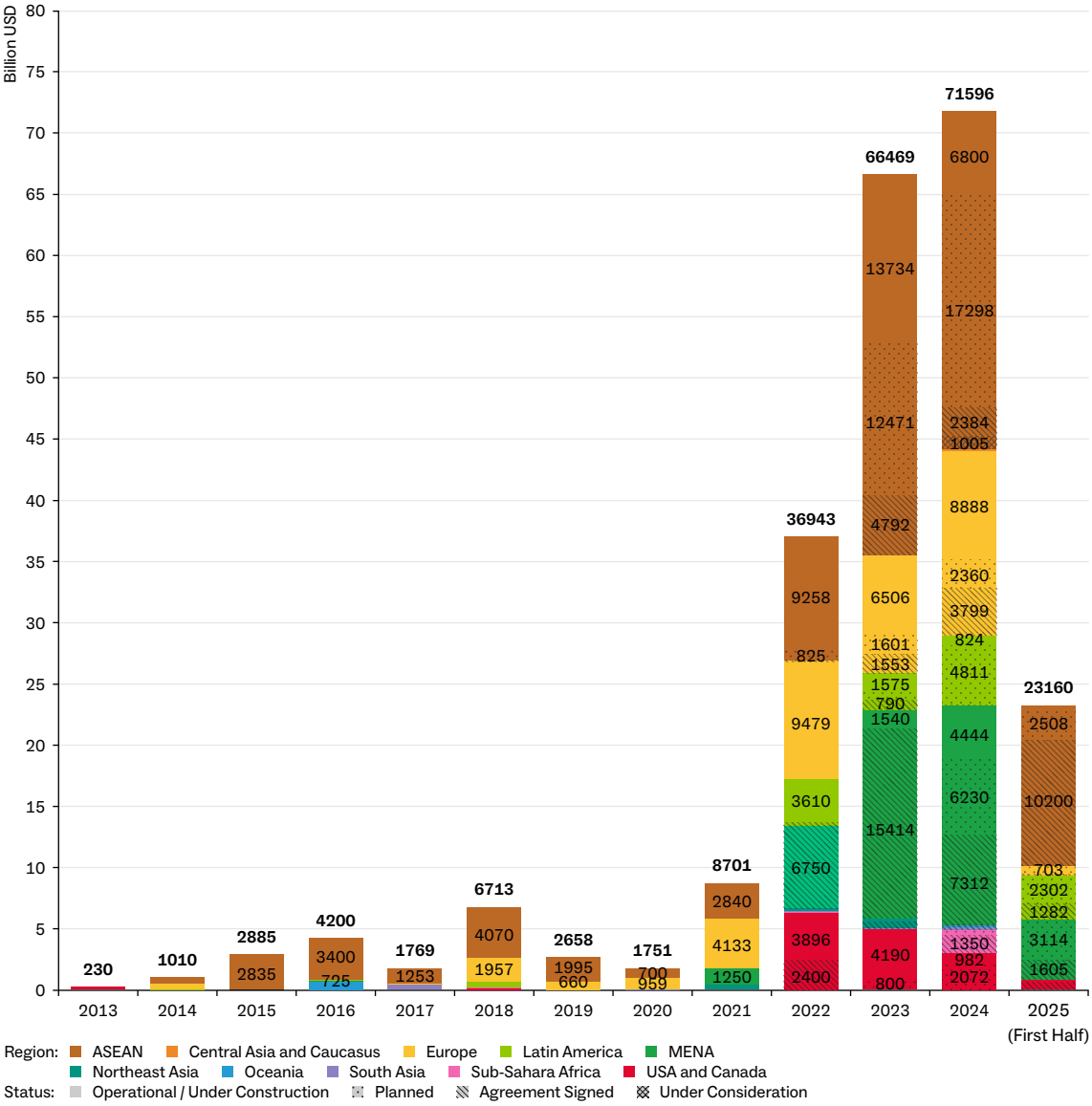
Source: Ember 2026b

The Global South has become a promising market for China's clean technologies, with more than half of its solar, wind, and EV exports going there, in particular to Southeast Asia and the Middle East (Schäpe 2025). Developing these markets as destinations for Chinese-produced electrotech is a key objective of the Chinese government in order to address the existing overcapacity in domestic supply. From June 2024 to June 2025, African imports of solar panels from China have risen by 60%, setting a new record – notably this growth was possible due to a very low base value (Jones 2025). The EU remains a key market for Chinese clean tech exports, accounting for the largest regional share by value (see Figure 6). Comparing tech exports to the population size of their destination is a useful way to assess trade flows and their advances with net-zero development. A stark comparison is the one between Pakistan and the African continent. Pakistan made headlines recently as one of the countries in which cheap solar PV and battery imports from China contributed to impressive advances in clean energy production, notably on the household level. Predominantly middle-class households in Pakistan have bought (and to a large part installed) solar PV panels in recent years, amounting to a total of 47 GW in imported capacity between January 2022 and January 2026 (as per Chinese Customs Administration, Ember 2026b).

During the same timeframe, although imports to both destinations started at a similar level, Africa imported roughly 45 GW worth of solar PV panels (ibid.). Pakistan is home to 240 million inhabitants, whereas Africa has a population of 1.4 billion, meaning

Africa's population is about 5.8 times larger. The fact that Pakistan imported no Chinese-made precursors of solar PV panels, such as wafers and cells, during this timeframe illustrates an important point: The clean tech manufacturing prowess in China – at least with regard to solar firms – is biased towards helping solvent end-use customers meet their demand for clean tech; in this case middle- and high-income households. The flip-side of the impressive solar-plus-battery story in Pakistan is that the poorer parts of the population that cannot afford to buy or install Chinese tech must rely on emission-intensive – and increasingly expensive – coal-powered electricity from the grid (Zaremba 2025). Making this transition more inclusive would require financing mechanisms that systematically lower component costs for underserved users and support grid upgrades for the entire population – something that has hitherto not been addressed by Chinese stakeholders (Bourgault/Moin 2025).

Figure 8 Total investment in Chinese overseas green manufacturing projects by region in USD millions



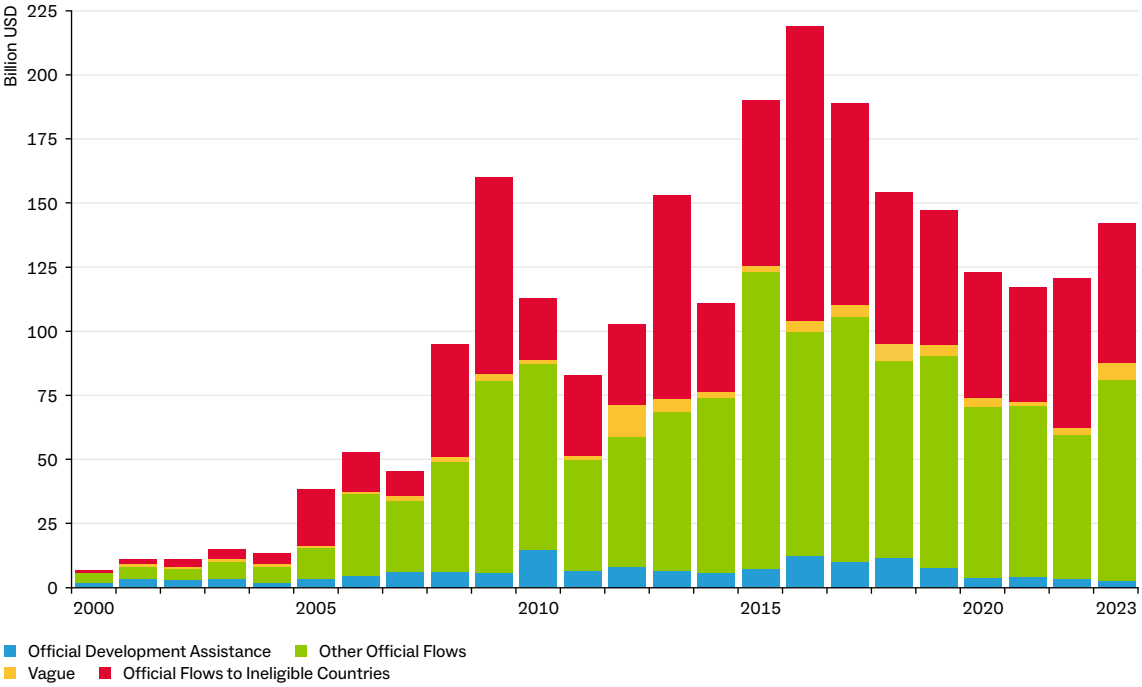
Source: Xue/Larsen 2025

In comparison to Pakistan's complete focus on panel imports, Africa is importing intermediate goods of the solar PV supply chain. The numbers reported by China's customs authority (Ember 2026b) are on the rise, indicating that manufacturing and assembly are slowly localising on the continent.

Figure 7 shows how Chinese overseas investments in net-zero technology manufacturing spiked in 2022, and their annual aggregate has since surpassed the combined total of the entire decade up to and including 2021. Xue and Larsen (2025) find that most investments serve three key purposes: "Seeking access to host countries' markets, access to third-country (neighbouring) markets, or access to raw material inputs." These numbers are also likely a result of the overcapacity in net-zero sectors in China, where industrial policies led to an investment boom in 2021 and 2022, and the resulting price wars pushed firms to look abroad for profit (Rivera et al. 2026). Here, too, a clear bias indicates that investments flow into more developed and affluent regions, with Africa and South Asia receiving a disproportionally low share, when based on world population share or broader development needs.

Chinese Development Finance and Debt

Figure 9 China's official financial flows to the world



Source: Parks et al. 2025

The recent surges in international deployment and clean tech manufacturing investments are being led by a disparate mix of Chinese private firms and state-owned enterprises largely motivated by commerce. At the same time, China's government-led flagship development agenda, the BRI, has encountered several challenges. For one,

accusations levelled by parts of international community include a lack of transparency, efforts to expand Chinese geopolitical influence through infrastructure and trade, and contributions to the debt crisis. Various countries, ranging from Laos to Zimbabwe, are increasingly indebted to China (Bader/Hackenesch 2025). In Zambia, some large hydro-coal and grid projects are stalled because of Zambia's debt restructuring (ODI Global 2025). This trend is coming to a head, as the outstanding debt levels to be repaid to China by developing countries reached all-time highs in 2024 and 2025 – roughly USD 22 billion per year – and are expected to remain elevated throughout the decade (Duke 2025).

Chinese loan commitments to low-income and vulnerable countries had entered a declining trajectory already in 2018. In an unprecedented analysis of Chinese international financial flows, AidData found that ODA-equivalent commitments by China account for a mere 2% of the total (see Figure 8, Parks et al. 2025). This shifting pattern may be partially explained by China's reformed development agenda, which was launched in 2021: the so-called Small and Beautiful (SaB) projects. In contrast to the large-scale infrastructure projects that the BRI was known for during the 2010s, the new initiative is deliberately focused on projects that are not only smaller in size (both physically and financially), but also more sustainable and better aligned with local environmental and development goals (Liu/Wang 2024). The new initiative has received backing from Chinese leadership recently and has featured prominently in Chinese policy discourse since 2019. In 2025, premier Li Qiang announced the launch of 2,000 new SaB projects across developing countries in the next five years, while also outlining plans for 200 marine cooperation projects to support small island developing states (Xinhua 2025b; Guha Roy 2025). That the concept was also featured in the action plan adopted at the 2024 Forum on China-Africa Cooperation (FOCAC) highlights China's focus on the Global South (Liu/Wang 2024). The African continent in particular has become a major arena in which China might soon outcompete the EU, at least in geopolitical influence: "For nearly every flagship European project on African connectivity and energy transition, there is already a comparable Chinese initiative," surmise Ergenc and Yu (2025). In 2025, the China International Development Cooperation Agency (CIDCA) published a report on the SaB projects, highlighting flagship initiatives in Southeast Asia and across the world. One innovation worth noting, among others, is that certain projects are designed to include training and skilling programmes for the local workforce – an aspect that Chinese development projects historically conspicuously lacked. In fact, large Chinese development infrastructure projects have achieved notoriety for relying on Chinese labour and expertise (Minniti 2025). Examples of this apparent acknowledgement of partner countries' needs include the China-Laos Railway project, which promises training for railway professionals and technicians (CIDCA 2025), and the Sakai Photovoltaic Power Plant in the Central African Republic, which aims to create more than 700 jobs, provide training for local workers, and improve their living standards (ibid.).

Chinese Strategic Overseas Lending

At a time when Chinese lenders are growing increasingly wary of overseas markets, smaller projects – often associated with relatively high transaction costs – do not necessarily generate greater interest, at least among state insurance companies such as SINOSURE (Liu/Wang 2024). The Chinese ambition to mobilise private companies to invest across all world regions has yielded mixed results. The African market in particular remains challenging, especially when compared with Southeast Asia, where multiple factors strengthen the business case for Chinese investors: proximity to China's manufacturing base, an extensive track record of doing business, cultural familiarity, and, not least, the efficiency gains associated with higher population density. Moreover, as the number of sovereign-backed investments and projects carried out by large state-owned enterprises declines, the limited expertise and weak local networks of many Chinese companies remain major challenges, although they are slowly being addressed (Xue/Larsen 2025).

Recent developments indicate a renewed expansion of large-scale infrastructure financing and development internationally. The BRI returned to record levels in 2025, with new investment and construction deals totalling USD 213.5 billion across 350 projects, a 75% increase from 2024. Notably, contrary to the SaB narrative, this surge was driven primarily by energy megaprojects, particularly gas developments in the Republic of Congo, Nigeria, and Indonesia, together with USD 18 billion in renewable energy projects and USD 32.6 billion in metals and mining, in particular copper processing facilities critical for AI-driven data-centre demand (Nedopil 2026). Researchers attribute this growth to the comparatively high level of trust in Chinese companies' capacity to deliver large-scale projects, Beijing's strategy to secure supply chain resilience amid US-China tensions, and Global South countries' willingness to engage China as a reliable development partner. However, the BRI's expansion – which brings cumulative investments since 2012 to USD 1.4 trillion across 150 partner countries – continues to raise concerns about debt sustainability, opaque financing terms, lack of reciprocal market access, and increasing difficulties in tracking the programme due to offshore financing structures and loosely defined project affiliations (Gutakovsky 2026; Parks et al. 2025). This resurgence suggests that China's engagement strategy with the Global South remains fundamentally opportunistic and remarkably adaptive: The SaB initiative coexists with renewed megaproject financing, with Beijing deploying whichever approach best serves its strategic interests in a given context. The result is a flexible, dual-track model that can simultaneously pursue supply chain security through large infrastructure investments while building diplomatic goodwill with smaller, more visible community projects.

China's offer thus combines unmatched manufacturing capacity with rapid implementation, minimal conditionalities, and flexible financing structures – assets that resonate powerfully with Global South governments seeking tangible development outcomes. Yet this model also creates dependencies, lacks the transparency and governance frameworks that characterise European engagement, and remains primarily oriented

towards China's strategic interests rather than the development priorities of partner countries. Chinese development cooperation serves two central functions in this context: It promotes and supports economic relations while simultaneously securing political support (e.g. in United Nations forums) and positioning China as a responsible global actor whose rise poses no threat to other countries (Bader/Hackenesch 2025). The following section examines how these contrasting approaches by the EU and China interact in practice: as competitors for influence and market share, as reluctant collaborators in multilateral frameworks, or as complementary forces that together advance, or complicate, the Global South's transition to net-zero emissions.

2 Forms of Engagement: Complementarity, Cooperation, and Competition

In theory, EU-China engagement in Global South countries for net-zero development can range from full cooperation to complete avoidance. As discussed in the previous section, the EU and China are the major actors in this space, be it as providers of finance, technology, or know-how. Similarly, the reasons for both sides to pursue this engagement remain strong and clear. On the premise that a broad EU retreat that would leave the field to China is unlikely, the EU can choose among three distinct modes of engagement: complementarity, cooperation, or competition with China. The brief discussion of each in this section may serve as a rough analytical framework before an assessment is given of the scope and potential of the triangular engagement between European and Chinese stakeholders unfolding with countries in the Global South today. Section 3 applies this framework through case studies illustrating how these dynamics play out in practice.

Stakeholder Diversity in the EU and China

Before examining European and Chinese engagement patterns, it is important to acknowledge that "Europe" and "China" as used throughout this paper are analytical simplifications of complex actor constellations. European engagement in Global South net-zero development involves diverse stakeholders with distinct mandates, priorities, and operational logics: EU institutions such as the European Commission and the EIB; individual member states pursuing bilateral partnerships; development finance institutions such as Germany's KfW and France's AFD; export credit agencies; as well as private-sector actors ranging from multinational corporations to specialised project developers. Similarly, Chinese engagement encompasses central party and government institutions coordinating policy and diplomacy; state-owned enterprises developing large-scale infrastructure projects; an increasingly active private sector, particularly in solar and battery manufacturing; and financial institutions including policy banks as well as commercial lenders. The actors on both sides often pursue divergent strategies, operate under different constraints, and hold varying degrees of autonomy from central coordination. The analytical framework of this study necessarily aggregates these diverse actors to identify broader patterns of engagement, but readers should recognise that "European" and "Chinese" approaches in practice reflect complex negotiations among multiple stakeholders rather than unified strategies executed by monolithic entities.

The coordination challenges, however, differ fundamentally. China's centralised one-party state provides relatively coherent strategic direction, despite diverse

implementing actors. Europe's institutional architecture, sovereign member states, and multiple EU institutions generate substantially higher transaction costs. Aligning priorities across national governments, EU directorates-general, development finance institutions, and private actors creates major obstacles to coherent strategy development and swift implementation. This coordination deficit represents a structural disadvantage vis-à-vis China, putting the EU at a disadvantage in areas where financial resources or technical expertise match Chinese capabilities.

2.1 Complementarity

The idea of complementarity describes parallel European and Chinese involvement that is synergetic without requiring deliberate coordination between the two, especially on the government level. Unlike cooperation, complementarity often emerges from host (third) countries strategically orchestrating separate relationships, leveraging their demands vis-à-vis the EU and China, respectively. The growing prevalence of this mode may be interpreted positively: Global South countries increasingly act as autonomous agents that are selecting and combining partnerships rather than remaining dependent on unilateral provisions of development assistance. However, in order for a country to assume this role, it requires a critical amount of institutional capacity and bargaining power.

In its productive form, complementarity could allow countries to benefit from both European and Chinese strengths simultaneously. For the EU, this might be an emphasis on governance principles, upholding environmental and social standards, as well as regulatory systems for transparency and compliance. Chinese clean tech practitioners offer the rapid deployment of components at competitive prices, as well as unmatched experience and skills in (large-scale) engineering and construction. Bringing the two together, a recipient might rely on European financial inputs and adopt European-backed regulatory frameworks while sourcing physical inputs and/or project developers from China.

However, complementarity also creates challenges. When engagement operates according to fundamentally different principles such as divergent labour standards, environmental safeguards, and transparency requirements, the result can be regulatory fragmentation or a race to the bottom. The viability of complementarity depends critically on recipient-country capacity: expertise, negotiating positions, and coherent policy planning. Smaller countries with less institutionally endowed governments may struggle to manage this complexity. Moreover, as geopolitical tensions intensify, recipient countries may face growing pressure to align exclusively with one side. On the other hand, complementarity – like competition – allows countries to balance the influence of China and the EU against one another.

2.2 Cooperation

Cooperation refers to intentional, coordinated joint efforts by European and Chinese actors in third countries; deliberate partnerships through co-financing; joint implementation; or coordinated technical assistance at the government, development finance institution, or private-sector levels. Although the EU, its member states, and China often work together when governed by multilateral frameworks (the UNFCCC, the World Bank, the Asian Infrastructure Investment Bank, or the Green Climate Fund), the concept here means bilateral or trilateral coordination in specific countries.

Trilateral cooperation in the Global South dates to the early 2000s, with EU member states such as France, Germany, Italy, and the Netherlands engaging in third-party market cooperation with China Goalfore Advisory (2025). Yet formalised trilateral cooperation has been somewhat rare, hampered by complicated bureaucracy, state-level dialogue without dedicated implementation mechanisms, and the shift towards recipient countries orchestrating their own partnerships through diversified private-funding schemes. A key obstacle in recent years has made this form of engagement even less likely: the lack of political will in Brussels and – to a lesser extent – in EU capitals to enter contractual agreements for trilateral cooperation with Chinese counterparts on the state level. Reasons for this range from apprehension rooted in geopolitical and geoeconomic considerations, to different forms of political opposition, to a simple lack of knowledge about how to engage with China and its presence in the Global South.

In view of recent geopolitical developments, these barriers suggest that intentional and publicly sanctioned cooperation remains the exception rather than the rule. Where it occurs, cooperation between the EU and China in the development space is confined to narrow technical exchanges or multilateral institutions rather than genuine bi- or trilateral partnership. Limited success pushes engagement towards complementarity, where recipients orchestrate separate partnerships, or outright competition for market share and influence.

2.3 Competition

In the current geopolitical environment, competition represents the most common mode of EU-China engagement in net-zero development, centred on market shares, political influence, and standard-setting across commercial and normative dimensions.

At the commercial level, Chinese manufacturers are highly competitive in solar power, batteries, wind turbines, and EVs, benefitting from cost advantages, production scale, and rapid delivery. European firms compete on technology quality (confined to small market shares), after-sales service, system integration, and alignment with international standards. Although competitive dynamics can accelerate cost reductions and

improvements, European and Chinese firms are not on an equal footing in most sectors of net-zero development. The dominance of Chinese firms in the above-mentioned sectors means that they compete primarily with one another, potentially creating pressures that undermine quality or environmental safeguards as firms compete for market share (domestically and abroad).

Beyond commerce, the EU and China vie for strategic influence. China leverages its BRI network, overseas lending, and minimal ESG conditionalities. The EU counters with its Global Gateway initiative, emphasising transparent procurement, environmental sustainability, and democratic values. In theory, recipient countries may benefit through improved financing terms or infrastructure investments that neither side would have offered without geopolitical competition. However, with the political appetite for concessional development assistance waning globally, this is likely to be a common driver going forward.

Competition also extends to norm-setting: Whereas EU actors promote environmental assessments, labour rights, and transparent procurement, Chinese engagement proceeds with fewer requirements, prioritising rapid implementation and recipient sovereignty. This creates tensions: European standards may enhance long-term sustainability, but Chinese flexibility suggests faster delivery and local adaptation.

However, intensifying competition carries risks. Deepening geopolitical tensions pressure recipients to choose sides rather than benefit from both, thereby limiting strategic autonomy. Unconstrained competition may incentivise lower standards or unsustainable financing. Conversely, countries with strong institutions can leverage rivalry to secure better terms and accelerated processes, whereas those lacking such advantages may face debt burdens or fragmented systems.

3 In Practice: Triangular Engagement for Net-Zero Development with the EU and China

This section presents several case studies in which European and Chinese stakeholders have interacted while engaging with Global South countries for net-zero development. It combines desk research, interviews, and visits in the field (Kenya, Philippines) to highlight examples of interaction that serve as replicable good practice, while also highlighting challenges and potentials for improvement.

3.1 #Complementarity – EU Stakes in Chinese Electrotech Deployment: The Case of EV Start-up BasiGo (Kenya)

The EU provides essential financial inputs for Kenya's transport decarbonisation but fails to leverage its full diplomatic capital. The denial of visas for BasiGo engineers seeking training at CATL's German facility exemplifies missed opportunities to build an electrotech skills base in Europe, even if Chinese actors play essential roles. The EU retains its reputation as an innovation hub, yet bureaucratic barriers prevent it from facilitating knowledge transfer, supporting localised manufacturing, or fostering relationships with East Africa.

BasiGo is a Kenyan start-up that produces fully electric buses for Kenyan and Rwandan public transport. The firm operates a leasing format that provides the buses to operators with a 10-year battery warranty. Currently, there are 130 BasiGo buses on African roads, with 96 in Kenya.

Although BasiGo's 96 electric buses are still rarely noticed on Kenyan streets, where in Nairobi alone there are a total of 20,000 buses, the activities of start-ups such as BasiGo have been encouraged due to the country's increasingly favourable political climate. Possibly in response to the fuel crisis in 2022 following the Russian attack on Ukraine, a special e-mobility tariff was introduced in 2023 and designed to encourage the use of EVs. Kenya Power, the country's main electric utility company, plays a crucial role in the shift towards renewables, with its goal being the phasing out of fossil fuel vehicles. One policy that supports local start-up activity such as BasiGo's is the government's decision to bar public agencies from importing vehicles from July 2026 onwards.

This "make it locally" policy is also reflected in BasiGo's production processes. Although the start-up imports technologies such as batteries, individual components, and complete knock-down kits from China, the kits are assembled locally – a process

that creates job- and skilling opportunities. BasiGo's long-term aspiration is to manufacture locally.

Although China is BasiGo's main technology provider, European actors serve as financiers alongside Japanese partners, local Kenyan banks, and – until the abrupt end of USAID and similar programmes – US partners. In addition to providing key inputs to the venture, such as debt and equity, European finance also covers the training costs of Kenyan engineers. Although the trainers of local staff are Chinese engineers, this is mostly enabled through the German Development Agency GIZ.

This is a reflection of the current deliberations concerning EU-China joint ventures to localise EV manufacturing in Europe. Nevertheless, in the eyes of Kenyan stakeholders at and around BasiGo, Europe at large retains a reputation as an innovation and education hub. Among stakeholders at BasiGo and across East Africa, Germany still enjoys a reputation for industrial know-how, including for clean technologies. Case in point: Recently, a group of BasiGo engineers applied for visas to train at the CATL battery manufacturing plant in Erfurt, Germany (opened in 2018). After the applications for Schengen visas were declined, the engineers sought an alternative solution in Egypt instead. Chinese visas, by contrast, can be attained within one week.

3.2 #Complementarity – EU Finance and Chinese Development for Large-scale Solar in Redstone (South Africa)

European development finance institutions can strategically de-risk large-scale renewable energy deployment in developing countries, leveraging limited financial inputs to accelerate markets for Chinese clean technology exports. This serves multiple European interests: advancing the Global Stocktake goal of tripling renewables by 2030, directing Chinese overcapacity towards productive use in the Global South in a cost-effective manner, and supporting clean energy deployment in areas where Chinese competitors are unable to match manufacturing scale. European financial sophistication, blended finance, and multilateral coordination remain essential inputs to a collective undertaking in which Chinese firms have comparative advantage in construction and technology.

In May 2025, the Redstone Concentrated Solar Power plant in South Africa went into operation. The park is seen as a milestone in the country's clean energy transition, as it features a concentrated solar power tower with molten salt energy storage (CEF 2024). The complex aims to offset an estimated 440 metric tonnes of CO^2 emissions per year (DBSA 2026) while delivering electricity to more than 200,000 South African homes

during peak periods and at night (CEF 2024). In addition, Redstone is intended to support grid stabilisation and provide similar ancillary benefits (Kraemer 2021).

The project's financing is highly diverse. Of the ZAR 11.6 billion (approximately USD 0.6 billion) in total investment, contributors include local institutions such as the Development Bank of Southern Africa and Investec Bank, alongside European development finance institutions such as the German Investment Corporation (DEG) and the Dutch Entrepreneurial Development Bank (FMO) (AfDB 2022). China's involvement centres on the operational sector, with SEPCO III – a Power China subsidiary – serving as the project's engineering, procurement, and construction contractor (IASS et al. 2022; PowerChina 2025).

Redstone demonstrates successful complementarity between European finance and Chinese construction capacity, as it is enabled by strong local orchestration. European development finance institutions provided capital, while China delivered operational expertise. The project's success depended critically on local institutional frameworks: The African Development Bank coordinated investment activities (AfDB 2022), and Investec Bank in South Africa provided early support (Kraemer 2021). Most importantly, the project operated within the Renewable Energy Independent Power Producers Procurement framework, a programme launched in 2011 by the South African government to attract private investment for renewable energy projects and advance its NDCs (NDC Partnership 2016; Di Ciommo et al. 2024).

The Redstone case illustrates an unrealised potential in European development finance strategy. With relatively modest capital inputs – with DEG and FMO contributing only a small fraction of the total investment – European actors helped de-risk a project that deployed Chinese clean technology at scale in Africa.

3.3 #Complementarity – Beautiful and Cost-effective: Rooftop Solar and Grid Integration (Philippines)

The EU has the opportunity to use its financial weight and sophisticated insurance sector to de-risk projects. This could help address a bottleneck for small-scale renewable energy projects and create demand for Chinese solar PV. At the same time, a crucial role at the table would allow Europe to call for standards and negotiate them jointly with China – for example by demanding governance and social safeguards in procurement, incentivising circularity and life-cycle optimisation, and addressing cybersecurity risks linked to smart components.

Small solar projects have emerged as solutions for geographically remote communities lacking grid connections. Both the EU and China are involved in such projects, particularly in Africa. Under the African Solar Belt programme, China has provided power to

50,000 African households through off-grid solar systems, pledging at least CNY 100 million (approximately USD 14 million) in public funds for the period 2024 to 2027 (Ma et al. 2025). The EU has similarly financed photovoltaic-hybrid mini-grids in Nigeria through the EIB, in partnership with the American company Husk Power Systems, which manages construction (Gerasimcikova et al. 2024).

Yet these small and off-grid solutions face a fundamental economic challenge: Investors perceive them as offering insufficient returns, sometimes creating new burdens for the intended beneficiaries rather than alleviating energy poverty. Gerasimcikova et al. (2024) describe how in the EIB-Husk project, low-income African households had to take out loans to purchase energy-efficient devices, despite being the intended beneficiaries of the infrastructure. Husk reportedly designed this financing model to generate profits.

A solar rooftops initiative in the Philippines offers a compelling case: The Philippines faces electricity constraints that are similar to those in many African regions. Even before the energy crisis that began to unfold due to the US attack on Iran, the country had the highest electricity prices (USD 0.20/kWh) and the highest dependence on fossil fuels (approximately 80%) in Southeast Asia, with solar and wind playing only a marginal role in the energy mix (roughly 5% combined, while hydro and geothermal provide triple that amount) (PACS 2025). In recent years, rooftop solar energy installations on local government units (LGUs) have proven so successful that in 2023, the Department of Energy launched an Expanded Rooftop Solar Programme (PACS 2025; Layug Jr. 2025). Its goal is to further popularise the use of solar panels on LGU rooftops, thereby increasing local energy generation. The electricity produced can then be used either by the end users themselves or sold to the grid and neighbouring communities to generate income for the LGU (PACS 2025; Layug Jr. 2025).

Chinese providers of green tech are already involved in the Philippines' solar sector. Yet this involvement seems to be limited to projects at grid-scale, for instance in the newly inaugurated first baseload solar-plus-storage plant (Colthorpe 2025). Although the panels can easily be shipped from China, the small-scale rooftop projects still require investment and de-risking. As the NGO Peoples of Asia for Climate Solutions (PACS) calculates:

> If a financial institution can provide small loans, one LGU can install a solar system (with 300kW generation capacity and storage support) and pay the loan back within 3 years. Imagine 10 LGUs doing it (3MW solar) at the same time with an investment of USD 1.7 million, or 100 LGUs doing 30MW solar with USD 17 million. In three years, this investment can be recovered for another round of 100 LGUs (or 30MW) benefiting at least over 25,000 households.
>
> *Yang/Sabado 2025*

This example illustrates how targeted European development finance could achieve significant scale in underserved markets by financing such aggregated small-scale

projects that combine local economic development with energy access. One added benefit of such an approach could be that the provider of key financial inputs, such as de-risking insurance, is able to require that standards be met, for example the labour and quality standards for the technical components procured from China. This could help draw a baseline in terms of the sustainability and longevity of Chinese solar PV and potentially provide an avenue to address cybersecurity risks inherent in the use of smart components. Furthermore, it could contribute towards setting the European role apart in a meaningful way in a region otherwise dominated by Chinese soft power and hard infrastructure and components, for example by emphasising standards and ancillary benefits such as the skilling of local workforce (specifically in installation and maintenance).

3.4 #Competition – Green Hydrogen: European Advantages at Risk (Namibia) and Strategic Coexistence (Morocco)

Europe's structural advantages – geographic proximity, its potential role in standard-setting as a lead market and off-taker, and its financial commitments – may be lost without sustained commercial follow-through. Where European demand remains rhetorical rather than real, political commitments damage credibility and cede ground to Chinese actors, whose role often begins with equipment supply and construction contracts. Conversely, where recipient countries possess strong institutional frameworks and strategic vision, as the Moroccan case demonstrates, they can successfully orchestrate complementary European and Chinese roles, benefiting from European finance and Chinese manufacturing capacity without forcing exclusive choices.

Green hydrogen represents a strategic sector where Europe retains significant advantages over China in African markets. The EU's geographic proximity to Africa, which is critical for ammonia transport via shipping routes, and its role as a potential major off-taker give European actors structural leverage. By August 2024, nearly 80% of renewable hydrogen project funding commitments for the African continent (totalling more than USD 8 billion) came from Europe, with Germany leading at 13% (Tesfaye 2024). Nevertheless, these advantages are at risk of being lost without continued political and commercial support, as the fate of the Hyphen Project in Namibia demonstrates. Meanwhile, the Moroccan case illustrates how recipient countries can successfully orchestrate European and Chinese engagement simultaneously even in this emerging sector.

Namibia has positioned itself as a potential green hydrogen hub in southern Africa through an export-oriented approach and supportive policy framework (Uhrorakeye et al. 2025). The EU plays a central role both as the intended market and as a key investor.

After establishing a strategic partnership on green hydrogen and sustainable raw materials in 2022, European Commission President von der Leyen and Namibian President Hage Geingob endorsed a joint roadmap in 2023, with the EU pledging EUR 1.1 billion for Namibia's hydrogen value chain (European Commission 2025a; Goosen 2024). Germany, the Netherlands, and Belgium emerged as particularly active member states, with Germany establishing a hydrogen partnership with Namibia in 2021 (Federal Ministry of Education and Research 2021).

The flagship project of German-Namibian cooperation was the Hyphen green ammonia project, designated by former German Minister for Economic Affairs Robert Habeck as "a foreign project in the strategic interest of the Federal Republic of Germany" (ENERTRAG 2024). With a planned investment of USD 10 billion, the joint venture between German company ENERTRAG SE and South African Nicholas Holdings aimed to produce 1 million tonnes of green ammonia annually by 2028 for shipment to international demand centres, potentially cutting 5 to 6 million tonnes of CO^2 emissions per year (Hyphen Hydrogen Energy s.a.). Germany was to be a key destination, with energy company RWE signing a non-binding memorandum in 2022 for 300,000 tonnes of ammonia annually (Reuters 2025).

Yet in 2024, RWE unexpectedly withdrew, announcing that it was "currently not pursuing any further projects in Namibia" due to insufficient demand for hydrogen products in Europe (ibid.). The German government subsequently distanced itself from the project, emphasising its pursuit of a "step-wise approach" in green hydrogen development (Gerstenberg 2025). This withdrawal exposed a fundamental contradiction in European green hydrogen strategy: Political commitments to African partnerships run ahead of actual market demand and the willingness to absorb premium costs for green hydrogen imports. High-level diplomatic engagement proved hollow without a commercial foundation, damaging European credibility.

Meanwhile, China has established a presence in Namibia's hydrogen sector through less visible but strategically important channels. Although China has historically focused on the Namibian mining sector (Xiaodong 2025), it now participates in key hydrogen infrastructure projects. The Hyphen project involves China's National Chemical Engineering Corporation as the engineering, procurement, and construction contractor (Namibia Oil and Gas 2025). Similarly, the HyIron plant, although it receives significant levels of EU funding, uses electrolysers from the Chinese company Peric Hydrogen Systems (Xinhua 2025a), despite EU press releases describing "the largest electrolyser in Southern Africa" without mentioning its Chinese origins. China's electrolyser manufacturing dominance (IEA 2025b) thus ensures its presence even in European-funded projects.

Morocco presents a contrasting example: The country has successfully leveraged its geographic proximity to Europe while maintaining productive relationships with both EU and Chinese actors. China already has a significant presence in Morocco's renewable energy sector, notably through investments in the local EV industry (Di Ciommo et

al. 2024). This engagement now extends to hydrogen: In 2025, Chinese companies United Energy Group and China Three Gorges were selected to develop green ammonia production capacities (Uhrorakeye et al. 2025).

This Chinese involvement occurred within the "Morocco Green Hydrogen Offer" – a framework adopted in 2024 to structure investment in hydrogen projects. The initiative encompasses six projects totalling approximately USD 32.5 billion, with participation from European, American, local, and Middle Eastern companies (Uhrorakeye et al. 2025). Although the EU and China operate in parallel rather than through unified frameworks, which is characteristic in Moroccan renewable energy cooperation generally (Agyeman/Abudu 2025), this represents peaceful complementarity that is enabled by strong local institutional capacity.

Morocco maintains thriving partnerships with both the EU (the Green Partnership in 2022) and China (an MoU from 2017, expanded in 2022 to include BRI cooperation) (Di Ciommo et al. 2024). According to Di Ciommo et al., the Global Gateway initiative and the BRI are not in direct competition in Morocco. This coexistence likely reflects multiple factors: Morocco's larger and more diversified economy compared to Namibia's, its robust institutional framework for orchestrating multiple partners, and its strategic positioning as a gateway to European markets, which is an advantage relevant to both Morocco's ambitions and Chinese companies seeking to circumvent EU trade restrictions, as is evident in the EV sector (Di Ciommo et al. 2024).

3.5 #Cooperation – Critical Minerals: An Opportunity for EU-China under African Leadership

Critical minerals illustrate how intense EU-China competition can paradoxically create opportunities for cooperation when mediated by the agency of recipient countries. China's processing dominance (87% globally) and Europe's near-total dependency (more than 90% for some rare earth elements) drive European de-risking efforts, yet African export restrictions and value-addition requirements make single-actor strategies inadequate. Neither Chinese processing expertise nor European financing alone can secure access when recipients demand local value capture. Morocco and the Democratic Republic of the Congo (DRC) demonstrate how African countries can orchestrate frameworks that combine Chinese industrial capacity with European standards and partnerships, creating genuine win-win-win scenarios. Nevertheless, cooperation remains potential rather than realised: No formal EU-China critical mineral frameworks exist, despite mutual recognition that competition harms both parties. African leadership, not European or Chinese coordination, drives the triagonal engagement that does exist.

The critical minerals and rare earth elements that are essential for the energy transition represent both the sharpest point of EU-China competition and the strongest imperative for conciliatory engagement. China controls more than half of global critical mineral production and an estimated 87% of processing and refining capacity (Nantulya 2025), leaving the EU around 95% dependent on China for some rare earth elements (European Parliament 2025). Yet the complexity of critical mineral value chains makes single-actor strategies insufficient, as no country can fulfil all of the requirements independently (Neema 2025). African countries – holding nearly 30% of global critical minerals needed for clean energy – are increasingly asserting agency through export restrictions and value-addition requirements that reshape EU-China dynamics. Rather than choosing between European and Chinese partners, African governments are orchestrating instances of trilateral engagement that combine Chinese industrial capacity with European standards and financing, creating opportunities for cooperation where competition alone would fail all parties.

EU-China Competition and Its Limits

The EU-China critical minerals relationship is fundamentally asymmetric. China dominates not only with regard to extraction but increasingly upstream supply chains as well, whereas Europe depends almost entirely on Chinese processing of the rare earth elements essential for wind turbines, electric motors, and batteries. Lithium-ion battery demand alone will grow from 200 GWh in 2023 to approximately 2,000 GWh in 2030 (Federal Ministry for Economic Affairs and Energy 2023), deepening European dependency. China has demonstrated a willingness to leverage these dependencies through export controls on rare earths – measures intensified by US-China trade tensions.

European de-risking responses include investment screening mechanisms and supply diversification. Germany has signed agreements with Kazakhstan for gallium shipments that begin in 2026; pursued partnerships with Australia – including Minister Johann Wadephul's February 2026 visit and plans for lithium extraction facilities in Germany with Australian company Vulcan Energy (Landmesser 2025); and explored alternative sources across multiple continents. Nevertheless, even European policy-makers acknowledge that long-term competition with China in critical minerals harms European interests (Neema 2025). During his spring 2026 visit to China, German Environment Minister Carsten Schneider advocated for Sino-German joint ventures to attract Chinese investment and facilitate knowledge and technology-sharing.

African Agency Reshapes the Landscape

African countries hold nearly 30% of the global critical minerals needed for the clean energy transition (Neema 2025). However, both extraction and refining processes are dominated by foreign companies, with China being the most important actor in refining, and increasingly in upstream extraction (Nantulya 2025). In recent years, African

governments have begun asserting control through export restrictions and policies requiring local value addition.

Nigeria, which is rich in lithium, cobalt, and nickel, has enacted mining reforms that require exporters to submit in-country refining plans (Animashaun et al. 2026). Morocco, whose "Green Transition Minerals" account for 10% of GDP, has pursued similar measures through its Green Morocco Plan and National Mining Strategy 2021-2030 in an explicit attempt to "move up the battery value chain" (Agyeman/Abudu 2025). These policies are yielding results: Chinese firms have increased investments in Nigerian processing plants (Animashaun et al. 2026), while China has constructed spodumene lithium concentrators in Zimbabwe, Nigeria, and Namibia (Neema 2025).

This African policy shift does more than just call for responsibility from individual external actors – it creates conditions for trilateral cooperation by making single-actor strategies insufficient. When countries require local processing and value addition, neither Chinese extraction expertise nor European financing by themselves can secure access. Both become necessary, creating incentives for cooperation that competition cannot provide.

Opportunities for Cooperation: Morocco and the DRC

Morocco exemplifies how recipient countries can transform complementarity into cooperation. With existing engagement from both Europe (Green Partnership) and China (BRI cooperation), Morocco's push to develop battery manufacturing value chains creates opportunities for trilateral frameworks. A locally coordinated Green Transition Minerals cooperation mechanism could combine Chinese "speed, scale, and industrial know-how" with European emphasis on "high standards, long-term development partnerships, and commitments to local content, skills, and institutional capacity building" (Agyeman/Abudu 2025). Specific cooperation modalities could include joint ventures for knowledge-sharing and supporting production scaling, which would leverage complementary capabilities rather than force Morocco to choose between competing offers.

The DRC presents an even more compelling case. As it accounts for 70% of global cobalt production, the DRC aims to move up the value chain towards EV battery production. Yet the complexity of battery value chains makes this impossible without external partnerships. Under its existing memorandum of understanding with the DRC, the EU could fund electricity infrastructure and projects dedicated to powering cobalt processing and refining plants. China could contribute expertise in establishing processing units. A Sino-European joint venture based in the EU could serve as the destination for refined and processed cobalt, creating a trilateral framework where the DRC moves up the value ladder, China gains access to European markets, and Europe enhances access to cobalt resources currently dominated by China (Neema 2025). This represents a genuine win-win-win scenario that is enabled by the agency of recipient countries rather than donor coordination.

However, these cooperation opportunities remain more potential than reality. No formal EU-China critical mineral cooperation frameworks exist, despite mutual recognition that pure competition harms both parties. Morocco and the DRC illustrate what becomes possible when African countries assert requirements that make cooperation advantageous, but European and Chinese actors have not systematically pursued such arrangements. The question is whether the agency of recipient countries alone can create cooperation, or whether European and Chinese strategic reorientation is also required.

4 Recommendations for EU Policy-Makers

Global South countries are central to achieving global net-zero emission targets, yet their clean energy transitions are unfolding in a landscape dominated by Chinese manufacturing capacity, impaired by debt obligations, and at odds with large-scale infrastructure development. China controls more than 65% of global solar panel production, dominates battery manufacturing, and leads commercial electrotech investment, all of which are capabilities that Europe cannot match at scale. This creates a strategic dilemma: Europe has a vital stake in Global South decarbonisation, both to prevent severe climate impacts and to keep Chinese technological dependencies from translating into geopolitical leverage. However, European actors systematically underutilise available assets such as development finance expertise, regulatory influence, technical knowledge, and diplomatic capital. They are, at times, impaired through bureaucratic barriers (section 3.1 Kenya), failed political commitments (3.4 Namibia), and institutional fragmentation (3.3 Philippines), all of which cede ground to China's flexible, opportunistic approach. Success depends less on European capabilities than on strategic deployment: Complementarity works when recipient countries orchestrate effectively (3.2 South Africa, 3.4 Morocco); cooperation emerges in cases where the agency of recipient countries demands it (3.5 critical minerals); and competition proves unavoidable in sectors of strategic dependency. The question facing European policy-makers is not whether to engage with China in this arena, but how. This can be achieved by strategically differentiating when to collaborate where interests align, when to work alongside in cases where complementarity serves mutual goals, and when to compete in areas where European values or strategic interests require it. The following recommendations outline how Europe can strengthen its position through such strategic assessment rather than blanket approaches.

Europe stands to benefit from proactive engagement with China to manage industrial and economic competition as well as trade tensions and build a shared vision for net-zero development.

- Both the EU and China have to show leadership at home and continue on their domestic paths towards net-zero economies, leading the just transition away from fossil fuels by example.
- The new fossil energy crisis creates the opportunity to jointly take leadership and accelerate fossil demand-side reductions for energy efficiency, pursue electrification of all sectors, and ramp up renewable energy shares. It should be explored whether this could be a joint BASIC-EU Initiative.
- The EU should consider setting an electrification target for itself – an ambition that could be expanded globally – building on the Dubai Consensus (COP28) goal to triple installed renewable energy capacities by 2030.

- It is in the EU's interest to recognise its economic and trade-related interdependence. Joint and pragmatic efforts to advance net-zero development should be seen as a means to reduce Chinese clean tech firms' outsized focus on accessing the EU market and minimise the European pressure felt due to clean tech imports.
- Similar to the EU market, China should not view the rest of the world solely as a buyer of its goods, but should also localise net-zero technology supply chains elsewhere to generate value added, employment, security, and development.
- Potential cooperation options between China and the EU to support poorer countries in the energy transition should be explored. A specific role for EU partners and European industries might be in the systemic dimension of the energy transition, once the share of flexible renewable energy in the grid is sufficiently high.
- The EU needs to decide in which net-zero technologies it wants to be competitive, potentially in collaboration with third countries such as India that are seeking to localise manufacturing.
- In the same vein, the EU also needs to decide to what extent it is willing to bear the costs of building resilience and avoiding technological dependence on China – and to invest accordingly.

Shaping its offer to countries in the Global South, the EU can build on areas where it is complementary and attractive in comparison to China. It should:

- Safeguard its provisions of development finance (ODA), which are needed for purposes beyond climate action, such as for humanitarian aid, health, and sustainable development at large.

Concretely, this would require:

- Maintaining at least €200.3 billion for the Global Europe Instrument (GEI) as the baseline for effective EU external action. This envelope is essential to uphold the EU's global role, support stability and prosperity, and respond to interconnected challenges such as climate change, health risks, and conflict.
- Anchoring development as a core objective of EU external action: Set a minimum 93% ODA target for the GEI and remove the possibility for the ODA target to be adjusted through a delegated act – in line with the previous framework – and reaffirm poverty reduction and inequality reduction as primary objectives. This is critical to ensure compliance with EU Treaty obligations and to prevent short-term geopolitical priorities from undermining long-term development impact.

Focus on targeted inputs that can leverage significant outcomes when engaging with China for net-zero development in third countries, both on the government and commerce levels.

- For example, de-risking of projects deemed too risky or unprofitable for commercial actors, such as large-scale solar in general, and small-scale renewable energy in underdeveloped and remote markets.
- Engage in countries and regions that lack sufficiently developed markets, especially energy systems used to generate demand for clean tech components, which will come (mostly) from China in the near term. Crucial ancillary inputs from the EU are grid development, power market reform, and policy support.
- Focus European industrial policy on defensible niches: for example, offshore wind, complex systems integration, climate adaptation technologies, project development, and the combination of adaptation technologies with emerging technologies in areas where Chinese dominance is not (yet) established.

In mini- and multilateral frameworks that include China, the EU should:

- Seek to align support for Country Platforms to strengthen the agency of recipient countries and govern varied inputs from China and Europe, such as finance and hard technology, technical assistance, institutional support, and policy coordination (which may already exist by way of diverse partnerships).
- Work with multilateral development banks that have China as a shareholder to provide capacity-building, small-scale financing facilities for net-zero development, and de-risking.
- Use financial weight to create an initiative to fully underwrite and de-risk multilateral development bank investments in select sectors and projects to boost net-zero energy deployment in countries of the Global South.

Critical raw material inputs for net-zero technology supply chains are highly concentrated; expanding supply is costly, carries environmental risks, and takes place in markets that are volatile. Yet greater access to these materials will be essential, as many will be difficult to substitute.

- The EU should pursue supply chain security – both in terms of the supply and the workers in the supply chain – and governance with China, for example by establishing a predictable and transparent framework for critical mineral mining, including ecological and social criteria as well as processing and trade to mitigate the risk of supply chain disruptions and uncertainty.
- At the same time, the EU and the Global South should reduce reliance on any single country for strategic raw material inputs and technologies while simultaneously developing diversified and resilient supply chains and partnering with other emerging clean tech manufacturers such as India and Indonesia.

As a major market for, and financier of, net-zero technologies, the EU should use its leverage with China within a relationship of mutual dependence to help set standards, particularly on quality, reliable access, sustainability and circularity, workers' rights, and, not least, the reduction of cybersecurity risks arising from smart components, which could create a bottleneck for clean tech deployment globally.

- The EU should seek to establish internationally recognised cybersecurity standards for green tech without mixing them with the – potentially legitimate – interests of protecting its own industries. The safe operation of green tech is a global public good that is in the common interest of all countries. Whether suspicion towards China is warranted or not, it should be possible to agree on standards that enable the rapid expansion of green technologies and keep them outside increasingly tense geopolitical competition.

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Abbreviations

BRI	Belt and Road Initiative
BRICS	Brazil, China, South Africa, Egypt, Ethiopia, India, Indonesia, Iran, Russia, and the United Arab Emirates
CO^2	carbon dioxide
COP28	28th Conference of the Parties to the UNFCCC in Brazil
CTIP	Clean Trade and Investment Partnerships
DAC	Development Assistant Committee
DEG	German Investment Corporation
DRC	Democratic Republic of the Congo
EIB	European Investment Bank
ESG	Environmental, Social, Governance
EU	European Union
EV	electric vehicle
FMO	Dutch Entrepreneurial Development Bank
GDP	gross domestic product
GEI	Global Europe Instrument
GIZ	German Development Agency/Deutsche Gesellschaft für Internationale Zusammenarbeit
GW	gigawatt
IRA	Inflation Reduction Act
LDC	least developed country
LGU	local government unit
MoU	memorandum of understanding
NDC	Nationally Determined Contribution
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
SaB	Small and Beautiful
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USAID	United States Agency for International Development

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