









# Competitive Interdependence: A New Era for EuropeAfrica Industrial and Energy Cooperation



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# **Executive Overview**

# Strategic Africa-Europe cooperation can advance global climate goals while supporting economic development at both domestic and regional levels.

Africa and Europe possess complementary assets and interests that, if aligned, can underpin mutually beneficial, yet non-exclusive, green industrial partnerships – partnerships that create commercial value while also serving broader geopolitical goals. For Africa, partnering with Europe can give access to technology, finance, and the European single market. For Europe, partnering with Africa can help lower the costs of its industrial decarbonisation, while new green industrial partnerships can help European industries diversify dependencies and build more secure supply chains.

This Policy Report unpacks the viability of mutually beneficial green energy and industrial partnerships between Africa and Europe. It examines the geopolitical and commercial case for 'competitive interdependence', with both regions leveraging each other's strengths to compete in the global green economy.

The Report is part of the Africa-Europe Foundation's #RoadtoLunda25 initiative aimed at reinforcing evidence-based policymaking in the lead up to the 7th Summit of African Union and European Union Heads of States and Government (24-25 November 2025, Luanda - Angola). It is the result of a year-long strategic research project facilitated by the Africa-Europe Foundation and co-led by Climate Action Platform – Africa (CAP-A), the European Centre for Development Policy Management (ECDPM) and Bellona Europa.

Our central message is that the changing economics of renewable energy offer a unique chance to rebuild Africa-Europe industrial partnerships, but unlocking their full potential requires reframing the discussion on cooperation.

Europe's industrial decarbonisation is constrained by high energy costs and limited access to renewable energy in the short term. Africa's potential to produce low-cost renewable energy and hydrogen offers the opportunity for shared, cost-efficient, energy-intensive value chains like green iron and green fertiliser. Importing energyintensive intermediary goods can help Europe mitigate its decarbonisation costs while avoiding the strain on its own renewable energy capacity. The commercial benefits for both regions include reduced costs for green products and greater access and competitiveness in global green markets. For Africa, the partnership offers job creation, technological transfer, and industrial development that support long-term economic growth, while for Europe, it provides a reliable source of competitively priced green goods to meet climate goals while retaining jobs and key industrial processes in Europe.

Despite the potential, these partnership opportunities come with unique challenges and risks. African countries face structural barriers such as inadequate infrastructure, inefficient logistics, and high capital costs, all of which require significant policy support and commercial partnerships to overcome. For Europe, a common argument against strategic industrial partnerships with third countries is that they would offshore industrial activities, leading to job losses and de-industrialisation traditional industries. However, investing in decarbonisation together with strategically integrating value chains from key regions has the potential to create employment in downstream manufacturing and build global competitiveness in green supply chains. Moreover, this would allow European policymakers and industries to proactively shape this inevitable decarbonisation shift in a fair and just manner, rather than passively reacting to it.

# **Priority areas of action include:**

- Enhanced policy frameworks. Countries of the African continent to focus on enabling conditions that support long-term investment. This includes stable and transparent policy frameworks, integrated energy system planning, and regulatory reform to attract large-scale investment into clean energy and industrial projects.
- Meaningful market for green industry products. African green industrial producers will need predictable and transparent access to global and regional markets, but also predictable demand. On the one hand, streamlining export procedures, reducing non-tariff barriers, and ensuring alignment with international standards on technology and sustainability can facilitate cross-border trade, and improving trade logistics and aligning regional strategies through the AfCFTA (African Continental Free Trade Area) can support value-added green exports. On the other hand, implementing long-term and stable off-take agreements and procurement mechanisms that offer confidence to low-carbon goods producers can be instrumental for crowding in investors.
- Integrated goal-setting. The EU to recalibrate its
  policy instruments to support cross-border green
  value chains. This means connecting climate and
  industrial goals with strategic interdependence,
  ensuring market access for African green goods, and
  working to ensure CBAM is a transparent and fair
  driver of global decarbonisation.
- From proclamation to demonstration. Leverage targeted investments to showcase the potential of cross-border value chains through early flagship projects and structured partnerships, maximising tools such as Clean Trade and Investment Partnerships. Demonstrating success can build trust and momentum, hence help attract broader investments needed to transform industrial and energy cooperation.
- Sustainable partnerships. Clearer political ambition, better coordination of standards, and scaled-up financial innovation will be essential to building long-term partnerships, de-risking investments and aligning private and public actors around a common industrial vision.

# Acronyms and Abbreviations

AGII Africa Continental Free Trade Area
AGII Africa Green Infrastructure in Africa
AGII Africa Green Industrialisation Initiative

APRA Accelerated Partnership for Renewables in Africa

**AU** African Union

BF-BOF Blast Furnace and Blast Oxygen Furnace
CBAM Carbon Border Adjustment Mechanism

DRI Direct Reduced Iron

EAF Electric Arc Furnace

**ETS** Emissions Trading System

EU European UnionGVA Gross value addedHBI Hot Briquetted Iron

IPP Independent Power Producers

**LNG** Liquefied natural gas

MENA Middle East and North Africa

**REIPPPP** Renewable Energy Independent Power Producer Procurement Programme

SEZ Special Economic Zones

**US** United States

**WACC** Weighted Average Cost of Capital

# Introduction

This paper explores the viability of mutually beneficial green energy and industrial partnerships between Europe and Africa, based on a 'competitive interdependence', where both regions rely on each other's strengths to compete in the global green economy.

Green energy is not only a tool for climate action; it can also drive energy access, industrialisation, trade, and economic security. Europe and Africa possess complementary assets and interests that, if aligned, can underpin an interconnected green industrial geography. The paper argues that there is both a geopolitical imperative and a commercial case to see African green industrialisation as essential to European decarbonisation and African economic growth.

Focusing on emerging opportunities in green iron and steel, and green fertiliser, the paper identifies areas of strategic collaboration, assesses the economic and geopolitical implications, and examines how mutually beneficial –yet non-exclusive– partnerships can be achieved. The benefits for Africa are clear and compelling: green energy can give African countries a competitive edge in a low-carbon global economy. The case for the European Union (EU) is more complex and requires a higher burden of proof, as it navigates industrial reconfiguration amidst pressure from US political and economic uncertainty, and intense Chinese competition across key sectors of its green industrial strategy.

Beyond outlining long-term benefits, the paper therefore also addresses short-term trade-offs and barriers to greater industrial interdependence, including the risk of deindustrialisation, and explores how these can be anticipated and mitigated to build more equitable and resilient partnerships.

Africa and the EU differ significantly in how climate and industrial policies are formulated and implemented. While pan-African frameworks exist, decision-making remains largely in the hands of individual countries. To reflect this diversity, the paper draws on examples from South Africa, Nigeria, Morocco, and Kenya to support broader continental observations.

Unlocking the potential for green industrial partnerships requires reframing the discussion on industrial cooperation. In Europe, partnerships with African countries should be viewed not as a threat to existing production centres, but as a strategic opportunity to strengthen long-term competitiveness, supply chain resilience, and trade in green inputs. In Africa, green industrialisation should be reframed not as an externally imposed agenda, but as a forward-looking development strategy.

Finally, the paper outlines a set of practical policy, regulatory, and investment levers needed to operationalise green industrial partnerships. It highlights the importance of aligning trade, climate, and industrial strategies across both continents; creating enabling conditions for investment in African green industries through energy planning, regulatory reform, and regional integration; and recalibrating EU industrial and financing instruments to support cross-border value chains.

# 1. Competitive interdependence through green industrial partnerships

Both Europe and Africa<sup>1</sup> are evolving their industrial policies in 2025, as governments reposition their economies not only to survive, but also thrive in a transforming global political and economic context.

Europe is at a moment of reckoning, trying to regain its industrial competitiveness while facing structurally high energy prices (European Commission 2024). Following a sobering assessment of its economy by Mario Draghi last year, the EU is redesigning its industrial policies around pillars of security and competitiveness, through a Competitiveness Compass and the Clean Industrial Deal. These lay out a set of primarily internal measures to enhance the competitiveness of European industries and close Europe's innovation and investment gaps, while creating an enabling environment for European industrial decarbonisation and clean technology manufacturing.

Meanwhile, many African countries are developing their own path for economic growth, green or otherwise. Africa has 40% of the world's untapped renewable energy potential, 40% of the world's critical minerals, and is projected to account for 40% of the world's young people by 2030 (<a href="Dhliwayo 2024">Dhliwayo 2024</a>; AfDB 2022; WEF 2022), and seeks to leverage these resources for investments in large-scale green industrial and infrastructure projects

across the continent (<u>Ruto 2024</u>; <u>Oqubay 2024</u>). This reflects a desire to move away from exporting raw materials to drive economies elsewhere, and reduce import dependence, along with a recognition among many that African economies are more likely to meet their long-held aspiration of industrialisation by leaning into the low-emission, 'green' opportunities.

While endowments, economic structures, and enabling environments vary across Africa, many countries on the continent share the potential to become a global green manufacturing and industrial powerhouse, which is discussed here.

The rapidly changing global environment creates new opportunities for an interconnected green industrial geography, even if these are not always obvious. As Europe looks to secure clean energy inputs and diversify its supply chains, and African countries pursue different forms of 'green' industrialisation (Medinilla and Byiers 2023), there are both geopolitical and economic arguments for a deeper green industrial interdependence between the two continents. The following table summarises the key elements of this alignment, which we explore in more detail below.

		Africa	Europe
<b>Geopolitical case</b>	•	Diversify investment partners in pursuit of increased value addition at source Take advantage of market proximity and historical linkages Shape international standards and regulatory frameworks Accelerate technology and skills transfer for industrial upgrading	<ul> <li>Diversify sourcing to reduce resource dependency</li> <li>Accelerate strategic autonomy</li> <li>Strengthen European green competitiveness globally</li> <li>Accelerate achievement of climate objectives</li> </ul>
Commercial case	•	Diversify economy, enhancing employment, prosperity, and resilience Kick-start green industrial investment and development driven by European anchor demand Strengthen energy systems by addressing the lack of viable investment cases	<ul> <li>Reduce costs of decarbonisation</li> <li>Invest in growth markets for green industrial goods</li> </ul>

# The geopolitical case: managing interdependencies for strategic autonomy

### European needs

Electrification and decarbonisation is the only pathway for European energy security. Europe has long been dependent on energy imports from unstable or unreliable partners. The Russian war in Ukraine simply shifted this dependence from Russia to other countries, particularly the United States and Qatar, creating new vulnerabilities and cementing structurally high energy prices. Since early 2025, the US, now Europe's largest gas supplier, is coercing the EU to commit to even further increasing its dependence on US liquefied natural gas (LNG) (Gavin 2025), while imports of Russian LNG continue indirectly (Humpert 2025).

Breaking this cycle and achieving long-term European energy security means replacing fossil fuels with renewable energy sources, both by increasing domestic production and creating a stable and diverse interconnected energy system with neighbouring countries.

Decarbonising heavy industries, which account for roughly 25% of Europe's final energy consumption (EuroStat

2024), will be a critical step towards achieving energy security through electrification and decarbonisation, but implies a reconfiguration of industrial production within Europe and beyond. Electrifying industrial processes and the shift to green hydrogen are essential elements of this transition, but Europe alone will not be able to meet the associated electricity and hydrogen demands in a sustainable, timely, and cost-effective manner.

In a fully net-zero scenario, electricity demand in the EU outstrips what can be affordably deployed and generated at home. Electricity today accounts for less than a quarter of Europe's final energy consumption (Enerdata 2024). Decarbonising power generation alone by 2040 will cost an estimated EUR 2 trillion (Göke et al. 2023). Europe today faces structurally higher electricity prices than its main industrial competitors, the United States and China, a trend which is estimated to continue as the EU decarbonises its energy system between now and 2050 (Business Europe 2024). Verpoort et al. further estimate that in the case of Germany, an electricity price difference of 40-70 EUR/MWh with renewable energy-rich countries (including African countries) could be plausible in 2040 (Verpoort et al. 2024a; 2024b). Europe will also increasingly be faced with competing demands for clean power as electrification of residential and industrial heat, hydrogen production, as well as transport all scale up simultaneously.

For regions with limited renewable energy, a cost-efficient decarbonisation pathway will require balancing domestic renewable energy investment and production with sizable imports of electricity and energy products. This is recognised in EU policy. The 2022 energy crisis led to an acceleration of plans for interconnections in the Mediterranean to import renewable electricity from North African countries, while the Commission set a target to import 10 million tonnes of renewable hydrogen and derivatives from third countries by 2030 (European Commission 2022).

For energy-intensive industries, proximity to high-quality renewable energy sites will become increasingly important. Crucially, hydrogen development – motivated by its use as an energy carrier, feedstock, or energy storage option for renewable energy – needs to happen in parallel with investments in renewable energy generation to avoid hydrogen production cannibalising existing renewable capacity. Indeed, renewable energy production for hydrogen development in Europe may put even more pressure on European electricity availability for other uses (Lovisolo and Whiriskey 2021).

To attain European Strategic Autonomy, the EU will need to look outward as well as inward, and proactively shape these new interdependencies to be diverse and secure. This goes beyond mere supply chain security and requires building the foundations for an integrated and alternative industrial geography with Europe's neighbours. Not doing so, or leaving it to the market like Europe has done in the past, may lead to further challenges to European industrial competitiveness and deepen high-risk dependencies.

Europe's shift from coal and oil to natural gas was largely market-driven, leading to a high concentration of dependence on Russia (Dejonghe et al. 2023; Fouquet 2016). The EU now has an opportunity to not only reduce its dependencies but also proactively shape clean energy deals to find a better balance between self-sufficiency, security of supply, diversification, and affordability. The input requirements of industrial decarbonisation extend this conversation beyond renewable energy to include hydrogen, its derivatives, and low-carbon industrial goods, making strategic partnerships even more critical for a competitive and resilient transition.

Many of the above needs might be met through closer links with African countries, many of which are well-positioned as future renewable energy partners. Their strong trade ties with Europe, proximity to and established physical

infrastructure links with North Africa, emerging green industrial base, and growing market potential highlight the opportunities the region offers for mutually beneficial European clean technology and green industrialisation.

Apartfromdiversifying input supply, European investments in African green industries can also create opportunities for a stronger footprint of European businesses in prime sites for renewable energy generation, while long-term, these additional investments will ensure trade in a largely untapped future growth market for green industrial goods in Africa.

### Africa's ambition

While the above underlines growing European dependence on others, Africa is not merely a passive potential partner to meet Europe's objectives. Rather, African governments are themselves actively seeking to promote their own industrialisation, green or otherwise. Several governments on the continent seek to leverage their considerable reserves of critical minerals and substantial renewable energy resources for their own industrialisation and job creation, where the EU serves as a potential market. Both are increasingly essential to global decarbonisation efforts and can be a source of strategic leverage. Partnering with European public and private investors would offer opportunities for technological upgrading and to transform raw materials into intermediate goods. Furthermore, Africa can meaningfully contribute to global policy dialogues on climate change, resource governance, and effective trade practices to accelerate global industrial decarbonisation through such partnerships, ensuring they are inclusive of African development. The continent represents a growing, early market for African green industrial goods, and engaging with EU investors may offer a pathway to a more prominent role in shaping these global discussions. including international standards and regulatory frameworks for green industries, and accelerating costefficient global climate action.

Kenya is a strong example of Africa's ambition for green industrialisation, demonstrating how a strategic, self-driven interest in renewable energy can align with broader socioeconomic and industrial goals. Driven by early investments in geothermal energy, nearly 90% of Kenya's electricity today is generated from clean sources (<u>Africa Check 2025</u>), with hydropower, wind, and solar power also contributing to its energy mix. This strong foundation

has enabled significant progress in expanding electricity grid access, with coverage now reaching 75% of the population, having doubled since 2013 (Beecham & Iberi 2024). The development of Special Economic Zones (SEZs) such as the recently expanded Naivasha SEZ, which is set to receive low-cost geothermal energy from a nearby well, is a strategic step to attract investment and energy-intensive industries by offering reliable, low-cost renewable electricity and regulatory and tax incentives (Kenya News Agency 2025). The Energy and Petroleum Regulatory Authority also recently published guidelines allowing investors in green hydrogen and its derivatives to apply for SEZ status of their project development areas in order to also gain from these commercial incentives, further solidifying Kenya's ambition to become a hub for sustainable industrialisation (Ambani 2024). However, despite the considerable progress, the country faces significant grid infrastructure challenges. Kenya's green energy potential cannot be fully realised while its transmission and distribution network, essential to ensuring reliable and affordable energy delivery to industries, requires USD 5 billion in investment by 2042 to modernise and expand (ITA 2024). Kenya's green transition journey demonstrates the potential for targeted investments and international partnerships to support both domestic socioeconomic development and the expansion of global green value chains.

Both Europe and Africa could benefit from a collaborative approach that prioritises mutual green industrial growth opportunities while allowing flexibility to engage with multiple partners. A close but non-exclusive partnership would allow the EU to remain actively involved in Africa's rapidly expanding green value chains, while Africa would retain the ability to attract diverse industrial investments.

# The commercial case: curbing the costs of EU decarbonisation while kick-starting African green industrialisation

Green energy and hydrogen imports are part of the EU's plan to meet its decarbonisation objectives at an acceptable cost level, yet this may not suffice. For some industrial use cases, especially those that rely on hydrogen as a feedstock, it will be more efficient to also import energy-intensive intermediary goods, like green iron, fertilisers, and low-carbon fuels. from African countries.

A recent study from the Potsdam Institute for Climate Impact Research estimates that conserving current production patterns by shipping hydrogen will be substantially costlier than producing intermediary goods and hydrogen-intensive products close to the lowest-cost renewables (Verpoort et al 2024b). This reflects the reality that energy-hungry upstream industrial processes may not be the most efficient use of the finite renewable energy capacity in the EU in the short-term, as their share of GDP, employment, and industrial output is much smaller than their share of energy use and related emissions (see chapter 2 for sector-specific examples). Energy-intensive industries, therefore, may be able to make significant short-term savings by relying on imported intermediary goods, as opposed to decarbonising the full production process with domestic or imported green energy and/or hydrogen.

While this would imply some reliance on industrial production outside the EU, at least in the short term, it does not represent a zero-sum game between African industrialisation and European reindustrialisation. Strategic imports can boost the commercial viability of European decarbonisation efforts, while maximising the efficiency of hydrogen consumption in key industries and limiting the need for long-distance transportation, which is costly (IEA 2024). For Europe, this can help keep decarbonisation objectives on track and keep electricity prices in check.

As a continent in the middle of an energy crisis, Europe should look towards African countries, not only as suppliers of raw materials, energy, and hydrogen, but also for intermediate inputs to support and enable the decarbonisation of its energy-intensive European industries in a cost-effective way.

The commercial case for African countries is more long-term. Africa's industrial competitiveness will, at least partially, rely on its climate competitiveness (<u>CAP-A 2024</u>). With approximately 40% of the world's untapped renewable energy potential (<u>AfDB 2022</u>), including abundant solar and wind resources and 60% of the world's best solar resources (<u>IEA 2022</u>), the continent has the potential to become a global hub for low-cost renewable energy production. African countries should look towards Europe as a key market for low-carbon goods and a partner for developing green industrial value chains. This will not only benefit Europe's decarbonisation, it can also help kick-start and accelerate African green industrialisation and diversification.

Short-term action will be critical for enabling long-term opportunities. Early anchor demand for low-emission products from large markets like the EU is crucial to unlock new industrial developments,<sup>2</sup> and European investment capital with an understanding of – and focus on – a low-emission industrial future is an important part of the capital stack for Africa's green industrialisation. Initiatives such as the African Continental Free Trade Area (AfCFTA) further complement this competitiveness by encouraging regional integration and market expansion within Africa, thus offering a larger connected market for African investments and economies of scale for both input and output markets.

Large-scale green industrial investments, developed in partnership with the EU, can enhance the commercial viability of electrification and energy access initiatives across Africa. By anchoring demand and attracting capital, these investments not only support industrial-scale production of renewable energy and green hydrogen, but also create a stronger foundation to address retail energy poverty³ by improving the broader investment case for energy infrastructure. Targeted green industrial partnerships can also help close long-standing funding gaps and build institutional and technical capacities that have historically constrained Africa's industrial development.

# Squaring the CBAM circle: an alternative model of production and trade

All of this highlights the need to rethink the role of African economies in Europe's decarbonisation, as well as the long-term value of low-carbon industries in Africa that could be unlocked through European investments. By investing in industrial production in African countries, Europe can enhance its energy security and establish a more secure and mutually beneficial interdependence with its southern neighbours. This not only aligns with the EU's intention to be a global climate leader but also supports the promotion of carbon pricing as a tool to incentivise decarbonisation, benefiting both regions.

The EU's Carbon Border Adjustment Mechanism (CBAM) has been a key pillar of the EU's decarbonisation agenda. Starting in 2026, the CBAM will impose a charge on imported carbon-intensive goods like iron and steel, cement, fertilisers, aluminium, and hydrogen that is

equivalent to what European industries pay under the European Emissions Trading System (ETS). This not only protects domestic industries from carbon leakage (high-emitting industries moving to more lenient jurisdictions) but also aims to lay the groundwork for global competition for low-carbon manufacturing.

This policy marks a significant shift in EU climate action, though its concrete consequences -both within and beyond the EU are still unfolding. CBAM presents undeniable short-term challenges for African countries (Byiers and Medinilla 2024), but can also create distinct opportunities for Africa's industrial development in partnership with the EU. With abundant untapped renewable energy resources, several African countries could become competitive hubs for low-carbon industrial production. These products would have a competitive access to the EU market as strategic imports, offering an advantage over carbon-intensive products that currently dominate trade flows. Once fully implemented, the CBAM will make carbon intensity a key factor determining market access to the EU, shifting competitiveness in favour of low-carbon products. However, many African countries may struggle to meet CBAM requirements in the short term, putting their trade and development prospects at risk.

To fully realise African industrial potential in the presence of CBAM, therefore fostering EU-Africa industrial cooperation, would require several critical adjustments and clarifications. These include the inclusion of indirect emissions across all covered sectors, a robust and transparent methodology for calculating embedded emissions, and strong partnerships to support African countries in meeting methodological and administrative requirements – enabling them to demonstrate the low carbon intensity of their exports.

While efforts to integrate African concerns into the CBAM's design have not been successful,<sup>4</sup> the inclusion of indirect emissions - those resulting from generating electricity used in industrial production - is particularly important for the climate effectiveness of CBAM. CBAM currently excludes indirect emissions for hydrogen, aluminium, and iron and steel, which account for the largest share of emissions embedded in hydrogen and aluminium<sup>5</sup> (Bellona 2021). While addressing these shortcomings would enhance CBAM's climate credibility as a climate policy in general, in the context of this paper, the advantage for Africa's industrialisation is evident. As a result, African producers, who have access to intrinsically

competitive renewable energy sources, would be motivated to engage more actively in the decarbonisation process, knowing that their lower-carbon production methods are recognised and rewarded in global trade.

Countries around the world, including African countries, have also shown a growing interest in establishing their own carbon pricing systems, partly driven by the introduction of the EU's CBAM. Several countries are considering some form of carbon price that will not only support decarbonisation but also retain value within their economies rather than transferring this to the EU, as this would allow carbon payments to be deducted from CBAM payments. However, regulatory interventions alone will not be enough, and there is a clear need for practical tools and robust analysis to support non-EU policymakers in navigating the complexities of carbon

pricing mechanisms. Major international investments will be needed, not only to decarbonise existing industries but to show that new greenfield investments are able to take advantage of market conditions under CBAM. The African Union is developing a collective response to offer a unified African perspective for engagement on CBAM. Predictability and consistency on the European side will be key to shaping this into a new model of production and international trade in low-carbon goods.

Apart from necessary changes to CBAM as outlined above, Africa will also have homework of its own - at both regional and national level: it must identify and support opportunities to develop new industries and transition existing ones by leveraging its potential for low-cost renewable energy and expanding domestic carbon pricing mechanisms to drive decarbonisation.

# 2. Opportunities for energyintensive industries

The economics of renewable energy provide a strong rationale for redrawing the geography of energy-intensive industries. But compelling arguments are not enough to drive change. To show how these dynamics can unfold in practice –and what it takes to make opportunities a reality– this chapter highlights two specific cases: green iron trade for a more efficient steel decarbonisation, and an integrated green ammonia supply for long-term energy and food security in both Europe and Africa.

These two cases reflect tangible options for a mutually beneficial Europe–Africa industrial cooperation. They move the discussion beyond abstract arguments, highlighting the need to navigate political economy dynamics and address key sensitivities.

# Green iron trade for a more efficient steel decarbonisation

# The challenge of decarbonising iron and steel

The steel industry is one of the most carbon-intensive sectors in Europe, accounting for 8% of global emissions and 5% of emissions in the EU (<u>Karkare and Medinilla 2024</u>). The iron and steel value chain accounts for 26% of industrial emissions covered by the EU ETS<sup>7</sup> and 10% of industrial energy consumption in the region (<u>Sandbag 2024</u>; <u>Eurostat 2024</u>). At the same time, it represents just 1% of manufacturing gross value added (GVA) (<u>Oxford Economic 2019</u>)<sup>8</sup>. The steel value chain can be broken

down into two steps: ironmaking and steelmaking. The most effective way to decarbonise the value chain is to move away from traditional coal-powered ironmaking and steelmaking, referred to as BF-BOF steel production,<sup>9</sup> and instead use Direct Reduced Iron (DRI) ironmaking, and Electric Arc Furnace (EAF) steelmaking processes. Hydrogen DRI-EAF low-carbon steel powered by renewable electricity,<sup>10</sup> can significantly lower emissions, but is still highly energy-intensive, and therefore requires access to affordable, abundant, and additional clean energy.

The geopolitical volatility in the international gas market and high gas prices pose challenges to gas-driven decarbonisation. That said, many traditional EU steel producers today are not well-positioned to access the low-cost renewable energy and hydrogen needed for a competitive low-carbon steel production. This is in contrast to traditional BF-BOF production, for which they have depended on coal imports.

While European EAF adoption is already at 45%, the shift to hydrogen DRI is facing significant delays, largely due to the cost of hydrogen and electricity. European steelmakers face increasing pressure on their competitiveness due to high energy costs, limited access to surplus renewable energy, and long distances to optimal sites for large-scale green hydrogen production. The first wave of European DRI projects – despite having secured billions of Euros in subsidies (<u>Tarasenko 2024</u>) – are facing significant delays (<u>Martin 2025</u>), while others are being put on hold (<u>Tamellini 2024</u>). This reinforces the need for complementary, costefficient alternatives.

# The case for green iron imports from Africa

In order to maintain decarbonisation targets, strengthen the competitiveness of the European steel sector, and diversify existing import dependencies, other sourcing options must be considered, including importing DRI in the form of Hot Briquetted Iron (HBI) from African countries with optimal renewable energy and hydrogen potential. This is an opportunity to expand African industrial activities as countries currently export raw ore, rather than adding value to it through further industrial processing.

Several African countries, including Egypt, South Africa, Mauritania and Namibia, are positioning themselves as key players in the global green hydrogen economy and have the potential for cost-effective hydrogen-based DRI production. The continent does not face the same renewable energy constraints as Europe, as it boasts high renewable energy potential and land availability, and less pressure from competing energy demands (see Chapter 3 below). By aligning technology access, investment incentives, and industrial strategy, both regions could maximise economic and environmental gains from green iron trade

The viability of a renewables pull—the incentive to relocate for energy costs savings—depends on a range of factors, yet even if adjusted for factors such as cost of capital, Verpoort et al. estimate that imports of green iron (HBI) from renewable energy rich regions could lead to cost savings of up to 12.9% when compared to fully domestic steel production (Verpoort et al 2024b). In some cases, the technological shift from fossil fuels to renewables will be easier. For example, while European iron and steel production is largely based on coal-powered production processes, ironmaking in North Africa (and the Middle East) primarily relies on natural gas DRI facilities, which can more readily transition to green hydrogen (Karkare and Medinilla 2024).

Africa has no scarcity of untapped renewable energy potential, but a scarcity of viable investment cases, which is exactly what maintains retail energy poverty despite a superabundance of untapped potential.<sup>11</sup> Additionally, African countries already account for 14% of the EU's iron ore imports (ITC 2025), with the world's largest untapped reserves of high-grade iron ore due to start production in the coming years in Guinea. 12 In 2023, the Middle East and North Africa (MENA) produced 3% of global crude steel but accounted for 45% of the global DRI production, having expanded by 11% from 2021 (Basirat 2025). Additionally, green steel production, in particular, is also seeing exploration and investment.13 Targeted partnership deals with African countries would allow European steelmakers to reduce reliance on volatile energy prices, control input costs, and diversify supply chains while decarbonising domestic production. By focusing on upstream decarbonisation while strategically developing Africa's green hydrogen and iron supply chains downstream, both regions would benefit from increased low-carbon capacity, technology transfer, and industrial development.

For Africa, in addition to increasing financial flows for expanding iron production, these partnerships can

ensure a 'green from the start' investment in DRI technology to avoid technology and infrastructure lockin by leapfrogging directly to sustainable industrial methods. For African countries with existing coalpowered steel production capacity, such as South Africa, these partnerships can facilitate the transition to green production where stakeholders increasingly acknowledge the need for more sustainable and greener production approaches. However, capital constraints remain a major obstacle; hydrogen-driven decarbonisation is viewed as expensive, and gas imports are viewed as a viable method to decarbonise ironmaking. The absence of explicit and secured demand for low-emission products leads industry players to delay investment decisions until green hydrogen becomes cheaper and more readily accessible.

The Simandou mine in Guinea represents a significant greenfield opportunity to bolster Africa's iron production infrastructure and expertise. With estimated reserves exceeding 2 billion tons of high-grade iron ore (Mining See 2024), Simandou holds immense potential to reshape green steel dynamics by offering high-grade iron ore that could rival alternative regions for low-cost green production, like Brazil and Australia. Notably, the mine's predominantly Chinese ownership structure carries geopolitical implications, and strategic agreements with minority stakeholders could help boost domestic value addition in Guinea while creating ties for the EU in an endeavour with great potential to reshape global iron ore trade.

### Overcoming barriers and disincentives

Despite its potential, this opportunity comes with unique challenges and risks. Steel is a strategic metal, and value chain interdependencies are complex and subject to political dynamics. Additionally, African countries face structural barriers such as inadequate infrastructure, inefficient logistics, and high capital costs, all of which require significant policy support to overcome. As discussed in Chapter 4, strategically planned partnerships can overcome some of these concerns for specific projects.

Europe's steel industry is a sizeable employer, with 300,000 direct jobs and EUR 26 billion in gross value (<u>Lot and Røyne 2024</u>). That is only 0.1% of EU employment (rising to 1.3% if all indirect and induced jobs are included) (<u>Eurofer 2024a</u>; <u>Eurostat 2025a</u>), for an industry that produces 5% of the EU's emissions, and uses 10%

of its industrial energy consumption (<u>Eurostat 2024</u>). Within the iron and steel value chain, the upstream DRI processing and HBI production, the part most considered for strategic relocation, is the least job-intensive.

Agora Industry estimates that shifting to green iron imports could lead to a 4% reduction in direct jobs across the full value chain, but up to a 16% reduction in steel production costs (Agora Industry 2024). This is still a significant labour impact, which should be put into perspective of a struggling industry with a current capacity utilisation of around 60% (Eurofer 2024b). Successful decarbonisation will require a major restructuring of European steel, including significant worker reskilling, and it is a priority for the EU to build green industrial competitiveness, futureproofing the industry and employment. Lowering costs of decarbonisation (including through strategic imports of HBI) could contribute to job preservation in steelmaking and finishing, where the vast majority of European steel jobs are located (Karkare and Medinilla 2024). Fear of de-industrialisation will remain a major factor in European decision-making, driven by concerns over the market being flooded by carbon-intensive Chinese iron and steel. However, cost-effective interconnected geographies for ironmaking strengthen the EU's case for green steel production. The concerns will need to be addressed through strategic policymaking and stakeholder engagement in order to find a workable balance between capital and energy efficiency, job retention, and global competitiveness.

# An integrated green ammonia supply for long-term energy and food security

Green ammonia is the key input for low-carbon nitrogen fertilisers, but it is also set to play a major role as an alternative shipping fuel to decarbonise maritime transport. Similar to the iron and steel sector, producing green ammonia for all these use cases will require large volumes of affordably produced green hydrogen.

# EU demand for affordable green ammonia

As the EU seeks to decarbonise its industries, securing a stable and sustainable supply of ammonia made from green hydrogen instead of natural gas has become a strategic necessity.

Today, most EU ammonia production relies heavily on natural gas, much of which is imported from outside the bloc. This dependency creates economic and geopolitical vulnerabilities, as was demonstrated at the beginning of the war in Ukraine. Surging natural gas prices in 2022 directly translated into ammonia price shocks, threatening fertiliser affordability and food security across Europe.

The European fertiliser industry has committed to the climate-neutral production of ammonia by 2050. Most carbon emissions in the industry are caused by the production of hydrogen as input to ammonia production (Fertilizers Europe 2023). Decarbonising ammonia and fertiliser production, therefore, faces similar energy constraints as iron and steel. Green hydrogen in Europe today costs nearly three times as much as grey hydrogen, adding a premium of EUR 4-6 per kg, which far exceeds what is commercially viable (McWilliams and Kneebone 2024).

With competing demands for clean energy in sectors where imports are not an option, such as residential heating and transport, and competing demand for ammonia as an energy carrier, Europe must strategically allocate its resources while decarbonising the sector itself. EU policies acknowledge that it does not have the renewable energy capacity to be self-sufficient in green hydrogen and green ammonia production, and that imports will be needed to complement its domestic industrial production and decarbonisation. European member states and institutions, led by Germany, have led green hydrogen diplomacy, striking deals with a wide range of countries, including Egypt, Namibia, Morocco, South Africa, Brazil, and many more (Medinilla and Dekeyser 2024).

# Localising African fertiliser production

Low-carbon fertiliser presents a major domestic market opportunity in African countries. With few exceptions, most African countries today are highly dependent on imported fertilisers, which are significantly more expensive than in other regions. Even before the war in Ukraine, fertiliser prices across Africa were higher than global averages. In 2022, South African prices of ammonium nitrate, urea, and phosphate fertilisers were 79% higher than the global average (Gaijgo 2022). The Russian invasion of Ukraine resulted in additional supply and price shocks for fertilisers in African countries.

Most Sub-Saharan African countries also severely underapply nitrogen fertiliser, leading to large yield gaps with other parts of the world. Increasing African fertiliser consumption is also crucial to limit land use change emissions (<u>Dekeyser and Medinila 2024</u>). Developing local ammonia production and expanding fertiliser manufacturing in Africa could substitute expensive imports, improve food self-sufficiency, and strengthen domestic agricultural productivity.

# The case for collaboration

The challenge Europe faces today is to strategically design its future ammonia trade flows and shape diverse and secure supply chains in a context where the commercial viability of green hydrogen consumption is still a couple of years away. As Africa looks to develop domestic fertiliser production to substitute expensive imports and close its food self-sufficiency gap, several African countries are also particularly well-placed to serve both to EU and African demand for green molecules. This presents an opportunity to build mutually beneficial industrial partnerships, where Europe guarantees longterm demand and investment support, while African countries provide cost-competitive production of green ammonia, while also growing the domestic or continental market for low-carbon fertilisers. The latter would be supported by the AfCFTA.

Combining import substitution, increased domestic consumption, and export potential will not only strengthen the investment case through diversification, but it can make these investments more politically attractive, especially since they combine export revenues with agricultural transformation and food self-sufficiency outcomes.

While several African countries, including Egypt and Namibia have already signed agreements to export green ammonia to Europe, countries in the Middle East, (Central) Asia, and Latin America are also positioning themselves to become large-scale green hydrogen and ammonia exporters. Since Europe has an interest in diversifying imports, African countries offer both commercial and geopolitical opportunities.

Commercially, (North) African countries have some of the lowest projected levelised cost of hydrogen, meaning that technically, they can produce at highly competitive rates. North Africa's proximity to Europe makes it well placed for developing an interconnected hydrogen economy, combining pipeline and maritime exports with an established fertiliser industry and a growing green industrial base. European investments in African green ammonia production can also ensure a strong stake in a future growth market for green fertilisers.

Geopolitically, partnering with African countries allows Europe to leverage strong existing trade relations with direct neighbours and further diversify their supply, avoiding increasing dependence on a small number of suppliers. If well managed, African green ammonia can therefore play an important stabilising role in Europe's long-term energy security, accelerate the transition away from grey ammonia in European fertiliser production, while providing a much-needed boost to African domestic fertiliser markets and food self-sufficiency.

# From potential to production

Many African countries have the potential to produce green ammonia at competitive rates, yet the conditions and opportunities vary significantly. North African countries are especially well placed due to their proximity to Europe and existing fertiliser industries. Egypt, for example, is looking to become a supplier of both green and blue ammonia, targeting exports, domestic manufacturing, and bunkering fuels. Morocco's export-oriented fertiliser industry means it can use green ammonia to supply both regional and international markets. Countries like Kenya and South Africa, in turn, may focus more on import substitution for domestic markets and expansion into regional African markets for affordable and low-carbon nitrogen fertiliser.

One of the key elements for Morocco's industrialisation approach is engaging and empowering the private sector, and supporting the adoption of renewable energy and the implementation of low-carbon industrial practices. The country's favourable policy landscape and sustained government support for renewable energy infrastructure have been instrumental in creating the enabling

conditions for significant private sector investments. Morocco's fertiliser exports already constitute around 16% of the country's total exports, with only 13% destined for the EU (Erixon 2023). Recently, Morocco's largest domestic fertiliser producer, OCP Group, announced an ambitious strategic investment to expand fertiliser production capacity by 9 million tons annually by 2028, with production powered entirely by renewable energy sources, meeting the growing global demand for sustainable fertilisers (Hesspress 2025). Such strategic decision-making and policy alignment in African countries can translate into large-scale industrial development when incentives and objectives are effectively aligned. In Morocco's case, this investment not only supports the strategic goal of developing an internationally competitive (export-oriented) hydrogen sector but also addresses other critical interests, such as enhancing water security through increased desalination capacity.

However, these opportunities do not come without challenges. Africa's infrastructure gaps remain a significant hurdle, with many countries requiring large-scale investments in renewable energy capacity, electrolysers, and port infrastructure to support the expansion of green ammonia production. Addressing these gaps will be essential to ensuring a reliable and competitive supply for both markets, while combining exports and local use will be necessary to maximise socio-economic benefits for African communities and establish a strong social and political license to operate.

The current context, characterised by the evolving EU competitiveness and climate policies, the economic uncertainties generated by the US, and the proliferation of large-scale signature deals makes it essential to preemptively address the barriers for making competitive interdependence a viable option.

In light of these developments, it is not enough to merely articulate the potential of mutual beneficiation, it is also crucial to anticipate and mitigate the arguments that may be raised by both EU and African stakeholders regarding the risks involved in such a partnership.

# 3. Navigating the tradeoffs of a green industrial reconfiguration

Energy dependencies are inevitable, and the EU must choose between proactively shaping them or accepting the consequences of inaction. Fears of job loss can be mitigated through strategic transition management and re-skilling programs, and job creation in new sectors in the context of broader regional economic diversification. An inward-only energy strategy is neither practical nor economically viable, making external partnerships essential. Green energy diplomacy and industrial partnerships are not just about securing the EU's energy future, they are an opportunity for building a sustainable and mutually beneficial economic relationship that supports industrial growth, job creation, decarbonisation, and stability on both continents. It is a strategic shift that would need to be managed responsibly for both regions to benefit.

Industrial partnerships are a strategic opportunity for Africa, large-scale industrial investment can help drive the expansion of Africa's renewable energy infrastructure, providing the financial stability needed to improve electricity access. Africa's industrial future should also not be dictated by external interests alone or merely left to markets to develop on their own, but driven by explicit African strategy and agency, and co-developed with partners where interests align. De-risking investment through targeted financial mechanisms, long-term offtake agreements, and policy coordination can help African countries overcome financing barriers and lower capital costs. For Africa, this is about leveraging international partnerships to strengthen and diversify Africa's industrial and economic base while simultaneously strengthening ties with their northern neighbours by supporting Europe's own energy needs.

This chapter looks at key concerns and (perceived) trade-offs for the EU and Africa. It should be noted that both regions can and will have other partnerships for green industrialisation, and the selection of opportunities for collaboration should first and foremost be rooted in mutual benefits.

# Overcoming inward-looking EU industrial policies

The concept of accepting energy dependencies in the EU can seem daunting, but the reality is that they already exist and are unavoidable in the future. Whether the energy source is fossil fuels (gas, oil, or coal), or renewables, in the short- and medium-term the bloc is unable to be entirely energy self-sufficient, without major consequences to its economy. The EU currently imports 85% of its natural gas, relying heavily on LNG from the US and Qatar and pipelines from Norway, Algeria, Libya, and Azerbaijan (Strategic Perspectives 2024a).

Fossil fuel dependence keeps European energy prices high and susceptible to price shocks. The most viable path forward for energy affordability and security, therefore, is renewable energy and decarbonisation. Unlike fossil fuels, renewable energy and intermediary products have diverse actors and ownership structures that are more open to the market, allowing for greater buyer power and security against political shifts. But even if the EU had unlimited time and financial resources, it may not be economically viable for the region to supply all of its renewable energy needs independently.

As a highly industrialised region, the EU faces geographical, permitting and zoning, and climate constraints that make large-scale renewable energy deployment a costly and time-consuming process. Multiple sectors, such as transport and residential power, will be competing for scarce clean energy. And some priority sectors (notably residential heating) will require that energy generation be located close to locations of use to avoid high transmission losses. That means the energy needed for industrial decarbonisation cannot be both fully and affordably met by renewable energy from domestic generation alone and will require imports of electricity, hydrogen, and low-carbon goods to complement domestic renewables.

As the EU seeks to secure its industrial transition through large-scale state aid, incentives, and protections, international partnerships can help maximise the efficiency of decarbonisation by complementing domestic efforts, managing competing demands on clean energy, and enabling a more strategic and targeted use of subsidies. By integrating external sources of low-carbon energy, hydrogen, and industrial goods, the region can reduce pressure on its own renewable capacity while ensuring that public support is directed where it delivers the greatest economic and climate impact.

# Interdependence without European de-industrialisation

A common argument against strategic industrial partnerships with third countries is that they would offshore industrial activities, lead to job losses and deindustrialisation in industries that are already struggling. This view overlooks important nuances. First, green industrial reconfiguration should only be considered if there is an economic and/or geopolitical rationale, such as in the value chains described above. Second, concerns over direct job losses often fail to consider the downstream job potential in green industrial supply chains as well as a counterfactual scenario in which the industry fails to decarbonise. Many energy- and carbon-intensive activities (e.g., ironmaking) are not labour-intensive, in absolute and relative terms, and employment in these sectors has been steadily declining. Overall, downstream manufacturing of metal products provides much higher employment relative to the value-added compared to the manufacture of basic metals (Eurostat 2025b).

For European industries to tap into the growing demand for low-emission products, and preserve and strengthen industrial competitiveness and employment in these downstream sectors, the entire supply chain must be decarbonised.

Third, industrial decarbonisation entails a fundamental reconfiguration of production processes, which often requires different skills. As new activities and inputs are integrated, not all the workers who powered conventional production processes would be immediately suitable to operate the green processes. Finally, as with all major economic shifts, the political challenge is to ensure that the transition is fair and socially supported, minimising disparities, as opposed to trying to stop an unavoidable transition in its tracks or leaving it fully to market forces. As Europe moves away from a carbon-centric economy, new jobs and reskilling efforts must be prioritised as part of this crucial challenge. Lessons can be drawn from past transition experiences, such as in the UK in the 1980's, where a plant facing closure offered its workers generous financial support and training to positive results - smoothing the transition for employees and avoiding much of the opposition from the broader community (Harris 2024).

This is not to say that job displacement concerns should be dismissed: industrial transitions always carry the risk of social disruption. It is important to note that such a transition is already occurring due to a decline in traditional heavy industries and rise in digital and advanced manufacturing. The key is not in preventing the change, but in being deliberate about the transition to create own advantages (rather than being merely on the receiving end of market-driven trends) and managing it responsibly to avoid the risks and costs of job losses in these industries and create future opportunities for those who are affected.

# Africa's energy poverty paradox: unlocking energy access through industrial demand

For African countries, the economic case for investing in green, energy-intensive industries is strong: largescale industrial operations are essential to make energy infrastructure investments viable across the continent. Yet investment in renewable energy for industrial use is often portrayed as being in conflict with efforts to address energy poverty, the argument being that industrial energy demand competes with the needs of underserved retail, and the more than 600 million people in Africa who still lack access to electricity.

This zero-sum framing, however, overlooks a more complex reality: unmet retail demand does not automatically translate into a bankable investment opportunity. Most off-grid and mini-grid energy solutions still rely on sustained public subsidies, concessional finance, or philanthropic support to be viable. Moreover, fragmented local currency-denominated retail demand is difficult to financially aggregate into a manageable, investable business case.

In contrast, industrial anchor demand can provide the scale, stability, and foreign exchange revenue needed to drive large-scale investment in renewable energy generation and grid infrastructure. Long-term, forexdenominated demand from industry can help derisk projects and justify investments that exceed the immediate needs of export-oriented production, enabling capacity to serve domestic industry and household demand as well. Strengthening utility balance sheets and expanding tax revenues through such investments also creates the fiscal space to support social objectives, including subsidised electricity access.

While industrial anchor demand is necessary, it is not a silver bullet for domestic and regional development or energy access. Targeted policies and regulations are needed to ensure industrial investments contribute to broader energy system development and inclusive growth. In this context, aligning industrial energy demand with local and regional manufacturing, for instance, using green ammonia for fertiliser production, can amplify both economic and social benefits.

# **Breaking with extractive legacies**

Many African countries aspire to grow their industrial and manufacturing sectors and output. Yet global demand for African products is mainly for primary materials, energy, and energy carriers, which can result in one-sided, extractive, and fragile relationships, reminiscent of colonial-era trade in precious metals.

This fear is not unfounded. In 2022, European countries suddenly needed to diversify their supply of natural gas. The sudden rush to source African gas and accelerate

African green hydrogen development to serve European energy security drove an increase in LNG investments in Africa and a somewhat chaotic 'hydrogen diplomacy' by EU member states driven by fear of industrial energy shortages (Medinilla and Dekeyser 2024). LNG investments in particular are often cited as potentially problematic, with a risk of oversupply as early as 2027 (Strategic Perspectives 2024b; Runciman 2024), which can lead to stranded assets and a slowdown of green transition (Vazi, Bridle, and Geddis, 2024).

While green hydrogen production holds the potential to be both more versatile and future-proof than fossil fuels, this outcome is not guaranteed. In the race to attract foreign direct investment and foreign exchange revenues, many African countries have built their hydrogen strategies around a narrow export-oriented model, often replicating the logic of fossil fuel markets. This approach risks instrumentalising African countries to meet external energy demands, reinforcing extractive patterns without a clear pathway to the broader economic diversification and structural transformation that is urgently needed. At the same time, global demand for green hydrogen remains far more uncertain than fossil fuels, further increasing exposure to market and investment risks.

While they risk it, hydrogen and green energy economies do not necessarily have to replicate extractive patterns. African countries should manage and balance three things to avoid this.

First, green industrial initiatives should be designed to serve both export and domestic or regional demand. For instance, green ammonia production could help reduce Africa's heavy reliance on fertiliser imports, while export demand can lower the cost of capital and strengthen the investment case. Diversifying markets and off-take agreements also reduces exposure to price and currency shocks and enhances local agency over industrial development.

Second, projects must be designed inclusively from the outset, with specific attention to environmental safeguards, job creation, skills development, technology transfer, and supporting energy access. A mutually beneficial relationship between industrial projects and local communities reduces operational and political risks, strengthens the social licence to operate, and increases the chances of project success and broader economic development outcomes (<u>Altenburg and Assmann 2017</u>; <u>UNEP 2018</u>; <u>Dare, Schirmer and Vanclay 2014</u>).

Third, African agency must shape industrial strategies, not just European or other global investor interests. Advancing African interests requires African leadership. National and continental strategies, such as Agenda 2063 and the green industrialisation vision outlined in the Nairobi Declaration, provide essential direction. Multi-stakeholder initiatives like the Africa Green Industrialisation Initiative (AGII), the Accelerated Partnership for Renewables in Africa (APRA), and the Alliance for Green Infrastructure in Africa (AGIA) are grounded in this vision, with active involvement from both African and international partners to support systemic, integrated implementation.

# Clearing the runway: de-risking African energy projects

Many African locations may have an intrinsic potential to be globally competitive in the production of green inputs and industrial products, yet in practice, the investment case is often weighed down by real and perceived risks. Today, the Weighted Average Cost of Capital (WACC) for African power projects is on average three times higher than in Western countries (<u>CATF 2024</u>), slowing down electrification and industrialisation.

Even if the intrinsic economics of clean energy and hydrogen suggest structural advantages and strong pull factors for investment in energy-intensive industries across Africa, renewable-rich countries often struggle to effectively leverage these assets in practice. For example, a recent study by Agora Industry (Agora Industry 2024) found that the country-specific WACC of hydrogen projects in Mauritania nearly doubles the projected cost per kilogram, making it more expensive than in Germany. This can make green hydrogen projects appear as a mere theoretical opportunity.

At the same time, the very industrial collaboration proposed can contribute to overcoming these drawbacks and address the risk perception premium for African economies. Industrial partnerships can help shape the financial structures that mitigate these risks and thus reduce the cost of capital. Mechanisms like long-term offtake agreements can reduce financial vulnerability, while securing stable supply chains, and forexdenominated demand can reduce exchange rate risks. From the European perspective, linking investment financing to procurement agreements not only ensures the stable supply of the EU green imports but also creates a viable alternative to the dominant global industrial competitors.

In the short term, however, this will require targeted de-risking measures and the creation of favourable conditions for commercial partnerships critical backbone infrastructure and industrial policies that prioritise green industrial value chains. It calls for a systemic approach that simultaneously addresses the business environment for large-scale industries, cross-cutting infrastructure challenges, and project-specific risks and opportunities. This is no small task, but the stakes are too high, and the opportunities too significant, to accept the status quo.

Countries like South Africa have made significant progress in shaping investments in clean energy, despite debt and energy crises surrounding the national utility ESKOM. Introduced in 2010, South Africa introduced the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) as an urgent intervention to increase the country's energy capacity (DMRE 2024). The programme attracts energy capacity development from the private sector, through market access and stable, long-term power purchase agreements (Eberhard & Naude 2017). By 2024, investments in Independent Power Producers (IPPs) had reached USD 15 billion, resulting in 95 renewable energy projects that collectively contributed over 7 GW to the national grid (Ramokgopa 2024). However, the framework faced critical challenges that initially slowed progress, including intermittent procurement windows and contract delays. Businesses and industries also encountered restrictions connecting their generation systems. Significant shifts in the execution of the framework, such as lifting licensing requirement thresholds, fast-tracking approvals and registration, and enabling more surplus resale to the grid, have accelerated South Africa's renewable energy development (Ramaphosa 2023). This highlights the critical importance of country-specific renewable energy policies and regulations in shaping the pace and scale of energy transitions. Tailored regulatory frameworks that address national contexts such as public finance limitations and private sector barriers, are key to unlocking the full potential and successful implementation of clean energy projects.

At the same time, many countries face formidable challenges and financing gaps. The financing gap for large-scale infrastructure projects in Nigeria remains substantial, with the country's power sector still deeply dysfunctional due to an unreliable grid, inefficient distribution companies, and ongoing liquidity challenges (World Bank 2023). Macroeconomic instability, including fiscal imbalances, rising debt, low revenues, and high inflation, further impede economic growth and development and complicate the task of scaling renewable

energy and green industries (<u>AfDB 2024</u>). However, the country has made notable progress, demonstrating the potential of the right policy measures and investment in transforming its energy and industrial sectors. One of the most significant advancements is the establishment of the Electricity Transition Plan implementation office, which has helped raise over USD 3.6 billion for projects in solar IPPs, gas flare commercialisation, and decentralised renewable energy solutions (<u>SEforALL n.d</u>).

Dismissing Africa on the basis of historical project development challenges ignores the real progress already underway in green industrialisation. Overcoming the challenges that have driven underinvestment in Africa is not only possible, but it is also firmly in the EU's longterm strategic interest.

The next and final chapter sets out a Call to Action for relevant stakeholders, outlining key priorities for coordinated, systemic action to make competitive interdependence a reality.

# 4. A call to action for industrial and energy cooperation

The changing economics of renewable energy are an opportunity to rebuild industrial partnerships between Europe and Africa. Targeted investments in clean energy and green industries in African countries can help accelerate decarbonisation, build bigger markets, and create a basis for an interconnected green industrial geography.

The time to do this is now. Europe's energy security will depend on its ability to access large amounts of clean energy, while its industrial competitiveness is tied to its ability to lead in low-carbon industries and clean tech manufacturing. African countries are not only well placed as renewable energy partners, but also offer a clear opportunity for green energy-hungry and hydrogen-

intensive industries, as they industrialise and integrate through the AfCFTA.

A collaborative approach that prioritises mutual green industrial growth and market access for African industries will benefit both Europe and Africa. The alternative scenario for both continents is less desirable. High European energy prices may lead to a further slow decline of key industries and a deepening dependence on China and the United States, while the absence of structural investments in African green industries will lead to a further gap between the continent and advanced economies and delay progress towards a clean industrial future.

# Changing narratives on green industrial value chains

The geopolitical and commercial case for green industrial partnerships may be clear, the way to get there is not. Opportunities for industrial cooperation between Europe and African countries are masked by European sensitivities around the relocation of industrial activities, but also African concerns around extractive trade relations and unmet prior investment commitments. In Europe particularly, the risk of an inward-looking industrial decarbonisation is strong. EU policies like the Clean Industrial Deal recognise the importance of international partnerships, but fall short of offering the tools to effectively redraw Europe's industrial value chains.

Unlocking this full potential requires reframing the discussion on industrial cooperation. In Europe, green industrial partnerships with African countries should be seen not as a threat to existing production centres, but as a strategic opportunity to enhance long-term competitiveness, supply chain resilience, and trade in green inputs. In African countries, green industrialisation should be designed and driven not as a reaction to global demand, but as a forward-looking development strategy—one that builds new capabilities, creates higher value-added industries, and taps into growing global demand for low-carbon goods and materials.

# Policy and investment levers for industrial partnerships

Realising green industrial partnerships between Europe and African countries takes more than aligned interests it requires concrete and coordinated action to create the right conditions for investment, innovation, and long-term cooperation. No single policy or initiative can unlock the full potential of green industrial partnerships. A wait-and-see approach will stall progress and risk a prolonged standstill. What is needed is a coherent strategy that simultaneously aligns trade, industrial policy, just transition, energy planning, climate ambition, and international finance. This chapter outlines three categories of policy, regulatory, financial, and diplomatic levers needed to move from ambition to implementation.

# Creating enabling conditions within and between African countries

For green industrial investment to take root in African countries, the domestic and regional environment must support long-term, large-scale capital deployment. This includes:

- Establishing investor-friendly policy frameworks
- Predictable and transparent policy environments are critical to attracting industrial investors. This requires country-specific reforms that may address land ownership, foreign exchange controls, visa regimes for skilled foreign workers, and strengthened rule of law and contract enforcement mechanisms.
- Accelerating energy system planning and regulatory reform - Green industrialisation depends on access to reliable and affordable energy. This calls for integrated energy system planning, both for grid-connected and captive power, and regulatory reforms that enable independent power producers (IPPs), leverage regional power pools, and support investment-friendly tariff structures. Planning for supply and generation must go hand in hand with industrial demand; doing one without the other will fail to create viable investment cases.
- Improving trade conditions for green industrial exports - African green industrial producers need predictable and transparent access to global markets, but also to regional ones. This requires streamlining export procedures, reducing non-tariff barriers, and ensuring alignment with international standards on technology and sustainability.
- Positioning green industrialisation as a core objective of the AfCFTA - The African Continental Free Trade Area (AfCFTA) is a unique lever for regional value chain development. Embedding green industrialisation into its protocols and implementation frameworks - particularly around investment, competition, and digital trade - can help align national strategies with a continent-wide industrial vision.

# Creating a European toolbox for Cross-Border Industrial Value Chains

Recalibrating the EU's policy instruments to achieve its climate targets through the support of cross-border green value chains will be critical. This includes:

- Aligning internal climate investments with a long-term vision of strategic interdependence Achieving the EU's climate targets will require large-scale deployment of renewables, climate-resilient infrastructure, and a strong internal market for low-carbon products. Europe must recognise that international cooperation is vital, not only for climate goals but also for resilient, competitive supply chains. Strengthening industrial partnerships with African countries will be key to building a low-carbon, future-ready economy based on mutual benefit and strategic interdependence.
- Ensuring meaningful market access for African green industrial goods - Predictable demand is essential for investment in Africa's green industrial base. This includes working towards stable off-take agreements and procurement mechanisms that offer confidence to African producers of low-carbon goods and their investors.
- Making CBAM a driver of international decarbonisation To achieve its external goals, CBAM must be implemented with transparency, predictability, and fairness, while addressing existing design gaps. Maintaining the current phase-in timeline and phasing out free allowances under the EU ETS, while including indirect emissions in all covered sectors will be essential, together with including upstream products like coke and limestone. Also, creating common grounds of understanding through links with European investments, knowledge sharing and information exchange can showcase the external benefits of CBAM-covered trade.
- Targeted investments to showcase the potential of cross-border value chains - Demonstrating what's possible through early flagship projects can

help build trust and momentum. Bilateral Clean Trade and Investment Partnerships can be a tool to structure such investments.

### Bridging internal and external industrial policies

- Europe's domestic decarbonisation efforts, through instruments like the Clean Industrial Deal, Steel and Metals Action Plan, but also the planned EU Competitiveness Fund, should be better connected to its external investment architecture.

### Defining a shared direction of travel

Long-term industrial partnerships require more than projects, they need a shared vision that gives direction to public and private actors alike. This includes:

- Setting a long-term ambition for green industrial cooperation - Political clarity and commitment are key to building momentum. High-level diplomatic moments, such as the EU-AU Summit, the G20, and COP30 in 2025, offer platforms to articulate a joint agenda and embed green industrialisation in the broader partnership narrative.
- Financial innovation and risk sharing Competitive green industrialisation in Africa hinges on access to affordable finance. De-risking instruments, blended finance models, and concessional capital should be scaled and targeted towards projects that build crossborder value chains and unlock private investment whilst green industrial investment must be considered in reforms to the international financial architecture, MDBs, and sovereign debt architecture.
- Harmonising standards and mutual recognition frameworks - Harmonised standards for technology and sustainability and metrics for "green" goods are essential to ensure African producers can compete in global markets. These standards should be set in a coordinated manner, based on strong MRV systems and recognising the unique conditions of developing countries while maintaining the standards' high environmental performance.

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# **Endnotes**

- <sup>1</sup>Throughout this paper, references to "Europe and Africa" (or "European and African countries") are used as a shorthand to describe both individual countries and regional groupings, as well as their formal institutions. This includes, but is not limited to, the European Union (EU), African Union (AU), and other regional organisations. While the level of political and economic integration varies between countries in these regions, this terminology is intended to reflect the broad range of actors and institutional configurations involved in shaping industrial and climate cooperation across both continents.
- <sup>2</sup> For many industrial products, the low-emission product currently carries a 'green premium' i.e., it is more expensive than the traditionally produced higheremission product. As the EU incorporates carbon pricing (through the EU Emissions Trading Scheme or ETS and CBAM), and buyers increasingly commit to low-emission products (such as carmakers committing to green steel), the EU can pioneer off-take for green industrial products. This is particularly important for investment in African green industrial infrastructure: the comparatively higher upfront capital expenditure of renewable-powered industrial processes hits African investment cases heavily because of the higher cost of capital.
- <sup>3</sup> Retail energy is supplied to individuals, households, and communities, and differs in scale, usage, and price from industrial energy intended for heavy industry
- <sup>4</sup> For example, South Africa has made repeated efforts to integrate African concerns into the CBAM's design, however, the EU's responses have largely been limited to offering financial support without significant adjustments to the framework that account for the unique challenges faced by the country. When they spoke to the EU about whether African countries could be excluded or have a longer transition period, it was unlikely that this could be possible. (Discussed in consultation for the recent Convening on Carbon Pricing, CBAM, and the Green Transition organised by J-PAL, MIT, UCLA, University of Pretoria, and CAP-A)
- <sup>5</sup> Aluminium: more than 70% of emissions are associated with electricity coming from the production process (International Aluminium, 2024). Electrolytic hydrogen: almost the entirety of emissions associated with the production of electrolytic hydrogen result

- from the electricity consumed in the process (IEA, 2023). Although indirect emissions for these products (aluminium, hydrogen and iron/ steel) are currently not included in CBAM, the European Commission is tasked under Article 30 of the CBAM Regulation to assess a possible extension of the CBAM scope to indirect embedded emissions.
- <sup>6</sup> At the recent Convening on Carbon Pricing, CBAM, and the Green Transition (organised by J-PAL, MIT, UCLA, University of Pretoria, and CAP-A), Global South policymakers, many of whom were African, voiced these concerns and plans.
- <sup>7</sup> ETS industrial emissions from iron and steel industry plants, attributing emissions from the combustion of blast furnace or coke oven gases from some power stations, and emissions from coke ovens, ferro-alloy manufacturing, and the production of lime used for steelmaking.
- <sup>8</sup> Direct contribution to the standard 'gross value added' measure of EU-wide production.
- <sup>9</sup> Traditional Blast Furnace (BF) ironmaking and Basic Oxygen Furnace (BOF) steelmaking processes, jointly referred to as BF-BOF steel production
- <sup>10</sup> The natural gas DRI-EAF process alone can reduce emissions by up to 50% when compared to BF-BOF steel production and up to 80% when using green hydrogen for ironmaking (Lot and Røyne 2024), while the EAF steelmaking requires renewable energy to effectively decarbonise.
- <sup>11</sup>See Chapter 3 for detailed discussion of this energy access paradox and the productive and impactful role that well-planned industrial anchor demand can play
- <sup>12</sup> The Simandou project in Guinea has a complex ownership structure including significant Chinese ownership. At full capacity, the annual output is expected to be around 120M tonnes of high-quality iron ore (ideal for DRI), and production is expected to start as early as 2025. (African Business, 2024)
- <sup>13</sup> In Morocco, another leading flat steel producer recently announced plans to launch a green steel production project using green hydrogen to reduce carbon emissions (Liu 2025).

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### **Notes**

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Africa-Europe Foundation (AEF) is the only organisation of its kind shared equally by stakeholders from both Africa and Europe. Co-founded in 2020 by the Mo Ibrahim Foundation and Friends of Europe in partnership with ONE and the African Climate Foundation, AEF is an independent platform for multi-stakeholder dialogue, frank debate and strategic analysis that brings together experts and leaders from diverse organisational settings to strengthen the partnership between our two continents.

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Bellona Europa is an international, independent and nonprofit organisation that meets environmental and climate challenges head on. They are solutions-oriented and have a comprehensive and cross-sectoral approach to assess the economics, climate impacts and technical feasibility of necessary climate actions. To do this, they work with civil society, academia, governments, institutions, and industries.

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