GREEN AFRICAN TRANSFORMATION PATHWAYS
A UNU-INRA INITIATIVE

UNITED NATIONS UNIVERSITY
UNU-INRA
Institute for Natural Resources in Africa

United Nations University -
Institute for Natural Resources in Africa

Discussion Paper
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BRIDGES OF OPPORTUNITY:
PARTNERING FOR AFRICA–EUROPE GREEN DEVELOPMENT

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ACRONYMS

4IR	Fourth Industrial Revolution
ACEA	African Circular Economy Alliance
ACP	African, Caribbean and Pacific Group of States
ADI	African Development Institute
AEEP	Africa–EU Energy Partnership
AfCFTA	African Continental Free-Trade Area
AfDB	African Development Bank
AGN	African Group of Negotiators
AGRA	Alliance for a Green Revolution in Africa
AJFAND	African Journal of Food, Agriculture, Nutrition, and Development
AMCEN	African Ministerial Conference on Environment
APP	Africa Progress Panel
AREI	Africa Renewable Energy Initiative
ATU	Accra Technical University
AU	African Union
AUC	African Union Commission
AUC-REA	African Union Commission for Rural Economy and Agriculture
AUDA-NEPAD	African Union Development Agency – New Partnership for Africa's Development
BMBF	Federal Ministry of Education and Research
BMZ	German Federal Ministry of Economic Cooperation and Development
CAADP	Comprehensive Africa Agriculture Development Programme
CBAM	Carbon Border Adjustment Mechanism
CESDOSED	Center for Sustained Domestic Security and Development
CH4	Methane
CICs	Climate Innovation Centres
CIFOR	Center for International Forestry Research
CO2	Carbon Dioxide
COP 15	Fifteenth Meeting of the Conference of the Parties
COVID-19	Coronavirus Disease of 2019
CTCN	Climate Technology Centre and Network
DIE	Deutsches Institut für Entwicklungspolitik
EAC	East African Community
ECDPM	European Centre for Development Policy Management
ECOSOC	United Nations Economic and Social Council
ECOWAS	Economic Community of West African States
EEAS	European External Action Service

ACRONYMS

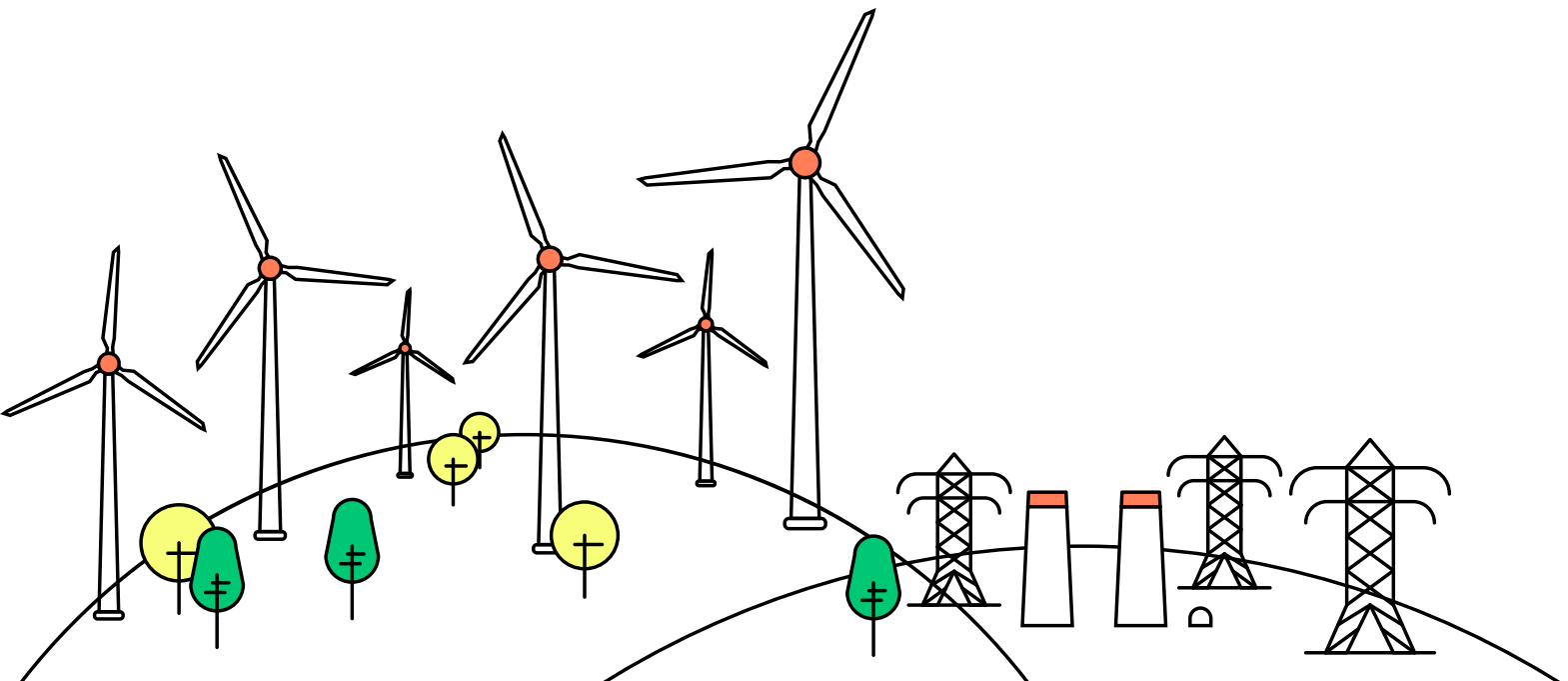
ENERGIA	International Network on Gender and Sustainable Energy
EPAs	Economic Partnership Agreements
EU	European Union
FAO	Food and Agriculture Organization
FARA	Forum for Agricultural Research in Africa
FSIN	Food Security Information Network
G-5 Sahel	The Group of Five for the Sahel
GCCA	Global Climate Change Alliance
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIMPA	Ghana Institute of Management and Public Administration
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GREAT Pathways	Green African Transformation Pathways
GW	Gigawatt
IEA	International Energy Agency
IFFs	Illicit Financial Flows
IGES	Institute for Global Environmental Strategies
IGF	Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
IIED	International Institute for Environment and Development
IISD	International Institute for Sustainable Development
ILO	International Labour Organization
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
JAES	Joint Africa EU-Strategy
JTM	Just Transition Mechanism
KNUST	Kwame Nkrumah University of Science and Technology
kWh/m2	Kilowatt-Hours per Square Meter
LCBC	Lake Chad Basin Commission
LDCs	Least Developed Countries
MISAHEL	Mission de l'Union Africaine pour le Mali et le Sahel
NDCs	Nationally Determined Contributions
OECD	Organisation for Economic Cooperation and Development
PIDA	AU Programme for Infrastructure Development in Africa
ROA	Rural Outreach Africa
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SMEs	Small and Medium Enterprises
SRSG UNOWAS	Special Representative of the Secretary-General – United Nations Office for West Africa and the Sahel

ACRONYMS

UCT	University of Cape Town
UN	United Nations
UN ECA-ACPC	United Nations Economic Commission for Africa – African Climate Policy Centre
UN ECA-ATPC	United Nations Economic Commission for Africa – African Trade Policy Centre
UN-ECA	United Nations Economic Commission for Africa
UN-SESG	United Nations Special Envoy of the Secretary-General
UNAM	University of Namibia
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UNU	United Nations University
UNU-INRA	United Nations University Institute for Natural Resources in Africa
UNZA	University of Zambia
US	United States
WAEMU	West African Economic and Monetary Union
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WTO	World Trade Organization

BRIDGES OF OPPORTUNITY

PARTNERING FOR AFRICA–EUROPE GREEN DEVELOPMENT



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Executive Summary

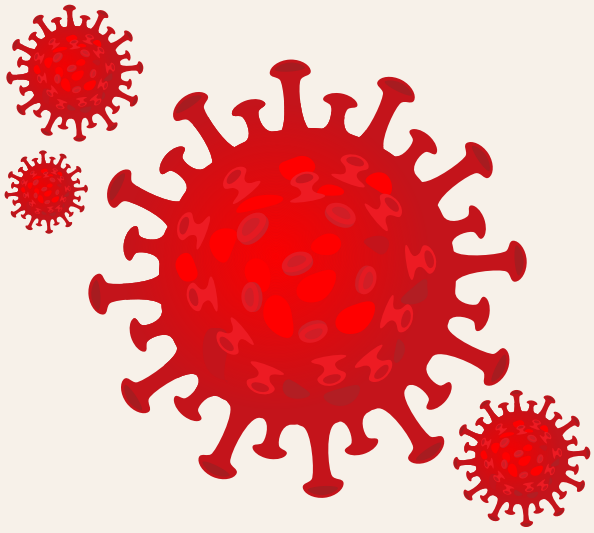
The Covid-19 pandemic has exposed the heightened vulnerability of the world's poorest and most marginalized. It has also underscored the disparities in development between the rich economies and the less developed ones, emphasizing the critical need to enhance Africa's adaptive capacity. The combined impacts of climate change and Covid-19 call for urgent and radical solutions to future exogenous shocks.

Disruption caused by Covid-19 has so far resulted in Africa's economy contracting by some 2.6%, with a loss of gross domestic product (GDP) of US$120 billion (ECA, 2020). Healthcare will require an additional US$100 billion in expenditure, 28.2 million–49.2 million more Africans will fall back into extreme poverty, and more than 100 million people are at risk of hunger (Food Security Information Network (FSIN), 2020). An estimated 25 million–30 million job losses are anticipated in both the formal and informal sectors. This comes on top of climate change-related projections that GDP in West and East Africa will contract by up to 15% by 2050, in North and southern Africa by as much as 10%, and in Central Africa by 5% (UNEP, AfDB & ECA, 2020). Crop yields could decrease by up to 15%, and more frequent and more intense extreme weather events are predicted (Sultan et al., 2019).

An ambitious plan to ensure stimulus spending in Africa to 'build back better' after Covid-19 has been unveiled. Backed by 54 African leaders, recommendations were issued by the Global Center on Adaptation and the African Adaptation Initiative (Global Center on Adaptation & African Adaptation Initiative, 2020). Beyond this, African environment ministers proposed an African Green Stimulus Programme at the eighth special session of the African Ministerial Conference on Environment (AMCEN). The African-led initiative aims to support green recovery in order to address the socio-economic and environmental impacts of Covid-19 in a sustainable manner (AMCEN, 2021).

However, faced with these challenges, Africa must go further and 'build forward better' towards a green recovery. This requires investment in a green transition that is likely to yield greater and more sustainable benefits than dependence on fossil fuels, which is already creating dire consequences for economies, the environment and public health. The slump in oil prices is a prelude to future impacts on fossil fuel-reliant African economies as the world continues to decarbonize.

This discussion paper presents a synthesis of expert views and research that recommend a green transition pathway for Africa's development, thus providing content and context for the next European Union (EU)–African Union (AU) summit. The note outlines the ability of the European Green Deal to catalyse a new partnership with Africa. It underscores the need to leverage Africa's renewable energy resources and raises critical questions, including about the role that natural gas can play as a fuel of the energy transition.



Disruption caused by Covid-19 has so far resulted in a contraction of Africa's economy by some **2.6%**, with a gross domestic product (GDP) loss of **US$120 billion.** Healthcare will require an additional US$100 billion in expenditure; **28.2 million–49.2 million** more Africans will fall back into extreme poverty; and more than **100 million** people are at risk of hunger. An estimated **25 million–30 million** job losses are anticipated in both the formal and informal sectors. This comes on top of climate change-related projections that GDP in West and East Africa will contract by up to **15% by 2050**, in North and Southern Africa by as much as 10% and in Central Africa by 5%. Crop yields could decrease by up to 15% while more frequent and more intense extreme weather events are predicted.

The road to a green transition draws on the aspirations of the AU Agenda 2063 for the 'Africa we want', namely 'a prosperous Africa based on inclusive growth and sustainable development'. While some greening is occurring in Africa, there is no regional framework for coordination, aggregation, capitalisation and scaling up. In this regard, the European Green Deal could be used to trigger a regional transformational blueprint, enabling an African green transformation and averting catastrophic climate change.

Africa's transformation is being strengthened by its strategic partnerships. A shared history and geography, as well as investment choices, make the EU a natural ally. The EU is already Africa's largest donor and its main investor. However, it is important that Africa's green transition is endogenously owned and that it provides an opportunity for African governments and companies to improve their transaction capacity and value addition. While the European Green Deal offers many opportunities with co-benefits for both parties, there are perceptions that the Carbon Border Adjustment Mechanism (CBAM) may impose new challenges on Africa that could reduce its trade volumes with the EU. Although the design and roll-out of the CBAM are still under discussion, some perceive the CBAM as a unilateral policy that may contradict World Trade Organization (WTO) rules and risk splitting the world into two trading blocs, high-carbon and low-carbon countries respectively, thus creating a barrier to exports from emerging economies to advanced economies.

Elements for continuing cooperation and mutually beneficial partnerships between Africa and the EU include financing mechanisms facilitating the green transition and providing alternative livelihoods and economic opportunities. The partnership is expected to deliver on equitable revenue-distribution mechanisms to incentivize greening measures and promote trade, especially through the African Continental Free Trade Area (AfCFTA), placing an emphasis on innovative production technologies, energy efficiency and renewable energy production and use.

Africa's green transformation could be rooted in the following strategic areas:

- **Sustainable production** ·using low-carbon, energy-efficient processes and equitably distributed renewable energy assets, and developing national and regional value and supply chains.
- **Sustainable consumption** through food production systems, less intensive fertiliser and water use, and circular economy policies promoting reuse and recycling.
- **Smart infrastructure** to optimise domestic and cross-border water, rail, road and air transport and construct energy-efficient buildings.
- **Sustainable habitats and biodiversity** to preserve land and maritime resources, halt land degradation encourage reforestation and build resilience.
- **Sustainable human development** through gender-inclusive, capacity-building technical and vocational education and training, the formalization and greening of the informal economy and planned urbanization.
- **Science, technology, innovation, research and development**inin nurturing home-grown ideas and technologies to support green production and supply and value chains, with alternative uses for assets at risk of becoming stranded.

The European Green Deal is an important opportunity for the EU to support Africa's efforts in digitalization and technological innovation, thus catalysing rapid transformation and enabling green development. Equally, the EU will need Africa's cooperation and support to meet its goal of carbon neutrality by 2050, as set out in the European Green Deal.

Key messages

- The global Covid-19 pandemic has laid bare the fragility and vulnerability of social and economic systems across the world and has reinforced the need to prepare for future shocks and build resilience. It is a timely reminder that Africa must 'build forward better', not only in recovering from Covid-19, but also to meet the other global challenge, namely climate change.

- To 'build forward better', Africa must help to mitigate climate change without compromising its development priorities. An urgent shift is required to a low-carbon, high-growth pathway that will lead to resilient livelihoods, infrastructural development and sustainable prosperity.

- A green transition is not a foregone conclusion – it is a choice supported by the first aspiration of Africa's Agenda 2063 development framework: 'a prosperous Africa based on inclusive growth and sustainable development'. Transition pathways are complex and non-linear. However, investing in an early transition plan today will enable Africa to reap important dividends over time.

- Economic diversification is essential for Africa's long-term development, but it will involve short-term costs and trade-offs. Africa's green transition should be flexible in sequence, pace and scale to reflect country and sub-regional specifics and development levels. Finding ways to build on existing greening initiatives and finance a broader transition will also be key.

- Covid-19 has created new challenges for both Africa and Europe. Strategic partnerships between the two regions can help to plug the gaps in financing, capacity-building and technological support. However, Africa's green transition must be homegrown and Africa-owned.

- Through the Africa–European Union (EU) partnership, a new cycle of which is under discussion, Africa could help strengthen the delivery of the European Green Deal and receive EU support to pursue its own green transition. There is room for resetting the balance within the partnership and enabling new forms of cooperation.

- The African Continental Free Trade Area (AfCFTA) should become the foundation of the AU-EU partnership in order to ensure alignment with regional aspirations and development goals. The AfCFTA can be leveraged towards greening value chains and raising green investments.

1. Introduction

The Covid-19 pandemic has been the defining global health challenge of the century so far. Beyond the loss of lives, we have yet to understand its full impact. The world is now facing severe economic recession, with no nation or industry left unscathed. In Africa, pre-existing threats to the continent's development trajectory have been exacerbated by the pandemic. The Covid-19 stress test has highlighted Africa's vulnerabilities afresh in respect of the continent's economic structure, trade imbalances and indebtedness, as well as heightening its insecurity in food, water and energy. The Economic Commission for Africa (UN-ECA) estimates that, in the best-case scenario, Africa's average GDP growth for 2020 will fall by 1.4%, equivalent to a loss of US$29 billion. In the worst-case scenario, Africa's economy could contract by up to 2.6% – a loss of US$120 billion (ECA, 2020).

40%

Yet a green recovery stimulus would build and restore livelihoods for millions of Africans, particularly those in the informal sector who constitutes more than **40%** of the continent's labour force. (Elisha et al., 2020)

Just as the pandemic threatens economies around the world, climate change is undermining lives, livelihoods and economic growth globally. Africa is being particularly hard hit because of its high vulnerability to multidimensional shocks and its low adaptive capacity. It is projected that West and East Africa could lose up to 15% of GDP by 2050 due to climate change impacts, while North and southern Africa could lose as much as 10% and Central Africa 5% (UNEP, AfDB & ECA, 2020).

At the same time, Covid-19 has significantly reduced the fiscal space to invest in urgently required climate change responses in Africa. According to the ECA, at least US$100 billion will be needed to finance Africa's health response to the pandemic, with an additional US$100 billion for an economic stimulus (ECA, 2020). While funding the response is vital, it draws investment away from green transition pathways, which require large, upfront expenditure before the benefits can be reaped. However, a green recovery stimulus would build and restore livelihoods for millions of Africans, particularly those in the informal sector who constitute more than 40% of the continent's labour force (Elisha et al., 2020). A report by the New Climate Economy estimates that, globally, bold climate action has the potential to generate over 65 million low-carbon jobs and US$2.8 trillion in government revenues, thus producing at least US$26 trillion in overall economic benefits (NCE, 2016).

Covid-19 has inspired renewed calls to 'build forward better' by building resilience into and across economic, social and ecological systems. In this sense, it has strengthened the business case for investing in a climate-proofed green transition as the development pathway of choice for Africa – the cost of preparing is negligible compared to the cost of not preparing (IMF, 2020). By exposing the heightened vulnerability of the world's poorest and most marginalised populations, the pandemic has also strengthened the development case for a just transition that enhances the adaptive capacity of all Africa's peoples.

The green transition is a choice that will involve trade-offs (especially to meet the initial financial costs), but it will bring about many much-needed, long-term benefits, including income generation, job creation and environmental sustainability, as well as stronger cities and energy sectors. Both climate resilience and development can be achieved through a continent-wide shift to a low-carbon, high-growth, green transition pathway.

However, this cannot be achieved in isolation. The pandemic has highlighted the interconnectedness of social and economic systems across the world, forcing us to recognise that global crises do not respect boundaries, and that actions in one country or sector will have ripple effects in others. This makes regional and global frameworks and partnerships key for a coordinated, collective approach to recovery, development and resilience. Therefore, Africa must adopt a regional green transition strategy that accounts for the continent's diversity of countries and deploys their human and natural resources at a pace and scale that meet the continent's development needs and aspirations.

To accelerate the shift to a green transition pathway, Africa can leverage its international alliances and partnerships to fill gaps in technological capacity and financing. One such partner, the EU, has launched the European Green Deal decarbonisation programme, potentially offering Africa opportunities in terms of trade, debt, investment and technical assistance. However, Africa must own its transition if it is to become sustainable, and partnerships between the two regions must be mutually beneficial in order to avoid historical patterns of asymmetry.

Box1: Concepts: Green Economy — Green Transition — Green Transformation

The concept of a green economy offers a solution to the multiple crises faced today — economic, food and climate — as well as the prospects of an alternative production system that fosters both economic growth and environmental sustainability. The green transition denotes the transition away from earlier systems that are now exacerbating global crises towards greener economies where there is no longer a trade off between growth and development on one hand and protecting nature and ecosystems on the other.

UNEP defines a green economy as:

> Low carbon, resource efficient and socially inclusive. In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services.

The notion of the green transition has generated a strong development narrative linked to the adoption and diffusion of innovations in economic, social, technological, behavioural and business models. These include energy generation, distribution and storage, agriculture and forestry, water supply and treatment, waste management and environmental remediation (OECD, 2019b). In this discussion paper, green transitions are defined with reference to sustainable practices that move away from overconsumption and system inefficiencies in respect of energy, water, land, buildings, etc. to increasing resource efficiency.

Although 'transition' is often used of short-term, orderly, managed actions, transformations are more profound, diverse, unruly, and sometimes linked to social and innovation-led outcomes (see Stirling, 2014).

To accelerate the shift to a green transition pathway, Africa can leverage its international alliances and partnerships to fill gaps such as technological capacity and financing.

1.1. About this discussion paper

This discussion paper is intended as a framing paper for Africa's development options and opportunities in the era of Covid-19 and climate change. The paper outlines Africa's priorities, both domestically and internationally, and proposes appropriate development trajectories. It is grounded in the context of Africa's international partnerships, in particular the forthcoming 2021 summit meeting with the EU.

Positioning a green transition pathway as the development trajectory of choice for the continent, it suggests that the green transition could be the central theme of the next cycle of the EU–Africa partnership. It proposes evidence-based opportunities for a green transition in Africa and outlines ways in which the European Green Deal could be beneficial to both the EU and Africa.

The discussion paper was produced by a consortium of African development partners coordinated by the United Nations University Institute for Natural Resources in Africa (UNU-INRA). It draws on expertise and engagement from key regional institutions, including the African Union (AU), African Union Development Agency (AUDA-NEPAD), African Development Bank (AfDB) and United Nations Economic Commission for Africa (UN-ECA). It has also been enriched by reflections from climate and greening stakeholders in both Africa and Europe, such as the African Trade Policy Centre (ATPC), African Climate Policy Centre (ACPC), adelphi and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Literature and policy documents on greening, climate change and Covid-19 were reviewed and analysed for the paper, and concrete cases and opportunities for greening evaluated. Interviews were used to solicit the views of key greening champions and experts in Africa and Europe.

2. The Need for a Green Transition for Africa

Africa is confronted currently with the twin crises of Covid-19 and climate change. Given the continent's vulnerabilities, both crises have the potential to fracture Africa's economic and social progress. However, both can also be grasped as catalysts for change in providing an imperative to 'build forward better'. In order for Africa to do so, it must consider investing urgently in a green transition that is likely to yield greater and more sustainable benefits than other pathways. Covid-19 has, for example, thrown the prospect of asset stranding into stark relief (see Box 2). The critical slump in oil prices caused by the pandemic has given the continent a preview of what could happen if the global community continues to divest away from oil, leaving Africa's fossil fuel-dependent economies locked into an obsolete and rapidly depreciating industry. UNU-INRA's report on stranded assets sheds further light on the implications of stranded hydrocarbon resources in Africa.

Diversifying economic growth away from dependence on natural, especially high-carbon resources is crucial to safeguarding development for the 'Africa we want' as envisioned in Agenda 2063, the core aspiration of which is 'a prosperous Africa based on inclusive growth and sustainable development'. The Agenda also calls for local value addition, as opposed to simply exporting raw products materials, in order to generate jobs and wealth for African peoples, as well as harnessing the continent's natural resources for its own development.

For example, Africa has large fossil-fuel reserves, including 450 billion barrels of oil – around 7% of global reserves – and 13% (100 tcm) of the world's gas resources. Yet, the paradox remains that Africa's domestic energy supply growth has been relatively low. For instance, in 2017, Africa represented 8.8% of world crude oil output, of which it exported 78% (IEA, 2019). Energy provision is therefore a cornerstone of Agenda 2063, which calls to increase energy access by 50% compared to 2013 levels and to increase the efficiency of household energy use by 30% before 2023.

Africa faces other developmental challenges that are directly related to the climate crisis, including threats to food and water security, population displacement and migration, increasing land degradation – which disproportionately affects the poorest and most marginalized people – and energy poverty, which has left about 600 million people and about 10 million medium-sized enterprises across the continent without access to electricity (APP, 2015). Development disruptors such as energy poverty must be targeted in order to make gains across other interrelated sectors and enable Africa to meet the Sustainable Development Goals (SDGs).

Agriculture is another sector at the heart of Africa's structural transformation. It offers several win–win opportunities for green development through reforestation, soil conservation and efficient water management strategies, as well as green industrialisation. As noted by the late Prime Minister of Ethiopia, Meles Zenawi, if Africa embarks on a green development pathway, it will be 'doing humanity as a whole and in particular those who created the problem an enormous service'.

Africa produced **8.8%** of world crude oil output, but it exported **78%** of this production (IEA 2019). Energy provision is therefore a cornerstone of **Agenda 2063**, which calls for a 50% increase in energy access compared with **2013** levels and a **30% increase** in the efficiency of household energy use before **2023**. (AU, 2015)

600 MILLION

Energy poverty has left about **600 million** people and about **10 million** medium-sized enterprises across the continent without access to electricity. (IRENA, 2020)

This remark touches on Africa's unique position in relation to mature industrialized nations: given its low historical emissions and relative absence of highly carbon-intensive industries, the continent does not have the same 'transition imperative'. Yet, Africa can play a leadership role in the management of the green transition, and in doing so build more resilient and inclusive economies to create jobs, become more competitive and cultivate innovation in the area of green development and digitalisation, or the 'fourth industrial revolution'. In Professor Lord Nicholas Stern's view, "Africa holds the foundation to a large scale emissions reduction. Africa can get there faster and be in a much more comfortable position in terms of its development trajectory." However, this cannot happen without a clear strategy and a conscious effort to diversify those of its economies that are built on non-renewable natural resource extraction and export.

Besides its resources, Africa has the market potential to lead a transformational drive towards green development: the continent has shown steady economic performance since 2000, with an average annual GDP growth rate of 4.6%. Indeed, the continent is home to some of the world's fastest-growing economies, with countries such as Ethiopia, Côte d'Ivoire, Senegal, Tanzania and Ghana having registered high growth rates for the past ten years. Nonetheless, Africa has struggled to increase its productive capacity and to diversify its national economies, many of which have been constrained by slow growth in manufacturing and other high-productivity sectors (Oqubay, 2020).

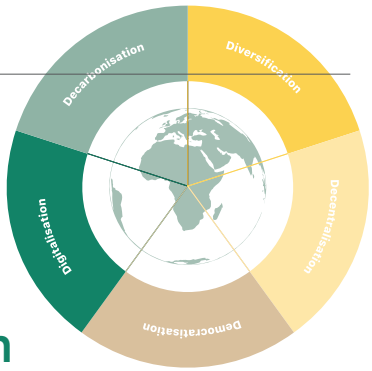
Box 2: Offsetting the risks of stranded assets

If the world is to limit global warming to no more than 2°C by shifting to renewable sources of energy, 80% of global coal resources, 50% of oil reserves and 40% of natural gas must be left in the ground. This will have direct consequences for hydrocarbon-driven economies that depend on such resources for up to 60% of their export revenues (UN, 2020).

Some African countries, including Mozambique, Kenya, Tanzania, Ghana, Uganda, Senegal, and Côte d'Ivoire, have recently locked in investments in fossil fuels with the expectation of rapid economic gains. These assets are at risk of stranding, a risk that has been exacerbated by the devastating impact of Covid-19 on the industry due to the sudden drop in energy demand and consequent fall in global prices. Nigeria, for example, saw an abrupt halt to its fragile recovery from the 2014–2016 oil price collapse, and was forced to review its oil benchmark price downwards and reduce planned crude production.

The effect of the pandemic on global oil revenues, which dropped by 50–85% in 2020 (IEA, 2020), provides just a glimpse of the impacts of future climate-related stranding. Following this downturn, Lord Nicholas Stern remarked, "For the first time we are seeing the beginning of the end of fossil fuels. Both the US stock market and the oil and gas markets have plummeted by 50 per cent – this is remarkable."

Hydrocarbon-dependent economies must rethink their development model in order to decouple economic growth from fossil fuels and diversify into other productive sectors such as agriculture, human capital and manufacturing. Lessons learnt from the pandemic should inform the reshaping of policies and energy infrastructure by capitalising on emerging opportunities from low-cost renewable energy to drive broader social and human development. A well-designed economic recovery programme that integrates low-carbon and climate-resilient growth pathways can deliver multiple and lasting economic and social benefits.



2.1. The Five Pillars for Green Transition

Africa's choice of a green transition is guided by Agenda 2063 (see Box 3), which sets out the continent's development aspirations for the next fifty years. It frames the green transition around five pillars: decarbonisation, diversification, decentralisation, democratisation and digitalisation (the '5Ds'). The 5Ds concept sets out the logic for a green transition and the structure and planning for its implementation. This discussion paper draws on the concept but is not framed by its parameters.

Decarbonisation: A gradual, sector-specific shift is needed towards low-carbon technologies across Africa's industries. This will allow its economies to benefit from the continent's natural resource endowment where strategic, while managing the risk of carbon-based assets becoming stranded and contributing long-term benefits to the planet and its people.

Diversification: The risks to African economies must be managed by diversifying revenue streams, sources of production, value chains, trade relationships and energy sources. Currently, the continent is increasingly reliant on its natural resource base as the main stimulant for economic growth, and much of Africa is locked into production systems that do not add value. As Yao Graham, Coordinator of Third World Network-Africa, argued, "African governments must begin to take diversification and planning seriously. Policy coherence and coordination are required as well as very careful thinking and planning for Africa to be able to mobilise the capital resources needed to enable the transition. We are not there yet".

Decentralisation: Energy and services must be supplied to both urban and rural populations. While Africa is experiencing rapid urbanisation, 50% of its population is still rural: off-grid and mini-grid systems will be crucial in closing the energy gap for rural residents. Africa must also provide efficient services for its rapidly urbanising population. Smart, sustainable cities will be engines of growth, enabling trade in goods and services to flow across various value chains.

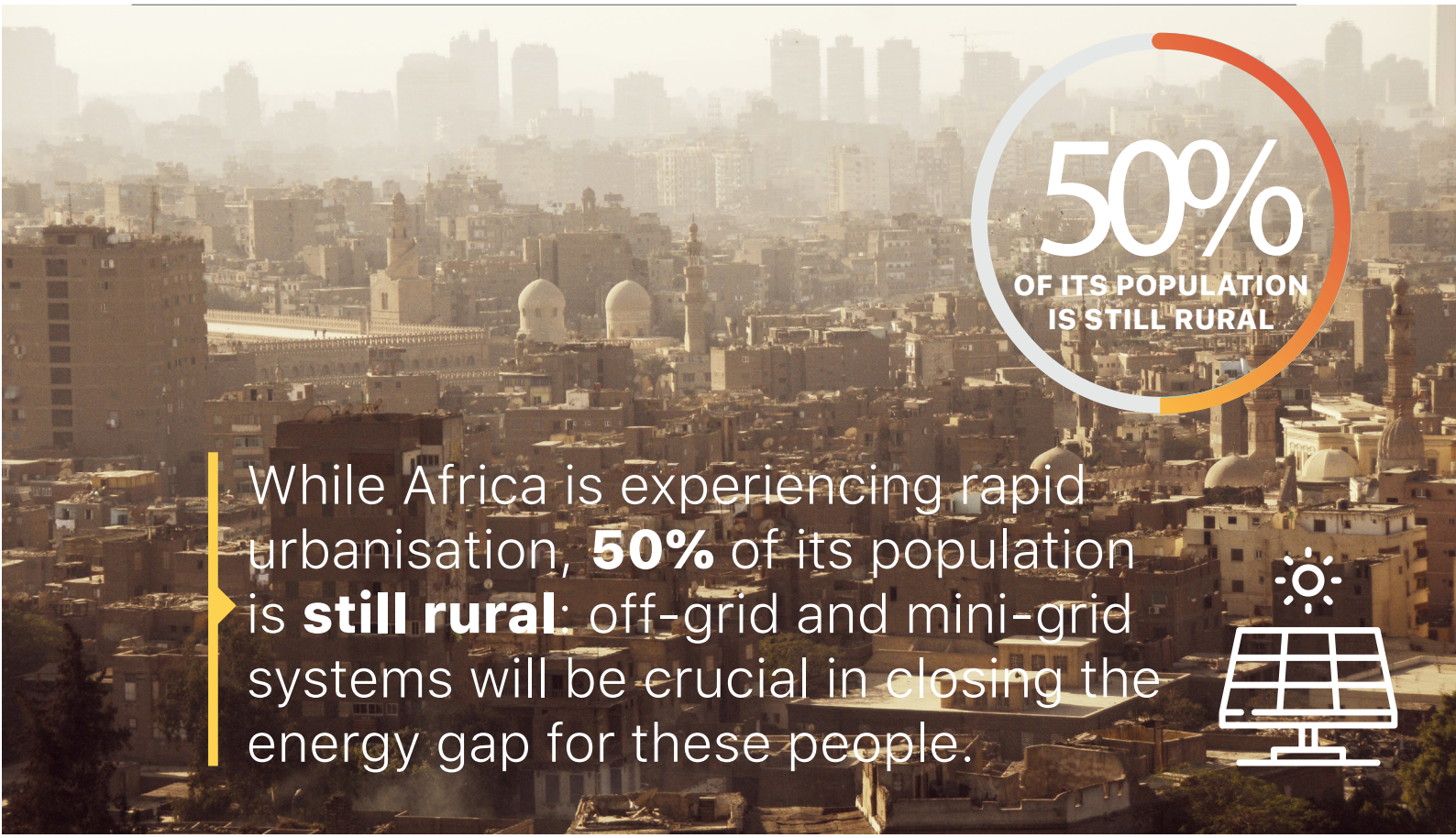
Democratisation: The green transition must be owned by and centred on Africa's people, which means enabling energy access for the more than 600 million Africans (half the continent's population of nearly 1.2 billion) who are currently without it (IRENA, 2020). Access to wealth creation and job opportunities must be shared, resilience built and inequalities addressed. In particular, Africa's young (more than 60% of Africans) and women (52% of Africans) must be key players in the transition.

Digitalisation: The global shift to digital technologies, accelerated by Covid-19, must be harnessed to drive low-carbon economies. The rise of digital connectivity in Africa is already increasing the opportunities for SMEs: a survey of eight African countries found more than three hundred unique digital platforms, mostly homegrown (80%), matching producers and consumers of goods and services across diverse economic sectors (Makuvaza et al., 2020) and with foreign platforms connecting markets across multiple countries (70%). However, the disparities in digital access between men and women, and between rural and urban dwellers, must be closed through capacity-building, as well as access to credit and other facilities.

Above all, it is crucial that Africa's green transition is built on the principles of inclusivity and environmental sustainability. Professor at the University of Cape Town, Harald Winkler, has noted:

'If we are going to have a greener industrial development pathway, then that cannot come at the cost of reducing poverty. Meeting the basic needs of people in African countries is not negotiable'.

> "If we are going to have a greener industrial development pathway, then that cannot come at the cost of reducing poverty. Meeting the basic needs of people in African countries is not negotiable."
>
> **Prof. Harald Winkler, Professor**
> University of Cape Town



Box 3: Agenda 2063: Setting the premise for Africa's green transition

Africa's green transition must be indigenously designed and managed, something that will require strong leadership and governance mechanisms, as well as innovation. Africa needs to own a coherent, continent-wide agenda for a green pathway that will be sustainable and beneficial for all.

A basis for this can be found in Agenda 2063, in which the green transition is pitched by African heads of state and government providing guidance on how to 'build an integrated, prosperous and peaceful Africa, driven and managed by its own citizens and representing a dynamic force in the international arena'.

The Agenda is a strategic framework for inclusive growth and sustainable development that optimises the use of Africa's resources for the benefit of all Africans in pursuit of unity, self-determination, freedom, progress and collective prosperity. Agenda 2063 asserts Africa's need for development and for a just transition. One of its eight pillars urges the continent to 'harness the continental endowments embodied in its people, history, cultures and natural resources, and geo-political position to effect equitable and people-centred growth and development'.

This discussion paper sees the green transition as the pathway of choice for implementing Agenda 2063 and de-risking and anchoring Africa's future in low-carbon development and renewable resources.

3. Greening in Africa

The call for a green transformation in Africa is gaining traction, but currently greening is taking place unevenly across the continent and without a unifying strategy. As underscored in the nationally determined contributions (NDCs) of most African countries, a sector-based rather than a whole-economy approach to the green transition is currently the norm. This puts the onus on individual industries (often requiring private sector input) to drive low-carbon development. Key sectors with the potential for greening are listed in Table 1.

Table 1: Key sectors with potential for greening

Category	Sector	Focus
Systems enablers	Energy 	Generation, distribution, efficiency
	Transport 	Movements of people, goods and services
Production systems	Agriculture 	Food security and nutrition
	Water 	Water systems, sanitation and hygiene (WASH)
Infrastructure systems	Built habitat (cities) 	Consumption, flows of goods and services, health of communities
	Natural habitat 	Protecting ecosystems, restoring degraded landscapes (agriculture, biodiversity, coastal zones, marine biodiversity, etc.)

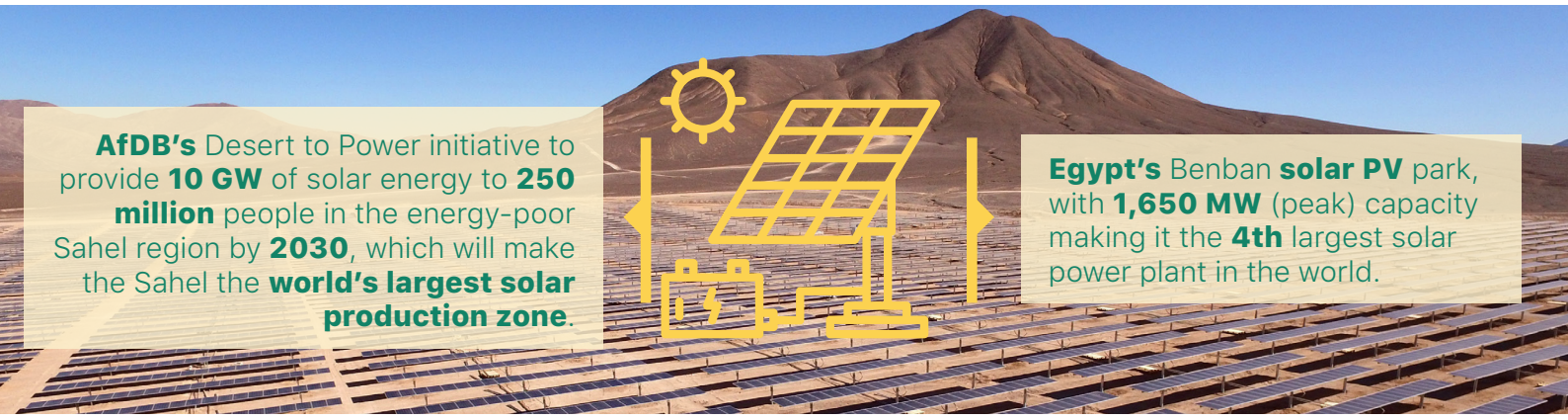
3.1 The current state of greening across Africa

3.1.1 National

Africa is already home to several champions of nationwide green development and whole-of-government approaches. Several countries, including Burkina Faso, Egypt, Ethiopia, Ghana, Kenya, Rwanda, Senegal, South Africa, Morocco and Tunisia, are developing green economy strategies and investing in clean energy, waste management, land restoration and sustainable cities.

One of Africa's major clean energy success stories is Egypt's Benban solar photovoltaic park, whose 1,650 megawatts (peak) capacity makes it the fourth largest solar power plant in the world. Other mega projects in this area include the Grand Ethiopian Renaissance Dam, which, with a planned capacity of 6.45 gigawatts, will be the largest hydroelectric power plant in Africa.

In agriculture, several countries are promoting green production technologies to increase productivity for purposes of sustainable food security and are also engaged in the Billion Trees campaign for land restoration. The government of Ghana, for example, has embarked on the biggest greenhouse project in West Africa. So far 75 greenhouses of a planned thousand have been completed, with hundreds of young people having been trained in efficient production technology. Other countries, including Algeria, Botswana, Morocco, Namibia and Tunisia, are also implementing mega projects for renewable energy, bringing electricity and better livelihoods to their people.



3.1.2 Sub-regional

Sub-regional programmes tend to focus on mitigating climate change and promoting economic development, with greening as a positive side effect. These include the Vision 2020 resolution adopted by the Economic Community of West African States (ECOWAS) in 2011, which aims to create a borderless economic community where 'people have the capacity to access and harness its enormous resources through the creation of opportunities for sustainable development'. Other examples are the 2010 Southern African Development Community (SADC) Regional Climate Change Framework, the East African Community (EAC) regional strategy for a green growth pathway, and the 2012 Gaborone (Botswana) Declaration on Sustainability in Africa.

AU Great Green Wall
a **7,704 km** long and **15 km** wide nature-based solution that aims to restore degraded landscapes and transform the lives of millions of people.

3.1.3 Regional

There is currently no common greening strategy that unites Africa and its regional bodies. However, there are a number of continent-wide mega projects promoting the sustainable management of natural resources, clean energy transitions and sustainable cities. Examples include the AU Great Green Wall – a 7,704 km long and 15 km wide nature-based solution that aims to restore degraded landscapes and transform the lives of millions of people – and AfDB's Desert to Power initiative to provide 10 GW of solar energy to 250 million people in the energy-poor Sahel region by 2030, which will make the Sahel the world's largest solar production zone. As part of the Desert to Power project, AfDB recently approved a €48.82 million loan to the government of Burkina Faso to develop 208 MW of solar power as part of the country's 2025 Yeleen solar programme. Some of these regional programmes are supported by the EU, including the Africa–EU Energy Partnership (AEEP) and the Africa Renewable Energy Initiative (AREI).

Box 4. Green Industrialisation

Any transition pathway will have to take into account Africa's development trajectory to avoid multiple development transitions that may have unintended destinations and outcomes. Industrializing Africa is a central tenet of Agenda 2063 and one of the African Development Bank's 'Hi 5s'. However, there is growing consensus that Africa's industrial pathway does not have to model itself on a business as usual approach that draws on high resource inputs. Africa's economy is heavily reliant on natural resources, many of which are subject to external shocks, thus reinforcing the vulnerability of Africa's economy. Green industrialization will enable Africa to align its development pathway with sustainable and inclusive growth. This move will not only allow Africa to move away from high polluting industries, it will also displace current models of hydrocarbon-based growth. New forms of production and consumption will require considerable financial investment, with a big push towards renewable energy technologies and efficient water and waste management systems. Africa is a late bloomer in the industrialisation process, but if it is to maintain an ambitious decoupling programme of using fewer resources, it will need to invest in green technologies, renewable energy and innovations. Greening Africa's industrialisation will mean looking at different parts of the value chain from design to marketing and outsourcing goods that are closer to production sites, thus reducing the carbon footprint and becoming less vulnerable to supply chain disruptions as witnessed during the current coronavirus pandemic.

As things currently stand, the enclave nature of Africa's extractive sector has not allowed the continent to realise the full benefits of its resources. One way of breaking this perceived 'resource curse' is to facilitate the growth of the indigenous private sector through legislation that boosts local content, builds local value chains and creates jobs. This will enable smart green businesses to emerge and multiply beyond Africa. As ECA Director of the Sub-Regional Office for Eastern Africa, Antonio Pedro, remarked: "The response of the international oil companies to the COVID pandemic is to localise more and more the procurement of the value chain. This value chain constitutes about 60% of the extractive industry operations which, in turn, means localising 60% of capital expenditure that can catalyse small and medium enterprises – serving as a job multiplier".

In addition to new job opportunities, a green industrialisation pathway will create new forms of innovation that will boost the productive capacity of African countries and create new streams of employment in the manufacturing, energy, waste and building sectors. Given the new momentum linked to the AfCFTA, green industrialization can reduce Africa's high transaction costs for energy imports and purchases of foreign exchange, which will boost trade balance and imports. In boosting regional trade, the AfCFTA can also support green industrialization and encourage investment in green infrastructure that will integrate climate risks and act as a buffer for climate proofing to avoiding lock-in emissions through existing polluting infrastructure. Adopting a resource-efficient approach in critical sectors such as water will enable the industrial process, since water effluents released into the rivers tend to affect other development sectors and interfere with household use. This is especially the case because populations are increasing, causing rapid urbanisation and poor infrastructure that stress water systems. In addition, water courses constitute important assets to trade and industrialization. Africa is well endowed with transboundary water courses and aquifers. Its 63 transboundary river basins cover 64 per cent of its land area and contain 93 per cent of its total water surface area (ECA, 2016; UNEP, 2010). Water Resource Management Expert at the Center for Sustained Domestic Security and Development (CESDOSED), Stephen Donkor, pointed out that "waterways provide the movement of bulk goods, and Europe, for example, uses the major rivers to move a lot of their traded goods; Africa could do the same".

> "The response of the international oil companies to the COVID pandemic is to localise more and more the procurement of the value chain. This value chain constitutes about 60% of the extractive industry operations which, in turn, means localising 60% of capital expenditure that can catalyse small and medium enterprises - serving as a job multiplier."

Mr. Antonio Pedro, Director
Sub-Regional Office for Eastern Africa, ECA

70%

Cities consume two thirds of global energy consumption and more than **70%** of greenhouse gas emissions.
(World Bank, 2021)

The International Renewable Energy Agency estimates that Africa's renewable energy transformation will require an average of **US$70 billion** annual investment between **2015** and **2030**. (IRENA, 2015)

Most of Africa's urban growth is projected to take place in small and intermediate cities, implying a greater need there for improved urban management than in the megacities.

3.2 Green transition challenges and opportunities

Greening opportunities could constitute solutions to the challenges facing Africa. Potential entry points for a green transition cut across sectors, with beneficial synergies between them, as outlined below.

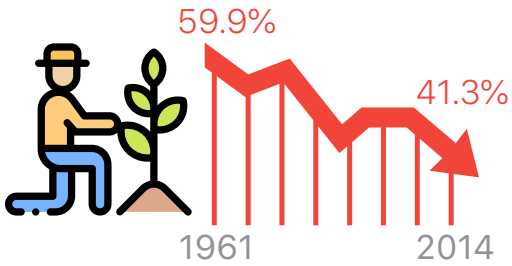
3.2.1 Land

Africa's economies are still largely land-based, with the majority of people depending on the land for their livelihoods. Agriculture still contributes more than 30% of the GDP of most countries and provides employment to about 70% of the population. Yet, paradoxically, hunger remains pervasive, with more than 20% of Africans undernourished, mostly women and children. Although Africa possesses more than 60% of the world's remaining arable land, it is poorly optimised.

Additionally, the region's share in global agricultural exports has been declining over the last forty years, while food imports have skyrocketed to US$80 billion annually and are set to increase further to US$110 billion by 2025 (AfDB estimates AfDB2020).

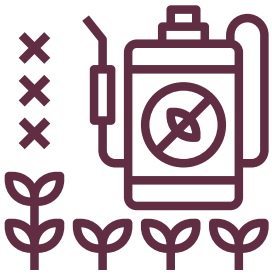
Food imports have skyrocketed to **US$80 billion** annually and are set to increase further to **US$110 billion** by **2025** (AfDB estimates) (AfDB, 2020)

With population growth set to make greater demands on food production capacity, Africa is the only region in the world with a chronic and growing deficit in yield – agricultural yield fell from 59.9% of the world average in 1961 to 41.3% in 2014 (AGRA, 2017). This is largely because governments have focused on agricultural expansion rather than productivity and have not invested adequately in smallholder farmers, who produce 85% of Africa's agricultural output (Shirley, R., 2020).



Africa is the only region in the world with a chronic and growing deficit in yield – agricultural yield fell from **59.9%** of the world average in **1961** to **41.3%** in **2014** (AGRA, 2017)

The sector has already been affected by climate-related events such as floods and droughts, the recent locust invasion, and now pandemic-related disruptions of value and supply chains for food and farming inputs such as fertilisers, pesticides and herbicides. This has raised input prices and threatened to aggravate food insecurity (Blanke, 2020).



The **Agriculture** sector has already been affected by climate-related events such as floods and droughts, the recent locust invasion, and now pandemic-related disruptions of value and supply chains for food and farming inputs such as fertilisers, pesticides and herbicides. This has raised input prices and threatened to aggravate food insecurity.

Land also contains habitats that provide natural infrastructure and ecosystem goods and services. Land degradation and deforestation exacerbate climate change, conflict and forced migration, and can even be a factor in the development and spread of outbreaks of novel diseases such as Covid-19 (IPCC, 2019).

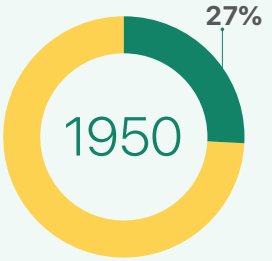
The adoption of climate-smart agriculture will therefore benefit habitats, livelihoods and food security. Improving the productive capacity of farmland and local value chains through green technology as part of a diversified and resilient production system will reduce carbon emissions, as well as providing more income for farmers and more food for people. Digital technologies are also an important pathway here: for example, in Benin, TechnoServe 'uses digital solutions including drones, satellite data, and machine learning to improve the productivity and environmental sustainability of the country's cashew sector' (TechnoServe, 2020).

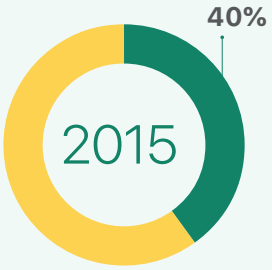
Beyond digital innovations, the green transition for agriculture must benefit all smallholder farmers. Access to land is currently limited for women in particular, as well as minority groups. However, there has been some progress: in Botswana and Mozambique women now account for 34.7% and 23.1% of access to land access (UN Women, 2018).

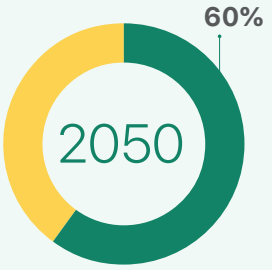
In order to increase the productivity, efficiency, profitability and attractiveness of agriculture, especially to the younger generation, AU leaders have adopted the Maputo Declaration of 2003 and the Malabo Declaration of 2014. These reaffirmed their commitment to the Comprehensive Africa Agriculture Development Programme (CAADP) target of an annual allocation of 10% of national budgets to agriculture (African Union, 2014). However, this remains a challenge for many countries.

3.2.2 Smart cities

Africa's urban population growth rate







Partly due to mass rural–urban migration, Africa is the most rapidly urbanising region in the world. Such rapid urbanisation, combined with a lack of clean energy, has resulted in dangerous levels of air pollution in many African cities, which are also experiencing a proliferation of slums. An OECD study estimated that air pollution was responsible for more than 450,000 premature deaths in Africa in 2013. To achieve SDG 3 (good health), SDG 7 (clean energy) and SDG 11 (sustainable cities), African countries must urgently embrace smart cities and enact policies across the low-carbon–urbanization nexus to provide citizens and businesses with cleaner energy.

African cities mirror wider development problems such as dysfunctional infrastructure and growing competition for land use (IPCC, 2019). A high annual population growth rate (2.7%) and unplanned urbanization have led to increased pressure on already limited infrastructure and competition for scarce resources (Yoshida, 2018). Similarly, the industrialization agenda of most countries has led to a high demand for raw materials, while industrial waste is poorly managed, with adverse consequences for the environment and human health (Abubakari et. al., 2016).

The projected increase in Africa's population (2.5 billion by 2050), coupled with climate change, requires urgent action to introduce the sustainable and efficient management of what are finite natural resources. Africa's need to avoid high levels of emissions from rapid urbanisation involves meeting the challenges of planning and building appropriate housing and infrastructure for green growth and low-carbon development.

Urbanisation can also bring huge economic opportunities if it is harnessed to benefit both people and the planet. Globally, urban areas generate more than 75% of GDP, but also contribute about 75% of carbon emissions (Stern Zenghelis, 2020). Africa's cities therefore pose both a climate risk and an opportunity for jobs and wealth creation. Africa has the fastest growing youthful population in the world, but one-third of the continent's 420 million people aged 15–35 are unemployed (AfDB, 2016), so job creation through green industrialization and growth is vital. Key to this process is the huge informal economy and its capacity to innovate and 'test drive' new technologies and innovation in sectors such as food, energy and transport. Africa's current infrastructural needs are estimated at US$130–US$170 billion a year, leaving a financing gap of US$108 billion (World Bank, 2020). However, with its relatively low baseline, Africa is well-positioned to leapfrog old, polluting and inefficient technologies in its cities. Digitalization and low-carbon decentralization will be key: smart grids, for example, will allow for the more efficient management of energy distribution, reducing costs and enabling more consistent production. M-Kopa Solar in Kenya and Lumos in Nigeria are already using financial technology and mobile applications for decentralized renewable energy investments (ECA & ECOSOC, 2020).

60 % of the Africa's urban population lives in slums (sub-Saharan Africa - **189 million**).
(Brookings, 2021)

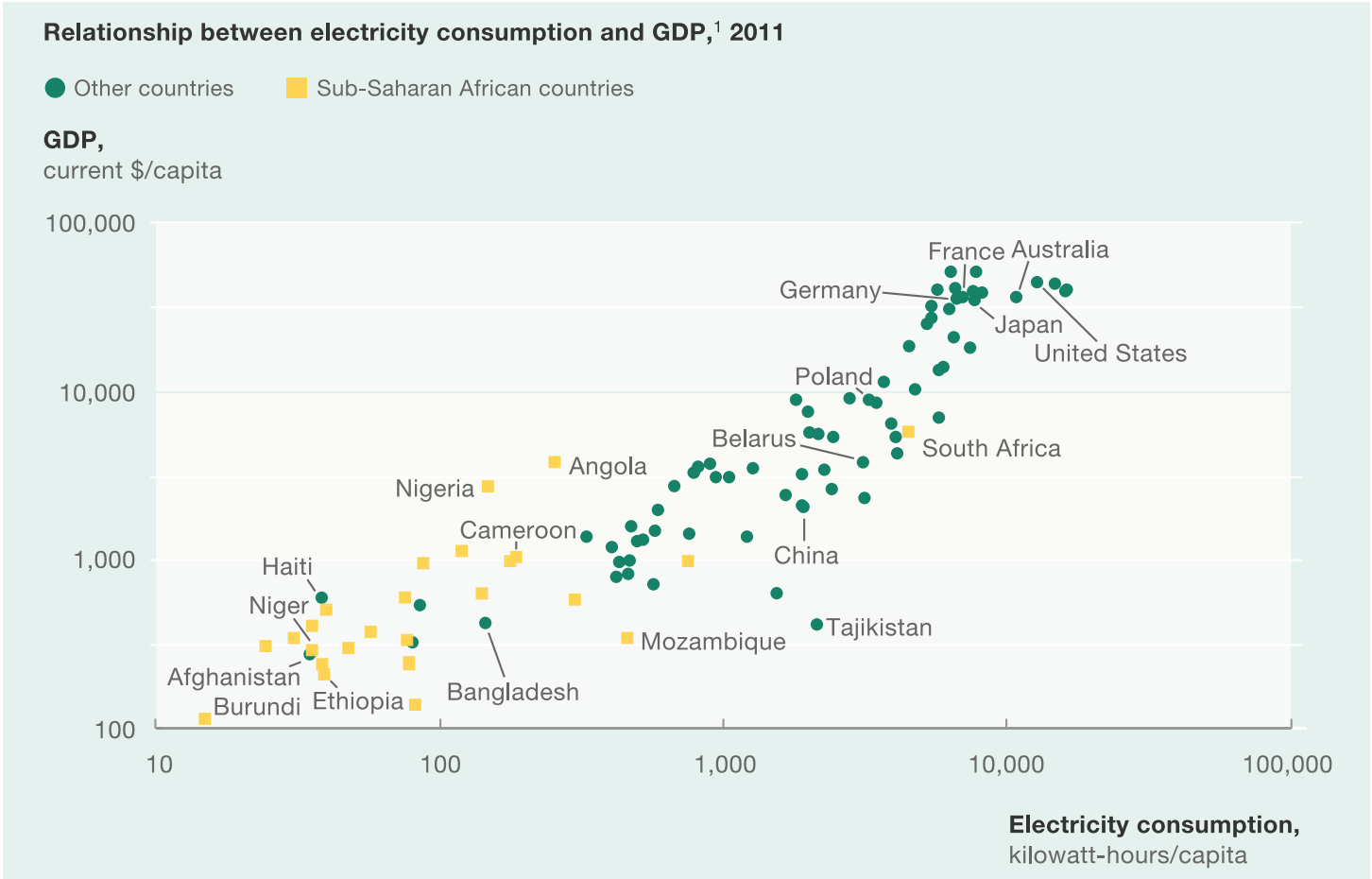
3.2.3 Energy

To achieve SDG 7, Africa must 'ensure access to affordable, reliable, sustainable and modern energy for all'. Unfortunately, an estimated 600 million Africans still lack access to electricity, and the energy gap is expanding, with a particular disparity in access between rural and urban areas (APP, 2015).

Inefficient energy production and distribution hamper Africa's growth on multiple levels. Around ten million medium-sized enterprises lack access to electricity (ibid.). The available electricity costs three times as much as it would in the US or Europe and is disrupted by frequent outages. Cumulatively, this costs African economies 1–4% of GDP annually and adversely impacts on individuals and households – a villager in northern Nigeria spends 60–80 times more on energy than a resident of an industrialized country (ibid.). Usage of unclean, kerosene-based energy costs more than US$10 billion annually, a cost largely borne by poor people living on less than US$2.50 a day (ibid.).

Poor energy access also affects other infrastructure and essential services, as highlighted by the Covid-19 pandemic. One in four health facilities in Africa has no access to electricity, and 60% of refrigerators used to store vaccines lack access to a reliable power supply, resulting in spoilage and waste (ibid.). And in the education sector, electricity access in primary schools remains low at an average of 35% – in some countries 80% of primary schools have no electricity. As such, widening access to energy is synonymous with development and transforming lives and livelihoods (Figure 1).

Figure 1. Electricity consumption and economic development are closely linked; growth will not happen without a steep change in the power sector.



[1]Base 10 logarithmic scale.

Source: IHS Economics; International Energy Statistics, US Energy Information Administration, 2013, eia.gov

There are opportunities for installing decentralized and distributed renewable power across Africa and to use green hydrogen for a transition to e-mobility in urban areas. Another important opportunity for consideration is using the continent's abundant natural gas as a stepping-stone to the energy transition (Box 5). Some would argue that greater use of natural gas would help to close the energy gap for people and businesses, as well as aiding a low-carbon transition and creating jobs. It is therefore considered as a bridging fuel with the potential to address the energy deficit in Africa as the continent transitions to renewables, following a pattern set by Europe and the USA. However, while natural gas is 40% cleaner than coal, it is still a fossil fuel with long-term implications for the climate and for meeting the Paris Agreement targets.

Box 5: Leveraging gas as a bridging fuel

Natural gas, which emits about 40% less greenhouse gas (GHG) than coal, has enormous potential to fill Africa's energy gap and support the transition to a low-carbon economy (IEA, 2020). In the US, for example, the switch from coal to gas as an energy source has abated more carbon emissions than all the renewable power capacity ever installed in the country.

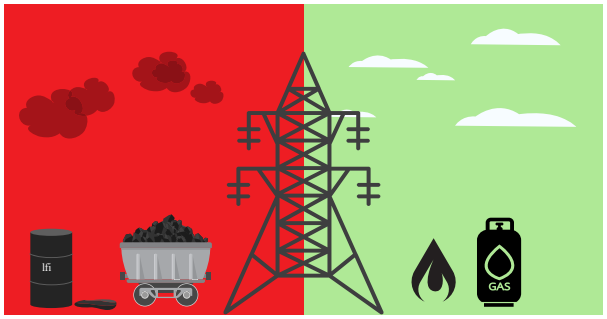
More than 40% of global gas discoveries between 2011 and 2018 were in Africa, yet the continent accounts for only 6% of global gas production (IEA, 2019). In sub-Saharan Africa, natural gas represents just 5% of the energy mix, compared to around 50% in North Africa. With regard to power generation in Africa, natural gas currently represents 40%, compared to coal (30%), hydropower (19%) and oil (9%) (IEA, 2019).

Natural gas is at a potential turning point in Africa, which is projected to become a major global producer, consumer and exporter. Overall, the share of natural gas in Africa's energy mix is projected to grow to 24% in 2040, and there is the potential for more than 400GW of gas-generated power in sub-Saharan Africa (IEA, 2019). The AfCFTA will help to significantly expand the uptake of and access to natural gas in the green energy transition.

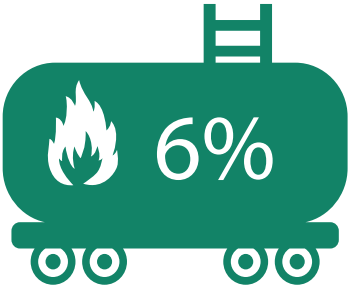
The use of gas is underscored in the NDCs of Ghana, Mozambique and Nigeria, for instance, as part of their long-term strategies for emissions reductions. The use of gas can help facilitate the deployment of access to renewable energy and support a transition to zero emissions that is less disruptive than an unrealistic, wholesale shift to renewables. It will also help to achieve universal access to energy across Africa, thereby improving livelihoods and catalysing economic growth.

This has the potential to lower the cost of energy and encourage fuel-switching, which could help stem the increasing rate of deforestation for firewood and charcoal for household energy use. Meeting current charcoal demand is estimated to require clearing 3% of forest area per year, which would deplete Africa's forests within thirty years (IEA, 2019). Cooking using charcoal and fuelwood also exposes women and children to indoor pollution and respiratory health problems.

A mix of energy supply solutions can be deployed in phases to ensure universal access and enhance the mitigation of global GHG emissions, not least as an intermediate solution. Natural gas will play a key role in this in Africa. However, gas is not without its drawbacks. Fugitive emissions (i.e. leaks and irregular releases of gas) and venting (intentional releases) create upstream emissions, mainly of methane (CH4), which has a much greater global warming potential than carbon dioxide (CO2). In addition, some critics argue that gas can actively hamper the transition to a climate-neutral energy system by displacing or crowding out renewable energy deployment.



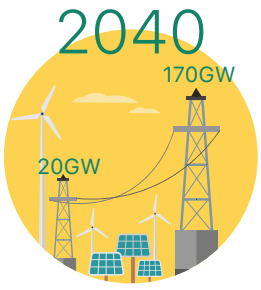
Switching coal and oil plants to run on natural gas, a less-polluting fossil fuel, can cut emissions while increasing energy access and security.



More than **40%** of **global gas** discoveries between **2011 and 2018** were in **Africa**, yet the continent accounts for **only 6%** of global gas production (IEA, 2019)

Depending on where you sit in the climate debate, natural gas remains a polarising issue. While it is hailed as a 'transition' fuel in different parts of the world, there has been some disagreement between critics and protagonists on the use of the word 'transition'. In one view, transitions 'are managed under orderly control, through incumbent structures … towards a particular known (presumptively shared) end' (Stirling, in Scoones, I., Leach, M., & Newell, P., 2015). Consequently, for some regions of the world, the transition is perceived as an open-ended option that has run its course and is equated with a bridge that is leading nowhere. In Africa, it is clear that the infrastructure to support planned investments is not yet in place, even in countries that are well endowed with natural gas, such as in northern Mozambique.

Meanwhile, in hydrocarbon-rich countries, there is the determination and the perception that natural gas holds the key to the swifter replacement of industrial energy and greater development. Evidence of increased demand and announcements of planned investments in Europe and the USA may convince African countries that there are gains to be won from the exploitation of natural gas. According to Investigate Europe (2020), planned investment in gas infrastructure amounts to at least €104 billion. Indeed, even given the excitement over hydrogen prospects, natural gas is being hailed by a powerful fossil-fuel lobby as an important 'bridging' fuel.



The African power sector already expects renewables-based capacity to increase from around **20GW** to nearly **170GW** by **2040**, with renewables accounting for more than **50%** of the increase in total capacity over the same period. (IRENA, 2020)

The debate on natural gas as a bridging or transition fuel reveals the contradictions evident in decarbonization and the complications of making sovereign energy decisions. Critics of natural gas say that the methane content of the fuel contradicts the idea that it is a cleaner energy source. Nevertheless, investment and reliance on natural gas seems to be growing, and between Australia, Russia and the USA, production has increased by 75.6% compared with 2018 figures (Investigate Europe, 2020). Beyond production, LNG is also often seen through the prism of geopolitical influence and competition, with implications for markets, prices and alliances, as evidenced by the race between the USA and Russia to supply LNG and even anthracite to central European countries.

In the midst of the jockeying for control of markets, planned investments in natural gas represent 116 billion cubic metres globally per year, with an increase in imports of 54.5% (Investigate Europe, 2020). Despite the geopolitical and political wrangling, natural gas exploitation has to go through several processes, including liquefaction, shipping and regasification, all with attendant concerns for fugitive emissions. Given the high methane content, the consequences for the environment and public safety are far too important to be discounted. In the case of shale gas, extracted through hydraulic fracking, there are heightened concerns related to leakages and explosions from seismic tremors. This is especially problematic because methane is 25 times more potent than CO2 as a greenhouse gas.

It is becoming increasingly urgent to give more attention to climate action. Some countries may be in danger of overestimating the future demand for natural gas and need to be mindful that investments made today may very well result in stranded assets. Claudia Kemfert, head of the German Institute for Economic Research, claims that 'every new gas infrastructure construction will be a stranded investment' (Investigate Europe – Gas Trap 2020). This would be especially galling if such investment could support countries in Africa to build their renewable energy infrastructure and production capacity. Given the initial investments in gas pipelines, the upfront infrastructure required and the high risk of stranded assets, it is debatable whether African energy security is better served by going down this LNG route or whether countries need to consider the alternatives – especially heavy investments in renewables – that will decentralize and democratize energy options and result in sustainable outcomes.

The renewable energy sector is promising for Africa, which possesses a large share of the world's renewable resources. For example, most of the continent enjoys an average of 320 days a year of bright sunlight and radiation levels of almost 2 kWh per square meter (kWh/m2), making it a prime location for solar energy and green hydrogen plants. However, as Nicholas Stern remarks, "Africa has not made full use of its renewable energy potential – it has a huge reservoir of renewable energies that it can unleash, and these can support entire economies." Still, Africa is making steady progress in the renewable energy arena: the Africa Renewable Energy Initiative (AREI), launched during COP15 and endorsed by the AU, aims to accelerate and scale up the renewables sector across the continent to provide universal access to clean and affordable energy. AREI is set to deliver at least 10 GW of new and additional renewable energy generating capacity by 2020 and at least 300 GW by 2030 (AREI, 2016a). As of September 2019, AREI has adopted 206 projects with a total capacity of 9.99 GW and partners' financial commitments worth €6,487.06 million. To enable the full continental scale-up to reach 300 GW of new renewable energy generation capacity by 2030, funding needs for Phase II (2020-2030) will be significantly larger (AREI, 2016b). It is estimated that an investment of around US$500 billion will be required. IRENA (2020) estimates that the continent will need an annual investment of US$70 billion until 2030 (approximately US$700 billion in total) in order to achieve a clean energy transformation.

Africa also possesses many of the 'green minerals' required for low-carbon technologies such as lithium-ion batteries. However, to reap the full economic benefits of extracting these minerals, African countries must enhance their value addition to create wealth and jobs locally, rather than simply exporting raw materials. Indeed, this is one area in which Africa's green transition would benefit from a mutually supportive partnership that would help build capacity on the continent to increase local content and add value to its natural resources. Opting for a green transition is an opportunity for African countries to improve their productive capabilities and profitability by enhancing efficiency and value addition, including in the energy sector, since Africa's share of global exports is currently around 3% (ECA, 2015). Focusing on resource efficiency, value addition and product diversification will pave the way for more sustainable industrialization. There are significant opportunity costs in adopting a renewable energy pathway as the cornerstone of Africa's development. The short- and long-term benefits include considerable returns on investment, but as the ECA's Chief Development Planning Expert, Bart Armah, remarks, 'It is about what you get versus what you give up. The question that warrants asking is: what is the scale of the business opportunity of adopting a green economy approach?' These benefits must be weighed against the opportunity costs of leaving fossil fuels in the ground.

Kenya: The Renewable Energy Pioneer – Case Study

Kenya's power production has increased from 1,768 to 2,712 in six years with a diverse energy supply mix. The majority of the new production is derived mainly from renewable energy such as geothermal (690MW) and hydroelectric projects (677MW); other projects include the Lake Turkana wind (310 MW) and Garissa solar (55 MW) projects, which were both inaugurated in 2019. Over the last decade, Kenya nearly doubled electricity access rates from 25% to 46%, with nearly three-quarters of the population connected to the national grid. By 2030, the country aims to add 7,200 MW of installed electricity capacity to its grid with a 100% energy mix.

Key Areas for Renewable Energy Investment

BIOGAS

Potential to produce over 130MW of power.

BIOMASS

Cogeneration using charcoal, wood-fuel and agricultural waste. Total estimated generation is 193MW.

GEOTHERMAL

Proven potential as high as 10,000MW along key sites in the Rift Valley.

HYDROPOWER

Potential of 1,000MW from small scale hydropower plants.

SOLAR

Relatively stable off grid PV market with insolation estimated at more than 23,000 tWh/year.

WIND

Proven potential as high as 346w/m^2 and wind speeds over 6m/s.

Source: Africa Oil and Power A special Report "Kenya: Invest In The Energy Sector Of Kenya", 2020

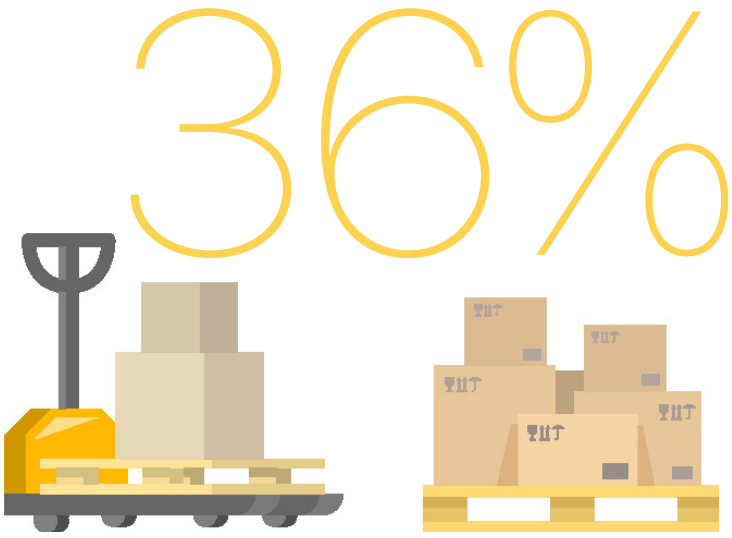
4. The need for strategic partnership

Africa's transformation is strengthened by strategic partnerships such as those with the EU (Africa–EU Partnership), China (Sino–Africa Partnership) and the US (African Growth and Opportunity Act). Partnerships of mutual respect ultimately yield mutual benefits, including responding to issues of shared interest such as the Covid-19 pandemic, climate change mitigation and trade. Indeed, Covid-19 has emphasised that such partnerships will be more necessary than ever in navigating a turbulent and uncertain future and in fostering solidarity in preparedness for recovery from similar crises.

To meet its ambitions for a green transition that protects people and the planet, Africa will need support in the form of financial resources and capacity-building. Africa is not asking for old forms of development aid for its green transition (McArthur, and Sachs, 2019), but seeks mutually beneficial partnerships in trade and investment, as illustrated by Ghana's 'Beyond Aid' strategy. Africa's ambitions for a structural transformation like that set out in Agenda 2063 will be central to such partnerships.

In terms of the American relationship, the new Biden administration has signalled its intention to renew a 'mutually respectful engagement toward Africa with a bold strategy' for combating the pandemic and climate change and promoting democracy and human rights. In contrast to his predecessor, President Biden will place a greater focus on multilateral trade relationships under the AfCFTA, rather than bilateral free-trade agreements (Swandon, 2020).

The EU is a natural ally, owing to its historic links and geographical proximity to Africa, as well as its leadership of climate actions. Europe is Africa's leading partner, largest donor and main investor. Indeed, in 2017, Europe imported more than US$240 billion in goods from Africa, accounting for 36% of the continent's total exports (Oqubay, 2020). Africa and the EU have longstanding cooperation agreements, and a new proposal under the current EU leadership – 'Towards a Comprehensive Strategy with Africa' – is under discussion.



> in 2017, Europe imported more than **US$240 billion** in goods from Africa, accounting for **36%** of the continent's total exports. (Oqubay A., 2020)

The European Green Deal – Europe's flagship plan to achieve carbon neutrality (see below) – is another opportunity for fruitful exchange. The EU could benefit from Africa's youthful demography and rapidly growing middle class as a huge labour and consumer market. Africa has some of the natural resources (e.g., cobalt, coltan, lithium, nickel) that are driving the transition to green energy and that are in high demand for the Fourth Industrial Revolution (see Box 5). Africa also has year-round solar energy for green hydrogen production that can support the EU in its own shift to carbon neutrality (see Box 6). In return, the EU can offer Africa technological, human and financial resources to support its green transition.

The European Green Deal should be a catalyst for Africa to think strategically about advancing its own green transformation agenda. It 'presents an opportunity for Africa to ask itself what it wants and what it will do to implement its development priorities.' in the context of the Fourth Industrial Revolution. This will enable Africa to enter negotiations with the EU as a bold and confident partner, not afraid to ask for what it wants and needs. Continuing partnership requires such a reset in Africa–EU relations, with the two regions forging a new future together as equals – a win–win partnership that explicitly upholds Africa's ambitions for a green transformation.

Box 6: Africa's green minerals in the Fourth Industrial Revolution

The transition from fossil fuels to a low-carbon future opens up market opportunities for diverse minerals and metals. The low-carbon technologies required for the Fourth Industrial Revolution (4IR) will require more minerals and metals than are currently produced. For instance, about six times more iron and steel and seventy times more copper will be needed to transmit electricity generated from clean energy on a large scale.

Wind and solar photovoltaic technologies, as well as fuel cells used to power electric vehicles, will drive up demand for materials such as copper, aluminium, chromium, iron, lead, manganese, nickel, zinc, titanium, silver, cobalt, platinum, molybdenum and neodymium.

This offers huge opportunities for Africa, which is endowed with 42 of the 66 strategic minerals driving 4IR. Distributed across 42 countries, these minerals can position Africa as a major global player in the development of low-carbon technology. Africa provides two-thirds of global cobalt production, 80% of platinum and half of manganese production, and has one-third of the world's bauxite resources and about 20% of its uranium resources. The Democratic Republic of the Congo and Zambia alone account for 75% of global cobalt production. Namibia and Zimbabwe have 100% of the world's caesium reserves and 89% of the world's rubidium reserves. Morocco and Namibia are currently the world's second and third largest producers of arsenic, and South Africa produces 70% of the world's platinum.

However, Africa must look at these resources as an opportunity for more local transformation, local content and value chains linking extraction to the rest of the economy in African countries. As noted by Isabelle Ramdoo, 'For a strategic mineral policy, the first thing is to see what exactly we need in terms of raw materials and what makes them strategic. Define them and then, just like the European Union has done, build your domestic and regional policies and your external diplomacy around them.'

Similarly, Ade Freeman pointed out that 'knowing the value of our resource base will improve Africa's ability to negotiate. We need a better sense of the total economic value of the resources that we have and then use that as a basis for having a conversation with the EU in relation to the European Green Deal.'

The continent requires an additional **310 GW** of **clean renewable** capacity to meet a quarter of its **2030** energy needs, while providing half of the total electricity generation capacity. (IRENA, 2020)

Box 7: Green hydrogen – a step towards win–win solutions

With global energy consumption set to grow by 50% by 2050 (and by 70% in developing countries and emerging economies), more efficient clean energy sources are required to meet the target of limiting global warming to 1.5°C. Green hydrogen has been hailed as the 'clean oil' of tomorrow and could be the key to facilitating the energy transition.

Green hydrogen is projected to supply up to 25% of the world's energy needs and become a US$10 trillion market by 2050. The pursuit of such clean and powerful energy sources presents partnership opportunities for countries and regional bodies that are aiming to achieve carbon neutrality by 2050. Already, some (including the EU, South Africa, Australia, Germany, Japan, New Zealand and Korea) have published hydrogen strategies aimed at tapping into green hydrogen's potential.

The production of green hydrogen and its derivatives requires massive amounts of renewable energy, preferably derived from solar, wind and hydropower. Thus, regions endowed with large sources of renewable energy have a great capacity to produce green hydrogen and associated derivatives. African countries, with their large sources of renewable energy and platinum reserves, are well positioned in this regard. South Africa, for instance, is estimated to possess 75% of global platinum reserves and is considered a potential leader in green hydrogen production. Additionally, the cost of green hydrogen production has fallen by 40% since 2015 and is expected to fall by a further 40% by 2025.

However, several challenges limit Africa's capacity to realize its green hydrogen production potential on its own. For example, renewable energies are poorly developed, constituting just about 20% of the continent's energy mix as of 2018, and projected to increase to about 48% by 2040 based on national policies and energy investment plans. Nonetheless, mega-initiatives exist to scale up renewable energy development on the continent (e.g. Egypt's Benban solar photovoltaic park; Desert to Power, etc.), which will facilitate the production of green hydrogen and its derivatives.

Meanwhile, although Europe has made great progress in developing renewable energy for green hydrogen production, it remains a net energy importer, with 55% of its energy needs in 2017 being met from imports of oil, natural gas and solid fuels. In addition, compared to Africa, the region has limited resources and potential for renewable energy generation sufficient to meet its climate neutrality target by 2050. To ensure the full decarbonization of its energy sector, the EU will have to import clean energy from other regions, creating space for a mutually beneficial partnership with Africa.

The two regions could build on existing joint initiatives and partnerships to ensure a coordinated effort to meet the targets of the Paris Agreement and other global environmental treaties. One such partnership is the North Africa–Europe Hydrogen Manifesto, which outlines a joint strategy to build a European energy system based on attaining 50% of renewable electricity and 50% of green hydrogen by 2050. In addition, several German ministries are championing win–win partnerships with African countries in this regard, including the Green Hydrogen Atlas-Africa project in Southern and Western Africa with the Federal Ministry of Education and Research (BMBF). Through this initiative, German researchers and local experts in 31 countries are analyzing the climatic, political, social, infrastructural and economic conditions for the production, transport and use of green hydrogen.

4.1 The European Green Deal

The EU–Africa Partnership under the European Green Deal offers many opportunities with co-benefits for both parties. This section outlines its opportunities, as well as potential pitfalls to be avoided.

The EU is already a model for decoupling emissions from economic growth. For example, between 1990 and 2018 EU emissions fell by 24%, while its GDP grew by 60% (European Commission, 2017). The European Green Deal looks to accelerate this trajectory. The policy framework and action plan aims to achieve carbon neutrality by 2050 by mainstreaming sustainability into all EU policies, covering energy, biodiversity, food systems, agriculture, industry, construction and transport.

Climate action is at the heart of the package, ranging from ambitious cuts to emissions to investing in research and innovation to preserve the natural environment. There is a particular focus on resilience and preparedness to ensure that cities and citizens are able to integrate climate change adaptation into their risk management practices. Crucially, the Deal incorporates a 'Just Transition Mechanism' (JTM) in order to 'leave no one behind', including through financial support to European regions that are heavily dependent on carbon-intensive activities.

The EU recognizes that climate change requires a global response, and the European Green Deal highlights the EU as a 'global leader' that can build on years of effort to promote green and resilient economies around the world (European Commission, 2019). Making climate and environment 'key strands' of its engagement with Africa, the EU hopes for 'rapid progress towards a green and circular economy including sustainable energy and food systems and smart cities' while fighting the loss of biodiversity (European Commission, 2019).

The European Green Deal is not without its critics, however, and negotiations are ongoing between EU member states, especially on just transitions for highly fossil-fuel dependent countries such as Poland and the Czech Republic. Some commentators further argue that the principles of the 'just transition' should extend to international partners so as not to create disproportionate burdens for less-developed regions or entrench economic imbalances. The European Green Deal itself recognizes that the 'ecological transition will reshape geopolitics, including global economic, trade and security interests' (European Commission, 2019).

There is a strong sense among African scholars that any green transition partnerships should not contradict African development priorities. Senior officer of the UN Special Envoy of the Secretary-General (SESG) for the Great Lakes Region in Africa, Allan Mukungu, stressed that:

> "Africa's engagements with the EU must align with Africa's priorities. Africa lacks a cohesive arrangement for presenting our priorities. In this 21st century, if Africa is going to exert itself, we really need to have our own position and start from our own position to negotiate with different partners. We need to prioritise our own priorities in these relationships. If Africans are going to sacrifice their development opportunities because they have to meet certain standards for the sake of meeting those standards, then we are on the wrong path."

Mr. Allan Mukungu, Senior Officer
Economic Affairs Officer at United Nations Economic Commission for Africa

It should also be noted that Africa's future emissions pathways are closely tied to the goals of the European Green Deal. According to Bart Armah, "One is dealing with a continent that is beginning to rev up its industrial engines, and its forest resource can also contribute significantly to greenhouse gas emissions." Consequently, there is an enlightened self-interest in supporting Africa's green transition because, simply put, Africa's 'fugitive' greenhouse gas emissions is Europe's abatement problem.

4.1.1 Carbon Border Adjustment Mechanism (CBAM)

A controversial element of the European Green Deal is the Carbon Border Adjustment Mechanism (CBAM), which aims to mitigate carbon leakage from production being transferred to non-EU countries with fewer emissions restrictions by putting a tax on imports of certain carbon-intensive goods from outside the EU (e.g. cement and steel imports).

It is intended as a unilateral policy option that offers both effective protection against leakage and an incentive for other countries to strengthen their climate change mitigation efforts (Mehling et al., 2019). However, there are questions about its design, some of which will be of concern for Africa. Firstly, the EU plans to use the revenue in its own budget (including the budget for external cooperation), which may contradict its World Trade Organization (WTO) obligations. Some commentators have also voiced a concern that it could split the world into two trade blocs – high-carbon versus low-carbon – and so create a barrier to emerging economy exporters (Temple, 2020; Tsafos, 2020) .

It also requires the calculation of all direct and indirect emissions and the disclosure of value chain information (McWilliams & Zachmann, 2020). This is an expensive process that may contravene the United Nations Framework Convention on Climate Change (UNFCCC) principle of 'common but differentiated responsibilities and respective capabilities', which states that less-developed countries should not face same burdens in combating climate change as developed countries. Options for improving the mechanism's design include specifically channelling CBAM revenues to benefit developing countries and providing exemptions for least-developed and low-income countries (Droege & Fischer, 2020).

It is argued that the carbon border tax is most likely to have a greater impact on BRICs countries (Brazil, Russia, India, China and South Africa), as well as other developing countries (Bueb et al., 2016). According to David Luke, Director of the African Trade Policy Centre (ATPC) at the ECA, imposing a carbon border tax will reduce the profits from African exports to Europe and may be 'too blunt an instrument'. An alternative approach could be to build an incentive structure to encourage the incorporation of technologies to make production processes carbon-neutral. While the border tax is still under discussion, least developed countries (LDCs) and their fragile industries could be protected through exemptions from the tax (Bueb et al., 2016). However, Professor Akpalu, Dean of the School of Research and Graduate Studies at the Ghana Institute of Management and Public Administration (GIMPA), argues that the carbon border tax could be a blessing in disguise, as it may force countries to adopter cleaner technologies, leading to new innovations. He asserts: 'If you realise that the technology has to be cleaner for you to export or that you will pay higher taxes for your product to be sold, then this might open doors for African manufacturing to start using cleaner technologies'.

4.2 Africa and the EU: opportunities for a mutually beneficial partnership in greening

4.2.1. A historic relationship

Africa has had a longstanding relationship with the EU, formalised in the 1975 Lomé Convention and subsequent Cotonou Agreements between the EU and the African, Caribbean and Pacific (ACP) group. The first Africa–EU Summit was held in Cairo in 2000, and cooperation has been strengthened since through further multilateral and bilateral agreements.

The Joint Africa–EU Strategy (JAES), adopted in 2007, was an important milestone in this regard and has led to a series of multi-year action plans, including the 2014 Pan-African Programme, which ran from 2014–2020 and provided €845 million to promote cooperation in areas such as peace and security, governance, human development and economic growth (European Commission, 2018a). The Abidjan Declaration at the 2017 AU-EU Summit in Côte d'Ivoire set out four new areas for cooperation from 2018 onwards: investing in education, science, technology and skills development; strengthening resilience, peace, security and governance; mobilizing investments for a sustainable structural transformation; and migration and mobility. The focus on economic and trade relations between the EU and Africa was sharpened by the 2018 Africa–Europe Alliance for Sustainable Investment and Jobs, with €40 billion in grants to be provided to Africa for the period 2021–2027 (European Commission, 2018b).

There are also ongoing EU investments in Africa that could provide easy entry points for a strengthened greening partnership. For example, the EU funds 24 projects under AREI, representing an investment of €488 million (European Commission, 2020b). The EU is also supporting the implementation of an infrastructure database under the AU Programme for Infrastructure Development in Africa (PIDA), which aims for green infrastructure development across sectors including energy, transboundary sources and bodies of water, transport, WASH, and information and communications technology.

The upcoming AU–EU Summit promises to deepen this cooperative relationship. An initiative entitled 'Towards a Comprehensive Strategy with Africa', proposed by the current EU president, focuses on five key areas of cooperation: the green transition and access to energy; the digital transformation; sustainable growth and jobs; peace and governance; and migration and mobility (European Commission, 2020a). There are some clear synergies between these and the '5Ds' for Africa's green transition, points of intersection that should be further explored as opportunities for greater cooperation.

4.2.2 A partnership of equals

As both Europe and Africa grapple with the twin impacts of Covid-19 and climate change, there is space for fruitful collaboration to strengthen each other's responses and in doing so enhance the global preparedness for future shocks. Both sides will approach the 2021 summit with clear agendas: Africa needs the development outcomes of a green transition, while Europe needs drastic emission cuts if the region is to achieve carbon neutrality by 2050 as envisaged in the European Green Deal. Moreover, both sides have something to offer the other: Africa can greatly support Europe with the provision of natural carbon sinks to aid the move to carbon neutrality, as well as natural resources for green hydrogen production (van Wijk & Wouters, 2019). There are also investment opportunities for European companies in Africa's green transition, including in clean energy, sustainable mobility, green hydrogen technologies and green infrastructure. Finally, it is in Europe's interests to support African countries to meet the SDGs and fulfil their commitments under the Paris Agreement. 'There is a need for real change, and different types of dialogues are needed', suggested Programme Chair at the German Development Institute (DIE), Julia Leininger.

While the European Green Deal holds out much potential for Africa, the continent's green transition must be endogenously owned and serve as an opportunity for African governments and companies to improve their transaction capacity and value addition to generate wealth for the people from the continent's natural resource endowment. There is a strong sense that an African position and strong leadership is essential to induce better negotiations and reduce the historical imbalances between Africa and the EU. As noted by Simon Anderson, Senior Fellow for Strategy and Learning at the International Institute for Environment and Development (IIED), Africa can benefit from a 'stronger capacity to be able to negotiate internationally'. This view is supported by Deputy Director of the IGF and IISD's Economic Law and Policy Program, Isabelle Ramdoo, who stated that Africa needs 'our own green deal that fits our levels of development and our realities, and we need to secure the financing dimension. We also need the competencies at the continental level to conduct successful trade and external diplomacy.'

4.2.3. A partnership of equals

There is a general criticism that low-carbon development is being planned with a heavy emphasis on the 'green' and little attention to the 'justice' elements. In short, pursuing mitigation at all costs without due regard for the fact that countries in Africa are at different points on their development pathways could compound the inherent vulnerabilities that may hinder countries in Africa as they emerge from the Covid-19 economic downturn with fiscal deficits, greater indebtedness and social malaise.

There is also a sense that, in the 'fast mitigation' race (Forsyth, 2014), the focus on adaptation for Africa is being left on the back burner. This must be avoided, both domestically and within the framework of international partnerships. Beyond job creation and the attendant reskilling and capacity-building, the move away from fossil fuels must prompt nations to re-dynamize their economies based on their national development goals and regional priorities. The just transition must be aligned to avoid creating a deep divide between transition winners and losers (Newell, P. and Mulvaney, D., 2013). While the just transition is about limiting the disruption and hardships due to low-carbon development, local agendas and domestication imperatives related to the SDGs and nationally determined contributions (NDCs) (see Box 7) cannot be overlooked. In other words, it is crucial for the low-carbon transition to be aligned with contextual realities and to be led endogenously. Transition pathways must be mapped not only in line with the mitigation agenda, but also to ensure that a fast route to mitigation will not derail and delegitimize important adaptations or the priority to attain social inclusiveness (Forsyth, 2014).

This should extend to Africa's global partnerships. For instance, any assistance that the continent might receive from the European Green Deal for its green transition will still need to be supplemented with domestic fundraising for the huge capital investments that will be required. Illicit financial flows (IFFs) from African to foreign countries – many European – are an obvious place to start. For years, Africa has suffered from exploitative and even illicit activities that have resulted in significant trade distortions and have increased vulnerabilities and inequalities across the continent. Africa lost an estimated US$1.3 trillion in IFFs between 1980 and 2018, and illegal logging, wildlife poaching and illegal fishing, as well as dangerous mining and waste dumping, have been perpetrated by foreign companies, depleting African economies and ecologies, and depriving the continent of opportunities for wealth creation, ecosystem preservation and, especially, healthier lives (ECA, 2014). The EU, then, could make a concerted effort to support Africa's efforts to crack down on tax evasion and increase domestic revenues by choking off IFFs from the continent to Europe. Global syndicates and the collusion of external partners with internal accomplices can only be curbed through judicial and security collaboration against organised crime (Oftadeh & Pauciullo, 2019).

Moreover, while the EU's goal of carbon neutrality by 2050 is to be applauded, it is important to recognize the different historical responsibilities for global carbon emissions between the Global North and South. Africa is responsible for less than 3% of total global emissions (Ritchie & Roser, 2017), and, due to the history of foreign extraction and exploitation, its economies are yet to fully benefit from the industries that have been built on its natural resource wealth. The concept of a just transition will test the EU–Africa partnership, and how the partners address this issue will help to determine how inclusive and just the continent's green transition will be. As Christine Hackenesch, Head of the Inter- and Transnational Cooperation Programme at DIE, argued: 'the Green Deal is about reforming economic systems, energy systems and ways of consumption and production – but the big question is how do you reduce inequalities, even in Europe? If the Green Deal does not address social aspects of the transition, then its success will be much reduced'.

Sub-Saharan Africa will require an estimated **$377 billion** in financing for climate mitigation investments and **$222 billion** for climate resilience investments in order to reach nationally determined contributions (**NDCs**).

This discussion paper therefore argues that Africa needs development and that the use of a mixture of energy resources to power its development and to enable a gradual green trajectory should be supported by the EU and other partners. The green transition must be just that – a transition – rather than leaping between a false dichotomy of 'dirty' versus clean energy. As previously discussed, Africa's supply of natural gas is particularly relevant here. As a less polluting and flexible energy option, gas can be paired with renewable energy systems to ensure an adequate power supply. Such hybrid energy systems are cost-effective and may be better suited to Africa's needs for a reliable option to spark a clean energy revolution on the continent. Indeed, the global North, including the EU and US, is using gas as a bridging resource to phase out more polluting forms of energy such as oil and coal while ensuring energy security over the medium term. However, using natural gas as a bridging fuel will require concerted political alignment and management. The Regional Program Leader for FAO Regional Office for Africa, Ade Freeman, noted, 'We need to have the right to utilise natural gas if it's going to be a driver of development … Right now, the political incentives are not well aligned, and consequently you see a lot of disjointed efforts.'

The concept of a just transition could be integrated into the EU's external financing to provide technical and financial assistance in the form of 'just transition task forces', which would engage directly with stakeholders in affected regions and mobilize political and financial support to develop new employment opportunities (Tänzler, et al, 2020).

> Africa is responsible for less than 3% of total global emissions and, due to the history of foreign extraction and exploitation, its economies are yet to fully benefit from industries built on its natural resource wealth.

Box 8: Nationally determined contributions (NDCs) and the green transition

African countries have set ambitious emission targets in their NDCs with long-term goals oriented towards a green transition. However, they face significant financial, technical, and institutional barriers to achieving these targets. External financial support is often necessary for successful NDC implementation. Burkina Faso, for example, has described the need for external funding as a 'constraining determinant'. While some NDCs acknowledge the potential of attracting private sector finance, there is still great emphasis on bilateral and multilateral donor funding. For example, Angola aims to reduce its emissions by nearly 50% by 2030 and will require US$14.7 billion for its NDC implementation. Similarly, the total cost of Ghana's NDC implementation is estimated at US$22.6 billion, of which 28% (US$6.3 billion) will come from domestic sources while the rest (US$16.3 billion) is to come from international sources. Namibia will need US$33 billion in funding from international sources for its NDC implementation.

In 2015/2016, annual climate finance flows to sub-Saharan Africa remained static at US$12 billion, with the biggest slice – as much as 20% since 2003 – going to South Africa. The inadequacy, unpredictability and unevenness of resource flow needs to be addressed in order to expand national opportunities for greening. The process governing climate finance is still relatively opaque and donor countries tend to make a clear distinction between their own interests and the priorities and needs of the receiving countries (Peterson, L. & Skovgaard, J., 2019).

The question of how to leverage climate finance as a primer for 'out-of-the-box' adaptation and mitigation, and for designing innovative technologies needs to be given more prominence. There is an urgent need to create new value addition and to give climate finance the much needed scale (Warren, 2020). Climate finance has largely focused on short-term goals and projects, but has not progressed to matters of scale or transformation. For instance, very little reference is made to climate finance related to deep decarbonisation or how climate finance can be used to support green industrialisation, especially for countries in Africa that are keen to make savings in the use of resources as production inputs. Some technologies such as carbon capture, usage and storage fuel switching can be tried and tested and given scale as part of green industrialisation, but companies are risk averse due to the limited economic incentives and the need to retain competitiveness (Warren, 2020).

Understanding the obstacles to scaling up and speeding up the disbursement of climate finance could help direct institutional policies into more functional and effective use of limited resources (Adenle, A. A., Manning, D. T., & Arbiol, J., 2017). Although many African countries have demonstrated a strong preference for adaptation over mitigation, mitigation action might serve as a good dress rehearsal for complementing adaptation action. Indeed, in Africa, given the currently low level of emissions, mitigation is not necessarily a reduction in emissions, but rather a move towards more climate-resilient development and action towards decoupling growth from fossil-fuel dependent production (Adenle et al., 2017). Nonetheless, barriers to climate finance abound, ranging from low technical capacity to weak institutions which will continue to inhibit climate action even with highly ambitious NDCs. Technology transfer will also help to overcome NDC implementation challenges. Strong scientific partnership between the EU and Africa, including transferring or co-developing innovative and climate-smart technologies, should help to realise the ambitious NDC targets in Africa.

Technological capacity development is crucial to take advantage of new opportunities. As Bart Armah noted, 'It doesn't really matter how much money they give you; if you don't have the technological know-how to translate that into self-sustaining development, you will fall back in that old trap". Yet, as Yemi Akinbamijo, Executive Director of the Forum for Agricultural Research in Africa (FARA), affirmed, 'the capacity to deploy science in Africa is still very low'.

4.3 Potential areas for cooperation

Beyond the opportunities for the green transition detailed above, below we outline further areas to be explored for targeted cooperation between Africa and the EU.

4.3.1 Financing

International financial institutions have a crucial role to play in supporting green investments (particularly in renewable energy and green mobility), piloting new financing models and incentives, and providing guarantees. To date, Africa has benefited from only a small fraction of global finance for renewables. Unfortunately, official development cooperation is not yet set up so as 'to support transformative climate action in developing countries' (2019). Howeverm a conservative estimate by the OECD 'places official development finance for upstream and downstream fossil-fuel activities at US$3.9 billion annually over 2016–17' (OECD, 2019a).

This is an area in which the EU could support Africa: indeed, the new strategy proposes to 'substantially increase environmentally, socially and financially sustainable investments that are resilient to the impacts of climate change' in Africa (European Commission, 2020a: 8). This is in keeping with EU investments in Africa, such as the EU-funded Global Climate Change Alliance (GCCA), which supports climate-smart development in Africa and currently covers 33 countries with a total allocation of €311.26 million (GCCA+, 2020: 10). Other frameworks include sustainable growth (Africa Investment Platform) and infrastructure (EU–Africa Infrastructure Trust Fund). The EU also committed €100 million to the Pan-African Programme in 2014-2017 for education, research and innovation, as well as €130 million for higher education with a focus on science and technology skills development. Additionally, Nigeria is benefiting from the Digital4Development initiative to promote digital infrastructure, literacy and entrepreneurship (EEAS, 2018). The EU is also providing €120 million to ECOWAS through the West Africa Competitiveness Programme to boost economic integration, growth and jobs (Mayaki, 2018). It is this type of investment funding, rather than aid, that could be scaled up in the next cycle of the partnership.

Meanwhile, improving the capacity to mobilize domestic resources will improve Africa's ability to finance the green transition (see Box 8). IIED Senior Fellow Simon Anderson noted that, 'Covid-19 aggravates the real problem of domestic resource mobilisation. Tax revenue in most African countries is less than 20% of GDP'. Furthermore, a just transition will require financing. As IGF/IISD Deputy Director, Isabelle Ramdoo, remarked, 'the cross-cutting mechanism for the just transition is financing. African countries need to mobilise domestic resources because dependence on development assistance brings conditionality.'

Box 9: Green transition implementation mechanisms

Financial mechanisms to ensure a 'just transition' by providing alternative livelihoods and economic opportunities and enabling public and private sector investment in low-carbon production and infrastructure. Sources of finance include:

- Domestic resource mobilisation; steep reductions in illicit financial flows.
- Green foreign direct investment and green bonds.
- Climate funds set up under the Paris Agreement to support NDCs.
- Multilateral concessional funds for green projects (e.g. African Development Bank).
- Carbon markets and emission-trading schemes.
- Equitable revenue distribution mechanisms to incentivise greening measures.
- A common African position in negotiations with external partners on the greening agenda; financing and key issues such as the local processing of Africa's raw materials.

4.3.2 Trade

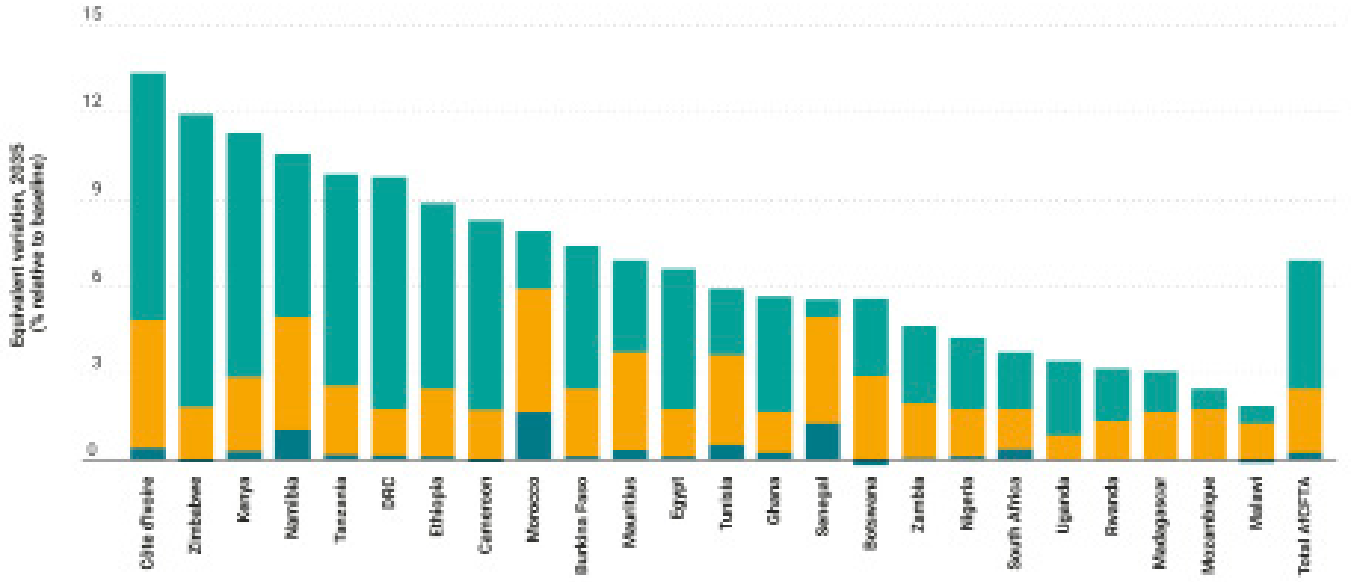
The European Green Deal notes how the EU uses its trade policies to 'engage with trading partners on climate and environmental action'. The trade policies aim to support such action outside the EU and ensure the supply of raw materials required for the green transition (European Commision, 2019). Trade and investment are a key element of the 2020 Council Conclusions on Africa, and the European Commission's proposed new strategy with Africa mentions trade as a factor facilitating the green transition.

The launch of the landmark AfCFTA has become even more significant as Covid-19 has disrupted international supply chains, impacting on African producers. The AfCFTA can also be used to 'green' trade in Africa, for example, by promoting environment-friendly protocols and e-commerce. The EU has shown support for implementation of the AfCFTA, home to six of the world's ten fastest-growing economies, Africa has enormous potential as an investment arena and market for European firms and as an ally for climate-friendly trade and investment. The eventual goal could be a free trade area agreement between Africa and the EU with an ambitious environmental side agreement (ecdpm, 2020). Indeed, the EU has a long-term vision of 'a comprehensive continent-to-continent free trade agreement', as highlighted by the European Commissioner for Trade Phil Hogan (Hogan, 2020). However, the EU regards establishing and further developing existing Economic Partnership Agreements (EPAs) as essential for its trade relationships with African partners at present (European Commission, 2020a; Hogan, 2020).

Box 10: Leveraging the AfCFTA for green transition and partnership

The African Continental Free Trade Area will create the world's largest trading block, connecting 55 countries and 1.3 billion people with an eventual combined GDP of US$3.4 trillion. The trade area has the potential to reduce wide scale poverty, raise economic growth and improve economic inclusion in Africa (World Bank, 2020). The World Bank (2020) predicts that 30 million Africans could be lifted out of extreme poverty, while incomes could be raised by US$450 billion by 2035, equal to a 7% continental average GDP increase, reaching up to 12% for some countries like Cote d'Ivoire.

Real income gains from AfCFTA



Visual Key

- Gains from trade facilitation
- Gains from reduction in non tariff barriers
- Gains from tariff liberalization

Source

World Bank, *The African Continental Free Trade Area: Economic and Distributional Effects* (Washington, DC: World Bank, 2020).

Africa Growth Initiative at BROOKINGS

Source: https://www.brookings.edu/essay/continental-integration-uniting-a-revitalized-africa/

The African Continental Free Trade Area will create the world's largest trading block, connecting 55 countries and 1.3 billion people with an eventual combined GDP of US$3.4 trillion. The trade area has the potential to reduce widespread poverty, increase economic growth and improve economic inclusion in Africa (World Bank, 2020). The World Bank (2020) predicts that 30 million Africans could be lifted out of extreme poverty, while incomes could be raised by US$450 billion by 2035, equal to a 7% average increase in GDP across the continent, but reaching up to 12% for some countries like Côte d'Ivoire.

Source: The Brookings Institution - Africa Growth Initiative (2021). Foresight Africa 2021.

Exports could increase by US$560 billion while wages may receive a 10.3% and 9.8% increase for unskilled and skilled worker, respectively.

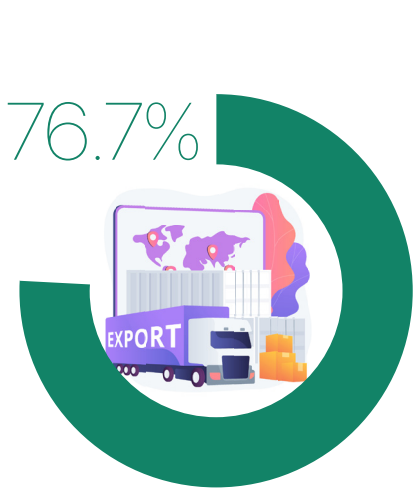
Africa's integration into global value-chains is low (especially in the manufacturing sector) and is centred around the export of intermediate goods, such as raw materials and energy, which are then used in production processes to produce the final goods. Although Europe is Africa's biggest trading partner (30.7% of Africa's total trade), 76.7% of Africa's exports to Europe are in intermediate goods (Brookings, 2021). On the other hand, intra-Africa trade comprises 62% intermediate goods and 38% final goods. The ECA predicts that the AfCFTA could boost intra-Africa trade by 52% as a result of tariff liberalization and trade facilitation.

Regional trade can minimize the constraints on the green transition, such as finance, technology and human capacity. It is estimated that Africa will need US$ 70 billion annually until 2030 to achieve the transition to clean energy. Many African economies have limited capacity for fiscal and resource mobilization to cover investments on this scale.

The AfCFTA offers possibilities for domestic and regional resource mobilization as it frees up the movement of people and finance and reduces the barriers to trade. In addition, the AfCFTA plans to raise investments in regional infrastructure projects, there being scope for some of this funding to be directed towards green infrastructure. Furthermore, the elements of the agreement relating to property rights and competition policy will reduce risk and improve investor trust. Finally, streamlined policy structures will align decision-making and improve dispute resolution and efficiency for better regional coordination to support the scaling up of a continental green transition.

However, these benefits depend on successful implementation of the AfCFTA, an area that could benefit from EU support. Institutional capacity support can be a fruitful element of the renewed AU-EU partnership. Africa can learn from the EU's experience of managing a successful regional trading bloc. There is also scope for knowledge exchange on the transition to green energy, especially given the EU's current position, where renewables faired better than fossil fuels for electricity generation in 2020.

To maximize the benefits of the AfCFTA, it would be beneficial for Europe to move away from bilateral agreements towards more coordinated continental-wide agreements to accelerate regional integration and the green transformation.



76.7% of African exports to Europe are in intermediate goods (e.g. energy, raw materials)
(Brookings, 2021)

The **EU** is Africa's largest trading partner: **30,7%** of Africa's total trade (2019)
(Brookings, 2021)

The **EU** is Africa's largest source of FDIs: **EUR 221 billion** of FDI stocks in Africa (2017)
(AfCFTA, 2021)

Trade in agricultural goods is often discussed as a key sector for the green transformation. Africa's agricultural raw material exports to the EU have largely been duty-free under various agreements, but exports of processed agricultural goods face both tariff and non-tariff barriers. Simplifying regulations and supporting compliant production could help African producers access the European market (Kornher &, 2020). This includes 'Aid for Trade' programmes and, more generally, directing development finance to building up economic sectors with export perspectives. Furthermore, the EU's internal policies have an impact on Africa's agricultural sector. Greening the EU's agriculture through the European Green Deal is likely to decrease European exports to African markets. This might lead to other external producers taking over these market shares (Kornher, L, 2020). Supporting sustainable food systems would require a mixture of trade-related measures: strengthening trade agreement provisions, possibly with preferential treatment for sustainable production, and providing targeted and sufficient Aid for Trade and finance to stimulate investment and private-sector engagement (Rampa, F., et al., 2020; Kornher, 2020).

In the face of these complex causal linkages, Africa and the EU could intensify their efforts to leverage trade in support of green economies, for instance, in the agricultural sector. This could include jointly taking stock of the effectiveness of and gaps in existing free-trade arrangements and Aid for Trade measures to support the green transformation, as well as discussions on sharing technological solutions and fostering SMEs. A continuous and open dialogue on how to connect domestic sectoral transformation policies, development cooperation and trade regulations could allow the partners to work on a joint vision of interlinked and fair markets for green agricultural products that bolster growth and resilient food supply and benefit populations widely. Involving civil society on both sides in these dialogues would be beneficial.

Renewable energy will also be a key sector for this kind of partnership. According to ECA-ATPC Director David Luke, 'Already, some big energy companies are beginning to pivot to clean energy. There will be more of that, and that's good news for Africa because we will be able to partner with investors in exploiting our clean energy potential, of which we have massive and underdeveloped resources.'

Achieving this vision would require a paradigm shift in Europe's policies regarding Africa, away from the development aid approach and towards trade and investment (High Level Group, 2019). Only these will lead to sustainable and resilient growth and employment for Africans. It will also require substantial work and negotiation to partner with the African continent as one entity rather than as a collection of sub-regional and national arrangements, but such a move will be critical to ensure coherent support for Africa's integration and continent-wide green transition.

4.3.3 Job creation

As already mentioned, Africa has the fastest growing young population in the world, but youth unemployment is a major problem, with one-third of the continent's 420 million people aged 15–35 unemployed (AfDB, 2016). Green economy transitions that spur green industrial development present an opportunity not only for sustainable resource management, but also to create new jobs for young people, including the most marginalised (see Box 10).

Despite the potential for job losses in some sectors, particularly the extractive industries, they are more than offset by the possibilities for job creation in a circular economy. Jobs in Africa's clean energy sector, for example, could easily exceed 20 million by 2031 (UNEP, 2019), and the International Labour Organisation estimates that up to 60 million green jobs can be created globally (ILO, 2012). The circular economy involves limited or no wastage of finite natural resources by keeping products and materials in use for as long as possible through recovery, reuse, repair, remanufacturing and recycling. This has become another arena that is ripe for job creation. The United States Environmental Protection Agency estimates that, for every 10,000 tonnes of used goods, six jobs are created when the waste is put in landfill, 36 jobs when it is recycled, and as many as 296 jobs when it is reused and repaired (World Economic Forum, 2020).

Innovation hubs and Climate Innovation Centres (CICs) are already emerging across Africa and demonstrating the job-creation potential and the economic and environmental benefits of circular and green economy transitions. Through these CICs, young African entrepreneurs are developing effective but affordable resource recovery technologies in different sectors for societal impact. The CIC in Ghana, for instance, has incubated more than a hundred green businesses that are developing innovative technologies in the five sectors of solar power, energy efficiency, climate-smart agriculture, waste management, and water management and purification. Collectively, these businesses have directly created 150 full-time jobs (of which 62 are held by women), generated revenues of US$2.06 million, provided green products or services to more than 341,000 households, and contributed to avoiding 5,497 tonnes of carbon emissions over a three-year period (World Bank, 2019).

These efforts notwithstanding, the continent suffers from limited technical and financial capacity to fully harness the job-creation potential of the circular economy and green growth. This is one area in which the EU could support Africa through capacity-building. Africa can benefit from Europe's experience in developing regional-scale policies and regulations, as well as transfers of innovative technologies, especially in waste management and resource recovery. The African Circular Economy Alliance (ACEA) and similar initiatives provide a ready platform on which the EU and AU could build mutually beneficial partnerships.

Specifically, the EU can support African countries with capacity-building and technological adoption in areas such as:

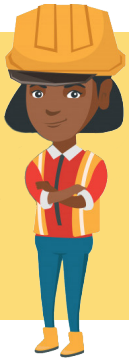
- **Innovative agricultural production technologies**
- **Energy efficiency and renewable energy production**
- **Sustainable transport systems**
- **Climate-sensitive building materials and construction**
- **Recycling of waste (including plastics, e-waste, water and textiles).**

These sectors will also contribute to making Africa's rapidly growing cities more sustainable and climate-resilient.

Ultimately, sources of funding for job creation must be sought in order to achieve long-term gains, which should include African governments facilitating more public–private partnerships for job creation. It has been demonstrated that every US$1 million invested in green rather than brown energy generates a net increase of five full-time jobs (Garrett-Peltier, 2017). The International Renewable Energy Agency estimates that Africa's renewable energy transformation will require an average of US$70 billion in annual investment between 2015 and 2030 (IRENA, 2015). The success of the African green transition will be measured partly by the number of jobs that it creates for young people, a drive that the EU could support as part of its commitment to just transition.

42 Million

Jobs in renewables would reach **42 million** globally by **2050**, four times their current level, through the increased focus of investments on renewables. (IRENA, 2020)



247,000

2020- Around **247,000** new RE jobs in Africa (IRENA, 2020)

11 Million

Eleven million people were employed in renewable energy worldwide in **2018** - the solar PV industry retained the top spot, with a third of the total renewable energy workforce. (IRENA, 2020)

South Africa's Renewable Energy Independent Power Producer Procurement Programme rose from **17,800** job-years in **2014** to **45,450** by **mid-2019**.

Box 11: Social dimensions of inclusive green transition

A more expansive view of the different beneficiaries and stakeholders that can justly participate in transition processes is needed to ensure the green transition is inclusive. An important aspect of this is how to bring gender into climate change mitigation. As Eric Zusman, senior policy researcher and area leader at the Institute for Global Environmental Studies (IGES), points out, 'There is discussion on vulnerability and adaptation, but that tends to not see women necessarily as agents of change'.

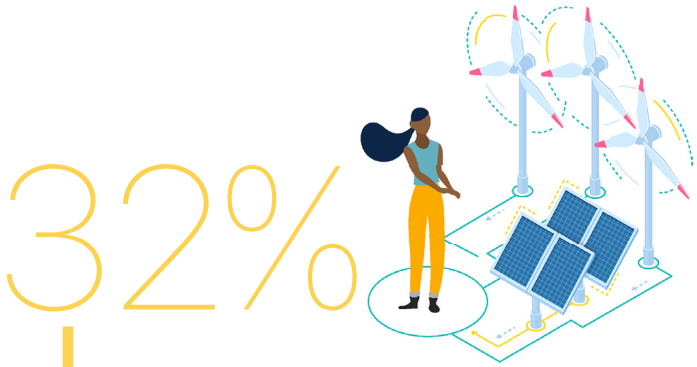
A study by Benkenstein and Murungi (2020) recommends that the 'Gender dimensions of the AU–EU strategic pillar on green transition and energy access should be elaborated as part of ongoing development of the AU–EU strategic partnership' and be recognised in policies and programmes. Current initiatives in line with this objective include the International Network on Gender and Sustainable Energy (ENERGIA), which has networks in West, East and southern African countries.

Investments in renewable energy for both industrial and domestic purposes have numerous social and economic benefits. For instance, women's access to sources of renewable energy tends to boost livelihood activities, especially in the food value chain in terms of production, processing, preservation and marketing. Fostering women's use of solar energy in particular, in place of fuelwood, prevents deforestation and promotes biodiversity conservation, thereby contributing to the realization of SDGs 7, 8 and 15. The time women and girls would otherwise spend gathering fuelwood can instead be invested in educational and economic activities, helping to achieve SDGs 1, 2, 4 and 5.

Actions towards biodiversity conservation, reforestation and the prevention of land degradation (such as the Great Green Wall) enhance community livelihoods led by women (farming, oyster harvesting, beekeeping, etc.), thereby building their resilience to climate change impacts. These activities can also add income-generation for young people and women.

Access to clean water, clean energy, higher incomes and improved food security will also improve health outcomes for vulnerable groups. Providing cleaner and more resource-efficient energy and water supply will help reduce the incidence of water-related diseases and acute respiratory infections, while also lowering the risks to pregnant women's health and reducing infant mortality. Improved resource efficiency will also help reduce the prevalence of malaria, which is exacerbated by higher temperatures due to climate change, deforestation, loss of biodiversity and poor water management.

Capacity-building for Africa's rapidly growing youth population should also be inclusive, targeted especially where certain aspects of technical and vocational education and training may have outmoded implications for gender. Finally, smart domestic and cross-border transport will foster regional trade and economic integration, thereby creating jobs for youth. Local job creation through a green transition may also aid in reducing migration to Europe.



Women currently represent **32%** of the **renewable energy workforce**, substantially higher than the **21%** average reported for the global oil and gas industry. (IRENA, 2021)

Decentralised renewable energy (DRE) can propel productivity in rural areas, particularly in farming and food processing, healthcare, communications, and local commerce. DRE sector also creates decent work for youth, who currently fill **40%** of all DRE jobs. DRE applications can have a greater impact in the Africa, where only **600 million** lack access to electricity in **2020**. Countries like Kenya and Nigeria are generating significant economic opportunity, including employment: (IRENA, 2020)

- Kenya - DRE companies provided for **10 000** jobs, compared with **11 000** from the national utility KPLC, and employment was forecast to increase **70%** by **2022-23**.
- Nigeria - Formal DRE employment is estimated at about **4 000**, with another **9 000** informal.

5. Conclusion:
towards a transformational green agenda for Africa

The Covid-19 pandemic has driven home the urgency with which Africa must prepare for and build resilience against future global risks and shocks, including the climate change impacts. The pandemic's impact on global oil prices and supply chains has also served as a timely reminder of the dangers of not diversifying economies, particularly away from fossil fuels. Underlying this is the continent's need for economic and socially inclusive development as defined in Agenda 2063. Both resilience and development could be achieved through a continent-wide green-transition pathway, which would see African economies adopt a low-carbon, high-growth formula.

Yet, there are still dissenting voices in Africa opposing the move towards green development. Some observers have suggested that fossil fuels will have a role to play in the future of Africa's energy transition, particularly natural gas, because the existing renewable energy infrastructure cannot support energy-intensive sectors like transport. Hence, Africa will need a mixture of different strategies to enable the transition. Nonetheless, African countries must take ownership of their own energy visions and create the conditions that will enable that vision. As Eric Zusman adds: 'When it comes to sustainable development, the initiatives that have the most success are the ones that have strong organic roots, and are locally aligned with existing needs, priorities, cultures and traditions'.

The following areas are recommended as foundations for Africa's green transformation.

Sustainable production
through low-carbon, energy-efficient processes that harness and equitably distribute renewable energy assets; develop national and regional value and supply chains; implement green trade measures; and rationalise artisanal and small-scale mining.

Science, technology, innovation, research and development built around nurturing home-grown ideas and technologies to support green production and supply and value chains, with alternative uses for assets at risk of becoming stranded.

Sustainable consumption, particularly through food production systems that are less fertilizer- and water-intensive; a circular economy policy to encourage reduction, reuse and recycling; and efficient waste management.

Sustainable human development, through gender-inclusive capacity-building with technical and vocational education and training; formalisation and greening of the predominantly informal economy; and planned urbanisation without slum growth.

Smart infrastructure that optimises domestic and cross-border water, rail, road and air transport; enables green means of transport (such as electric vehicles); and includes energy-efficient buildings.

Sustainable habitats and biodiversity
that preserve inland and maritime resources and livelihoods; halt land degradation; and encourage reforestation, while building resilience with coordinated national and regional environmental management policies.

Africa has the tools to lead a transformational green agenda: the region has maintained steady growth since 2000, and its huge market and youthful, innovative population are assets that can be harnessed for a green transition.

Africa has the tools to lead a transformational green agenda: the region has maintained steady growth since 2000, and its huge market and youthful, innovative population are assets that can be harnessed for a green transition. However, this responsibility cannot fall on Africans alone: while the orientation and direction of the green transition must be endogenously owned, international partnerships can provide investment and other forms of support.

This discussion paper emphasizes that green development will not happen by chance – it is a choice that requires Africa to accelerate its preparedness. As African Union Senior Industry Advisor Frank Mugyenyi suggests, "When the world is travelling on a green course, Africa cannot afford to be missing in action." This means rapidly boosting Africa's investment in research and development, and promoting entrepreneurial public-private partnerships. Africa has to move from being a consumer to a producer of technology. Europe can support Africa in building technological capacity and transferring relevant skills and technology to Africa, but it is Africa's own internal push that will be decisive in closing the green skills gap.

The next cycle of Africa–EU partnership should look to consolidate an important alliance to support Africa's green transition, as well as the zero-carbon ambitions of the European Green Deal. Joint efforts can achieve mutual benefits in respect of greening and expanding trade and private investment. The European Green Deal should support Africa to meet the SDGs and fulfil its Paris Agreement commitments, while recognizing the different historical responsibilities for carbon emissions. As Africa moves towards structural transformation, its energy choices will change, and so too will its dependence on traditional biomass. In the interim, the region will remain in dire need of a stable energy supply, particularly as it recovers from the Covid-19 pandemic, and will need to make difficult choices of energy systems to meet urgent energy needs for a just transition. This may entail the use of natural gas as a bridging fuel, prompting further reflections from the EU on the potential risks of the CBAM for Africa.

Moreover, the European Green Deal should encourage deeper reflection among African policymakers on how to link Africa's structural transformation with green development. For the green transition to be successful, it must be anchored in Agenda 2063 and must be owned by Africa as a continent-wide vision that accounts for regional and national diversity.

Recommendations

5.1 Recommendations

Closing the climate finance gap. The global response to the need for climate finance has been woefully inadequate: there is still a yawning gap between rhetoric and action. Covid-19 provides an opportunity to address climate change and channel energies into climate action. It would be difficult to envisage a green recovery when some of the old problems of finance and means of implementation have been reduced to oblique references. Africa's population is set to grow, and this will require careful planning so that the region does not find itself in a similar position to that of the industrialized nations. The promise of US$100 billion per year in adaptation funding has not been kept, and with only 3% of global finance being directed to the African continent, it is certain that transformational adaptation or mitigation will need a stronger push and a huge cash injection to get going. Climate finance, if used effectively, can accelerate clean energy transitions in Africa and provide much-needed incentives to increase climate readiness and to use investments for effective planning and greater climate proofing. Ambitious mitigation is not solely about finance, however; insufficient funding remains a significant barrier to successful climate action. Empowering institutions to be effective partners in the value chain of deploying large-scale solutions is a much-overlooked part of the process of making climate finance more effective. As African eyes are set on industrial development, research and development supported by technology transfer and climate investments will bring new technologies and the deployment of renewables to scale.

Avoid the 'big squeeze'. Many African economies are already experiencing huge fiscal challenges given the drop in oil and other commodity prices due to Covid-19, and several will see huge reductions in revenue streams into the recovery period. The heightened uncertainty has triggered general market turbulence accompanied by increasing indebtedness. EU partners should support and assist Africa in moving towards the green transition and avoiding a 'big squeeze' on the continent's economic recovery. Debt relief must consider strategies to support green entrepreneurship and the creation of green jobs.

'Green' should not be the enemy of the "just'. Africa's green transition is already in progress, and the region has many assets that can be used to scale up green initiatives and enable green development. As Special Adviser to the Nigerian President for Economic Matters, Adeyemi Dipeolu, argued that "We may still need fossil fuels to power our industrialisation". Different countries have different capacities and points of departure, particularly as they recover from the impacts of Covid-19, and they will need to find their own pace of transition. African countries should also be guaranteed a fair transition, given the significant perceived loss of income due to hydrocarbon resources becoming stranded for the sake of a zero-carbon future. The ability to determine the speed, scale and timing of the transition will matter, as will the relevant knowledge and skills to enable important transition decisions to be take.

Recommendations

Provide smart incentives to foster green development. There is a perception among senior African policymakers that the European Green Deal's CBAM is a taxation levy that will exclude Africa from potential trade deals with the EU. The principle of the border tax makes sense as part of EU efforts to avoid carbon leakage, but in practice it is countries in Africa that will suffer. The EU can level the playing field by using CBAM revenues to enable African countries to trade and to promote green investments, especially since Africa is unlikely to 'dump' heavy steel and other metal industries on the EU. Smart incentives can allow Africa to continue to trade with Europe in ways that foster good development.

Strong state support to enable new green businesses. Green development will necessitate an active state – one that provides the infrastructure for greening and that encourages private-sector investment. The Ethiopian model of building industrial parks has encouraged foreign direct investment and incentivized local entrepreneurship, as well as creating skilled labour and green jobs. Governments must provide a secure and stable regulatory framework that will create the right business environment and investor confidence. As Senior IIED associate for Climate Change, Camilla Toulmin, states, "Putting in place arrangements such as independent power purchase agreements will enable investments from domestic sources (pension funds, banks, local entrepreneurs etc.) to flow. Public assurance can rake in significant private investments."

Reset the partnership between Africa and the EU. Efforts must be made on both sides to negotiate new models of solidarity and cooperation. Covid-19 and climate change present opportunities to build long-term partnerships anchored in fair trade, the just transition and sustainable development. Recovery from Covid-19 in particular is a common trajectory that will bind all countries – rich and poor. It might also offer a new opportunity to address current perceptions of the power asymmetries between the EU and Africa. The pandemic has revealed that no one nation has all the answers, and that there are lessons to be learned from poorer countries.

Use the European Green Deal to catalyse an Africa-wide green transformation plan. The European Green Deal is an inspiring and ambitious blueprint that can act as a catalyst for Africa's own green transformation plan. Several African initiatives such as the 'Great Green Wall' have been founded on the principles of a green development trajectory, but most greening efforts in Africa are made at the national level, rather than being part of a continent-wide plan. The forthcoming Africa–EU Summit should set up a task force to identify transformative sectors for green growth in Africa, using the European Green Deal as a model for an endogenously owned green initiatives. African countries can rally behind the new momentum of the AfCFTA to channel new entrepreneurship into a continental blueprint for green growth and transformation. Indeed, as IPCC Vice-Chair Youba Sokona states, 'African countries must take ownership of their own energy vision and create the conditions that will enable that vision. This means breaking away from current modes of thinking and using energy resources in a strategic manner'.

Recommendations

Democratise systems and approaches. The Africa–EU relationship and the green transition pathway will involve a multiplicity of stakeholders. Constructive governance and institutional approaches will be needed to enable conversations between multiple actors and to identify transition barriers. The solutions lie not just in choices over infrastructural hardware, but also in creative thinking and innovation. Green transitions demand transformational change within society. For a confident Africa to emerge, more attention must be given to civil society, the private sector and other stakeholders capable of being key agents of change.

Use the energy sector as a driver of green transformation. Energy is both Africa's Achilles heel and its greatest potential tool for transformation. Greater efforts should be made to support Africa to democratize its energy menu and ensure that the continent is able to use energy to create new jobs and drive green development. There is huge potential to leverage renewable energy technologies for development and green job creation, especially as they become more economically attractive and offer real cost incentives compared to traditional hydrocarbon resources.

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Royal
Aroma

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List of Champions

Name	Position
Appiagyei, Patricia	Former Deputy Minister of Environment Science Technology and Innovation for Ghana; MP for Asokwa constituency, Ghana
Buyoya, Pierre	AU High Representative for Mali and Sahel (AU; MISAHEL)
Chambas, Mohammed Ibn	United Nations Special Representative of the Secretary-General for West Africa and the Sahel (SRSG UNOWAS), and head of UNOWAS
Fernández, Ángel Losada	EU Special Representative for the Sahel
Gurib-Fakim, Ameenah	Mauritian politician and biodiversity scientist who served as the 6th President of Mauritius from 2015 to 2018
Hamdok, Abdalla	Prime Minister of Sudan
Janneh, Abdoulie	Executive Director, Liaison with Governments and Institutions in Africa for the Mo Ibrahim Foundation
Kaberuka, Donald	High Representative for the African Union Peace Fund; Chairman SouthBridge Group; 7th President of the African Development Bank (AfDB)
Léautier, Frannie	CEO of SouthBridge Investment; Senior Partner at SouthBridge Group
Mwebaza, Rose	Director, UN Climate Technology Centre and Network (UN CTCN)
Nubukpo, Kako	Special Advisor to the President of the Commission at West African Economic and Monetary Union (WAEMU)
Nuhu, Mamman	Executive Secretary of Lake Chad Basin Commission (LCBC) and Head of Mission of the Multinational Joint Task Force.
Owusu, Eugene	Special Advisor to the President of the Republic of Ghana on the Sustainable Development Goals
Sacko, Josefa	Commissioner for Rural Economy and Agriculture of the African Union Commission (AUC)
Sidikou, Maman	Heads the Executive Secretariat of the G5 Sahel.
Songwe, Vera	Under-Secretary-General at the United Nations; Executive Secretary of the United Nations Economic Commission for Africa
Thiaw, Ibrahim	Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD)

List of Knowledge Consortium Members

Organisation	Name	Position
adelphi	Ivleva, Daria	Senior Advisor, adelphi
adelphi	Tänzler, Dennis	Director and Head of Programme Climate Policy, adelphi
adelphi	Wintermeyer, Florian	Consultant, adelphi
AfDB	Urama, Kevin	Senior Director, African Development Institute, African Development Bank Group (AfDB)
AGN	Abebe, Selam Kidane	Legal Advisor, African Group of Negotiators (AGN)
AUC	Jerome, Afeikhena Theo	Special Advisor, African Union Commission (AUC)
GIZ	Cantzler, Jasmin	Climate Policy Advisor, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
IIED	Anderson, Simon	Senior Fellow in the Strategy and Learning Group, International Institute for Environment and Development (IIED)
UN-ECA	Lubango, Louis Mitondo	United Nations Economic Commission for Africa (UN-ECA)
UN-ECA, ACPC	Mofor, Linus	Senior Environmental Affairs Officer, Energy, Infrastructure and Climate Change, African Climate Policy Centre (ACPC), UN Economic Commission for Africa (UN-ECA)
UN-ECA, ACPC	Murombedzi, James	Chief of Section, African Climate Policy Centre (ACPC), UN Economic Commission for Africa (UN-ECA)
UN-ECA, ATPC	Sommer, Lilly	Trade Policy Expert, African Trade Policy Centre (ATPC), United Nations Economic Commission for Africa (UN-ECA)
UNU-INRA	Arko, Thelma	Research Fellow, United Nations University Institute for Natural Resources in Africa (UNU-INRA)
UNU-INRA	Bombande, Maria-Ancilla	Research Associate, United Nations University Institute for Natural Resources in Africa (UNU-INRA)
UNU-INRA	Denton, Fatima	Director, United Nations University Institute for Natural Resources in Africa (UNU-INRA)
UNU-INRA	Fomenky, Aloysius Ebokem	Independent Consultant, United Nations University Institute for Natural Resources in Africa (UNU-INRA)

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UNU-INRA	Forkuor, Gerald	Research Fellow, United Nations University Institute for Natural Resources in Africa (UNU-INRA)
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GREEN AFRICAN TRANSFORMATION PATHWAYS

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About UNU-INRA

The United Nations University Institute for Natural Resources in Africa (UNU-INRA) is one of the 15 research and training centres of the United Nations University (UNU) and is the only one focusing predominantly on Africa. We provide cutting-edge solutions and knowledge outlets for natural resource planning and management from an African perspective.

UNU-INRA serves as a platform to amplify African voices and showcase made-in-Africa solutions. We harness the incredible talent on the continent and also strengthen and develop capabilities by equipping African researchers, entrepreneurs and policy actors with the requisite knowledge to sustainably manage natural resources. We deliver research, capacity development and policy advice, and we convene spaces for knowledge sharing.

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