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Navigating green economy and development objectives: Opportunities and risks for African countries

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African countries and economies find themselves at the centre of competing demands and narratives around the global green transition. The continent is rich in renewable energy sources and the minerals needed to power a global shift to clean energy while reducing emissions. On the other hand, avoiding greenhouse gas emissions is seen by many as a risk to African economic development and akin to rich countries 'kicking away the ladder'.

This paper identifies and discusses the dilemmas African countries face in achieving 'greener' economic development pathways. Comprised of four policy notes, the paper discusses ways to navigate the conflicting narratives on an African 'just (energy) transition' and the challenge of economic development; the increasingly complex effects of external climate regimes on African economies; the opportunities and risks for African countries linked to the energy transition and green industrial development; and the political economy dynamics and complexity of green transition in practice.

The paper concludes with seven key findings and proposes emerging policy research and engagement opportunities for policymakers and their partners seeking to promote green trade and transport in Africa.

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Acronyms

AfCFTA	African Continental Free Trade Area
AU	African Union
CBAM	Carbon Border Adjustment Mechanism
CBI	Centre for the Promotion of Imports
DFI	Development finance institution
DRC	Democratic Republic of the Congo
DRI	Direct-reduced iron
EAC	East African Community
EASC	European Association for Supervision and Coaching
ECDPM	European Centre for Development Policy Management
EIB	European Investment Bank
ETS	Emissions Trading System
EU	European Union
FFI	Fortescue Future Industries
GDP	Gross domestic product
GHG	Greenhouse gas
ICD	Inland Container Depot
IEA	International Energy Agency
IRENA	International Renewable Energy Agency
KLTN	Kenyan Logistics and Transport Network
KRC	Kenya Railways Corporation
KTDA	Kenya Tea Development Agency
LMIC	Low- and middle-income country
MDB	Multilateral development bank
MGR	Metre Gauge Railway
MoU	Memorandum of understanding
MSME	Micro, small and medium enterprise
NCTTCA	Northern Corridor Transit and Transport Coordination Authority
NDC	Nationally determined contribution
NOx	Nitrogen oxides
R&D	Research and development
SCT	Single Customs Territory
SCZONE	Suez Canal Economic Zone
SGR	Standard Gauge Railway
SME	Small and medium-sized enterprise
SPS	Sanitary and phytosanitary
TEU	Twenty-foot Equivalent Unit
TMEA	TradeMark East Africa
TVET	Technical and vocational education and training
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change

UNFSS	United Nations Forum on Sustainability Standards
US	United States
WEF	World Economic Forum

Introduction

African countries and economies find themselves at the centre of competing demands and narratives around the global green transition. The continent is rich in renewable energy sources and the minerals needed to power a global shift to clean energy, with several countries positioning themselves to take advantage of new opportunities and attract investment. At the same time, reducing, or avoiding greenhouse gas (GHG) emissions is also considered by many to be a risk for African economic development. As late industrialisers, African countries contribute less than 4% of global GHG emissions, and are now faced with increasing pressure to forgo a fossil fuel-driven industrialisation pathway. Some see this as rich countries 'kicking away the ladder' (Walsh et al. 2021) that they themselves used to develop, denying the continent a chance to leverage its own resources to catch up to the industrialised parts of the world.[1]

This paper identifies and discusses the dilemmas faced by African countries in achieving 'greener' economic development pathways.[2] It looks at the challenges of economic development in a carbon-constrained environment as well as the opportunities for African economies in a global green economy. The paper is formed of four brief notes that seek to lay out and discuss ways to navigate:

1. the conflicting narratives on an African 'just (energy) transition', and the challenge of economic development in a carbon-constrained environment;
2. the increasingly complex effects of external climate regimes on African economies;
3. the opportunities and risks for African countries linked to the energy transition and green industrial development; and
4. the political economy dynamics and complexity of green transition in practice.

The following emerge as key takeaways from the four notes:

1. Narratives and perceptions are important - framing the green transition as offering business opportunities is likely to get most traction both internationally and at the enterprise level.
2. Even if climate change mitigation and adaptation objectives can be read differently, market regulations cannot - exporters in numerous sectors will need to adapt their production techniques and traceability to maintain market access to the EU, and increasingly to other markets.
3. Governments and private sector actors investing in and adopting sustainable, low-carbon paths may take advantage of niche markets in line with EU regulations, and what will increasingly become global norms.
4. External finance is increasingly going 'green' - first movers stand to gain most, whether between countries or in terms of companies/firms/sectors within them.
5. Structural reasons and political economy dynamics will define which countries can be first or even second movers, requiring support for others, that is adapted to context.

[1] The original idea of 'kicking away the ladder' comes from Ha-Joon Chang's discussion of how developed economies used trade protectionism to develop, before promoting trade liberalisation (Chang 2003).

[2] This paper is based on a desk review carried out in the second half of 2022, as well as a series of interviews with Kenyan stakeholders and experts carried out in November 2022.

6. Addressing these multi-level, complex challenges requires 'systems thinking' within and between countries to take account of the interconnections between different policy areas.
7. Applying political economy analysis to green transition processes will help systematise and bring out contextual knowledge to help:
    - Understand the varying interests, incentives and power relations that underpin the challenges and opportunities for green transition, whether in Europe or Africa
    - Understand the scope for regional and national political alignment around 'green' objectives (even if implies new winners and losers)
    - Position economies vis-à-vis international regimes, helping firms and countries therefore decide on the balance between risky bets and long-term strategy
    - Find ways to better connect existing progressive policy space and private demand/business opportunities that support a green transition
    - Inform a spatial approach by helping to unpack regional politics, interests and incentives around key sectors like agro-processing manufacturing, transport, and the wider industrialisation dynamics.

The remainder of the paper is structured around four policy notes. Note 1 unpacks African narratives on climate and development into four broad categories, arguing for the need to avoid the extremes in looking for green transition opportunities, even if these can help shape international negotiations. Note 2 discusses how global climate narratives are being translated into trade regulations, looking particularly at the EU and what this means for African economies. Note 3 then discusses the factors that enable countries to navigate international climate regimes, to manage trade-offs, and to benefit from new opportunities both within and between countries. Note 4 provides a case study to illustrate the importance of understanding political economy dynamics between and within states to promote the green transition, zooming in on the northern corridor in East Africa. Drawing on these, the final section provides the conclusions and offers brief implications for policymakers and their partners seeking to promote the green transition.

1. Unpacking African narratives on climate and development

Economic development through increased productivity, trade and market integration have historically gone hand in hand with increased greenhouse gas (GHG) and other emissions. Simply put, more production, more trade, more emissions. While that has been the case, Africa as a whole, accounts for less than 4% of global GHG emissions, with most countries' contributions being negligible on a global scale.[3] And as the world's biggest emitters are seeking to reverse course, some fear that industrialisation and economic development in Africa will lead to a dramatic increase in GHG emissions (Moss and Ramachandran 2021).[4] Even without following the same carbon-intensive path as industrialised countries, rising trade and industrialisation as foreseen under the African Continental Free Trade Area (AfCFTA), is likely to increase GHG emissions from current levels. That raises questions around how these can be

[3] Africa's GHG emissions are highly concentrated in South Africa, Egypt, Algeria, Nigeria and Morocco, which account for over 75% of the continent's total GHG emissions (Ayompe et al. 2021).

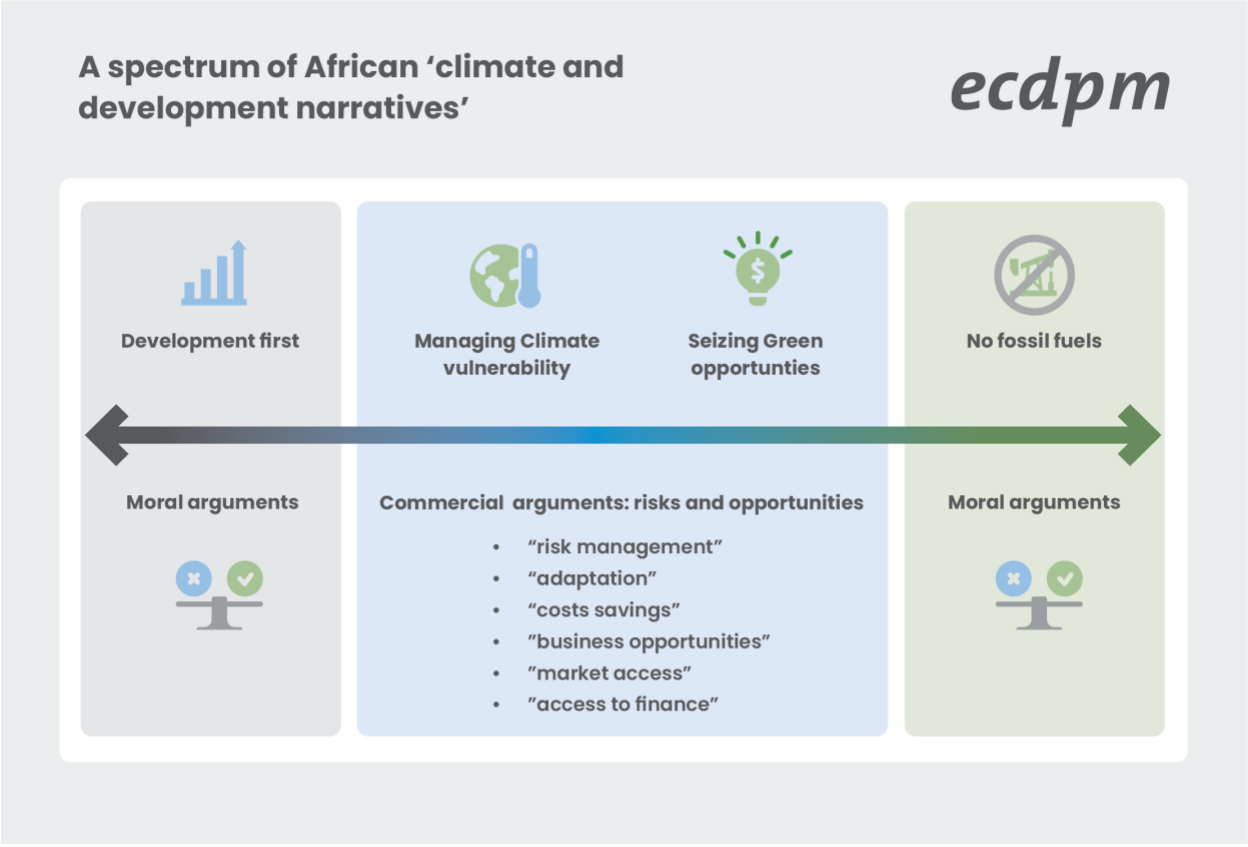
[4] The relationship between economic development and environmental quality follows an inverted-U whereby carbon emissions rise with economic development up to a certain point before declining, also called the Environmental Kuznet curve (Stern 2018). This is also shown to be the case with industrialisation - technology-intensive manufacturing is associated with lower emissions (Avenyo and Tregenna 2022). However, even as there is evidence that every new wave of industrialisation and development peaks at a lower level of carbon emissions, thanks to renewable energy and energy savings (Burn-Murdoch 2022), industrialisation in Africa does imply an initial increase in emissions before they start declining.

reconciled with greener industrialisation objectives and what that means for policymakers and their international partners.

COP27 discussions in Sharm-el-Sheikh in November 2022 underlined the different positions of developed and developing countries regarding the responsibility for reducing and limiting greenhouse gas emissions. The African Union (AU) and several African leaders advocated strongly for the use of Africa's fossil fuels to kickstart Africa's industrialisation and economic development while pointing fingers at European hypocrisy on fossil fuels, especially following the Russian war in Ukraine (AU 2022; Museveni 2022; Buhari 2022; Rolley 2022).

Africa's right, and urgent need, to develop and industrialise is the starting point for all African leaders, yet African positions on the green transition and climate action are increasingly diverse. They cover a wide spectrum, ranging from an unapologetic 'development first, climate later' to a 'generational case against fossil fuels'. These four key narratives, illustrated in Figure 1, are discussed below.

Figure 1: A spectrum of African 'climate and development narratives'



Source: authors

1) **'Development first, climate later'** is a common narrative, based on the moral argument that African economies have not contributed to global greenhouse gas emissions, and should not be subject to the same mitigation standards as other parts of the world. It argues for the use of Africa's fossil fuel reserves to jumpstart its own industrialisation, and for channelling external investment into Africa oil and gas without export barriers for African industries. Leaders of emerging fossil fuel producing countries, including Mozambique, Uganda, Senegal, and the Democratic Republic of the Congo (DRC), all used elements of this narrative to call for a 'fair energy transition' at COP27, that enables them to develop their fossil fuel

economies in the medium term, while balancing environmental and climate protection in the longer term (Rolley 2022; Museveni 2022; IISD 2022; Chakamba 2022). The 'development first' narrative is further supported by estimates by the United Nations Economic Commission for Africa (UNECA) and the International Energy Agency (IEA) that the effects of using African natural gas on global greenhouse gas emissions would be small (Songwe et al. 2022; Chakamba 2022).

2) **'Managing climate vulnerability':** This narrative is linked to the observation that African countries are vulnerable to climate change and extreme weather events, and an increasing concern with global inaction on climate change mitigation. It argues that African economic development and industrialisation will need to take account of, adapt to, and mitigate changing climatic conditions that are already felt through floods and droughts and their impacts on agriculture and people. But it is mostly concerned with securing financial support for climate change adaptation and the loss and damage caused by natural disasters, rising sea levels due to ongoing and future climate shocks. This requires significant investments in both resilience building and climate change adaptation, not least through a future loss and damage fund, as agreed at COP27. Africa's distinct climate vulnerability also calls for closer alignment of climate and industrialisation agendas to enhance adaptation capacity in the productive and value added sectors (Said et al. 2022)[5].

3) **'Seizing green opportunities'** The green transition may offer opportunities for African countries. Several countries and industries are adopting a more optimistic approach that argues that African economies can leverage their renewable energy potential and mineral resources to play a lead role in a global green transition. The premise of this narrative is that the technology is available to enable African countries and particularly low- and middle-income countries (LMICs) to leapfrog from a fossil fuel based economy to cleaner alternatives (Walsh and Oguntoye 2022). Common commercial opportunities that countries see are linked to renewable energy production, both for exports and the production of green hydrogen. Countries like Kenya, Morocco and Egypt take this narrative further by presenting their countries as prime destinations for future investment in low-carbon industrial applications, and using their existing renewable energy capacity to promote external investment in clean energy and green hydrogen for powering industry transition, export to Europe, and green ammonia for decarbonising shipping (Ruto 2022a; Anouar 2022; Godinho and Eberhard 2019; Medinilla and Sergejeff 2023).

4) **'No fossil fuels':** While particularly associated with external, particularly European narratives, there is an increasingly vocal climate action community in Africa that argues a moral case against the development of Africa's fossil fuel resources. At COP27, this was the call of the Don't Gas Africa campaign, led by African climate groups. Some even called the AU's pro-fossil fuel Common Position on Energy Access and Just Energy Transition (AU 2022) a betrayal of the African people (Adow 2022). Youth-led climate groups at COP27 made this into a generational struggle, calling out the long-term irresponsibility of future fossil fuel developments. The anti-fossil fuel narrative is supported by analysis that questions the medium-term commercial viability of large-scale investment in emerging African natural gas for exports and domestic consumption, especially as the demand from industrialised countries is set to fade out or peak in the coming decades (Anwar et al. 2022).

All four of these narratives coexist in the public discourse of African leaders and policy makers. Though often disconnected from societal and firm-level interests, the more extreme, moral arguments (development first vs. no fossil fuels) play an important role in climate negotiations and arguably helped produce the breakthrough agreement on establishing a funding mechanism for loss and damage funding at COP27, even if the specific scope, parameters

[5] In this regard, the G7, under the German leadership, launched the Global Shield against Climate Risks to protect developing countries governments, citizens and businesses from extreme climate weather events, mainly through insurance and guarantee type of mechanisms (BMZ 2023).

and modalities are yet to be defined (UNFCCC 2022). In some cases, however, those positions can polarise debates, emphasising tensions over opportunities. This is especially the case on energy and fossil fuels.

A less dogmatic approach acknowledges that there will always be an inherent tradeoff for African economies that seek to further industrialise in the 2020s and 2030s. This will mean balancing industrialisation agendas with the costs of climate change adaptation and the need to develop a more climate secure pathway. African economies may also benefit from greener industrialisation, building on cheap renewable electricity if they are able to position themselves in emerging green value chains, both in agricultural products and manufacturing (Triki and Said 2021; Jayaram et al. 2021). Framing the green transition as a matter of business opportunities, market access, costs savings, access to finance, and/or risk management, is more likely to get more traction beyond the direct climate action community, and offers more options to develop politically-informed, context-appropriate approaches to green economy transitions.

The AfCFTA and regional integration agendas may also help steer a more opportunity-focused approach to the climate agenda by facilitating more efficient (and therefore lower emission) transport systems serving larger markets and overcoming persistent trade barriers that stand in the way of scaling local productive capacity. While implementing the AfCFTA and regional trade agreements is subject to competing interests within and between states that can undermine their use (e.g. Apiko et al. 2020), the ability of African countries to take a more optimistic approach to the green transition also depends on a multitude of domestic structural, political, and economic factors, not least their existing energy assets (fossil fuel reserves, renewable energy potential), existing industries and exports. The importance of understanding these interests and incentives comes back as a common theme in the following three notes.

2. Navigating external climate regimes: risks and opportunities for African economies

African economies will increasingly be subject to climate-related regulations. These 'external climate regimes' include trade policies, climate and environmental regulations that will increasingly affect production and trade flows, as well as a growing body of international standards.[6] All of these will shape the supply of and demand for African goods and services. The range of external climate regimes goes from hard regulations that directly link market access to specific production criteria, to more indirect consumer dynamics that shape the incentives of African governments and firms to pursue 'green' and 'just' production of goods and services. While this is not new - since the 2019 European Green Deal, the EU has pursued an increasingly proactive and some say aggressive externalisation (Cramer 2022) of its own climate objectives through trade and economic means - its effects will increasingly be felt by African economies and producers.

The EU is Africa's largest trade partner, accounting for some 33% of African exports in 2020 (Eurostat 2022). EU decisions, standards and regulations define both the quantity and nature of these African exports to the EU and will increasingly be part of the *de facto* operating environment of many African businesses and economies. As climate-related standards and regulations increasingly shape export markets, the way in which countries and businesses navigate these regimes will create winners and losers within and between countries. This note discusses these evolutions, highlighting both the challenges and potential opportunities they bring.

[6] Most of these regulations are not yet implemented - and in some cases are still at proposal stage. They have been included in this analysis given the high probability of their adoption in the short-term.

2.1. An evolving EU external climate regime

Market regulation is a key role of the European Union, often with external implications - the so-called 'Brussels effect' (Bradford 2012). The combination of European sustainability regulations and consumer preferences are seen as creating new barriers for exporters, and raising the costs of production. While not explicitly intended as protective measures to safeguard the competitiveness of EU domestic producers, so-called 'precautionary measures' aimed at protecting the environment and the health of consumers can play that role, due to the higher production and compliance costs they imply (Lamy 2020). The EU single market has historically led the introduction of quality and safety standards for food and agricultural products worldwide, often explicitly using its market power to seek alignment by global trading partners.

As part of the European Green Deal, in 2020 the EU launched the 'Fit for 55' package, a comprehensive set of climate-related policies, measures and instruments aimed at cutting greenhouse gas emissions and putting the EU on a path to climate neutrality by 2050. While primarily focused internally, it contains both an implicit and explicit external dimension that will affect African economies.

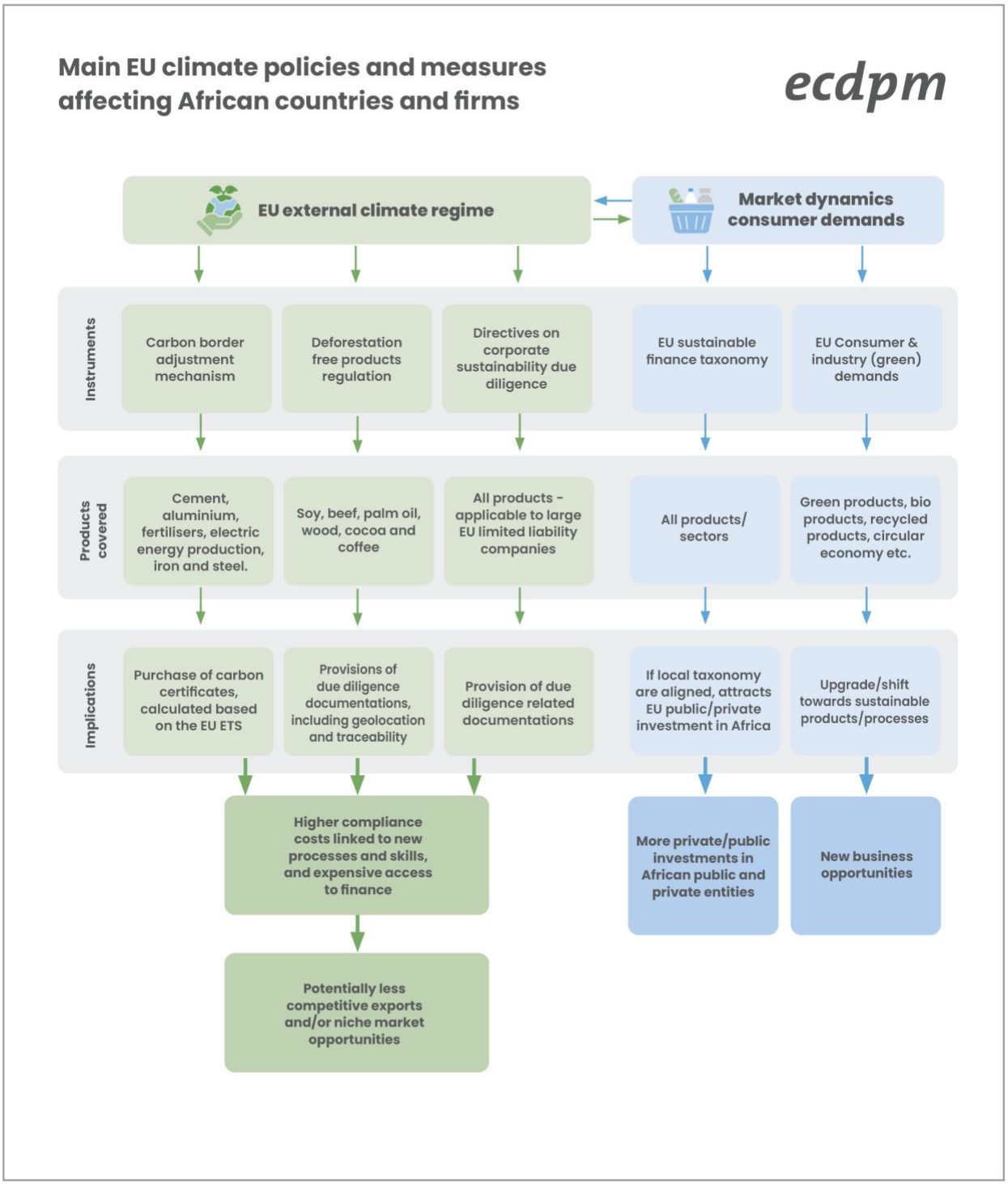
The most controversial external component is the Carbon Border Adjustment Mechanism (CBAM), discussed below. But that is just one example of how the EU is externalising its own green transition. Figure 2 presents a selection of EU regulations and consumer market dynamics that are likely to affect Africa-EU trade flows in a range of products in the coming years. It highlights the combination of regulations and the indirect effects of financing and consumer demand that will shape current and future demand for African products, thus offering business opportunities for some European and African businesses, while potentially fading out demand for other products.[7]

Though the main new external EU climate regulations are yet to come into force, the timelines are short as presented in Figure 3. Most rules also have an explicit option for further expansion. CBAM, for example, will initially cover five sectors and only scope 1 emissions, but after an initial transition period may be extended to other sectors, and once a method is designed to do so, cover indirect emissions (European Parliament 2022).[8] The European parliament in particular advocated strongly for including organic chemicals, hydrogen and polymers, and indirect emissions in this round (Titievskaia et al. 2022). Firms and governments must therefore already prepare for such regulations widening to other sectors, and deepening in scope.

[7] 92% of retailers in five major European economies "expect sustainable product sales to increase in the next five years", for example (Woolfrey and Karkare 2021).

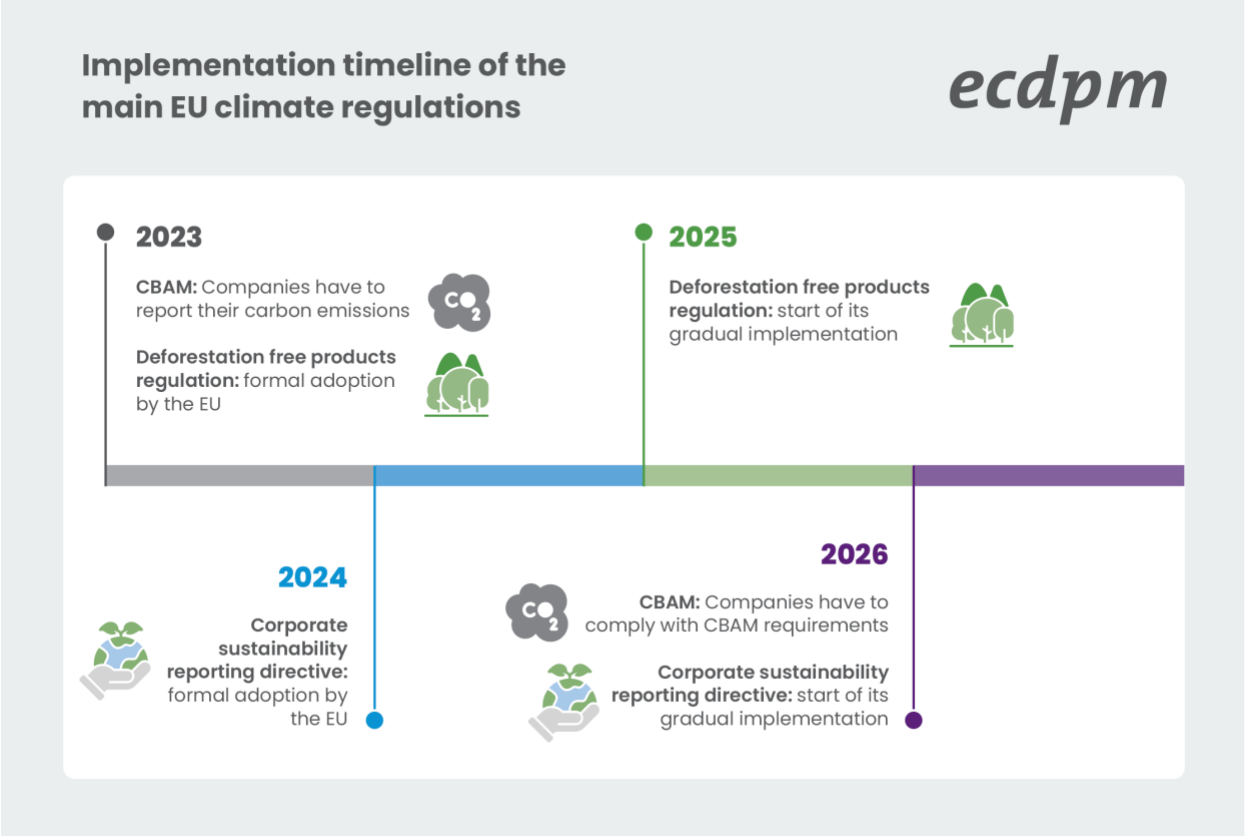
[8] The emissions targeted by CBAM will be those including under scope 1 - direct emissions, i.e. those from company-owned and controlled resources. Scope 2 emissions relate to indirect emission from the consumption of purchased electricity, steam, heat and cooling. Scope 3 emissions include all other indirect emissions from the value chain of the reporting company, including both upstream and downstream emissions (such as transport).

Figure 2: Overview of the main EU climate policies and measures affecting African countries and firms



Source: Authors

Figure 3: Implementation timeline of the main EU climate regulations



Source: Authors

The following takes a closer look at the CBAM, the EU's Taxonomy for Sustainable Activities, and the new Regulation on Deforestation-Free Supply Chains. These innovations have been the subject of controversy but are often also misunderstood among both African and European policy makers.

2.2. Externalising Emissions Trading: the EU Carbon Border Adjustment Mechanism (CBAM)

The CBAM is an external counterpart to the EU's internal Emissions Trading System (ETS), in place since 2005. Its main purpose is to limit 'carbon leakage' caused by the ETS, where production of carbon intensive products, particularly heavy industry, might relocate to jurisdictions with less stringent emissions regulations and/or a lower price of carbon. The CBAM, which is currently in late stage negotiations between the European Commission, Council and Parliament, will introduce an emissions-based levy on the imports from outside Europe of iron and steel, energy, cement, fertilisers, aluminium and hydrogen.[9] The levy is intended to result in an equivalent carbon price to that

[9] The *CBAM certificate* entails carbon pricing calculated on the basis of the EU European Union Emissions Trading System (ETS) which currently prices at €80 per metric ton of CO2 equivalent emissions. The emissions targeted will be those including under scope 1 - direct emissions, i.e. those from company-owned and controlled resources. Scope 2 emissions relate to indirect emission from the consumption of purchased electricity, steam, heat and cooling. Scope 3 emissions include all other indirect emissions from the value chain of the reporting company, including both upstream and downstream emissions (such as transport).

under the (internal) Emissions Trading System. As of 2023, importers will only be obliged to *report* on carbon content, with the first payments foreseen in 2026. Additional costs may trickle down to exporters to the EU, depending on the ease with which they can shift production towards greener, less carbon intensive, supply chains and/or pass on costs to other parties, thus depending on power dynamics within the value chains.

The potential widening of the CBAM's scope suggests that African governments and their private sectors would benefit from familiarising themselves with its objectives, logic and implementation. This will help to anticipate i) the application of CBAM in other industries where the EU's internal emissions trading system already applies (oil refineries, steel works, and production of metals, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals, commercial aviation etc.); and ii) its scope expansion to indirect emissions, i.e. scope 2 and 3 emissions which includes inter alia electricity and transport emissions respectively), which will raise the cost of the CBAM certificate.

While the total value of African exports covered by CBAM may be relatively low, they account for a large share of the total exports of some countries to the EU, reflected in Table 1. North-African exports, and particularly those from Egypt are likely to be most affected by the mechanism - iron and steel and fertilisers accounted for 9.9% and 8.3% of Egyptian exports to the EU in 2021 (Eurostat 2022). Zambia and Zimbabwe's iron and steel exports account for 30,8% and 14,9% of their total export value to the EU in 2021. Similarly, Mozambique's aluminium exports accounted for almost 50% of its total exports to the EU. Recent studies concluded that Mozambique GDP may contract by 1.6% to 2.5% if demand follows the price change brought by the introduction of the mechanism. A recent paper from the South African Presidential Climate Commission estimates that the CBAM could affect 28,000 jobs and $2bn of South African exports of iron and steel to the EU (PCC 2023). Among East African Community (EAC) countries, Kenya's cement exports may be affected by the introduction of CBAM, while the potential for widening its scope suggest that the EAC and other African countries will have to follow its evolution and the envisaged revisions over time.

Table 1: Top 10 African countries' exporters to the EU per products in 2021

	Top 10 African exporters of CBAM covered products			
#	**Iron and steel**	**Fertiliser**	**Cement**	**Aluminium**
1	South Africa	Egypt	Algeria	Mozambique
2	Egypt	Morocco	Morocco	South Africa
3	Algeria	Algeria	Tunisia	Egypt
4	Tunisia	Tunisia	Egypt	Morocco
5	Libya	Libya	South Africa	Cameroon
6	Morocco	South Africa	Kenya	Ghana
7	Zambia	Namibia	Ghana	Tunisia
8	Zimbabwe	Nigeria	Ivory Coast	Mauritius
9	Nigeria	Madagascar	Senegal	Nigeria
10	Benin	Mauritius	Cameroon	Libya

Source: Based on Eurostat COMEXT database (2022)

Although developing countries, and some African countries will be affected, they are not the primary target of the mechanism, given their fairly limited industrial exports, compared to the US, China, India, Russia, Turkey and other major industrial partners[10]. The mechanism is rather intended to incentivise more ambitious carbon pricing systems worldwide. Any equivalent carbon price that is collected locally will be deducted from the mechanism, while discussions on how CBAM revenues will be reinvested (externally) are still ongoing. The idea is that the CBAM seeks not to be a punitive tax, but a mechanism that can help create a 'de facto' climate club, of economies that impose similar standards to their industries, modelled on the EU's own ETS (Szulecki et al. 2022). This may incentivise African partner countries to reflect more systematically on the broader concept of a carbon market, an idea that has gained momentum as reflected by the introduction of the Africa Carbon Markets Initiative at COP27.

The CBAM transitional phase[11] from 2023-2025 is very short, and the eventual pace of the mechanism will be aligned with the phase-out of free allowances under the EU ETS. Yet it is clear that some countries' private sectors are better positioned to respond to the CBAM than others, with significant investments in decarbonising production that can give them a competitive advantage. Morocco, for example, is investing heavily in decarbonising its fertiliser industry which may boost future exports to the EU and mitigate the potential increase of transaction costs relating to CBAM implementation (see Note 3).

[10] Initial opposition to the scheme centred around the interests of the BRICS/BASIC countries, the US and Japan (Szulecki et al. 2022).

[11] According to the December 2022 provisional political agreement, first reporting obligations would start in October 2023, and full implementation in January 2025 (European Parliament 2023a).

2.3. Countering greenwashing: the EU taxonomy for sustainable investments

The EU's internal and external transition ambitions rely heavily on its ability to regulate, but also to leverage public and private investment. To give 'green' a predictable and consistent meaning, the EU has developed a taxonomy, an instrument geared towards defining what can be counted as a 'green investment' and avoiding 'greenwashing' by self-defined 'green' projects. This taxonomy is a classification system[12], defining a list of environmentally sustainable economic activities, thus helping investors identify responsible investment opportunities through a common set of standards and reporting systems, and incentivising companies to become more climate-friendly to attract financing. The EU taxonomy is also what defines the EU's understanding of natural gas as a 'transition fuel'. In a highly controversial decision following the war in Ukraine, the Commission issued a supplementary delegated act that includes natural gas and nuclear energy under certain 'strict conditions' in the EU's taxonomy (European Commission 2022a)[13].

The taxonomy seeks to provide uniform criteria for EU investments, but it also seeks to set a minimum standard that can be replicated or adopted internationally. By applying the EU taxonomy or having an equivalent, African countries will facilitate and attract investment from EU and multilateral development banks, development finance institutions and private investors, including but not restricted to impact and ESG investors where there is a development added-value. So far, South Africa is the only African country to have developed its own taxonomy, which is largely in line with that of the EU, to facilitate EU investment in the South African green and sustainable economic growth. The merits of a green taxonomy are also discussed in Kenya in the context of the country's green fiscal policy. However, the EU taxonomy does not take account of African countries' economic, social, geographic and climate contexts and needs to be adapted to reflect local priorities and preferences. For instance, the South African taxonomy social safeguards (labour standards) are based on domestic law and jurisdiction and not international conventions, while the scope of climate mitigation does not cover fossil fuel-related activities and activities related to electricity generation from natural gas, meaning that investments in these fields cannot qualify as "green" (National Treasury 2022). In fact, the South African treasury is also considering a just transition taxonomy given the current reliance of the country on fossil fuels - which would provide for investment in gas exploitation (Gambetta 2022).

2.4. Environmental action through product standards: the EU regulation on deforestation-free products

The EU is increasingly using product standards to influence environmental outcomes beyond its borders. An estimated 10% of global deforestation between 1990 and 2008 was linked to European demand for goods and services. To address this, the European Parliament and the Council reached a provisional agreement on a new Regulation on Deforestation-free Supply Chains in December 2022 (European Commission 2022b; European Parliament 2023b).

The draft regulation targets six main products: soy, palm oil, coffee, beef, wood and cocoa, as well as some of their derivatives such as leather, chocolate and furniture. It sets mandatory due diligence requirements for the private sector operating in these sectors, though these will vary depending on the level of risks associated with given regions and countries. Like with CBAM, the list of targeted products may be further extended in the future. Producers will be required to collect the geographic coordinates of the land where the commodities were produced, to prove that

[12] The taxonomy is based on an EU regulation that is detailed through European Commission delegated acts, the first of which was a ca. 350 page document with technical screening criteria (European Commission 2021a).

[13] This decision was welcomed in African energy circles, as the EU 'changing course on natural gas', however its effect outside of the EU will likely be limited.

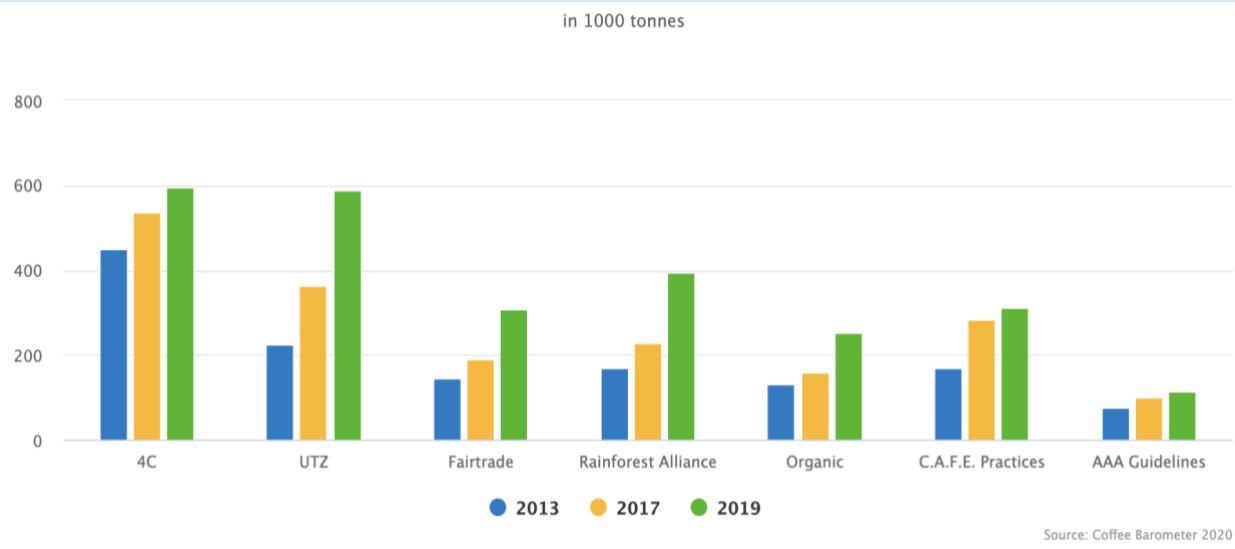
(1) it was not logged or degraded after 31 December 2020, and (2) that they fully complied with the relevant laws of the country of production.

Compliance with the regulation is expected to bring additional production costs. How these are absorbed within the value chain - whether by the importer, the supplier and/or the final consumer - will depend on the power dynamics within the value chain, and the extent to which importers are able to switch to lower-risk value chains in other countries (Lee at al. 2010, FAO 2014). Although micro and small enterprises will enjoy a longer adaptation period, as well as other specific provisions (EC 2023), if importers fail to demonstrate compliance with the requirements, the products will be prohibited from access to the EU market.

Box 1: Evolving consumer demand and the rise of 'soft standards'

Hard standards like the regulation on deforestation-free products also reflect a gradual, but steady shift of citizen and consumer demand towards more sustainable products in Europe and the Global North in general. Global sales of coffee certified to be both Fair Trade and organic grew by 5.5% per year between 2015 and 2019, reaching 131,000 tonnes in 2019. As such, beyond regulations, environmental standards can be an important tool for accessing the EU's market for 'responsible goods' purely from a consumer perspective.

Figure 4: Growing EU demand for sustainable coffee



Source: CBI 2021

Businesses have reacted to opportunities in the sale of sustainably branded products, leading to a proliferation of voluntary ecological and fair-trade labels and certifications. In 2022, the United Nations Forum on Sustainability Standards (UNFSS) identified 318 voluntary sustainability standards according to the ITC Standards Map, and an additional 456 ecolabels - a sign or logo that is intended to indicate an environmentally preferable product, service or company, based on defined standards or criteria. These mostly focus on agricultural and agro processing products (UNFSS 2022). While this indicates the generally increasing market interest in, (see Table 2) and growing volume of sustainability certified areas and production (ibid), this proliferation makes it challenging for public authorities, consumers and producers to assess their credibility and impacts (Martins 2022). Though voluntary standards are accompanied by due diligence requirements, often based on international and national regulations and frameworks, there is still room to improve their implementation (Negi et al. 2020).

Table 2: Illustrations of European consumer trends

	40% of consumers see sustainability as "highly important", and 70% consider it into purchase decisions.
	In fast-moving consumer goods, recycled and sustainably produced products are estimated to see an 15 to 25% annual growth until 2030, leading to an €85 billion to €140 billion market opportunity.
	75% of consumers in Europe are willing to pay more for sustainable products.
	86% of those aged 45 and under said they were willing to pay more for sustainable packaging

As Table 3 shows, the Deforestation-free Supply Chains regulation will affect different countries to those affected by the CBAM. The biggest effects will be in West African countries for soy, palm oil and cocoa, in Central African countries for wood and palm oil, and in East African countries for coffee and soy exports.

Table 3: Top 10 African countries' exporters to the EU per products in 2021

	Top 10 African exporters of					
#	**Soya**	**Palm oil**	**Beef**	**Wood**	**Cocoa**	**Coffee**
1	Togo	Ivory Coast	Namibia	Cameroon	Ivory Coast	Ethiopia
2	Benin	Gabon	South Africa	Gabon	Ghana	Uganda
3	Burkina Faso	Liberia		Ivory Coast	Nigeria	Kenya
4	Uganda	Ghana		Congo	Cameroon	Tanzania
5	Ghana	Sao Tome and Principe		Namibia	Sierra Leone	Burundi
6	Kenya	Cameroon		Morocco	Uganda	Rwanda
7	Nigeria	Sierra Leone		South Africa	Liberia	Cameroon
8	Mauritius	Egypt		Ghana	Congo, Democratic Republic of	Ivory Coast
9	Egypt	Guinea		Nigeria	Togo	Democratic Republic of Congo
10	Morocco	Togo		Tunisia	Madagascar	Zambia

Source: Based on Eurostat COMEXT database, 2022

Coffee exports account for more than 40% of total exports from Ethiopia, Uganda, Burundi and Rwanda, and more than 90% for Burundi. Cocoa exports account for over 50% of total exports for Ivory Coast and Ghana, and over 20% for Cameroon and Sierra Leone. Exports of palm oil from São Tome and Principe account for close to 40% of its total exports. The impact will also differ depending on the length, complexity and "sustainability-maturity" of the supply chains - showing the importance of sectoral factors. In 2019, 86% of palm oil imported into the EU was already voluntarily certified (European Commission 2021b), though this does not directly imply compliance with the deforestation-free products regulation.

The cocoa value chain presents specific challenges, including the myriad of small-scale producers in West Africa where production is concentrated, making traceability a complex exercise. While there is currently no cocoa traceability system in Côte d'Ivoire, in Ghana COCOBOD is taking a lead in setting up a traceability system for cocoa to ensure its product will comply. This will be particularly useful for small and medium-sized enterprises (SMEs) and smallholder farmers, including women, who account for 68% of the cocoa workforce.

The regulation may therefore also create winners and losers both at the domestic level, between producers and between countries. Those countries and firms with a solid quality and standards infrastructure, a well-trained workforce, and financial resources to innovate and experience in integrating additional sustainability requirements will likely have a headstart and be able to seize market opportunities arising from the EU climate regime (Woolfrey and Karkare 2021).

2.5. Future implications of the EU's external climate regime

The full impact of the EU's new external climate regime cannot be predicted given the number of issues to be finalised, but it is clear that these regulations will lead to some reconfiguration of trade and export relations. At a minimum, they will allow some industries to carve out a niche through the development of products complying with sustainability requirements and certifications, with potential for value addition and for promoting sustainability (Woolfrey and Karkare 2021). In specific contexts, these financial and sustainability benefits will outweigh the costs relating to compliance - provided that businesses and especially SMEs can access relevant support measures. This has been the case for agricultural products such as horticulture, where exports into Europe have had high growth rates despite having to comply with the highest sanitary and phytosanitary (SPS) standards (Bureau and Swinnen 2018). In other cases they may lead either to reduced competitiveness or a diversion of trade towards other markets. Exporters who cannot access the EU market may seek markets in African countries (thus fostering intraregional trade) or other emerging countries. Their ability to shift export markets will largely depend on the extent to which those exports are competitive and the costs associated with transport and logistics in Africa.

This creation of winners and losers within and between countries will affect the political-economy dynamics within and between those affected countries. These will also change as the EU's external climate regime continues to take more precise shape and to be further expanded over time to address additional environmental and climate issues, products, and indirect emissions. Regardless of whether these external mechanisms are seen as fair, they alter the operating environment for African companies and governments. In order to mitigate the risks and seize some of the opportunities, African economies will need to evolve and make use of the transitional phase in which they are today.

2.6. Policy implications

Policy-makers should focus on how to transform the constraints that these regulations impose into potential market opportunities and a benchmark for future competitiveness. Stronger standards do not need to be bottlenecks: trade flows between Africa and the EU in goods subject to high SPS standards actually increased, especially for high-value exports (such as fruit, vegetable and meat), showing the ability of African businesses to carve out a niche for sustainable products, responding to the growing EU consumers' demand.

However, these regulations will inevitably increase costs in the short term, whether these relate to accessing finance and technology to adapt to more sustainable business processes, supporting the development of skills and accessing regulatory and market information (Mukonza 2020), or complying with specific requirements (e.g. CBAM).

Navigating these external climate regimes thus requires a thorough understanding of those value chains, and how the changes will affect local and regional political economy dynamics. This will help translate 'green ambitions' into tailor-made, effective accompanying measures to African countries and their private sector.

The following accompanying measures will help businesses - and especially SMEs[14] - comply with EU climate regime requirements and to benefit from greener trade with the European market:

- **Access to finance:** African firms will need to invest in more sustainable processes and/or pay higher compliance fees for certification processes. However, accessing affordable finance can be difficult with high commercial interest rates, stringent collateral requirements and complex application procedures (EIB 2022). Climate finance can help unlock affordable financing for African firms investing in more sustainable processes - multilateral development banks (MDBs) can provide guarantees to de-risk investments, and bring down the cost of credit for African firms and SMEs. Guarantees could also be relevant to support financial institutions providing trade finance products to African SMEs such as the AfreximBank.
- **Technical assistance**: climate finance needs to be coupled with technical assistance to help businesses i) access/develop green technologies - i.e. products and processes allowing to decarbonise business processes and products; ii) design and implement environmental and social systems to better manage, report on and improve the way businesses produce goods from a sustainability perspective; and iii) access relevant regulatory and market information on EU consumers' demand to develop business plans targeting specific niche where businesses can have a value added and competitive advantage.
- **Policy framework**: domestic investment climate reforms can be used to support those businesses adopting sustainable business practices. This is to some extent happening in Kenya, for example, which has a dedicated regulatory framework for green businesses. In practice, governments could i) define what falls in sustainable activities and practice, by developing a taxonomy; ii) provide fiscal incentives for businesses adopting sustainable processes; ii) facilitate access to information and raise awareness on business opportunities; iii) provide support for research and development (R&D) measures targeting the green technologies; iv) develop further technical and vocational education and training (TVET) in relation to sustainability business practices in specific sectors; v) in the long-term contribute to the creation of an African carbon market, that would be closely aligned to the EU ETS, in order to foster domestic revenue and leverage Africa's potential in this field.

3. Africa's first movers: geographical, industrial and commercial enablers of a green transition

Though many countries are struggling to adapt to climate shocks and to affect a 'green transition', several African countries are positioning themselves as first movers in a global green transition. Especially in the field of renewable energy, some African countries are able to leverage their renewable energy potential, international finance and existing industries to scale up their renewable energy capacity. Kenya and Morocco, for example, both have a solar and wind power share of more than 10% of total power generation, putting them well ahead of the US, China, and several European countries in intermittent renewable energy capacity. Both countries are progressive in international climate diplomacy, and actively market their economies as prime destinations for future green industries and sustainable investment. This note looks beyond the headline figures, at what enables these countries

[14] "A recent survey of African SMEs by ITC (2018) found only a small proportion of them (13%) export. This is largely due to the difficulties SMEs face in meeting export requirements such as acquiring necessary, but costly, certification" (Woolfrey and Karkare. 2021:3).

to use 'greening' as an opportunity. In particular we highlight the importance of structural factors such as renewable energy potential, as well as existing industries and sectors that can directly benefit from the green energy transition, and discuss future opportunities and risks linked to green hydrogen production for African countries.

3.1. Structural factors: Kenya's historical renewable energy capacity

Kenya is often seen as a clean energy champion on the African continent. In 2021, clean energy sources accounted for 80% of Kenyan electricity generation (Kenya National Bureau of Statistics 2022). The government intends to increase this share to 100% by 2030 (Ruto 2022b). Kenya benefits from various sources of clean energy, not least hydropower and significant geothermal energy sources. These provide a stable base on which it can expand intermittent renewables like solar and wind power. Kenya also gets power from its neighbours through a power purchase agreement with Ethiopia (Garowe 2023), and is developing a gas pipeline with Tanzania. Kenya's own fossil fuel resources, in contrast, are limited, meaning that it relies on expensive imported oil and gas for its needs. Kenya's early development of geothermal energy in particular, with its first plant commissioned in 1981, has given Kenya a significant lead in clean energy in Africa. This has also helped the country initiate several power sector reforms since the 1990s, making it a preferred African destination for private energy investment (Godinho and Eberhard 2019; Eberhard et al. 2018).

These structural and sectoral factors have allowed Kenya to prioritise both large-scale and smaller scale wind and solar power to further expand installed capacity, with lower risks and costs than other African countries. This also translates into ambitious targets for further deploying renewable energy[15] and a more optimistic outlook on the green transition and the opportunities it can bring for green manufacturing and climate-smart agriculture. At COP27 Kenya's president explicitly called on developed economies to "[redirect] industrial investments to Africa and [make] use of clean energy to manufacture for the world" (Ruto 2022). The country used COP27 to fast-track commitments for new green energy projects, including for the production of green ammonia with Australian Hydrogen developer FFI (O'Farrell 2022).

3.2. Industrial competitiveness: decarbonising Moroccan fertilisers

Morocco's energy transition pathway is closely intertwined with its existing industrial and extractive base. Morocco still relies heavily on imported fossil fuels, including coal for its energy production, but has recently emerged as a leader on renewable energy, attracting significant investment in solar and wind power, and is on a path to develop significant renewable energy capacity to decarbonise its phosphate mining and fertiliser industry in the coming decades.[16] Morocco has around 70% of the world's reserves of phosphate rock, an essential component of phosphatic synthetic fertilisers. While it has long been a key exporter through its state-owned mining group OCP, the country has become one of the top-five exporters of finished fertilisers (Tanchum 2022), and intends to maintain and further expand its supply to both African and global markets.[17]

Morocco currently relies on imported ammonia to produce its fertilisers, traditionally produced from natural gas. In 2021, the costs of producing ammonia reportedly increased nearly tenfold compared to the previous year, putting significant pressure on the industry worldwide (Sterk 2022). As locally produced ammonia from 'green hydrogen'

[15] Kenya's most current draft Energy Sector Roadmap outlines a highly ambitious strategy to scale up energy production and take advantage of the shift to a clean economy around the world, with a goal of 100 GW of installed capacity by 2040 (Kenya Ministry of Energy 2022).

[16] Morocco is well known for its large scale concentrated solar power plants, the Noor Ouarzazate Solar Power Station (a 580 MW facility), but also has considerable wind power capacity, e.g. the 301 MW Tarfaya wind farm.

[17] The OCP Group (formerly Office Chérifien des Phosphates) accounts for ca. 20% of Morocco's export revenue (Tanchum 2022).

offers the possibility to replace those imports, Morocco was the first country to sign a hydrogen production agreement with Germany in 2020 (Tanchum 2022). More recently, OCP announced a USD 12.3 billion investments in green energy and desalination18 to decarbonise its fertiliser production by 2027 (North Africa Post 2022). Morocco is also well placed to become an export hub for green energy through interconnections with Europe via Spain, and green hydrogen[19], giving it the prospect of both internal and external demand for hydrogen.

The combination of natural resource endowments, renewable energy potential and a strong industrial base has allowed the country to make a decisive shift to green energy, not only to modernise its energy system, but to ensure the long-term competitiveness of its fertiliser industries. Early investments in green hydrogen, but also renewable energy for electricity exports can help Morocco cement its long-term access to the EU market. Electricity and fertilisers are both covered by the CBAM, which may help future Moroccan green exports, especially since the EU fertiliser market has been heavily affected by the Russian invasion of Ukraine[20].

3.3. African hydrogen exports: balancing risks and opportunities

Interest in and commitments to African green hydrogen and ammonia development surged around COP27, as they did around COP26 in Glasgow in 2021. The EU has long been at the forefront of the hydrogen debate. As an energy-poor continent, it is betting heavily on hydrogen to power its industrial transition, including for hard-to-abate sectors like iron and steel, chemical industries and shipping. Europe's energy crisis since the war in Ukraine has also led the EU to frontload plans for using green hydrogen and ammonia to transition hard to abate industrial sectors and the shipping sector, including plans to import 10 million tonnes of renewable hydrogen by 2030 (EC 2022).

Several African countries are working to develop hydrogen exports, and are actively pursuing deals and commitments, both in partnership with Germany, Europe's largest industrial centre[21], and with a range of global energy companies. As well as Morocco, two countries that stand out are Namibia and Egypt[22]. Namibia is working with Germany to become the continent's first green hydrogen hub, supplying domestic, regional and international markets (BMBF 2022) and has plans to deliver 350,000 tones of green hydrogen by 2030 (Biogradlija 2022; Hyphen 2022). Egypt has been very successful in collecting green hydrogen commitments ahead of COP27 (O'Farrell 2022), and is particularly betting on green ammonia to supply the shipping industry. The country also entered into a strategic partnership with the EU on renewable hydrogen to facilitate investment and future trade (EU and government of Egypt 2022).

Renewable ammonia, produced from green hydrogen similarly presents opportunities for some African economies, especially given the high prices of natural gas since 2022, which has historically been the source of ammonia production (IRENA and AEA 2022).[23] Today, around 85% of ammonia worldwide is used to produce nitrogen fertiliser,

[18] Hydrogen electrolysis with green energy requires significant freshwater resources that are in short supply in North Africa.

[19] IRENA estimates that the country, due to its geographical proximity to the EU market and renewable energy capacity, has the potential to become a highly competitive source of green hydrogen in the future (IRENA and AEA 2022).

[20] Before the EU imposed trade sanctions, 60% of its fertiliser imports came from Russia and Belarus, while the EU's own production relies on imported natural gas (Fox and Vasques 2022).

[21] Germany houses 27% of the EU's industrial production and has been proactively seeking hydrogen partnerships with a range of African countries, including Namibia, DRC, Angola and Nigeria since 2020 (Nweke-Eze and Quitzow 2022).

[22] Together with South Africa, Mauritania and Morocco, these countries are part of the African Green Hydrogen alliance, which is meant to position the continent as a frontrunner (Climate Champions 2022). Several others, including Kenya are also pursuing hydrogen investments.

[23] Worldwide, around 183 Mt of ammonia is produced annually, the bulk of which comes from natural gas (72%) or coal (22%). Renewable or green ammonia is made from renewable hydrogen, using nitrogen that is separated from air (IRENA and AEA 2022). Less than 0,2 Mt of renewable ammonia was produced in 2021, yet IRENA and AEA (2022) estimate the capacity of announced plants (worldwide) will be around 15 Mt by 2030, with a further 71 Mt in the pipeline. New capacity in the second half of the decade and the 2030s will likely be dominated by renewable production. Its projections further estimate that in a

yet green ammonia is also set to be used as an alternative maritime shipping fuel, and long-range carrier for hydrogen. While some safety issues still need to be addressed, major carriers, including Denmark's MAERSK are investing heavily in e-fuels (including green methanol) and preparing the ground for ammonia use. The company is developing a range of projects to prepare green fuel production in Europe and abroad. In 2022 it signed memorandums of understanding (MoU's) with Oman (Ovcina Mandra 2022a) and Egypt (MAERSK 2022) among others, to explore large-scale green fuel production and bunkering to supply shipping lanes. Egypt in particular has positioned itself to develop the Suez Canal special economic zone (SCZONE) as a future green fuels hub, and has reportedly signed over 20 MoUs to date, aiming at operational activities in e-methanol, green hydrogen and ammonia within the decade (Ovcina Mandra 2022b; Čučuk 2022).

While these initiatives illustrate the central role African countries could play in a global industrial energy transition, the hydrogen economy and related trade flows are still at a very early stage of development. Key issues for (prospective) African producers include:

1) **EU industrial demand is still fairly low:** While hydrogen will be key to decarbonise Europe's hard-to-abate sector, market demand remains limited today, and future volumes are hard to predict. European countries have increasingly moved away from hydrogen for road transport, which shows that a correction of expectations of the scope of Europe's hydrogen economy and import demand may still follow.

2) **African industrial demand is limited and highly concentrated:** Morocco (see above) in particular has the basis for a strong industrial demand. Other countries, including Egypt, South Africa and Kenya, have or are developing hydrogen strategies, yet current demand from African industries is limited

3) **Low deployment of renewable energy for green hydrogen:** Production of green hydrogen requires sufficient supply of renewable energy (ControlRisks 2022). This is currently not the case in Africa given the relatively low levels of deployment. Only about 9% of overall energy generated in Africa comes from renewable sources (WEF 2022).

4) **Transport and storage costs significantly affect the price of renewable hydrogen:** Optimistic scenarios see the price for producing green hydrogen drop to under USD 1/kg in all regions of the world by 2050 (IRENA 2022). Transport costs, however, will be a significant portion of the final price. EU imports from North Africa and the Middle East have the greatest theoretical potential to compete on price, depending on pipeline infrastructure and a range of other factors.

5) **Africa's low-carbon industrial potential is severely underutilised:** IRENA estimates that the bulk of green hydrogen and ammonia in 2050 will be regionally traded, rather than globally (IRENA 2022). African countries have the theoretical potential to be highly competitive in both direct electrified industries and hydrogen consumption. North Africa and the Middle East for example have a significant theoretical potential for green steel production using hydrogen-based Direct Reduced Iron[24] (Basirat 2022), yet North Africa today only houses a fraction of global production, while investment in steel decarbonisation tends to focus on existing production centres in Asia, Europe and the US.

While African green hydrogen may offer an opportunity for African economies, it will also entail significant risks, especially for those countries that are primarily focusing on the future export market for hydrogen and derived

1.5C scenario the green ammonia market could grow to 688 Mt per year, or more than a 400% increase in ammonia production (IRENA and AEA 2022).

[24] While the bulk of global steel production uses coal-based blast furnaces, natural gas fired direct-reduced iron (DRI) is used in the Middle East and North Africa today. The move to hydrogen-based DRI (Agora 2022).

commodities, including ammonia[25]. In the absence of stable export demand and established trade flows and hydrogen infrastructure, African economies may need to readjust their expectations and focus on attracting and developing African low-carbon industries.

Box 2: How climate finance can unlock green energy opportunities including for low-carbon industrial development

Rising inflation driven by energy and food prices, coupled with a stronger dollar is threatening the debt sustainability of African countries which already spend 3% to 9% of their GDP on measures to address climate risks and disasters (UNECA 2022a). Many countries therefore have limited financial capacities to green their economies. In this context, development finance that mobilises additional private investments is seen as a means to reconcile different objectives, i.e. foster socio-economic development while contributing to climate actions. Financing is now more readily available for green energy projects, as governments, donors and financial institutions prioritise projects that can help meet their sustainability goals.

In principle, climate finance could be used to address some of the challenges underlying the financing of green energy. In particular, MDBs/development finance institutions (DFIs), by de-risking investments, can help mobilise private investments in hydrogen production (Kobina Kane and Gil 2022), where USD 450-950 billion worth investments is required to make it a reality in Egypt, Kenya, Mauritania, Morocco, Namibia, and South Africa (Green Hydrogen Organisation 2022). To this end, MDBs/DFIS can leverage:

- Blended finance, which leverages public funds to crowd in private investment through co-financing. This allows mitigating risks relating to the technology costs, and can facilitate the long-term commercialisation of hydrogen.
- Guarantees, where MDBs/DFIs act as guarantor, meaning that they agree to pay part of the full amount of the loan or equity provided by private investors in the event the project promoter (government) defaults and is unable to repay the investors. Of particular interest may be the volume guarantee, which covers the risks related to offtake agreements.
- Subordinated debt, or junior debt. In such a scheme, a loan financing a hydrogen project would be composed of at least two tranches: MDBs/DFIs would take the junior tranche, while commercial investors would take a senior tranche. In practice, this means that in case the project promoter fails to repay its loan, the senior tranche will be repaid first. In this scenario, MDBs help de-risk private investments. Additional tranches could fit in such a loan structure such as e.g. mezzanine financing.

MDBs/DFIs can also provide financing in local currency, or provide financial instruments hedging the currency fluctuations for the project promoters. This is increasingly important in a context where the value of the dollar is expected to keep rising, following the US Federal Reserve decision to increase interest rates.

Beyond financing, MDBs/DFIs could provide technical assistance in the form of grants for project preparation activities such as feasibility studies but also capacity building type of support that can help make projects become bankable (including strengthening the skills of project's owners or supporting access to technologies). Such support does not only focus on the financial viability of hydrogen projects, but also on their overall bankability (including the confidence that projects financed will be carried out following e.g. environmental and social standards).

3.4. Policy implications

The experience of Africa's 'first movers' shows that Africa's clean energy potential is only one factor among many that define a country's ability to secure benefits in a global green transition. Kenya and Morocco's experiences are driven by short-to-medium term economic and social objectives and not only longer-term climate concerns. Kenya and Morocco both have structural, geographical factors that enable them to pursue a clean energy trajectory that

[25] There is also a risk that the prospect of future export markets incentivises governments to choose an 'extractive model' of green hydrogen production, which prioritises exports over local energy consumption and industry transition. This risk is particularly high in economies that already heavily rely on the export of raw materials, such as Namibia, Angola, and Nigeria.

combine with commercial incentives to green their economies and position themselves for future opportunities. This has enabled their governments and policy-makers to also take ambitious positions in climate negotiations, which in turn (will) facilitate their strategic access to international climate finance. This means that for these countries, the economic gains they can derive from green energy investments outweigh the potential risks and costs associated with a first mover status. But these are not in place in all African economies, many of which are constrained by underperforming energy systems, or tied to fossil fuel industries that threaten their ability to position themselves on the winning side of a global energy transition.

A closer look at the developments around renewable hydrogen illustrates how some African countries might position themselves at the centre of an interconnected green economy with Europe. Yet it also shows that in order to effectively leverage Africa's geographical advantages, countries must focus on developing local industrial applications, hydrogen consumption and regional markets in addition to exports.

Doing so requires a level of access to finance that is difficult to attain for many African countries, many of which are already facing debt distress. International climate finance may play a role in offsetting some of the challenges of securing energy investment and promoting green industrialisation, yet this requires a different approach to risk management, especially in fossil-fuel dependent economies, where the disincentives will be both structural and deeply ingrained. Technical assistance and policy support will be crucial to better connect demand and supply and a steady flow of bankable projects.

4. The political economy of greening transport: multimodal transport along the East African northern corridor

This section illustrates how political economy dynamics can accelerate or slow down the green transition process, taking the case of regional freight transport and that of the Kenyan Standard Gauge Railway (SGR) Railway in particular.

The SGR was not initially planned as a 'green project'. But with capacity to carry some 150 containers per trip by rail and six to eight trips per day, it could lower the number of trucks on the Northern Corridor road from Mombasa port to the Kenyan and regional hinterland by some 900 to 1200 per day, reducing both road congestion and greenhouse gas emissions (Maombo 2022). That aligns with policy ambitions in Kenya, the region and globally to reduce carbon emissions through 'green transport' and 'green corridors'. Kenya and Rwanda in particular have national-level climate targets, as part of their nationally determined contribution (NDC) that rely partly on a modal shift from roadways to railways for freight transportation (TMEA 2021). This has been translated into corridor-level ambitions through the Northern Corridor Authority Sustainable Freight Transport Strategy for 2030 (NCTTCA 2017).[26]

However, the challenges of promoting a modal shift of freight transport from road to rail illustrate the difficulties of 'green' policies - whether in trade and transport or in other sectors. Multiple actors, interests, incentives and power relations interact at different levels to shape current behaviours, where 'greening' ambitions may not be a priority.

Building on existing literature and interviews in Kenya, this section highlights how politics, interests and incentives - both between and within countries - affect the calculations of potential users, and thus need to be addressed in promoting the commercial viability of an ostensibly 'green' technology. At the same time, the note discusses how a modal shift from rail to road might succeed as part of a wider transport strategy, further underlining the need to

[26] That sets the objective "to cut emissions of Particulate Matter (PM), black carbon emissions and Oxides of nitrogen (NOx) grams per ton-km by at least 10% and reduction of CO_2 emission intensity grams per ton-km by 10% by 2021" (NCTTCA 2021).

work within existing short-term political timespans for long-term, strategic, systemwide thinking that takes account of Kenya and the wider region in order to promote cleaner transport in a context of rising trade and industrialisation.

4.1. A 'modal shift' from road to rail

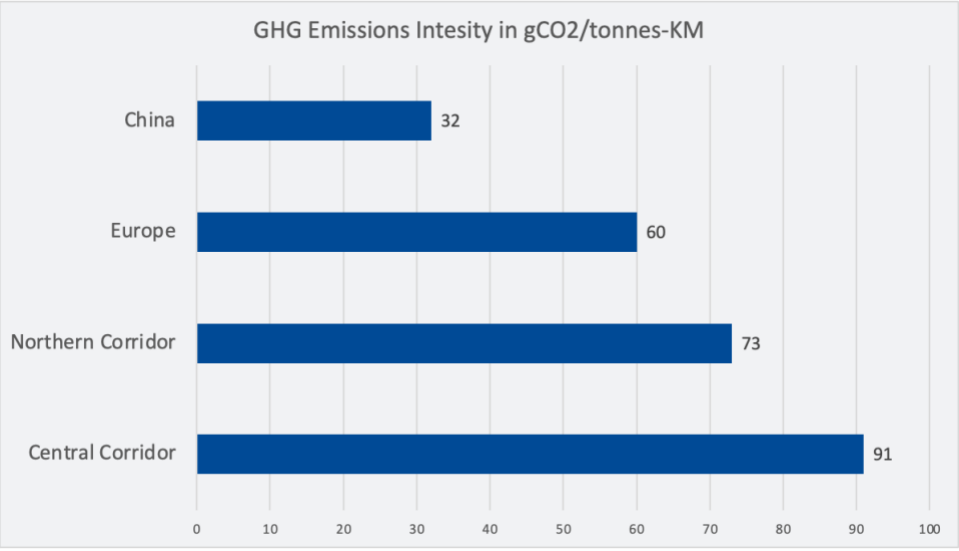
Freight transport is a major contributor to greenhouse gas emissions and air pollution. Its effects are predicted to multiply in the coming decades as the volume of international and regional trade increases. UNECA (2022b) estimates that a fully implemented AfCFTA could increase intra-African trade volumes by 40% by 2045. With rising trade volumes, freight emissions in Africa alone are projected to increase by 700% by 2050 (NCTTCA, 2017).

Kenya's AfCFTA Implementation Strategy acknowledges this, seeking to contribute to sustainable development "through mutually supportive trade and environment initiatives" (UNECA 2022c). In theory, green freight transport can accompany rising trade while lowering costs and time, thus offering benefits for public health and climate change mitigation.

Transport times and costs on the Northern Corridor have improved over recent years (TMEA 2021), thus already helping to reduce carbon emissions. Though travel times increased somewhat with COVID-19-related barriers (See EASC), a 2021 TMEA study suggests that the GHG intensity of the Northern Corridor had declined by 3% compared to the 2018 baseline (TMEA 2021).

Emission intensities on the Northern (and Central) corridor nonetheless remain higher than in China and Europe, as illustrated in the Figure below. Estimates of GHG emissions on the Northern Corridor put these at 1.72 $MMtCO_2e$ (million metric tons of carbon dioxide equivalent), above that of the Central Corridor that runs through Tanzania, estimated to be 1.24 $MMtCO_2e$ (NCTTCA 2021).

Figure 5: Comparative GHG intensity across corridors in the world (gCO2/tonnes-km)



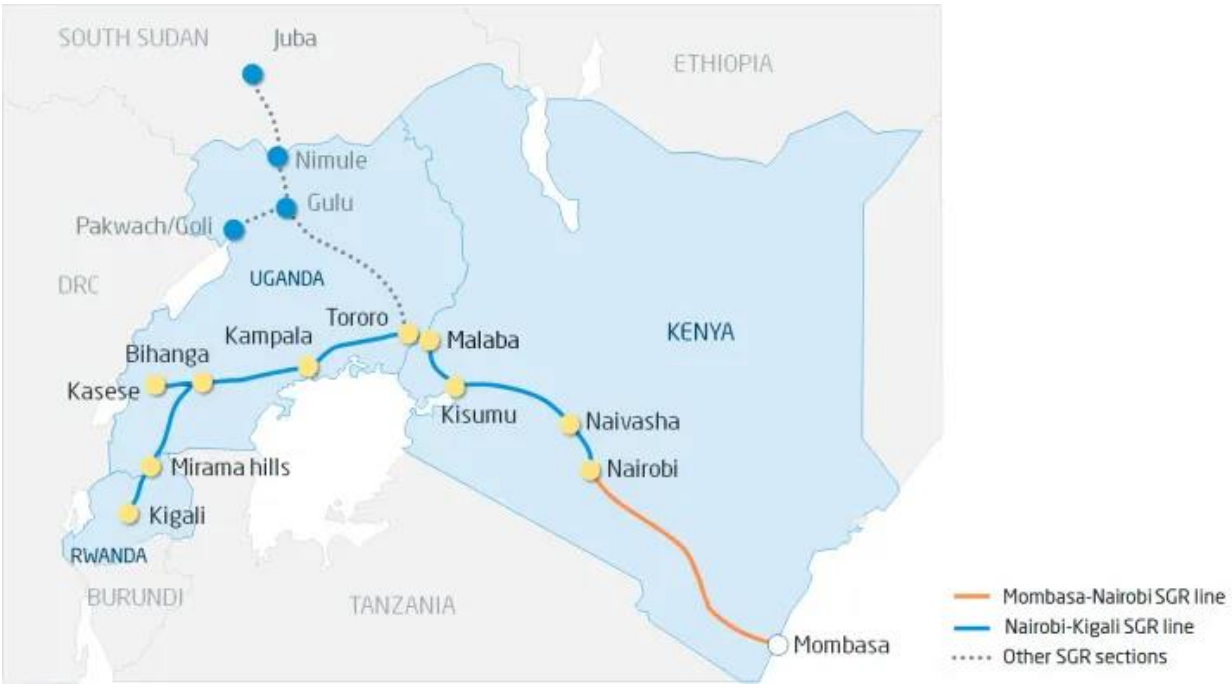
Source: Kaack et al. 2018, cited in TMEA 2021

As the NCTTCA Freight Strategy suggests, these emissions could be lowered through a combination of efforts that address: *technological aspects*, by upgrading fuels, vehicles and infrastructures; *behavioural aspects*, by optimising routes, consolidating loads and streamlining processes; as well as a *modal* shift from road to rail by "advocating for

a shift of traffic to more sustainable freight transport systems and modes". Thus, on paper, the SGR offers a means to address the forecasted rise in emissions.

The SGR is commonly cited as Kenya's largest infrastructure project since independence in 1963, and the first modern standard gauge railway in East Africa. It was funded with China Exim Bank funding for almost 90% of the US $3.8 billion contract project, and entered into operation on June 1, 2017 after construction began in December 2014 (McCartney 2022; Carrai 2021). The first phase of the SGR linked Mombasa with Nairobi. Phase 2 was intended to connect Nairobi to the Malaba border with Uganda (see figure 2 below) with subsequent connections to Rwanda.[27] However, lack of finance to complete Phase 2 has meant upgrading the pre-existing Metre Gauge Railway (MGR) instead.

Figure 6: SGR Route planned and operational



Source: ALG Newsletter 2017

After its launch in 2017, in its first year, the SGR transported over 1.3 million travellers and 60,000 containers between Mombasa and Nairobi (Carrai 2021). It cut the journey time from Nairobi to Mombasa from 15 to 4.5 hours for passengers and to 8 hours for freight (ibid). The new Inland Container Depot (ICDs) at Naivasha represents an extension North of the SGR from Nairobi, with SGR freight services beginning in 2019 (Kimanthi 2022). From there, the refurbished MGR now continues to Malaba at the border with Uganda. Trials took place to transfer containers from the SGR to MGR in Naivasha in January 2022 (Tanui 2022).

Although that seems to represent a major step forward in encouraging a modal shift from road to rail and contributing to reducing carbon emissions, the SGR has yet to meaningfully play that role. Freight volumes have been lower than forecast, partly due to shifting interests and incentives at the regional level, interacting also with

[27] Phase 2 was divided into three different sub-phases: Phase 2A: Nairobi to Naivasha; Phase 2B: Naivasha to Kisumu (which included the construction of a new port at Kisumu on Lake Victoria); and Phase 2C, from Kisumu to Malaba (Taylor 2020).

domestic Kenyan politics. The plan to extend the SGR beyond Naivasha to the border with Uganda was dropped, while a presidential directive from 2018, put in place to guarantee that Nairobi-bound freight used the SGR, was reversed in response to domestic political manoeuvrings around the 2022 presidential elections.

4.2. The role of interests between states

A key challenge of realising a modal shift and reducing carbon emissions through the SGR is its overall commercial viability. While initial forecasts by the World Bank (2013) led them to recommend rehabilitating the existing Metre Gauge Railway (MGR) from Mombasa to Nairobi and beyond rather than an SGR, the loan from the China Exim Bank and a tripartite agreement to extend the SGR from Kenya to Uganda and Rwanda allowed its construction to begin - on the basis of a minimum freight guarantee by the Kenyan government (Brautigam et al. 2022). However, the ability to meet those freight commitments has been challenged by the interests of key players in Kenya and the wider region.

The Kenyan SGR project emerged from a 2009 memorandum of understanding to build a line from Mombasa to Kampala between the governments of Kenya and Uganda, enlarged to a tripartite treaty with Rwanda in 2013 (Taylor 2020). The agreement to launch the SGR coincided with the launch of the EAC Single Customs Territory (SCT) among Kenya, Uganda, and Rwanda thus providing a further commercial logic to the agreement (Lamarque and Nugent 2021), where the three countries were seen as a 'coalition of the willing' within the EAC group at this time (Matheson 2016), offering solid political underpinnings. The economic rationale stems from the fact that approximately 30% of containers arriving in Mombasa port are destined for Uganda, Rwanda, South Sudan and the Democratic Republic of Congo (Lamarque 2019).

But in a reflection of 'corridor competition', Rwanda withdrew from the Northern Corridor SGR venture in 2016 to focus on the Central Corridor through Tanzania, citing "cost concerns and the possibility of a more affordable line connecting the Rwandan capital Kigali to Dar es Salaam port via Isaka in Tanzania" (Lamarque 2021). This also came with a shift in regional relations after the election of President Magufuli in Tanzania, who immediately sought to reverse the criticism of his predecessor about deteriorating Rwanda-DRC relations (Kibuuka 2021). In addition, Rwanda-Uganda political relations led Rwanda to close its Gatuna border with Uganda from 2019 to 2022, a possibility given the desire to avoid over-reliance on any one transport corridor (Reyntjens 2022).

The Ugandan authorities stalled the construction of their SGR connection from Kampala to the Kenyan border amid parliamentary accusations that the US$2.3 billion price tag had been inflated and that certain aspects of the project were unnecessary (Lamarque and Nugent 2021). By mid-2017, Uganda and Tanzania had signed a memorandum of understanding on joint ministerial cooperation and improvements of ports, inland waterways, and railway transport (ibid). Taylor (2020) also links this to the decision by Uganda to route its $4 billion oil pipeline through Tanzania rather than Kenya as had been previously agreed. At the same time, time and costs to transport between Kampala and Dar es Salaam fell further in 2018 with the entry of a new cargo ship operating across Lake Victoria for the first time since 2005 (Lamarque and Nugent 2021). Together these all add to the attractiveness of the Central Corridor through Tanzania and undermine the attractiveness of the Kenyan SGR.

Due to lack of funding to continue the SGR to Malaba, the Kenyan government instead rehabilitated the metre-gauge line from Naivasha to Malaba, with investments to ensure the smooth transfer from the SGR that were then trialled in early 2022 (Otieno 2022). Nonetheless, these met controversy as transit goods were offloaded prior to crossing the border, allegedly in contravention of international rail transit conventions (Esiara and Kitimo 2022). According to some, "until and unless the SGR connection to Uganda is accomplished, the only export commodities that may utilise the line from Nairobi to Mombasa are tea, coffee, hides and skins and animal and vegetable oils.

None of these are high value" (Taylor 2020), even if volumes are not insignificant. By undermining the viability of rail as a freight transport option, these dynamics undermine the potential emissions prospects of a modal switch from road to rail.

Nonetheless, in 2019 Uganda announced that it would restore the old railway line linking Kampala to Malaba on the Kenyan border, rather than pursue the planned SGR (Taylor 2020). This aligns with the Kenyan government's decision to *upgrade* rather than *replace* the metre-gauge line from Naivasha to Malaba, and its construction of the Inland Container Depot in Naivasha (Lamarque 2021). That will mean an MGR between Kampala and Naivasha, with goods transferred to and from the SGR at Naivasha. Burundi, Rwanda, DRC, Uganda and South Sudan have now all been given land at the Naivasha ICD to encourage their trade through the Northern corridor (Andae 2022). At the same time, reportedly good relations between Kenyan President Ruto and Ugandan President Museveni also provide a strong basis for cooperation around the Northern Corridor and the SGR (Kzibwe 2022) suggesting that the SGR could yet play an important role in reducing freight-related GHG emissions.

Recently, Kenya and the Netherlands signed an agreement to create a 'cool logistics corridor' to export horticultural goods using the SGR for onward export to Europe (Kimanthi 2022). The Kenya Tea Development Agency (KTDA) is reportedly also transporting their produce via the SGR, along with other firms such as Delmonte who export avocados and pineapples. While driven by climate concerns, these initiatives may also serve as an example for others to follow, and at the same time point to the need to build demand for the SGR that puts it on a more financially sustainable path..

As it stands, demand for the SGR has reportedly been on the rise. Press reports cite a rise of cargo throughput from 34.1 million metric tonnes in 2020 to 34.5 million tonnes in 2021, amid an increase in container traffic, by 5.6%, from 1.359 million Twenty-foot Equivalent Units (TEUs) in 2020 to 1,435.3 thousand TEUs in 2021 (Mwita 2022). Reports from mid-2021 reflecting rising demand for freight on the SGR, led the Kenya Railways Corporation (KRC) to begin buying 500 new freight wagons (Kimanthi 2022). This came amidst a slight reduction in the volume of imports handled at the Port of Mombasa from 27.7 million metric tonnes to 27.3 million metric tonnes in 2021 but a rise in export volumes by 9.7% to 4.6 million metric tonnes (Kimanthi 2022).

Nonetheless, though regional politics may be realigning around the SGR, the bulk of freight is still carried by road. Estimates suggest that as of June 2022 the SGR was carrying 40% of containerised cargo and 10% of the conventional cargo (Kimanthi 2022). Further, as for most African countries, the trade balance is heavily skewed towards imports. It is estimated that for every 7.8 tonnes of cargo transported inland from Mombasa on the SGR, only 1.01 tonnes is sent back to the port for export (Taylor 2020). Analysis of GHG intensities along the corridors in East Africa show that empty return trips contribute more GHG emissions than loaded return trips (NCTTCA 2021). In both the Northern and Central corridors, exports represent only 14% of the total trade with nearly 70% of trucks returning empty (ibid). This trade imbalance is a difficult structural factor to overcome in the name of reducing GHG emissions, at least in the short term.

Regional politics and corridor competition clearly play a role in shaping SGR uptake, but much also depends on structural factors such as trade flows and the ability of the SGR to compete with road transport, an issue that has been heavily influenced by Kenyan domestic politics.

4.3. The role of domestic politics and road competition

In February 2019, the Kenyan Government reported that the SGR costs twice as much as road to transport cargo (Taylor 2020). As such, at the end of May 2019, the Kenya National Bureau of Statistics reported that the SGR

generated sales of $57million in 2018, against the annual operating cost of $120million (Taylor 2020). In March 2021 Kenyan Railways reduced SGR cargo tariffs by 15% to promote the use of the Naivasha ICD (NCTTCA 2021).

Beyond efforts to cut prices, the previous government also sought to fulfil its rail freight obligation, as laid out in its loan agreement, through a directive obliging inland-bound traffic to use the SGR. The Authorities published a government directive requiring all cargo imported through the port be transported to Nairobi and the hinterland exclusively by the SGR in 2018.

Promotion of the Naivasha ICD led coastal actors to accuse the government of shifting the most lucrative elements of Mombasa port – the handling, clearance, and storage of goods – inland to the benefit of the Nairobi elites (Lamarque 2021). Mombasa has long been a stronghold of Raila Odinga's National Super Alliance and as such, implies the development of the SGR and Naivasha IDC is a way of shifting control of revenues from the burgeoning warehouse sector in Mombasa to Nairobi (Lamarque 2019). Tellingly, news reports connect the SGR and Naivasha ICD to former President Kenyatta, even if formally this represented a strategy to connect Kenya to the wider region (The East African 2022).[28] One of the first moves by President Ruto in September 2022 was to return all port operations transferred to Nairobi and Naivasha ICDs to back to Mombasa, reversing one of the most controversial policies of the Jubilee administration (The East African 2022).[29] While the implications of this have yet to be fully seen, it highlights the importance of domestic and local politics in shaping issues of much wider impact.

New reports suggest that while the previous directive had led to rising SGR traffic, it also led to job losses in Mombasa. Its reversal risks undermining recent investments in Naivasha. Although the reversal pleases the Kenyan road transporters, it potentially undermines the SGR loan agreement with its guaranteed freight volume (The East African 2022). It can also be seen as a setback for the environmental objective of shifting freight from road to rail.

Supporters of the policy reversal point to the importance of shippers' freedom to decide, and the role of competition - in this line of thinking, the SGR should compete with road transport. Recent field interviews confirm that shipments to Nairobi remain more expensive by SGR than by road transport. Newspapers cite that until the recent reversal hauling goods to Nairobi by road was cheaper than using the SGR mainly because of the last mile factor (Kisero 2022). This is confirmed by field interviews, with two main culprits making up this factor: the processes at the Naivasha and (particularly at) the Nairobi ICD; and last mile delivery costs from these to shippers' final destinations. Both of these ultimately translate to higher last mile costs which according to interviews can amount to KSH 23,000, while from Mombasa to Nairobi can be some KSH 60,000. Critics suggest this is to do with 'transport cartels' seeking to undermine the viability of the SGR, while others point to congestion and times taken to exit the Nairobi ICD, for example. Those can mean taking some 7 or 8 hours for a 20km round trip (Interview). This also highlights how private operators' interests are more to do with efficiency gains rather than green (carbon emissions) aspects.

Beyond this, as Nugent and Lamarque (2021) point out, though railways are in principle more cost-efficient and environmentally friendly than roads, the fixed costs of establishing a railway are high, placing a visible burden of debt on government that users must pay. In contrast, the cost of repairing road damage by (overloaded) trucks is less directly borne by users, with "less visible" financial obligations (Lamarque and Nugent 2021). As they put it, powerful interests continue to insist on the primacy of trucking "which politicians ignore at their peril. As things stand, therefore, road continues to trump rail." (Lamarque and Nugent 2021).

[28] See also Africa Confidential 23 September 2022, Vol.63, No.19 (Africa Confidential 2022).

[29] Reportedly, Odinga's defeat gave Ruto a much higher vote than expected in August, thus further underpinning this decision (Africa Confidential 2022).

The saving grace here may be that Ugandan shippers, for example, have found the SGR to Naivasha to be more efficient than road transport, while rising fuel costs may also tip the balance in favour of rail transport given that some 60% of road transport costs are fuel (Interview).

4.4. Implications

Overall, for landlocked countries, reducing emissions through a modal shift to rail must take account of road competition with rail, and in the case of the Northern Corridor with competition with the Central Corridor through Tanzania. While corridor options are generally sought by landlocked countries, the nature of the goods traded and trade balance combine with interstate politics to shape the transport environment and undermine the potential of the SGR. The Kenya and Tanzania SGRs are therefore also part of a wider regional rail and road transport system, where competition will play a role.

The above discussion highlights the challenge of promoting the SGR, and underlines the need for a system-wide approach: SGRs should be thought of as a part of the transport system alongside other transport infrastructures, logistics infrastructures ICD, and other modes such as road, maritime and air transport. That also implies looking at connections between different modes through last mile connectivity at the local, national and regional levels. All of these elements partly determine the extent to which SGRs will be efficient from a cost/time and carbon perspectives, and thus competitive vis-a-vis road transport and gain traction vis-a-vis private operators, which are less concerned by emissions savings.

Such an approach is arguably underway, between bringing regional partners on board through engagement around the Naivasha ICD, and seeking to promote a combination of road and rail. Nonetheless, the success of the SGR in a multimodal approach will hinge on addressing persistent bottlenecks along the transport chain. These were the focus of the Kenyan Logistics and Transport Network (KLTN) - which was working with a range of transport and logistics stakeholders to connect the revenue and ports authority tracking systems, for example, and to engage with the Nairobi ICD to improve efficiency - before the lead organisation, the Industry and Commerce Development Corporation was folded into a new body, the Kenya Development Corporation. Such initiatives will be important to resurrect to overcome any vested interests in an inefficient SGR and ICD system. Navigating these interests also means adopting a gradual and agile approach responding to short-term incentives, that can in turn alter longer-term incentives for a more ambitious system-wide approach.

More importantly, road and rail will both play a key role in regional trade and transport - implying that the modal shift to rail should be seen as one component of a green transport strategy. Indeed, unless the Kenyan SGR can be electrified - discussions were held in 2018 to electrify the SGR, which is currently diesel powered, those plans were later postponed “for 3 or 4 years” in 2020 due to the cost and fears about the reliability of electricity supply (Mutambo 2020; Genghis Capital 2018) - one estimation exercise finds that the highest potential for emissions reductions over the long term lie in road transport due to improvements in fuel and truck technologies as well as expanding roads to reduce congestion (Notter et al. 2018).

Overall, greening trade and transport will require long-term system-wide thinking, within and between countries, where rising climate finance and the EU climate regime may alter incentives towards ‘green infrastructure projects’, and sectoral initiatives such as last mile electrification, but where interests and incentives must also be worked through and around to ensure future impact.

Conclusions

Economic development has historically gone hand in hand with a significant increase in greenhouse gas (GHG) and other emissions. As the world's advanced economies seek to reduce and reverse emissions, this creates unavoidable tensions. In some readings current climate discussions pit African countries - seeking a carbon-fueled 'development first' agenda - against developed economies - seen as moralising and 'kicking away the ladder', by limiting the opportunities of others to follow their development paths.

This paper discusses the resulting tensions and ways in which some African countries are seeking to reconcile their development with greener industrialisation and trade ambitions. While that leads to a focus on what shapes the different approaches across countries, the paper also looks into the political economy challenges of greening transport within a country, where different sectoral and political dynamics can play a role in making progress or not.

The resulting notes focus on the four following topics:

1. the conflicting narratives on a 'just' African energy transition;
2. the increasingly complex external climate regimes for African economies;
3. how some African countries are seeking 'first mover' advantage in green industrial development and the energy transition and;
4. the political economy dynamics and complexity of promoting a modal transport shift along the Northern Corridor in Kenya.

Together the notes highlight the need to understand and engage with the range of actors and factors that shape country positions and their possibilities to adapt to the evolving narratives on climate change and the green transition.

The main message from **Note 1** is that low-carbon industrialisation must be framed in terms of business opportunities and not external moralising. Even if, for some, this implies the need to accept a 'development first' approach based on natural gas as a transition fuel, the long-term business case for fossil fuels is also changing, thus inherently limiting the viability of such an approach. At the same time, several African countries are taking a more 'climate forward' position, highlighting the heterogeneity of positions across countries, in spite of the common framing of high-income versus low-income countries. Adding this nuance to the increasingly polarised debate can itself help highlight opportunities to reduce emissions whilst helping provide a groundswell towards climate-friendly industrialisation policies.

Whatever the rhetoric of global climate debates, they are already altering the rules that will shape future trade. **Note 2** looks primarily at the ways in which the external regimes are changing, focusing on EU regulations in particular - the Carbon Border Adjustment Mechanism (CBAM), the EU taxonomy for sustainable investments, and the Deforestation Regulation. Although some of these initiatives ostensibly reduce future market access, experience in the realm of food standards for horticultural exports, for example, suggests that this can lead to niche market opportunities for African firms rather than declining trade. But this will not be the case for all private sector actors or sectors, depending inter alia on firm sizes, the complexity and length of the value chain), while the costs related to sustainability compliance may be passed on to those that can least afford them, according to power dynamics within a specific value chain. This suggests a need to ensure African countries can position themselves for better market access, and to tailor support to specific firms, sectors and value chains to minimise the transition risks that are associated with international climate regimes.

Partly related to these changing external regulations, **Note 3** looks at how some African countries are seeking to get ahead in the 'green transition'. Kenya and Morocco in particular are seeking to take advantage of their relatively 'green' starting positions in terms of renewable energy and spotting opportunities linked to existing industries and value chains. Although this builds to a degree on structural features - such as their geography and suitability for solar energy - those are not enough. Morocco has combined favourable starting conditions with targeted policy and finance to transition towards low-emission fertiliser. Though not just about the EU, this has partly been motivated by the future business opportunities offered by a tightening EU trade regime, highlighting the need for governments and partners to think strategically beyond 'restrictions' and more in terms of future market opportunities. Several African countries are also positioning themselves to be part of a global hydrogen economy. In order to maximise benefits and minimise the risks associated with such early-stage developments, it will be crucial to focus on an African hydrogen economy and regional value chain, as well as exports to Europe.

Note 4 zooms into a specific 'green transition' process within and between countries, looking at transport along the Northern Corridor in Kenya from a regional perspective. The example highlights how, even if the case for such transitions appears solid, promoting a modal shift is complex, and subject to similar political economy constraints to many other sectoral reforms. The existence of a 'green option', in this case the Standard Gauge Railway, to carry cargo from Mombasa to the hinterland rather than road transport, is not enough for it to be fully adopted. Beyond the challenge of making rail more commercially attractive through 'last mile' investments, the political economy dynamics between neighbouring states also affect the commercial viability of such investments, while domestic political decision-making in the name of political survival or votes can also undermine green ambitions. This highlights the need to think of green transition reforms through a systems approach, and to identify context-driven opportunities that are globally desirable, commercially viable, but also politically feasible.

Overall, the four notes suggest the following takeaways:

1. Narratives and perceptions are important - framing the green transition as offering business opportunities is likely to get most traction both internationally and at the enterprise level.
2. Even if climate change mitigation and adaptation objectives can be read differently, market regulations cannot - exporters in numerous sectors will need to adapt their production techniques and traceability to maintain market access to the EU, and increasingly to other markets.
3. Governments and private sector actors investing in and adopting sustainable, low-carbon paths may take advantage of niche markets in line with EU regulations, and what will increasingly become global norms.
4. External finance is increasingly going 'green' - first movers stand to gain most, whether between countries or in terms of companies/firms/sectors within them.
5. Structural reasons and political economy dynamics will define which countries can be first or even second movers, requiring support for others, that is adapted to context.
6. Addressing these multi-level, complex challenges requires 'systems thinking' within and between countries to take account of the interconnections between different policy areas.
7. Applying political economy analysis to green transition processes will help systematise and bring out contextual knowledge to help:
    - Understand the varying interests, incentives and power relations that underpin the challenges and opportunities for green transition, whether in Europe or Africa
    - Understand the scope for regional and national political alignment around 'green' objectives (even if implies new winners and losers)

- Position economies vis-à-vis international regimes, helping firms and countries therefore decide on the balance between risky bets and long-term strategy
- Find ways to better connect existing progressive policy space and private demand/business opportunities that support a green transition
- Inform a spatial approach by helping to unpack regional politics, interests and incentives around key sectors like agro-processing manufacturing, transport, and the wider industrialisation dynamics.

Emerging policy research and engagement opportunities

Beyond these broad conclusions and implications, the following relate these to steps policymakers and partners might take to promote and support trade and transport as part of greening regional trade corridors.

1. Linking climate policy with opportunities

Where there are no climate related policies and strategies, support to produce these may be welcome and useful. However, while reviewing and harmonising climate policies, strategies and frameworks might have some value - for example, to look for and encourage some degree of regional alignment of strategies in key complementary areas - the notes above rather point towards a need for 'problem-solving' around specific sectors, bottlenecks or climate ambitions in the framework of actually implementing existing strategies and adapting to external regimes. In that sense, support to climate policy frameworks should be linked to industrialisation and trade policy objectives, and address climate vulnerabilities and green opportunities within those.

The Notes also suggest that GHG monitoring, reporting and verification along transport corridors has already been useful to provide a baseline for thinking about 'greening' transport and could be useful for helping shift debates, and potentially seeking to 'alter' the status quo.

Knowledge gaps linked to improved climate policy frameworks

The AfCFTA process and institutions do not have an explicit green agenda, and in some cases global climate action agenda is seen as a threat to achieving the full benefits of the AfCTFA. More analysis of clean economy opportunities and scenarios/pathways for a greener trade integration agenda may help identify policy actions and potential areas for development partner's support, which could either help address climate vulnerabilities or foster green market opportunities for the African private sector - where real AfCFTA implementation will take place. By examining these opportunities, and taking account of the political economy dynamics within sectors, and between and within countries, this will allow African economies to position themselves effectively and secure long-term benefits in a global green transition. Further research under this pillar should focus on providing a better understanding of opportunities and entry points for regional green economies of scale.

2. Improving the technical and political case for green infrastructure and logistics

Note 4 provides an overview of the challenges of encouraging a modal shift from road to rail. Although we look less at technology shifts within the transport sector, the note points to the very similar political economy blockages that may be faced in each of these, where parties will stand to lose market share or political clout, similarly to efficiency-promoting measures. Given current transport dynamics, technology shifts to reduce the carbon emissions of road

freight would clearly be positive alongside efforts to make the SGR more attractive, all of which must nonetheless be framed with a business case and with a systems approach in mind. In this context, there is a need for policymakers and development partners to help build the market to ensure the commercial viability of a modal shift from road to rail, including last-mile delivery, and mitigate economic and political risks through blended finance and risk-sharing mechanisms. This would facilitate climate finance flow in the transport sector.

Knowledge gaps linked to reducing GHG emissions and pollution

With the Global gateway and the European Fund for Sustainable Development +, the EU is well placed to finance and attract additional private capital to invest in greening corridors. However, this is a means to an end - i.e. sustainable and inclusive development. In this context, research and dialogue facilitation are needed to better identify and target where these EU investments in greening corridors could achieve most impacts. This includes analysis on the political economy dynamics of key technological innovations for decarbonising transport systems, but also renewable energy-powered cold chain logistics. In order to be effective, financing will need to be accompanied by policy measures to help operators along those corridors to adapt to changing external (EU) export market dynamics, and increase their competitiveness, while producing climate and environmental co-benefits. Research is also needed to identify options to maximise the impact of EU investments in greening corridors under the Global Gateway package.

3. Greening trade to exploit market opportunities

Notes 2 and 3 are especially relevant for thinking about value chain and green competitiveness for exports. Though not all countries and sectors will be affected by the EU's CBAM or Deforestation Regulation, the message is that those who *do invest* to meet the criteria, can hope to reap some first-mover advantages. The support needed to meet the requirements will vary a lot, according to the specific regulation - whether it be about traceability for coffee exports, or monitoring production processes - but also by firm, sector and country, given that much also depends on the starting position and wider institutional and productive capabilities. Access to finance will be a key constraint affecting the capacities of smaller players to comply with standards. This is an area where climate finance can help make a difference by supporting financial intermediaries' financial and human resource capacities to lend to micro, small and medium enterprises (MSMEs) adopting sustainable business processes.

Knowledge gaps for strengthening the green economy for trade and exports

The EU external climate regimes will have a profound impact on African exports. This raises the challenge of how African countries can most effectively navigate this external environment. Research will be needed on adapting specific CBAM-affected sectors (e.g. fertilisers, cement, aluminium). Recently, the EU announced its EU Green Deal industrial plan, partially in response to the US Inflation Reduction Act. As the EU moves to relax state aid rules and step up support to help European industries and businesses transition, this could have a significant effect on African private sector competitiveness. More research will be needed to better understand the implication of these developments on Africa.

While greater attention has been paid to EU regulations, EU consumer preferences and EU businesses sustainability standards and practices have a profound impact on the opportunities and challenges for the African private sector to access global value chains. Not only is there limited knowledge on the implications of EU consumer and regulation changes for African policies, but there is also limited evidence on the types of accompanying measures that could be put in place to effectively support the African private sector. Future research on specific regulations, sectors and products could tackle this gap.

4. Mobilising financial institutions and the private sector for the green transition

Although there may be more climate financing available, and the possibility to use this to achieve the objective cited above, projects still need to have an underlying commercial business case. The SGR project, and discussions about its electrification to further lower emissions, suggest limited appetite for this from investors given the numerous domestic and regional political economy risks that undermine its viability. Nonetheless, climate finance, coupled with technical assistance, might be used to help address issues of last-mile transport and its electrification, by helping de-risk investments and mobilise private finance. More generally, more coordination between DFIs/MDBs, donors, and development agencies will be required to help build markets and upscale investments in climate actions. Initiatives such as the Invest for Impact Nepal (a platform including both donors and DFIs) could be adapted and replicated at the national level (e.g. Kenya) or regional level.

Knowledge gaps to Catalyse green growth and infrastructure financing

Investing in capital intensive infrastructure projects is increasingly difficult, with most African countries affected by a growing debt burden. This exacerbates macroeconomic and political risk perception, which further limits the scope for private investment and the development of a pipeline of bankable projects.

This calls for Innovative practices to more effectively channel climate finance for African clean economy opportunities. These may include: cross-sectoral partnerships (donors, development agencies and public development banks and DFIs), innovative financial instruments (volume guarantees) and tools (voluntary carbon markets), systematic combination of financing, technical assistance and policy dialogue, the inclusion of commercial actors and notable financiers (pension funds and assurance) and export credit agencies. While these technical solutions can play a role, they require a context-specific approach to ensure their political and economic feasibility.

References

Adow, M. 2022. Outrage as African leaders seek to push for fossil fuel investment at COP27, 17 August 2022.

Africa Confidential. 2022. Vol.63, No.19, 23 September 2022.

Agora. 2022. Global Steel Transformation Tracker.

ALG Newsletter 2017. Rail as the economic development axis of Africa's new economy, 27 April 2017.

Andae, G. 2022. Nairobi finalises issuing Naivasha inland depot titles to five countries, BusinessDaily, 11 August.

Anouar, S. 2022. Marrakech Offers 'Green' Investments at Investor Day, Morrocco World News, 7 April.

Anwar, M., Neary, P. and Huxham, M. 2022. Natural Gas in Africa Amid a Global Low-Carbon Energy Transition, The African Climate Foundation, November 2022.

Apiko, P., Woolfrey, S. and Byiers, B. 2020. The promise of the African Continental Free Trade Area (AfCFTA), Discussion paper 287, ECDPM: Maastricht, December 2020.

AU. 2022. Africa Speaks with Unified Voice as AU Executive Council Adopts African Common Position on Energy Access and Just Energy Transition, press release, African Union, July 2022.

Avenyo, E.K., Tregenna, F. 2022. Greening manufacturing: Technology intensity and carbon dioxide emissions in developing countries, Applied Energy, Volume 324, 119726, ISSN 0306-2619, DOI 10.1016/j.apenergy.2022.119726.

Ayompe, L. M., Davis, S. J. and Egoh, B. N. 2021. Environmental Research Letters, Volume 15, Number 12, DOI 10.1088/1748-9326/abc64f.

Basirat, S. 2022. Green steel opportunity in the Middle East and North Africa, IEEFA, 14 September.

Biogradlija, A. 2022. Hyphen Hydrogen Energy's $10 Billion Namibian Green Hydrogen Project Advances, Energy News, 22 August.

BMBF. 2022. Karliczek: Germany and Namibia form partnership for green hydrogen, Bonn: Bundesministerium für Bildung und Forschung (BMBF).

BMZ. 2023. Global Shield against Climate Risks.

Bradford, A. 2012. The Brussels Effect, Northwestern University Law Review, Vol. 107, No. 1, 2012, Columbia Law and Economics Working Paper No. 533, Available at SSRN: https://ssrn.com/abstract=2770634

Brautigam, D., Bhalaki, V., Deron, L. and Wang, Y. 2022. How Africa Borrows From China: And Why Mombasa Port is Not Collateral for Kenya's Standard Gauge Railway, Working Paper No. 2022/52. China Africa Research Initiative, School of Advanced International Studies, Johns Hopkins University, Washington, DC. Retrieved from http://www.sais-cari.org/publications.

Bryant, T. 2022. "Imperfect Picks" And "Uglies": Beauty Brands Are Salvaging Damaged And Abandoned Packaging And Products, 21 April 2022.

Buhari, M. 2022. Muhammadu Buhari: How not to talk with Africa about climate change, Opinion, Washington Post, 9 November.

Bureau, J-C. and Swinnen, J. 2018. EU policies and global food security, Global Food Security, Volume 16, 2018, Pages 106-115, ISSN 2211-9124, DOI 10.1016/j.gfs.2017.12.001.

Burn-Murdoch, J. 2022. Economics may take us to net zero all on its own, Opinion, Financial Times, 23 September.

Carrai, M. A. 2021. China's Adaptive Governance: A Tale of Two BRI Railroad Megaprojects in East Africa, SOAS University of London, 19 January.

CBI. 2021. The European market potential for certified coffee, 11 August 2021.

Chakamba, R. 2022. Is natural gas the solution to Africa's 'energy poverty'? Devex, 10 November.

Chang, J-H. 2003. Kicking Away the Ladder: Development Strategy in Historical Perspective, Book.

Clifford Chance. 2021. 10 Questions On The Proposed Carbon Border Adjustment Mechanism, Clifford Chance: New York.

Climate Champions. 2022. African Green Hydrogen Alliance launches with eyes on becoming a clean energy leader, News, 18 May.

ControlRisks. 2022. Can Africa clean up with green hydrogen? Analysis, 26 May.

Cramer, K. 2022. The EU Goes Rogue on Climate Policy With CBAM, Commentary, WSJ, 14 December.

Čučuk, A. 2022. Plans to turn SCZONE into green fuel hub gain momentum, Offshore Energy, 9 December.

Davis-Peccoud, J. and Deryckere, M. 2021. One More Reason to Get Sustainable Brands Right, Bain & Company.

Eberhard, A., Gratwick, K., Kariuki, L. 2018. Kenya's lessons from two decades of experience with independent power producers.

EIB. 2022. Finance in Africa: Navigating the financial landscape in turbulent times, Report, European Investment Bank.

Esiara, K. and Kitimo, A. 2022. Uganda protests Kenya move to dump cargo at Malaba on old railroad, the East African, 17 January.

EU and government of Egypt. 2022. Memorandum of understanding on a strategic partnership on renewable hydrogen between the European union and the Arab republic of Egypt, 16 November.

European Commission. 2021a. Questions and Answers on new rules for deforestation-free products, 17 November 2021.

European Commission 2021b. Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives (Text with EEA relevance).

European Commission. 2022a. EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation, 2 February.

European Commission. 2022b. Green Deal: EU agrees law to fight global deforestation and forest degradation driven by EU production and consumption, news, 6 December.

European Parliament. 2022. Deal reached on new carbon leakage instrument to raise global climate ambition, news, 13 December.

European Parliament. 2023a. Carbon border adjustment mechanism as part of the European Green Deal, 20 February.

European Parliament. 2023b. An EU legal framework to halt and reverse EU-driven global deforestation (EP request).

Eurostat. 2022. Africa-EU - international trade in goods statistics.

FAO. 2014. Impact of international voluntary standards on smallholder market participation in developing countries – A review of the literature, Rome.

Fox, B. and Vasques, E. 2022. Europe searches for alternatives in fertiliser supply battle, Euractiv, 25 August.

Gambetta, G. 2022. 'It's investable': South Africa praised for new green taxonomy, Responsible investor, 1 April.

Garowe. 2023. Kenya purchases cheap electricity from Ethiopia to meet local power demand, 5 March 2023.

Genghis Capital. 2018. Why electric SGR is a pipe dream, 23 July.

Green Hydrogen Organisation. 2022. Development finance for the green hydrogen economy. Priority actions for development finance institutions.

Godinho, C. and Eberhard, A. 2019. Learning from Power Sector Reform Experiences. The Case of Kenya, Policy Research Working Paper 8819, World Bank Group, April 2019.

Hiller, N., Blot, E. 2022. Securing the position of smallholders in zero-deforestation supply chains, IEEP, 14 October 2022.

Hyphen. 2022. Namibia Announces Progress with Hyphen Hydrogen Energy to Unlock US$10bn Investment for First Green Hydrogen Project to Help Power the Energy Transition, Hyphen Africa, 1 June.

IISD. 2022. Daily report for 7 November 2022, Earth Negotiations Bulletin Vol. 12 No. 808, Sharm El-Sheikh Climate Change Conference, November 2022, International Institute for Sustainable Development.

IRENA. 2022. Global hydrogen trade to meet the 1.5°C climate goal: Part I – Trade outlook for 2050 and way forward, International Renewable Energy Agency, Abu Dhabi.

IRENA and AEA. 2022. Innovation Outlook: Renewable Ammonia, International Renewable Energy Agency, Abu Dhabi, Ammonia Energy Association, Brooklyn.

ITC. 2018. Promoting SME Competitiveness in Africa: Data for de-risking investment, International Trade Centre, Geneva: ITC.

Jayaram, K., Kendall, A., Somers, K. and Bouchene, L. 2021. Africa's green manufacturing crossroads. Choices for a low-carbon industrial future, McKinsey&Company, September 2021.

Kenya National Bureau of Statistics. 2022. Energy-Electrical Power Systems, Kenya - Country Commercial Guide.

Kenya Ministry of Energy. 2022. Kenya Energy Sector Roadmap 2040, White Paper, July 2022.

Kibuuka. 2021. Tanzania-Rwanda: How to be good friends, again, The Citizen, 31 March 2021.

Kimanthi, K. 2022. SGR seeks to reap from rising demand for freight services, Business Daily Africa, 29 June.

Kisero, J. 2022. Sharpen Mombasa port's rivalry edge, Business Daily Africa, 30 September.

Kobina Kane, M. and Gil, S. 2022. Green Hydrogen: A key investment for the energy transition, World Bank blogs.

Kzibwe, K. 2022. In Kenya's Ruto, Museveni has found the perfect EAC partner, Nile Post, 20 August.

Lamarque, H. 2019. Profitable inefficiency: The politics of port infrastructure in Mombasa, Kenya. The Journal of Modern African Studies, 57(1), 85-109. doi:10.1017/S0022278X18000630.

Lee, J., Gereffi, G., Beauvais, J. 2010. Global value chains and agrifood standards: Challenges and possibilities for smallholders in developing countries, DOI 10.1073/pnas.0913714108.

Lamy, P. 2020. PASCAL LAMY: "With precaution, the world is no longer flat", NRC Handelsblad.

MAERSK. 2022. Maersk explores new ways to accelerate green fuel production, press release, 8 March.

Maombo, S. 2022. SGR freight operation exceeds expectations as it enters 5th year, the Star, 28 February.

Martins, K. F., Teixeira, D., de Oliveira Corrêa, R. 2022. Gains in sustainability using Voluntary Sustainability Standards: A systematic review, Cleaner Logistics and Supply Chain, Volume 5, 100084, https://doi.org/10.1016/j.clscn.2022.100084.

Matheson, C. 2016. The political economy of regional integration in Africa – The East African Community (EAC), ECDPM: Maastricht.

McCartney, M. 2022. The New Steel Age? Economic Development and the African Railway Renaissance, August 2022.

McKinsey & Company. 2022. Playing offense on circularity can net European consumer goods companies €500 billion, 29 June.

Medinilla, A. and Sergejeff, K. 2023. Scaling up African clean energy, Discussion paper 334, ECDPM: Maastricht, January 2023.

Moss, T. and Ramachandran, V. 2021. Why the Climate Panic About Africa Is Wrong, Foreign Policy, 6 December.

Mukonza, Chipo. 2020. An Analysis of Factors Influencing Green Entrepreneurship Activities in South Africa. DOI 10.1007/978-3-030-44180-7_3.

Museveni, Y. K. 2022. Europe's Failure to Meet Its Climate Goals Should Not Be Africa's Problem, Opinion, Newsweek, 11 August.

Mutambo, A. 2020. SGR to be upgraded to electric railroad in four years, Nation Media Group, 28 June.

Mwita, M. 2022. Kenya Railways optimistic as rail revenues hit new high, The Star, 9 May.

National Treasury. 2022. Republic of South Africa. A Comparison Between the EU Green Taxonomy and South Africa's Green Taxonomy, November 2022.

NCTTCA. 2017. Northern Corridor Green Freight Strategy: For a Competitive and Sustainable Economic Corridor.

NCTTCA. 2021. The Northern Corridor Digest, March 2021.

Negi, A., Pérez-Pineda, J. A., Blankenbach, J. 2020. Sustainability Standards and Global Governance. Experiences of Emerging Economies.

North Africa Post. 2022. OCP new green investment program for 2023-2027 presented at a ceremony chaired by King Mohammed VI, 3 December.

Notter, B., Weber, F., Füssler, J. 2018. Greenhouse gas emissions from the transport sector: Mitigation options for Kenya, Methodology and Results, Short report, Zurich, 22 November 2018.

Nugent, P. and Lamarque, H. 2022. Transport Corridors in Africa, August 2022.

Nweke-Eze, C. and Quitzow,R. 2022. The promise of African clean hydrogen exports: Potentials and pitfalls, Brookings, 10 May.

O'Farrell, S. 2022. Kenya's FFI green hydrogen deal: 'Other countries will follow suit', interview, FDI Intelligence.

Otieno, B. 2022. Treasury allocates Sh1.5bn more for Naivasha-Malaba railway line, Business Daily, 3 February.

Ovcina Mandra, J. 2022a. Maersk to study feasibility of green fuels bunkering in Oman, Offshore energy, 6 December.

Ovcina Mandra, J. 2022b. Egypt ramping up efforts to make SCZONE clean fuel production hub, Offshore energy, 15 November.

PCC. 2023. Carbon Border Adjustment Mechanisms and Implications for South Africa, A Presidential Climate Commission Working Paper, February 2023.

Rabobank. 2021. The Carbon Border Adjustment Mechanism explained, 16 July 2021.

Rolley, S. 2022. Congo rejects U.S. request to pull oil blocks from auction, Reuters, 5 October.

Ruto, W. 2022a. We are at a crossroads in history: Africa can and must be a leader in clean energy, The Guardian, 4 October.

Ruto, W. 2022b. Doing development differently: How Kenya is rapidly emerging as Africa's renewable energy superpower, Rapid Transition Alliance, 17 November.

Said, J., Akileswaran, K., Mazumdar, J. 2022. Industrialising Africa: Anchoring climate adaptation and the AfCFTA, IGC blog.

Songwe, V., Ogunbiyi, D. and Abou-Zeid, A. 2022. Africa's energy transition calls for pragmatic measures to keep the continent competitive, UNECA stories.

Stern, D. I. 2018. The Environmental Kuznets Curve, in Reference Module in Earth Systems and Environmental Sciences.

Sterk, R. 2022. High fertilizer prices, tight supplies may adversely affect 2022 acreage, Food Business News, 12 June.

Szulecki, K., Overland, I., Dock Smith, I. 2022. The European Union's CBAM as a de facto Climate Club: The Governance Challenges.

Tanchum, M. 2022. Morocco's New Challenges as a Gatekeeper of the World's Food Supply: The Geopolitics, Economics, and Sustainability of OCP's Global Fertilizer Exports, MEI@75, 18 January.

Tanui, C. 2022. Kenya Railway Conducts Trial On New Line Linking Mombasa and Malaba, All Africa, 10 January.

Taylor, I. 2020. Kenya's New Lunatic Express: The Standard Gauge Railway, African Studies Quarterly, Volume 19, Issues 3-4, October 2020.

The East African. 2022. Hard times for Kenya SGR as port operations return to Mombasa, news, 14 September.

Titievskaia, J., Morgado Simões, H., Dobrevaet, A. 2022. EU carbon border adjustment mechanism Implications for climate and competitiveness, Briefing, European Union, July 2022.

TMEA. 2021. Report on the Tool for the Estimation of Greenhouse Gas Inventory for Northern and Central Corridors, TradeMark Africa, March 2021.

Triki, C. and Said, J. 2021. Maximising the Green Path to Industrialisation in Africa, Tony Blair Institute for Global Change.

UNECA 2022a. Communiqué Egypt – International Cooperation Forum and Meeting of African Ministers of Finance, Economy and Environment, 7-9 September 2022, Al Masa Convention Center New Administrative Capital, Cairo, Egypt.

UNECA. 2022b. African Continental Free Trade Area (AfCFTA) to significantly increase traffic flows on all transport modes, Stories, 7 April.

UNECA. 2022c. Kenya's national AfCFTA implementation strategy 2022 – 2027, Policy Brief, Addis Ababa: UNECA, https://hdl.handle.net/10855/48179".

UNFCCC. 2022. COP27 Reaches Breakthrough Agreement on New "Loss and Damage" Fund for Vulnerable Countries, 20 November.

UNFSS. 2022. Voluntary Sustainability Standards Sustainability Agenda and Developing Countries: Opportunities and Challenges, 5th Flagship Report of the United Nations Forum on Sustainability Standards.

Walsh, G., Ahmed, I., Said, J., E Maya, M. F. 2021. A Just Transition for Africa: Championing a Fair and Prosperous Pathway to Net Zero, Tony Blair Institute for Global Change, October 2021.

Walsh, G. and Oguntoye, O. 2022. Closing the Climate Divide: How Energy-Transition Plans Can Turn Pledges Into Projects, 9 November.

WEF. 2022. This is the state of renewable energy in Africa right now, World Economic Forum, 11 April.

Woolfrey, S. and Karkare, P. 2021. The future for Africa's trade with Europe: factors affecting the long-term relevance of the European market for African exports, Discussion paper 306, ECDPM: Maastricht.

World Bank. 2013. The Economics of Rail Gauge in the East African Community, August 2013.

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