



SIX KEY RECOMMENDATIONS ON CLIMATE FINANCE FOR AFRICAN GROWTH

**What can public
and private decision-makers
do to move faster?**

EDITORIAL.....4

THE EVIDENCE IN FIGURES.....7

1. Energy access: a growth issue.....7

a. 600 million left behind.....7

b. Energy needs set to increase.....8

2. Is there a decarbonised path?.....8

a. Energy consumption per capita is 4.5 times less than the global average.....9

b....but the energy mix is still largely carbon-based.....9

3. Renewable energy: an underutilised potential.....10

a. A potential renewable energy world leader.....10

b. ...still in the making.....11

c. The growing role of independent producers.....11

d. Will minigrids resolve the rural electrification headache?.....12

4. Climate finance still under utilised in Africa.....12

a. Sub-Saharan Africa attracts less than 3% of climate finance...12

b. ...and 2% of global investments in renewables.....13

c. DFIs role is key in turning African economies greener.....13

d. A fast-growing market of green bonds and loans... but of little benefit to Africa.....14

e. 2% of global voluntary carbon credits volume.....15

SIX RECOMMENDATIONS ON CLIMATE FINANCE FOR AFRICAN GROWTH..... 16

1. Implement realistic planning and comprehensive regulation..... 16	
a. Rigorous planning and effective regulation: key conditions for investors 16	
b. Accelerate investments in transmission and power infrastructure..... 17	
c. Off-grid requires its own regulatory framework..... 18	
2. Structure projects and mitigate risks: conditions to catalyze private financing..... 21	
a. Invest in the upstream phase of project preparation and structuring 22	
b. Increase the availability of guarantee instruments..... 26	
3. Boost the mobilisation of global savings through DFIs..... 28	
a. Develop standardised blended finance vehicle 29	
b. Bank on green bonds to structure local markets 31	
c. IMF as a green growth coordinator?..... 32	
4. Maximise the potential of carbon credits..... 34	
a. Clarify eligibility criteria and alleviate the certification process..... 35	
b. Ensure a price floor and set up upstream payment mechanisms..... 36	
c. Maximise funding strategy for green growth..... 38	

5. Make gas part of Africa's Just Energy Transition..... 39	
a. Some major gas discoveries but difficult to finance..... 39	
b. Gas provides a pathway to greener energy sources..... 40	
6. Invest now in energy storage and hydrogen technologies..... 41	
a. A specific contractual and regulatory framework for storage solutions..... 42	
b. Invest now in the production and transport of green hydrogen..... 42	

EDITORIAL



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MOBILISE CLIMATE FINANCE TO POWER AFRICAN GROWTH

The AFRICA CEO FORUM, the world's largest international conference for the private sector in Africa, and PHILAE ADVISORY, a financial and strategic advisory specialising in Africa's infrastructure and energy sector, have joined forces to assess and provide guidance on financing decarbonised growth in Africa.

Currently, Africa is home to 75% of the world's population without access to electricity. This major impediment to economic growth could become even more acute in the coming decades due to an unprecedented demographic trend: in less than 30 years' time, one out of every four people living on Earth will be African.

Access to electricity is therefore the continent's most pressing challenge, a generational endeavour, and one of the United Nations' 17 Sustainable Development Goals (SDG7). Meeting this goal means that this electricity has to be affordable. And to be sustainable, it has to be as low-carbon as possible.

With renewable energy costs having dropped drastically over the past decade and the continent's remarkable potential for solar, hydro, wind, geothermal and biomass energy, renewable energy (RE) meets the dual challenge of growth and decarbonisation and offers an opportunity to accelerate affordable and sustainable development.

However, Africa's share of installed RE capacity is half that of the rest of the world. The continent's energy mix is still largely carbon-based, with charcoal being the main source of energy for household cooking.

Developing and rolling out renewable energy is one of the opportunities being explored by what is commonly referred to today as climate finance, which includes all the financial instruments, both private and public, designed for greenhouse gas mitigation or climate change adaptation projects.

So, how can climate finance support the development of renewable energy in Africa?

While there is no shortage of global savings and financing, opportunities to invest in bankable projects are still too rare. So much so that Sub-Saharan Africa continues to attract less than 3% of climate finance.

In reality, most infrastructure projects do not reach financial close. According to McKinsey, fewer than.... 10% of projects make it to this stage, and 80% of them fail at the feasibility and business

plan stage. There are several reasons for this: the absence of realistic long-term planning that takes into account the entire electricity value chain from production to distribution; incomplete feasibility studies and business plans; the lack of a comprehensive regulatory framework; and failure to agree on a balanced and bankable risk allocation.

Drawing on a series of interviews with key sector decision-makers and an in-depth analysis of business cases, our report proposes six recommendations for accelerating the mobilisation of climate finance for African growth. The aim of this report is not to give you a new state of play of the sector but to offer realistic and ambitious recommendation towards the continent's energy transition. **Here are the six recommendations:**

RECOMMENDATION 1:

Implement realistic planning and comprehensive regulation

National plans for universal access to affordable, quality electricity are still too flimsy and unrealistic. It is essential that they cover the entire value chain from generation to distribution, and off-grid. Integrated planning, which accurately and realistically identifies potential demand, should lead to an increase in RE share, improved reliability of supply and lower costs. At the same time, comprehensive, independent and sustainable regulatory frameworks that ensure regulator accountability to stakeholders are essential for attracting private investors. With almost 70% of future rural electricity generation coming from off-grid solutions, sector-specific regulation is required.

RECOMMENDATION 2:

Structure projects upstream and mitigate risks

Almost 90% of climate finance in Africa come from public sources, mainly DFIs. The challenge is to mobilise additional private financing. This requires DFIs to ramp up assistance to governments to enable them to invest in the upstream phase of project preparation and to strengthen mechanisms that allow for rapid agreement on a balanced and bankable risk allocation. DFIs should also provide greater access to risk mitigation instruments, including guarantee instruments which, given their potential to reassure private finance, remain, so far, largely under-utilised.

RECOMMENDATION 3:

Increase the mobilisation of global savings through DFIs

Increased mobilisation of global savings is needed to meet the financing requirement for Africa's electrification, estimated up to \$25 billion per year until 2030. DFIs must foster the growth of blended financing vehicles, for example by offering first loss guarantees. They would thus act as an investor-catalyst capable of boosting returns and mitigating risks, thereby attracting private finance. DFIs should also be promoting the development of green bonds in local markets, by fostering the establishment of a green taxonomy and by supporting financial and industrial players' decarbonisation strategies. Lastly, to further increase the mobilisation of global savings, the International Monetary Fund (IMF) could play a signalling role amongst international investors by ensuring that resources allocated to low-income countries are efficiently directed towards mitigation or adaptation expenditures.

RECOMMENDATION 4:

Maximise the potential of carbon credits

Carbon credits are assets that value the avoidance, reduction and absorption of greenhouse gases, which buyers typically use to offset their own CO₂ emissions. They are a relevant additional source of financing for the necessary investments in decarbonised growth. Better integration into the international voluntary carbon markets is therefore needed. Facilitating the certification process and pre-financing carbon credits are ways of supporting project developers' access to these markets. It also involves preparing for the operationalisation of the mechanisms set out in Article 6 of the Paris Agreement, which specifically aim at international cooperation on mitigation efforts, as established in the Nationally Determined Contributions (NDCs).

RECOMMENDATION 5:

Make gas part of the just energy transition

Gas-fired baseload power generation can compensate for intermittent RE-based power generation and thus increase its share in African power systems. Given that natural gas generates about half the carbon emissions of coal, gas should be considered as a transitional energy in Africa. Major public and private project financiers should contribute to the financing of these key projects, provided that they are included in the NDCs and demonstrate their ability to be consistent with a low-carbon trajectory.

RECOMMENDATION 6:

Invest now in electricity storage and green hydrogen

Electricity storage can optimise the use and efficiency of the electricity grid. Mobilising more funding for investment in storage requires a specific regulatory framework. At the same time, governments must accelerate the emergence of a hydrogen industry based on renewable energy sources by establishing appropriate and predictable frameworks and helping to overcome initial economic barriers, in particular related to the financing of production and transmission infrastructure. Of key importance will be a set of policies such as robust carbon pricing and facilitating granting land rights, environmental permits and approvals. Development finance institutions, by providing innovative financing, guarantees and technical assistance to governments, will again have a key role to play in this ambition.

Enjoy the read!

THE EVIDENCE IN FIGURES

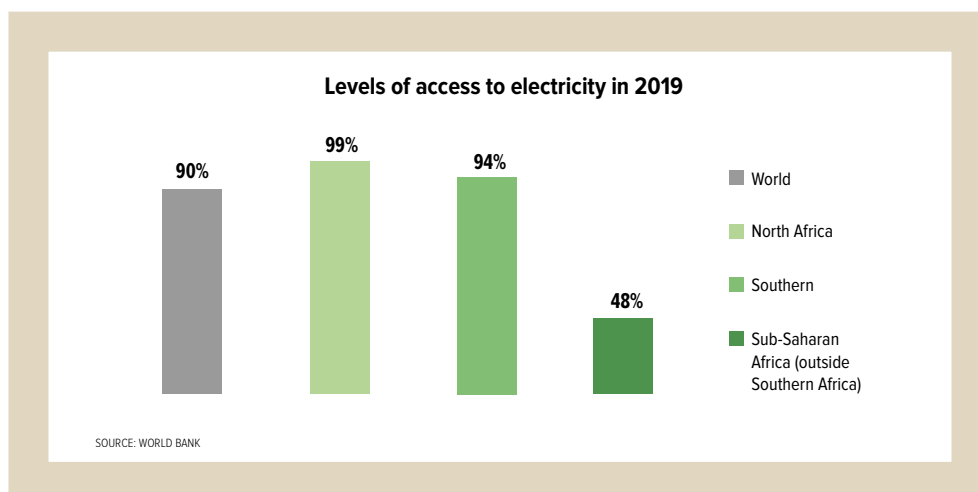


1. Energy access: a growth issue

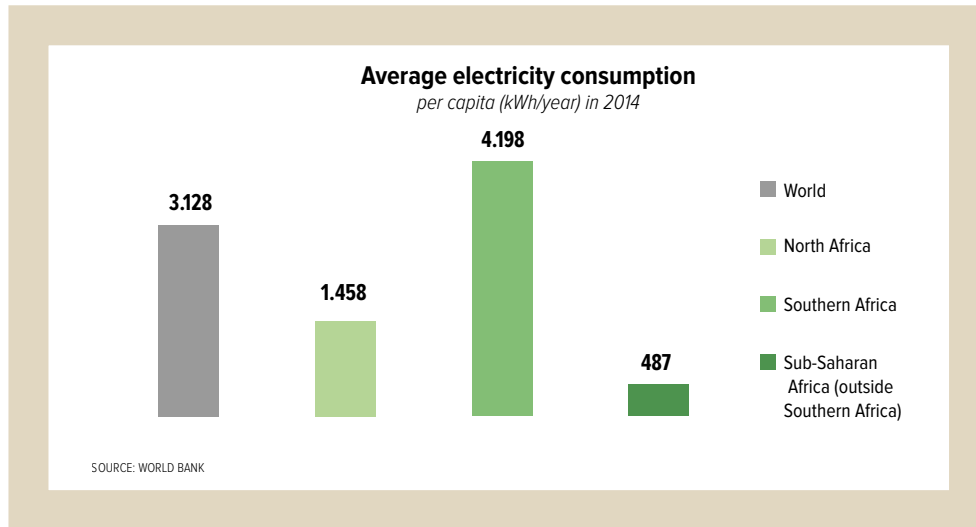
Among the Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly in 2015, SDG 7 aims to “ensure access to affordable, reliable, sustainable and modern energy for all”. SDG 7 is a key concern for Africa, given its impact on agricultural production, economic activity, employment and, therefore, socio-economic and human development.

a. 600 million left behind

600 million Africans still do not have access to electricity, representing 75% of the global population living without access to electricity.

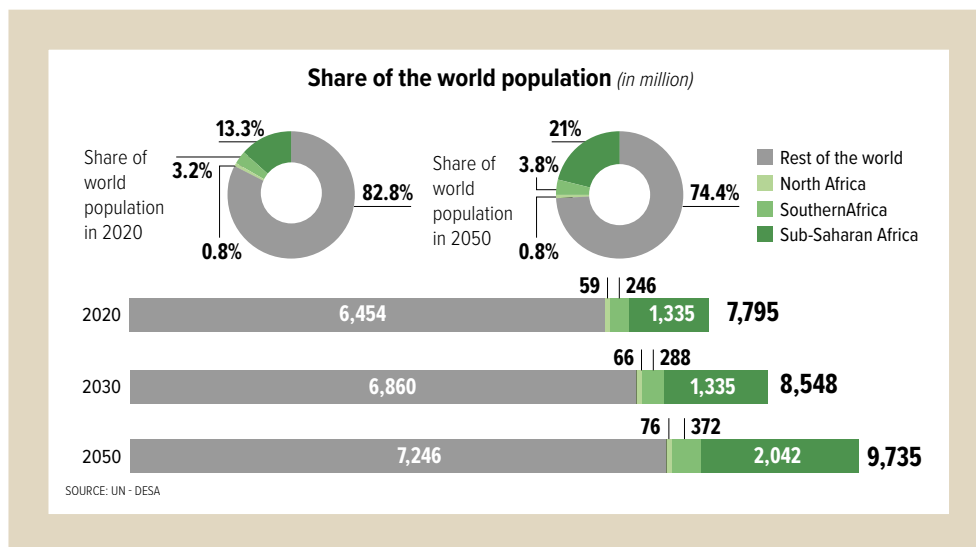


Electricity consumption per capita in Sub-Saharan Africa is six times less than in other regions of the world. Furthermore, this electricity is neither of high quality – meaning that many businesses are crippled by power cuts – nor accessible to many households.



b. Energy needs set to increase

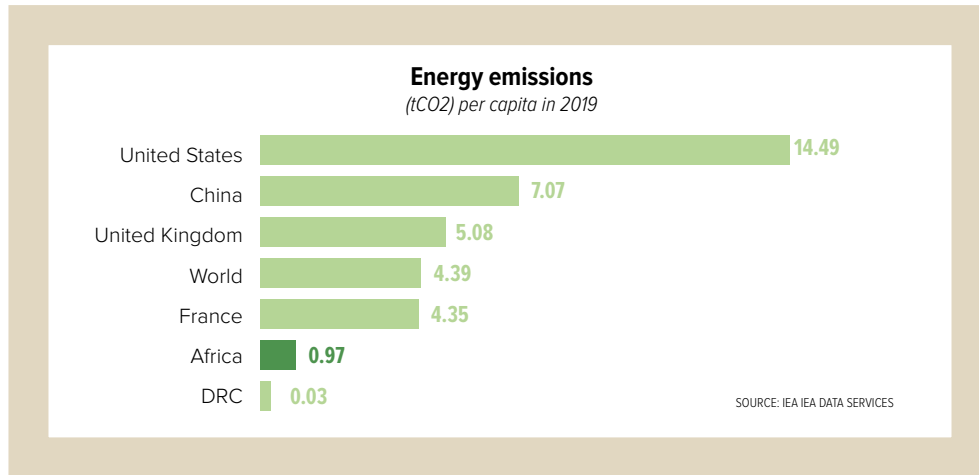
The African population is experiencing unprecedented growth and is expected, according to the World Bank, to double between now and 2050, increasing from 1.2 billion to 2.4 billion, with nearly one person out of four living in Sub-Saharan Africa by 2050. By comparison, this number was just 1 in 13 in 1960.



2. Is there a decarbonised path?

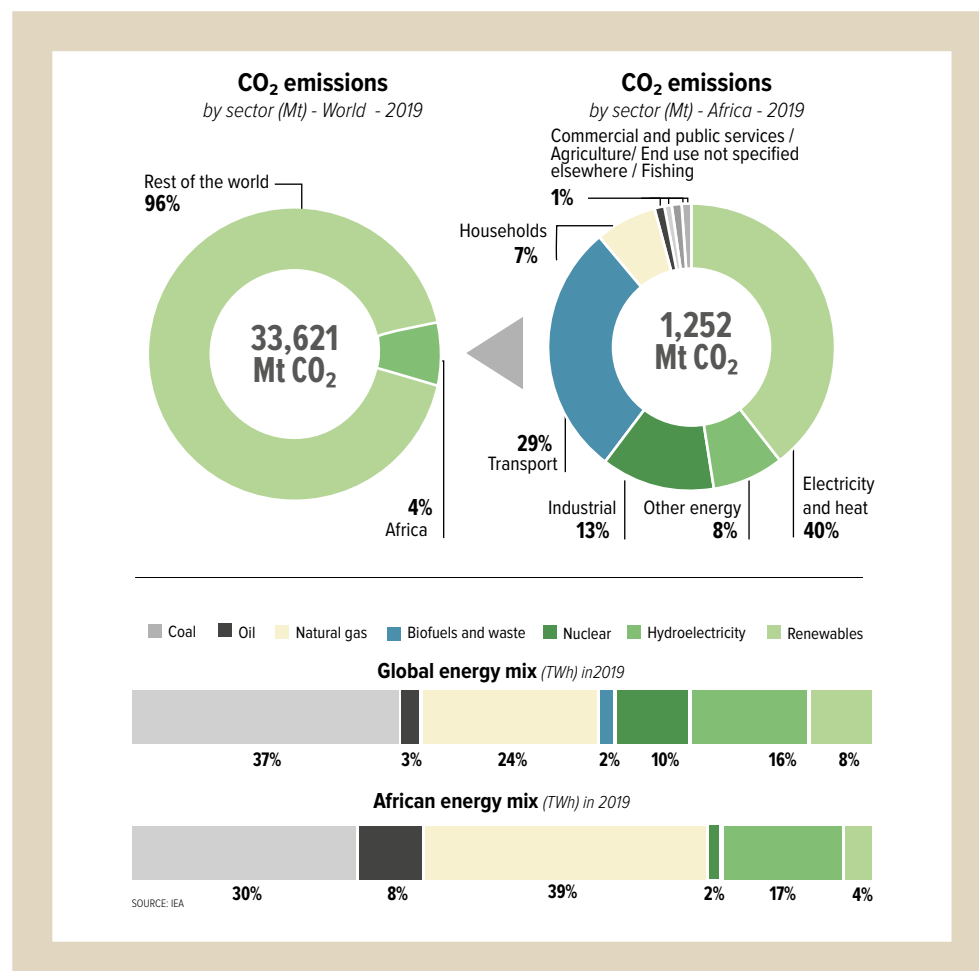
African countries have signed the Paris Agreement, which aims to limit the increase in global temperature to +1.5°C in comparison with pre-industrial levels by 2100. Although Africa contributes little to global GHG emissions (4%, this figure is rising), due to an energy mix that is largely carbon-based. To ensure decarbonisation, Africa must draw on its vast potential for renewable energy.

a. Energy consumption per capita is 4.5 times less than the global average...

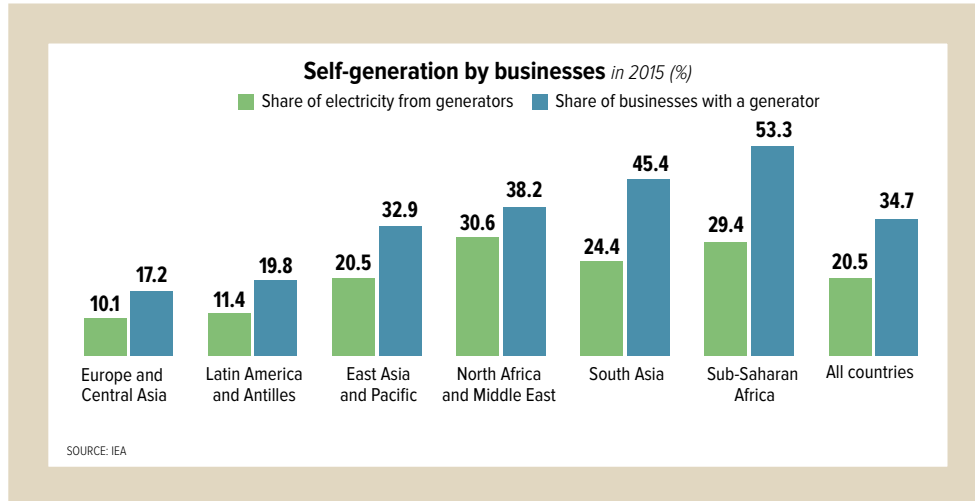


b. ...but the energy mix is still largely carbon-based

Africa's energy mix is still largely carbon-based and is primarily dominated by biofuels (charcoal) due to a lack of access to clean cooking methods. Although biofuels are considered neutral in terms of CO₂ emissions, the unprecedented deforestation they cause has a substantial impact on the absorption of greenhouse gases (GHG).



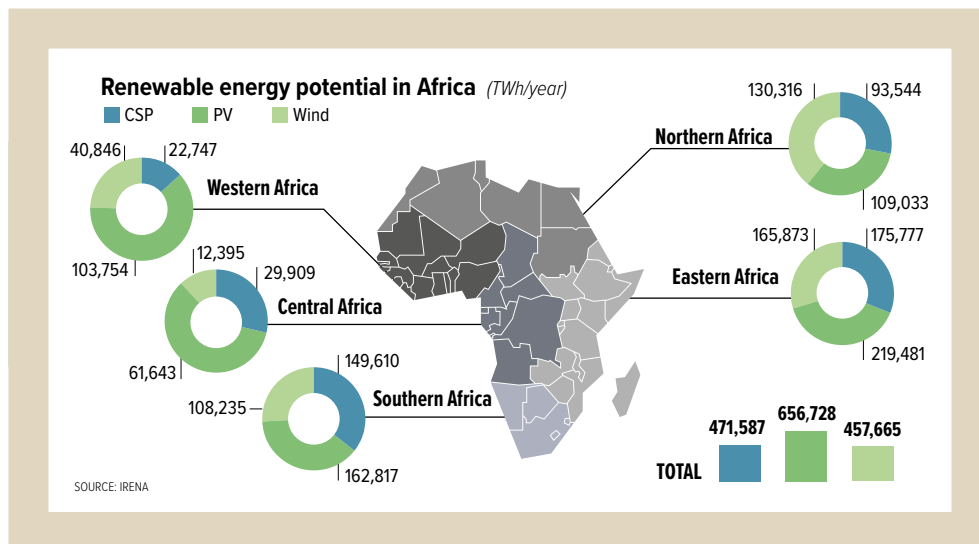
Apart from Southern Africa’s enduring coal-fired electricity generation, the carbon intensity of electricity in Africa can also be attributed to the poor quality and lack of access to energy. This is particularly critical in Central Africa where, despite production largely relying on hydroelectricity, frequent power cuts force consumers to use alternative solutions. These are often diesel generators, whose carbon footprint per kWh is larger than the grid’s. This share is the highest in the world.



3. Renewable energy: an underutilised potential

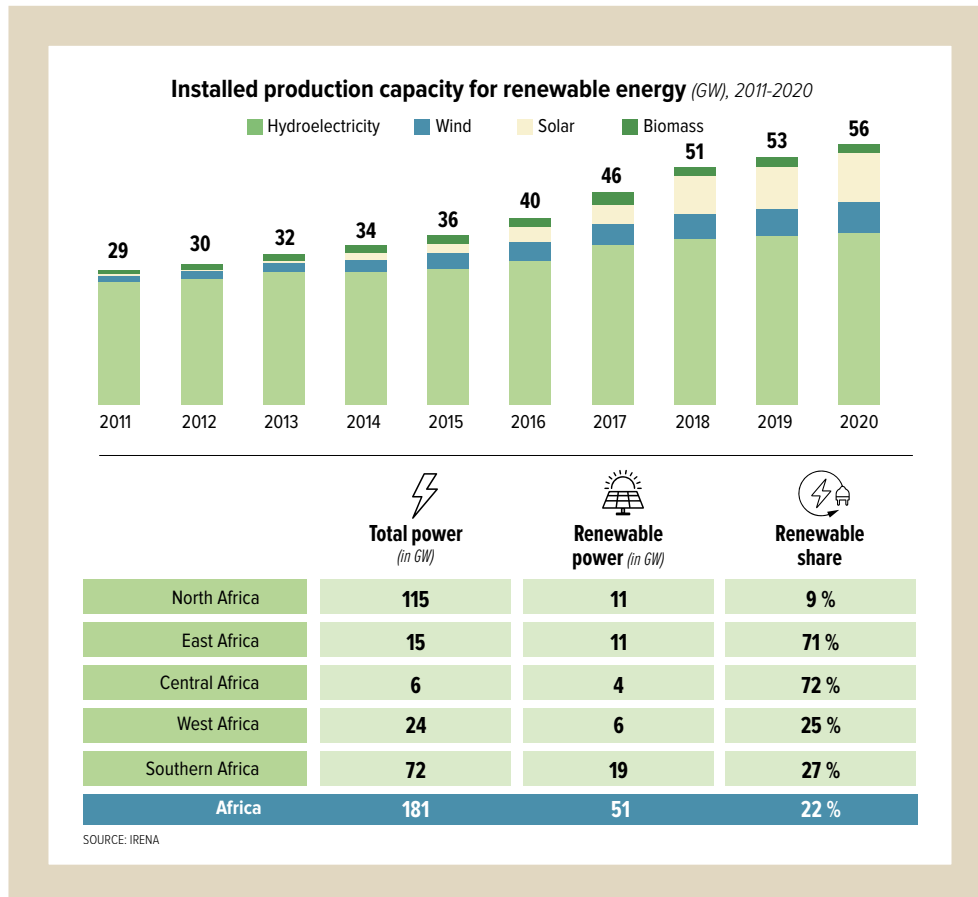
a. A potential renewable energy world leader...

Africa has vast renewable energy potential, whether as solar PV, wind, hydroelectricity, geothermal or biomass.



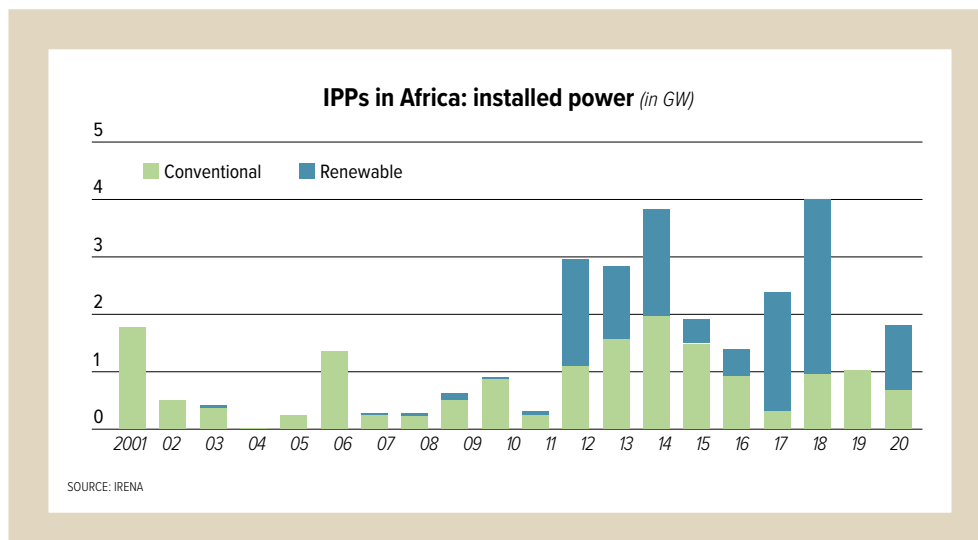
b. ...still in the making

The share of renewable energy in the energy mix is half that of the rest of the world.



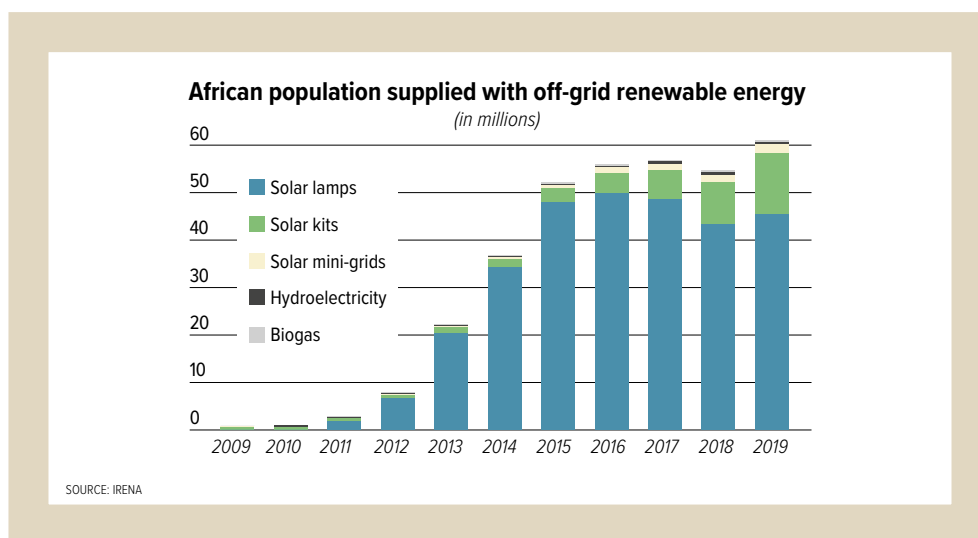
c. The growing role of independent producers

Since 2010, electricity generation based on renewable energy by independent power producers (IPP) has multiplied eight-fold, reaching an installed capacity of 14 GW by the end of 2020.



d. Will minigrids resolve the rural electrification headache?

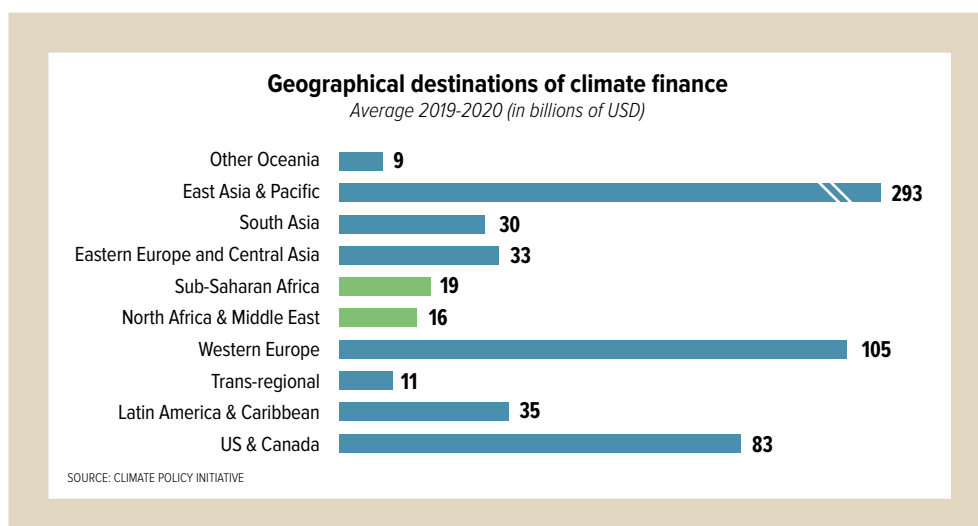
Mini-grids systems are comprised of two parts: electricity production on the one hand, ultimately combined with storage capacity, and electricity distribution on the other, which supplies electricity to a small, isolated group of customers. These mini-grids operate independently from the national grid, and their generation capacity generally ranges from a few kilowatts to 10 megawatts. With significant pressure on national electricity companies to stay solvent, which limits not only their production capacity, but also their transmission and distribution capabilities in remote areas, mini-grids offer low cost, practical and technical solutions.



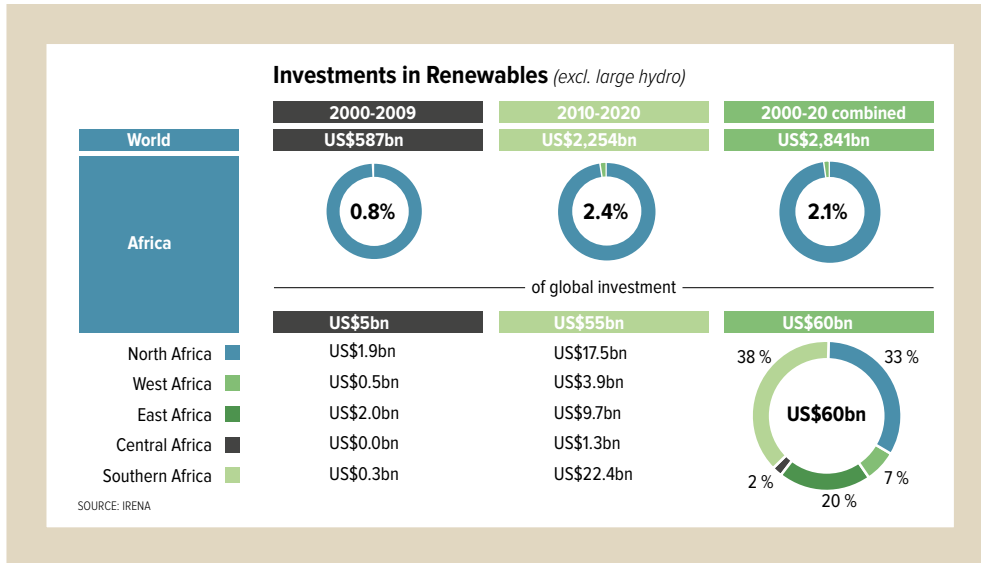
4. Climate finance still under utilised in Africa

Climate finance refers to all funding streams, public or private, that are allocated to mitigation (of GHG emissions) or adaptation (to climate change) projects. The taxonomy - or standard classifying economic activities from an environmental perspective - is still largely under discussion, and until recently was a matter of debate within the European Union, with the inclusion of gas and nuclear. Six years after the Paris Agreement, the 2021 COP 26 in Glasgow reiterated the importance of mobilising climate funding streams in developing countries well above the current target of \$100 billion.

a. Sub-Saharan Africa attracts less than 3% of climate finance...



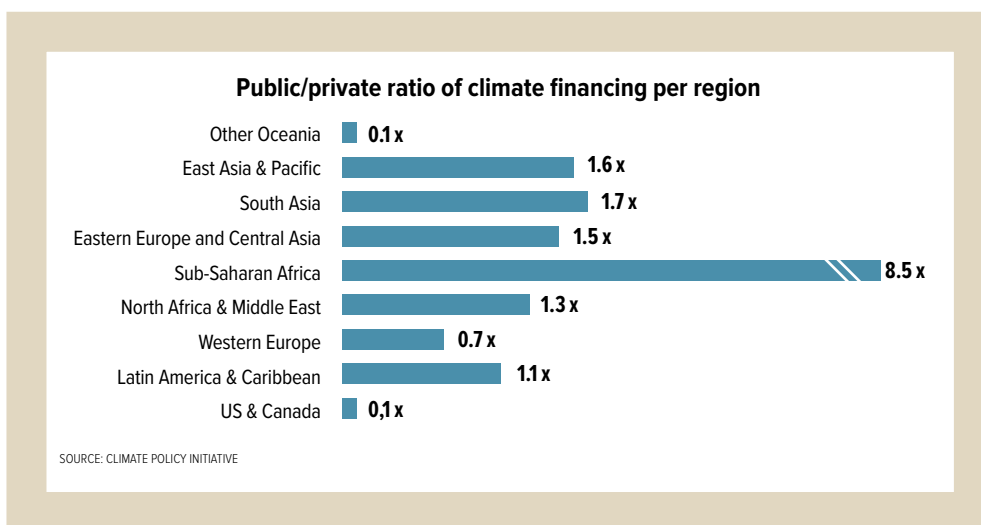
b. ...and 2% of global investments in renewables



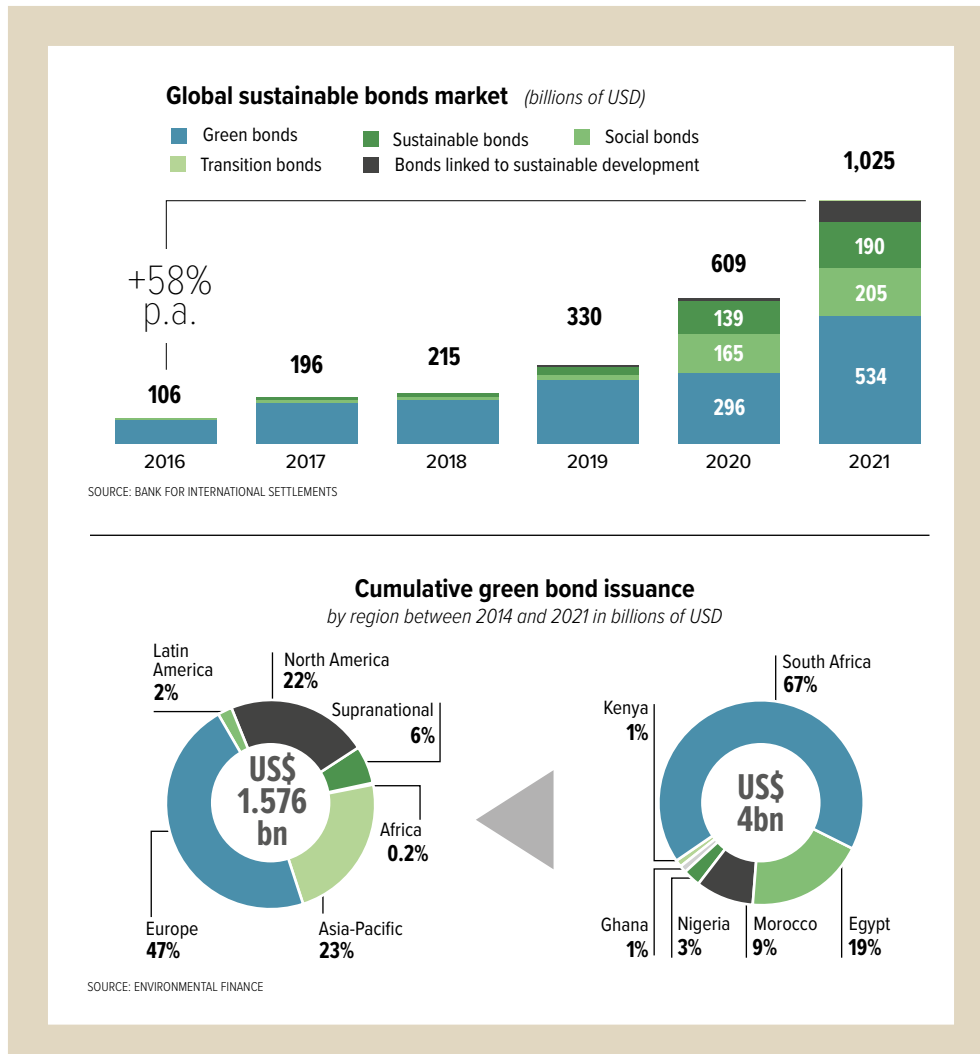
c. DFIs role is key in turning African economies greener

Development Finance Institutions (DFIs), usually multilateral or bilateral organisations that distribute public funding, play a key role in climate financing, especially in Africa. By adopting carbon-neutral or climate co-benefit targets, and by developing carbon methodologies, they are a key reference point for all the governmental, industrial and financial players involved in the process of making African economies greener.

DFIs have an important role to play as catalysts for private funding. The over-representation of public financing (governments, DFIs and state public services) in climate funding streams also reveals a lack of private investment in Africa – the public/private ratio is 8.5, according to data from the Climate Policy Initiative.



**d. A fast-growing market of green bonds and loans...
but of little benefit to Africa**

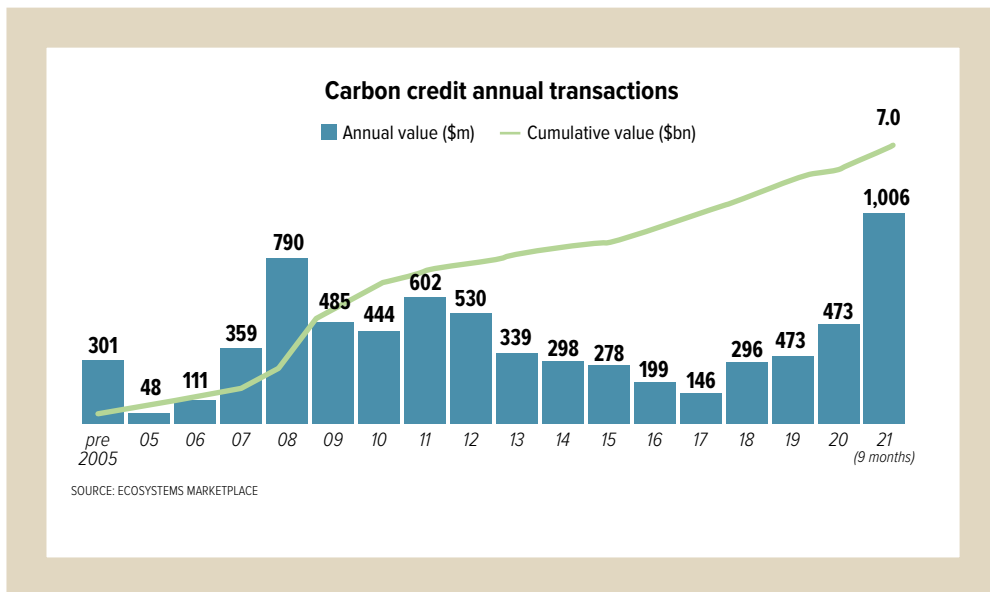


Even with a booming green bonds and loans market, Africa is struggling to capitalise on the benefits these instruments can bring. Issuers are faced with a stricter governance of green debt issuance, as formalised by the International Capital Market Association (ICMA) in its Green Bonds Principles.

Not only does Africa represent a negligible share of cumulative green debt issuance, but more than two-thirds of the continent’s green bond issuance comes from South Africa alone.

e. 2% of global voluntary carbon credits volume

The voluntary carbon credits market reached \$1 billion in 2021. The renewable energy industry in Africa should be able to benefit more from this source of climate financing.



SIX RECOMMENDATIONS ON CLIMATE FINANCING FOR AFRICAN GROWTH



1. Implement realistic planning and comprehensive regulation

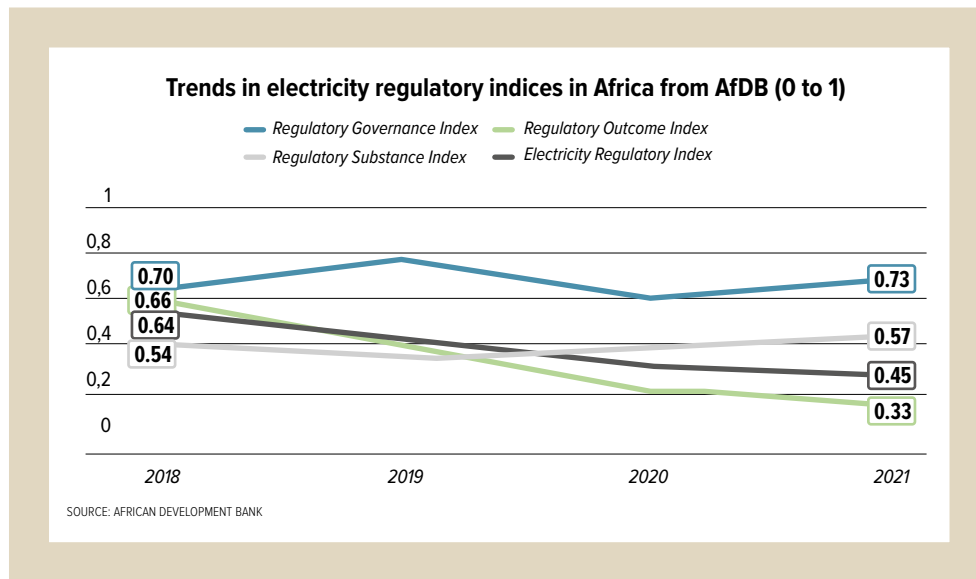
a. Rigorous planning and effective regulation: key conditions for investors

In order to ensure security of supply, a competitive generation mix, and to be consistent with the commitments made in the Paris Agreement, as detailed in the Nationally Determined Contributions (NDCs), African governments must develop realistic and rigorous planning.

In particular, planning must focus on robust electricity demand forecasts, key technical issues (such as the grid's absorption capacity) and coordinating with other production or electricity transmission projects in the region. As the Institut Montaigne states, "the projects envisaged are too often the result of 'political' announcements, and do not actually address any technical issues, such as the grid's capacity" (Institut Montaigne, 2019).

Alongside rigorous planning, a fit-for-purpose regulation is essential. As the African Development Bank's annual Electricity Regulatory Index shows, average regulatory performance is showing only marginal improvements. In fact, 33% of countries surveyed do not have methods for setting tariffs, while 40% have pricing methods without the main principles required for effective regulation. In 40% of the countries examined, there are no simplified frameworks or authorisation procedures for smaller-sized off-grid systems. In 67% of cases, there is a mismatch between average tariffs and the electricity companies' operating costs.

In this context, an agency that supports regulatory independence while guaranteeing the regulator's accountability to its stakeholders is crucial for attracting private investors. Such investors see this as a way of ensuring that decisions impacting the industry (market access, obtaining licences, approvals and permits, tariffs, revenue, etc) will be made in a fair and transparent way, therefore reducing uncertainty.



b. Accelerate investments in transmission and power infrastructure

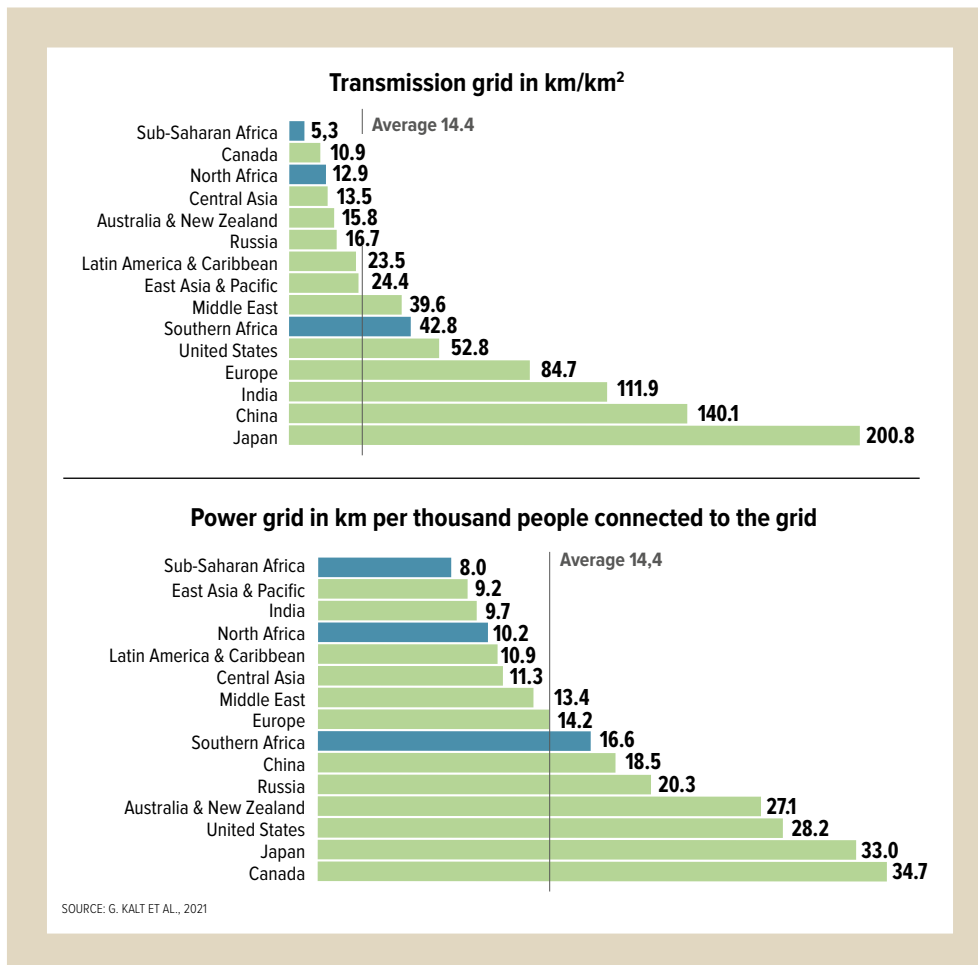
“Accelerating investment in transmission infrastructure and regional interconnections is vital to increase the share of renewable energy.”

CHRIS FLAVIN, Head of Business Development, Gridworks



Africa’s sustainable development and increased access to electricity not only depend on carbon-free electricity production, but also on its delivery to homes and businesses. However, a lack of transmission infrastructure is a major obstacle in connecting end customers and supplying significant volumes of renewable energy.

Africa has the lowest number of transmission lines in the world and faces a funding shortfall of billions of dollars in grid infrastructure. Unlike in Latin America, for example, private finance in Africa has not yet been used in the transmission sector. Paradoxically, there are several transmission projects with great potential for transformation and clear financial profitability, but which are unable to secure funding.



The interconnected regional grids, such as the Southern African Power Pool (SAPP), and the West African Power Pool (WAPP), improve supply reliability and reduce electricity bills through cross-border exchanges. They are a central pillar for tackling Africa's energy and climate challenges. They offer generating companies access to larger and more diversified markets, making it easier to integrate substantial quantities of intermittent renewables such as wind and solar while allowing economies of scale. Regional interconnections are now possible across most of the African continent. Nevertheless, further coordination efforts are required to fully reap the benefits of electricity pooling.

c. Off-grid requires its own regulatory framework

According to the African Development Bank, nearly 70% of future electricity production in rural areas will come from off-grid solutions or mini-grids, two-thirds of which come from renewables (mostly solar or mini-hydro). In moderately populated areas away from a power grid, where both grid extension and the rollout of a large number of solar kits would be prohibitively expensive, mini-grids are often the most economical option for electrification.

“A fit-for-purpose regulation is a prerequisite for any investment in the off-grid space.”

GILLIAN-ALEXANDRE HUART, CEO, ENGIE Energy Access



Taking public sector budgetary constraints into account, private investment is essential to ensuring the use of mini-grids on a large scale, and, once again, the focus must be on planning and improving the regulatory framework. Regulations must protect customers and developers, establish conditions for interaction between the different modes of electrification, and create fair competition conditions.

“Relying on C&I customers, and then extending access to electricity to nearby domestic customers and SMEs, makes it easier for mini-grid projects to find their economic viability. In addition, a blended tariff, with an element of cross-subsidization, can be considered.”

JENS THOMASSEN, Partner, A.P. Møller Capital



In order to speed up the interconnection between mini-grids and the main grid, regulation should clarify compensation conditions in the event of interconnection, as well as homogenising the technical standards between mini-grids and the main grid. To overcome the obstacles to developing mini-grids, national governments must also clarify the procedures for issuing licences and tariff regulations in a specific framework tailored to small mini-grids. Regulatory authorities should rely on adequately documented pricing methodologies that include the formulas for determining tariffs for the end user, and automatic pricing and indexing mechanisms. It is also recommended that regulatory authorities develop frameworks that include service quality codes/standards in order to prevent counterfeit, poor quality or hazardous components from flooding the off-grid renewable energy market and harming the entire ecosystem.

“We are often in competition with national utility companies in charge of the traditional distribution network. They capture most of the subsidies to compensate for their constant operating losses. There is still a lot of uncertainty about the equal support for the off-grid sector despite the fact that it is much more financially efficient.”

LAURENT VAN HOUCKE, Co-Founder, BBOXX





Dr. Kevin Kariuki

Vice President for Power, Energy, Climate and Green Growth at the African Development Bank

What is AfDB's climate strategy?

In 2021 the Bank adopted a new 'climate change and green growth strategic framework'. The aim is to mobilise \$25 billion of climate finance between 2020 and 2025, ensuring that at least 40% of the Bank's annual financing is earmarked for 'climate', and encouraging the private sector to participate. Resilience is also at the centre of our policies, and funding for adaptation needs to represent at least half of our total annual climate finance approvals. Furthermore, by the end of 2021, 92% of all approved projects were assessed as having a climate-informed design.

What are the main instruments used by the AfDB?

We have developed a wide range of financial instruments to enable investments in climate action, such as loans, partial risk and credit guarantees, green bonds, green credit lines to financial institutions, and technical support for the private sector so they can develop bankable green projects. The Bank also provides climate financing for its customers, in particular via the

Sustainable Energy Fund for Africa (SEFA), a multi-donor special fund that provides catalytic finance to unlock private sector investments in renewable energy and energy efficiency.

What do you think are the main barriers for governments or developers to access climate financing projects?

Above all, the institutional weakness of governments, poor governance and a lack of coordination between dedicated agencies, as well as not prioritising the fight against climate change in national development plans. Only a handful of regional member countries have put an effective climate financing strategy in place to support the implementation of nationally determined contributions (NDCs).

What do you think are the main lessons for Africa from COP 26?

COP 26 clearly showed that developed countries need to meet the annual commitment of \$100 billion. Africa needs to secure between \$26 billion and \$41 billion a year to bridge its climate financing gap. The commitment has

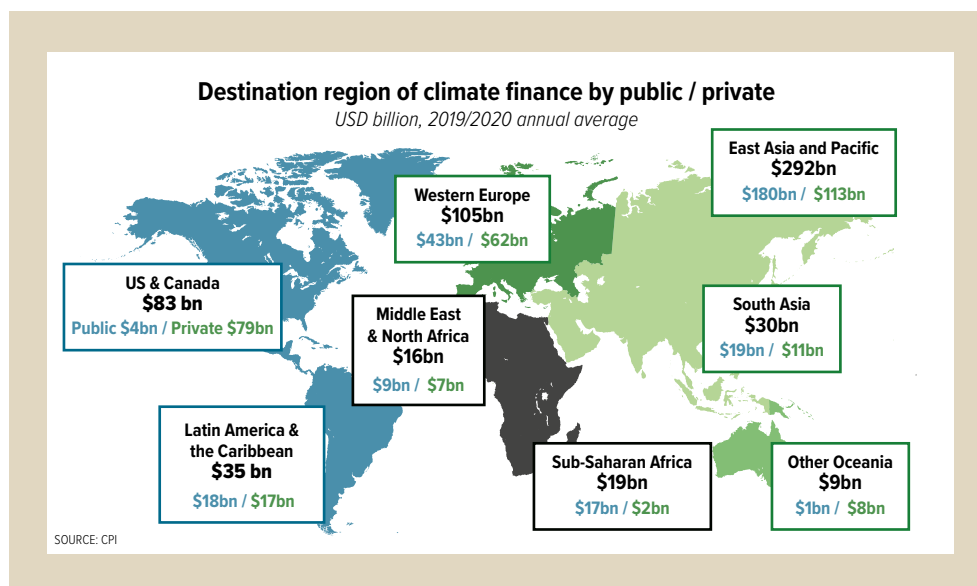
also been made to double financing for adaptation.

African countries themselves have also made commitments, particularly around being transparent on their climate action (NDCs) and implementing long-term low carbon development strategies (LTS). African countries need an appropriate environment to develop their programmes and projects for attracting investments. This goal should be reached with the help of enhanced capacity building, technical support, research, and development. To support them, the Bank has set up the NDC Hub for Africa, which provides full support for member countries so that they meet their NDC commitments.

We are also very pleased to say that, for the first time, an agreement has been reached on the gradual reduction of coal-fired electricity generation. A landmark political declaration was signed between South Africa and several partner countries on a just energy transition. The Bank is supporting South Africa in actualizing its energy transition.

2. Structure projects and mitigate risks: conditions to catalyze private financing

Of the \$632 billion in climate finance identified, each year, on average by the Climate Policy Initiative (CPI, 2021) in 2019-2020, Africa only attracted \$21 billion, of which \$19 billion were financed by public sources (mainly DFIs). This highlights their importance in financing mitigation and adaptation solutions in Africa, particularly in the development of renewable energy (which accounts for 60% of this financing).



The major role of DFIs in Africa's climate financing is explained by their commitment to being carbon-neutral by 2050 as a result of the Paris Agreement, as well as their ability to take extra risks compared to commercial banks, their privileged relationships with the governments and institutions in the countries they operate and, when it comes to multilateral banks, their status as preferred creditor (first priority in case of debt restructuring).

However, the amounts mobilised, which cover mitigation and adaptation costs, are not nearly enough to meet the funding requirements for Africa's carbon-neutral development and, more specifically, the funds required to achieve Sustainable Development Goal 7. According to the Africa Energy Outlook 2022 from the International Energy Agency (IEA), these needs are estimated at up to \$25 billion per year until 2030.

In order to secure the private financing required to achieve SDG 7, stakeholders are calling for targeted intervention from DFIs at a project level - specifically, enhanced risk reduction instruments as well as mechanisms to quickly agree on a fair and bankable risk allocation.



“In order to overcome the potential barriers to universal access to electricity in Africa, we need to do three more things: strengthen the capacity of local/national authorities so countries can create strong pipelines of bankable projects, build more solid partnerships with private and public stakeholders and mobilise the private sector.”

AMBROISE FAYOLLE, Vice-President, European Investment Bank

a. Invest in the upstream phase of project preparation and structuring

Too few projects reach financial close, with one of the main reasons being difficulties in agreeing on balanced and bankable risk allocation.

Financing renewable energy projects typically leads to high transaction costs due to the complexities of the technical, financial and legal work involved. The ‘Open Solar Contracts’ initiative, launched jointly by the International Renewable Energy Agency (IRENA) and TerraWatt, has made it possible to produce, in close collaboration with a dozen major international law firms, standardised documentation (including power purchase agreements, concession agreements, grid connection agreements, etc), that is simplified, accessible to the public, and validated by the main lenders. These contracts also propose a balanced risk allocation and are enforceable in the main African jurisdictions, thereby reducing transaction time and costs.

“The lack of critical size and data are obstacles to the deployment of innovative financing for mini-grid type projects. Standardization and digitalization are essential levers to aggregate projects, lower transaction costs, monitor performance and effective impacts, and thus facilitate ‘blended finance’ type arrangements.”

MARIE AIMÉE BOURY, Head of Impact Based Finance, Société Générale



The ‘Eссор’ Flexible Facility Programme in the Democratic Republic of the Congo

Thanks to the technical support of the Eссор programme, financed by the Foreign, Commonwealth & Development Office (FCDO), three large solar mini-grids should be in operation by 2023, therefore changing the model of the mini-grids sector. This project is the first of its kind in the DRC, a country plagued by one of the lowest electricity access rates in the world.

A critical size to make the project attractive

At a total estimated cost of more than \$100 million, these projects will supply electricity

to around half a million people spread across three cities.

This critical size enabled upfront investments by the bidders and project financiers on the grounds of non-recourse project financing, and also minimised transaction costs.

A contracting model that can be replicated to open up the path for similar projects

A contracting model that is robust, balanced, flexible and capable of raising non-recourse project finance has been implemented. This model has also been

adapted to tackle the risks and inherent uncertainties that come with the mini-grids sector. It can also be reused in other similar mini-grid projects in the DRC, as well as more widely in Africa. In order to mitigate the inherent risks in developing the project, and to shorten this phase of development, technical pre-feasibility studies and demand studies were carried out in advance and made available to all bidders.

This technical assistance made it possible to offer the private sector bankable and scalable opportunities.

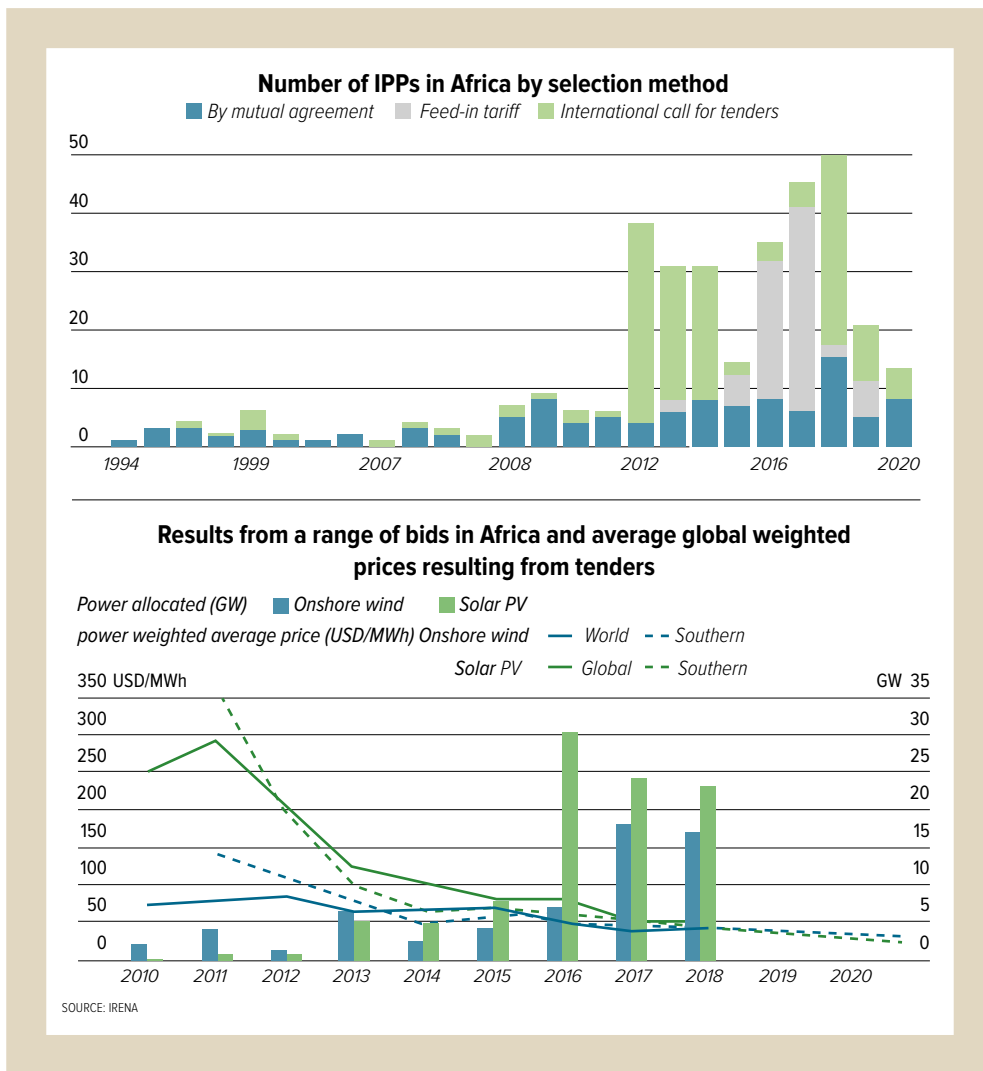
In order to develop project pipelines and lower transaction costs, auction procedures are progressively being used in many countries. These auctions allow a certain standardisation and replicability of the commercial, legal and financial framework, with the aim of creating more bankable investment opportunities, possibly grouped in a single tender.

“Auctions are easier and quicker the second and third times. The real benefits, such as standardization and lower tariffs, come from repetition.”

STEVEN HUNT, Senior Energy Innovation Advisor, FCDO



Some auctions, particularly in the case of small off-grid projects, may have been dogged by a lack of preparation and adequate structure (such as length of process, lack of communication with applicants, and lack of clarity in selecting the successful applicant). However, when adequately structured, these auctions are, without doubt, the most effective way of creating a consistent pipeline of projects. They significantly lower entry barriers and offer ‘bankable’ investment opportunities for the private sector, on a scale and at a pace required for the African continent – and they ultimately drive down tariffs.





Linda Munyengerwa,
Regional Industry Director of Infrastructure,
Middle East & Africa, IFC

How is IFC helping to address the lack of project liquidity in African markets in the energy sector?

IFC tackles the lack of liquidity in African energy projects by mobilising financing. As the largest multilateral development finance institution, IFC's participation is a strong validation of the feasibility and high standards of the project itself, which effectively helps 'crowd in' other potential financiers.

In parallel, we are actively working with governments and private companies to develop and structure bankable projects. IFC has a unique vantage point and access to key decision-makers, enabling us to advise governments on formulating supportive sector policies to attract direct foreign investments. Through our PPP advisory unit, we help governments design, structure and execute public-private partnerships. For example, through our 'Scaling Solar' initiative, Zambia and Senegal have

delivered record low tariffs generated from renewable sources.

What do you see as the main barriers to governments or project sponsors accessing climate finance, and how is IFC tackling these?

There are very few large, well-structured climate mitigation or adaptation projects that could qualify for climate financing. To play an active role in creating and developing more high-quality projects, IFC has adopted an 'upstream' approach to engage with clients early on, well before projects are fully structured and developed. To help companies de-risk their efforts, IFC provides both human and financial resources to help mapping and scoping opportunities in key sectors contributing to the climate agenda.

While the SDGs are still not a strategic focus for most companies on the continent, IFC can act as a 'sustainable financing coordinator'

to support companies in developing their sustainable financing framework and securing second party opinion certifications, which are prerequisites for green or sustainability-linked financing.

How can blended finance be scaled up to accelerate the mobilisation of private capital?

As mainstream investors, asset managers, venture capitalists, and pension funds all sharpen their focus on ESG-investing, blended finance has also emerged as an essential leverage to unlock trillions and billions of private capital. Blended finance can be structured in many creative ways to alter the risk profile of infrastructure investments and make them acceptable to mainstream investors. Lastly, blended finance can also be structured as a payment guarantee to enhance the creditworthiness of an off-taker, or to offer competitive long-term local currency financing, which remains scarce in many markets.

b. Increase the availability of guarantee instruments

Despite the continued lowering of the cost of RE and the highest solar potential in the world, investments in RE-based power generation in Africa are still seen as risky by private investors. Political risk, legal risk, exchange risk and, more acutely, the risk of off-taker insolvency, create a halo effect on investors and are an obstacle to industrial or financial investment. Versus the risk taken, the returns still appear too low.

“What is needed today are instruments that deal more with risk than with liquidity, as liquidity is widely available. You need to find the liquidity that is prepared to bear the risk.”

MATHIEU PELLER, Partner, Meridiam



According to the Blended Finance in the Least Developed Countries 2020 report from OECD-UNCDF, guarantees were the financial instruments used by DFIs that attracted the most private investments in LDCs in 2017-18 (46% of total private flows mobilised). Guarantees present a strong leveraging effect: for one dollar of public finance, they mobilise more private funds than other financial instruments. They help lower the risk profile of the borrower and reduce the cost of financing.

Yet, guarantees only represented 16% of concessional financing made available by DFIs in 2020, and they remain largely underutilised considering their potential. A larger rollout of guarantees is being constrained because guarantees do not count as official development assistance.

Total climate finance from MDBs by instrument type

In millions of USD, 2020

Type of instrument	For low- and middle-income countries	For high-income countries	Total
Shareholder equity	478	961	1,439
Grant	3,300	6	3,306
Guarantee	1,561	370	1,931
Loan	26,345	24,132	50,477
Credit line	455	1,650	2,106
Policy-based funding	4,395	449	4,844
Results-based funding	983	61	1,044
Other instruments	491	407	898
Total	38,009	28,036	66,045

SOURCE: MULTILATERAL INVESTMENT GUARANTEE AGENCY, 2020

Multilateral donors are the main providers of guarantees, in particular IFC and the Multilateral Investment Guarantee Agency (MIGA), which provide 50% of the total. MIGA has a leading role in the LDCs, to which it allocates 60% of its portfolio. It provides insurance against the four main political risks: expropriation, restriction and inconvertibility of currency transfers, war and civil unrest, and breach of contract, allowing project developers to focus on commercial risks.

Over the past decade other players, focused exclusively on Africa and RE, have emerged to cater for smaller projects in particular. Like MIGA, these players capitalise on the close relationship

they have with governments as ‘preferred creditor’ to put pressure, if required, on the debtor. This is the case for the AEGF, co-financed by the European Investment Bank (EIB), Germany’s KfW development bank and the African Trade Insurance Agency (ATI), which specialises in RE projects in Africa.

BUSINESS CASE

AFRICAN ENERGY GUARANTEE FACILITY: INCREASING INSURANCE CAPACITY

The African Energy Guarantee Facility (AEGF) is a reinsurance platform that allows ATI to have access to up to USD 1 billion of additional underwriting capacity for energy access, energy efficiency and renewable energy projects that are in line with SDG7 objectives. The facility was initiated by the European Investment Bank (EIB), Munich RE and ATI; more recently, additional support

and underwriting capacity has been provided by KfW Development Bank. The political risk perils that can be covered under AEGF include Confiscation, Expropriation, Nationalization and Deprivation (CEND); Transfer Restrictions and Currency Inconvertibility; War, Civil Disturbance or Civil Commotion; and Arbitral Award Default. Eligible projects across any of ATI’s member countries can benefit from cover.

Besides the political risks mentioned above, the offtake risk remains a major obstacle. In particular, in light of national utilities’ poor balance sheet. Without a creditworthy counterparty, lenders and investors require usually a sovereign guarantee. Yet governments are increasingly constrained by high debt levels and cannot afford to carry additional contingent liabilities on their balance sheets. Partial offtake risk guarantees mitigate the lack of a sovereign guarantee. Offtake risk guarantees are not a blank seal for not addressing the structural weaknesses of national utilities, but an accompanying tool to restore confidence while structural reforms are implemented.

“Between RLSF and AEGF, we aim to de-risk renewable energy projects in order to improve project bankability and hopefully help utilities attain lower end-user tariffs.”

MANUEL MOSES, CEO, African Trade Insurance



Launched in 2019, the Regional Liquidity Support Facility (RLSF) is co-financed by several multilateral banks, including KfW and the Japan International Cooperation Agency (JICA), as well as ATI, and aims to cover national utilities’ late payment risk. In particular, it guarantees the continuation of IPP activity for up to six months if it does not meet its payment obligations. RLSF replaces the need for a Letter of Credit. It prioritises small projects, from 5 to 10 MW (and in exceptional cases up to 100 MW) and offers simplified due diligence.

At the same time as the rise of IPPs, Africa has seen an increase in mini-grids due to a lack of transmission and distribution networks. With this in mind, ATI has announced plans to extend RLFS to off-grid by the end of 2023, with support from the Norwegian Agency for Development Cooperation (NORAD).

Beyond liquidity risk, insolvency risk remains deterrent in a context of slow restructuring process of national utilities. Africa GreenCo, with several DFIs as shareholders, mitigates the risk of end-buyer insolvency by acting as an intermediary buyer between IPPs and end consumers. By lowering this insolvency risk, Africa GreenCo helps raise the risk profile of IPPs and therefore reduces their financing costs.

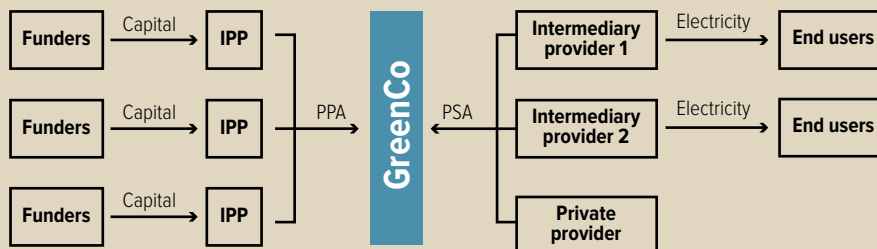
GREENCO: INTERMEDIARY OFF-TAKER FOR REDUCING SYSTEMIC OFFTAKE RISK

Electricity buyer and seller: GreenCo buys electricity from renewable IPPs through Power Purchase Agreements (PPAs) and resells it with a margin, through long-term Power Supply Agreements (PSAs), to national electricity companies and private customers. It also carries out short-term trading through the Southern African Power Pool (SAPP).

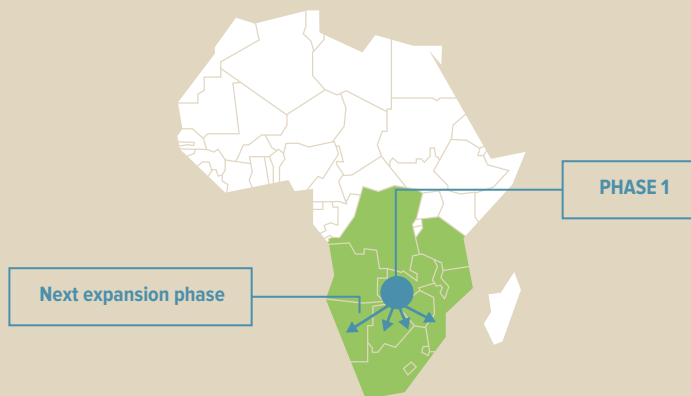
Risk aggregator: With the strength of its capitalisation structure, GreenCo assumes credit risk of utilities and private offtakers, reducing tariffs as a result.

Renewable energy supply aggregator

Downwards funding: Where ultimate off-takers fail to pay, GreenCo will sell power to alternative domestic buyers or through SAPP markets; where eventual termination scenarios arise, GreenCo uses its capital structure to protect outstanding commercial project debt in affected IPPs.



■ SAPP members



3. Boost the mobilisation of global savings through DFIs

The funding needs to ensure Africa's electrification, in the order of \$25 billion per year up to 2030, will only be bridged by large-scale mobilisation of capital markets, of which only 1% is currently directed towards emerging countries.

Several options should be considered to mobilise global savings:

- establishing standardised blended finance vehicles that offer attractive returns to institutional investors,
- strengthening the role of DFIs in bond markets, especially with the use of national savings,
- mobilising these savings could also be based on a greater coordinating role for the IMF, which would give a strong market signal to investors.

“Through our partnerships, we are aiming at making finance flows consistent with a low greenhouse gas emission pathway, in line with Article 2.1c of the Paris Agreement. AFD is working on two levels: The International Development Finance Club (IDFC) and Finance in Common accounting for 10% of global investment.”

MATHILDE BORD-LAURANS, Director of the Climate Department, AFD



a. Develop standardised blended finance vehicle

Developing countries, especially LDCs, are generally outside the remit of most institutional investors: sovereign risk is too high. In fact, just over half of African countries are rated by one of the three main credit ratings agencies, with a median B rating. For the least developed countries and fragile economies, the median rating is B-.

Blended finance enables private capital to be mobilised on a large scale in geographical regions that lie outside the remit of the main institutional investors. By improving returns and mitigating risk, public and philanthropic capital catalyse private financing for sustainable development. Furthermore, donors detailed knowledge of emerging markets, in particular national decarbonisation strategies, has a direct benefit for institutional investors. The Climate Finance Partnership Fund (CFP) is an example of a catalytic fund seeking to accelerate energy transition in emerging markets by mobilising private finance as much as possible.

BUSINESS CASE

BLACKROCK CLIMATE FINANCE PARTNERSHIP FUND

At COP26, BlackRock announced the financial close of its Climate Finance Partnership Fund (CFP) at \$673 million.

BlackRock's CFP flagship public-private finance vehicle focused on investing in climate infrastructure across emerging markets.

Africa, as one of the regions most vulnerable to climate change, will account for at least 25% of the total capital invested.

An innovative partnership with catalytic investors to mobilize private finance:

CFP employs a unique blended finance structure with a total of US\$130 million in catalytic capital raised from several development agencies together with private foundations and a multi-energy company.

This catalytic capital, a subordinated equity tranche, seeks to insulate risk for institutional investors in the fund and mobilise a broader institutional fundraise totalling US\$543 million (including Funds and accounts managed by BlackRock)

“If we don’t have international institutions providing that kind of first-loss position at a greater scale than they do today, we’re just not going to be able to attract the private capital necessary for the energy transition in the emerging markets.”

LARRY FINK, CEO, BlackRock



However, following the State of Blended Finance 2021 report, too little public funding is being directed towards blended finance. For this reason, DFIs and multilateral development banks (MDBs) could make the mobilisation of private financing a performance indicator in its own right. To date, just one development institution, IFC, has set a clear mobilisation target: around 80 cents of private financing for one dollar invested by IFC and other public sources.

Institutional investors are themselves experiencing a highly fragmented blended finance market (Convergence has identified more than 500 blended finance vehicles), with unclear eligibility criteria, too many impact targets, and insufficient transparency on returns and associated risks. More generally, institutional investors are calling for a standardisation of funds to strengthen scale effects rather than searching for permanent financial innovations.

Blended finance vehicles must clarify their eligibility criteria, particularly in terms of minimum investment size, but also in terms of their commitments to a carbon-neutral strategy. Furthermore, blended finance vehicles should focus on a limited number of development targets so as to avoid diluting their impact.

BUSINESS CASE

EMCAF: EMERGING MARKET CLIMATE ACTION FUND

Launched in November 2021 by the EIB and Allianz Global Investors (AGI) with a target size of 500 million euros.

EMCAF supports investment funds and climate-centred projects that are active in developing countries. It focuses on mitigating and adapting to climate change, access to energy and environmental sustainability projects. EMCAF is aligned with the Paris Agreement and the new EU taxonomy. It

is accredited as an official development assistance vehicle with the OECD.

The EIB acts as an investment advisor with the AGI. The EIB is responsible for market analysis, as well as identifying, assessing and monitoring investments, including environmental and social aspects. AGI is responsible for the vehicle’s management and decision-making process.

b. Bank on green bonds to structure local markets

The green bond market is worth \$1.6 trillion, just 2% of the global bond market, with Africa representing only 1% of the green bond market. While DFIs have generally given way to corporates and financial institutions in the global green debt market since the first issue by the EIB in 2007, DFIs remain dominant in this segment in Africa. Indeed, the AfDB accounted for 80% of African green debt in 2018. On the continent, 20% of these bonds are used to finance renewable energy projects.

“The various initiatives supported by Team Europe to promote the issuance of green bonds in Africa helps to channel capital market power towards low-emission and climate-resilient infrastructure, in line with the European taxonomy.”

AMBROISE FAYOLLE, Vice-President, European Investment Bank



Green bonds are a particularly effective way of raising capital from institutional investors who prefer to invest large amounts of debt securities rather than directly in RE projects. Due to the enhanced governance of green bonds, the issuer can also benefit from a ‘greenium’ (with a lower coupon than conventional equivalents), reducing the cost of financing the projects at the end of the term.

“When green bonds are based off a solid taxonomy, they become more standardised and therefore more credible in the secondary market and can offer lower volatility than traditional bonds.”

DARRON SCORGIE, Head of Africa, UN PRI



Bond issuances by organisations like the AfDB also stimulate the regional bond market and have a knock-on effect for other financial institutions, such as local pension funds and local commercial banks. They serve as a blueprint by establishing a taxonomy and rating rules. They contribute to the development of skills in the local market, in requiring the counterparties to which the bond funds are directed to set up impact measures, and more generally decarbonisation strategies. To foster the continued growth of this financing instrument, policy makers and regulators could work with DFIs and green bond organisations like the Climate Bonds Initiative to develop and adopt green taxonomies, and bond issuance and rating rules, as well as to raise awareness, and to develop relevant expertise in local capital markets. This would also support green loans in local currency issued by local commercial banks – as issuers of green debt, banks would be required to work towards securing green projects.

“In Africa, local capital is not used for local projects, which makes energy transition investments expensive.”

VUYO NTOI, Joint Managing Director, AIIM



c. IMF as a green growth coordinator?

The International Monetary Fund, whose primary role is to contribute to the stability of the international financial system, is becoming increasingly focused on development issues and could do more to greening the government programmes it finances in Africa. This would send a strong signal to international investors.

The Covid crisis prompted the IMF to adopt a more growth- and development-oriented approach. Three key initiatives have been introduced by the Fund to support African states: the Debt Service Suspension Initiative (DSSI); a one-off allocation of Special Drawing Rights (SDRs) to developing countries in August 2021, equivalent to \$650 billion - the highest in the IMF's history; the Resilience and Sustainability Trust (RST) fund, launched in May 2022.

Building on the DSSI, which was launched in response to the pandemic, the IMF is exploring the possibility of taking this a step further and considering debt stock relief in exchange for green spending. In practice, the IMF would seek to ensure that resources made available in low-income African countries are allocated to mitigation or adaptation spending.

These efforts have been complemented by SDR allocations of up to almost 2% of a given African country's GDP. These SDRs are not released as part of an IMF programme (for example, in return for achieving IMF-agreed targets), but instead constitute an additional budgetary resource, and are not intended to simply supplement foreign exchange reserves. But the allocation of these resources must be transparent. Many are calling for SDR drawdowns to be directed towards adaptation and mitigation spending. Given the amounts involved, SDR drawdowns could provide an opportunity for greater coordination between the donors on the implementation of the NDC and the Long Term Strategy (LTS) as well as greater coordination on the ground between sectoral ministries (energy, transport, agriculture, etc.).

The RST is designed to help low-income and vulnerable middle-income countries address long-term challenges like climate change, boosting the impact of the SDR allocation. The aim is to create a fund of at least \$45 billion. The RST serves as a third pillar of the IMF's lending facilities, in addition to the General Resources Account and the Poverty Reduction and Growth Trust Fund. The RST will provide policy support as well as long-term concessional financing (with a 20-year maturity and a 10.5-year grace period) to help increase countries' resilience to climate risks. The reforms supported by the Trust will also be designed to kick-start financing from the private sector, donors and other international financial institutions.

IS THE GREEN CLIMATE FUND UNDERUTILISED?

Launched in 2010 at COP 16 in Cancun, the Green Climate Fund (GCF) was designed to be a financial lifeline for developing countries in the fight against global warming. As of July 2021, the fund had approved 70 projects in Africa at a cost of \$3.3 billion, and provided \$7.7 billion in co-financing. Financial support from the fund can take the form of equity, loans, grants or guarantees.

Financing is accessed via accredited entities. These entities can be sub-national, national, multi-national, or private. However, even private accredited entities do not necessarily have the human capacity to conduct the environmental and social due diligence required by the Fund, and some accredited entities struggle to mobilise financing, even having to forego them. Technical assistance for accredited entities should therefore be strengthened.

Alternative financing schemes that could be directly accessed by the accredited entity (EDA, Enhanced Direct Access) should also be

improved. Financing is currently allocated, for the most part, via separate programmes and projects previously approved by the Green Climate Fund Board. Furthermore, some stakeholders believe that support should be given to the accreditation of national entities, which are better aligned to country realities, and more able to oversee the financing and implementation of NDCs.

Lastly, it is clear that capacity within the National Designated Authorities, which serve as the intermediary between the Green Climate Fund and the government, must be increased. Some of these authorities in Africa comprise just one person, with no human resources at their disposal. Their strategic importance is largely underestimated by governments. Adequate resources must be allocated to speed up the fund's disbursement rate, in particular by establishing a tracking system for Green Climate Fund programmes and calls for tender, and a formalised system for responding to these calls for tender.

“Accreditation processes are long but not insurmountable. GCF has been little used in Africa for three main reasons: some National Designated Authorities are limited to one person, there are few Accredited Entities at national level, local expertise that meets the Fund requirements is very limited.”

**EL HADJI MBAYE DIAGNE,
Senior Coordinator of the Africa Group for Article 6**



4. Maximise the potential of carbon credits

While Asia, particularly India and China, has made extensive use of the Kyoto Protocol's Clean Development Mechanism (CDM) to finance the development of its renewable energy sector, Africa accounts for only 1% of certified projects worldwide. This is in stark contrast to its CO₂e emission avoidance potential, which is among the highest in the world.

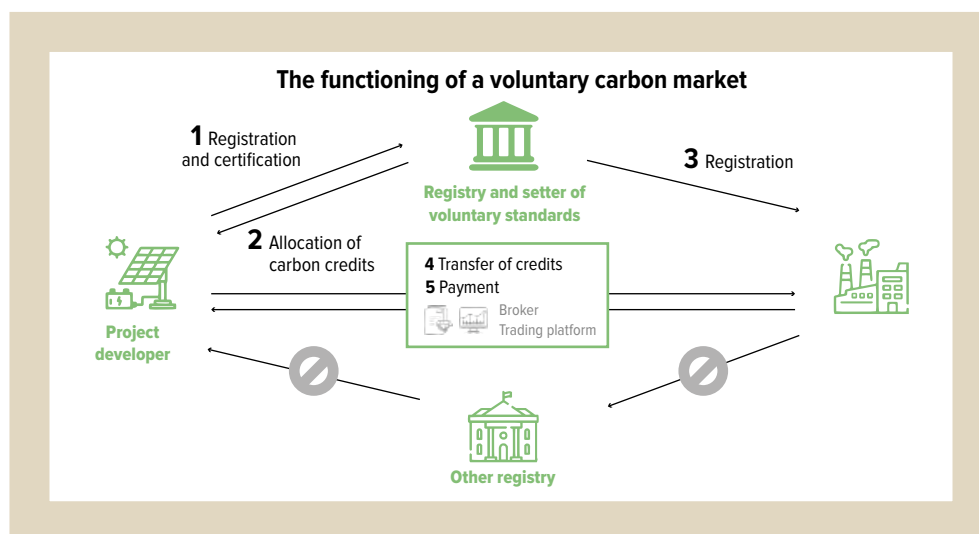
Following COP26, the expected revival of voluntary carbon credit markets and cooperation mechanisms on a voluntary basis provided for in Article 6 of the Paris Agreement – in particular the bilateral (6.2) and centralised (6.4) ones – is an opportunity to be seized for the continent, including in the renewable energy sector. If the centralised mechanism (6.4) will only be up and running in two to three years, African countries should be prepared to get on board well in advance.

“Carbon markets are a strategic tool which can help us leverage and support the preservation of our environment; and valorize our natural capital, while promoting economic growth. The choices the continent makes now about its future development trajectory will be critical in ensuring that we can make the most of this opportunity.”

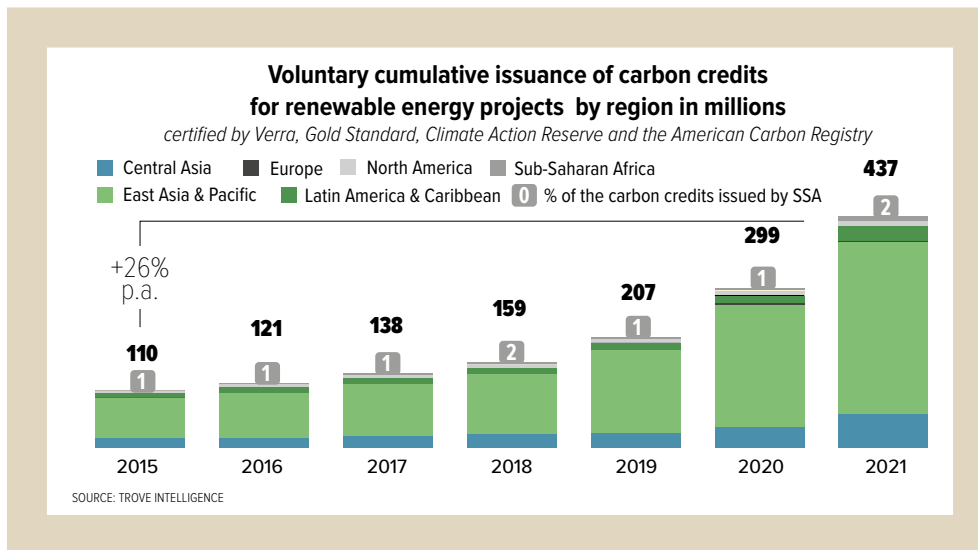
**AKIM DAOUDA, Managing Director,
Sovereign Wealth Fund of the Gabonese Republic**



Voluntary markets, where companies in developed countries offset their CO₂e emissions on a voluntary basis, are gaining momentum, driven by many stakeholders' pledges to achieve carbon neutrality by 2050 as well as by the transition period between the Kyoto Protocol and the implementation of the Article 6 cooperation mechanisms. But, against a backdrop of persistent market opacity and criticism of the very principle of carbon offsetting, this momentum remains fragile.



Africa lags far behind in terms of carbon credit volume from renewable energy sources. The continent must tap into the revenue streams associated with these credits in order to increase its electricity access rate.



According to a 2021 McKinsey study commissioned by the Taskforce on Scaling Voluntary Carbon Markets (TSVCM), global demand for carbon credits is expected to increase 15-fold between 2020 and 2030, from around 100 million to 1.5 billion tonnes of CO₂e reduced or avoided.

Furthermore, prices for voluntary credits are expected to increase significantly. Especially on the back of the carbon prices necessary for guaranteeing a 1.5°C pathway, that is a range of between \$75 and \$100 by 2030, according to the IMF's and the IPCC's high range.

Despite this potential, key energy sector stakeholders view carbon credits with scepticism. This stems from the high level of uncertainty around the eligibility criteria, the certification processes and cost, a lack of visibility on the long-term demand for carbon credits and future prices, and the difficulty of integrating them into project financing plans.

a. Clarify eligibility criteria and alleviate the certification process

While REs are no longer eligible for carbon certification in most regions of the world, they remain eligible in LDCs because carbon credits are still 'additional' in these countries. Despite a drop in the cost of renewable energies, this additional financing supports the emergence of projects where there is a low creditworthy demand and insufficient transmission and distribution networks. Grid-connected RE-based projects also remain eligible for carbon certification in LDCs, while non-grid-connected RE-based projects are eligible in all countries.

“Carbon credits are a golden opportunity that Least Developed Countries could capitalise on. Moreover, with RE projects, carbon credits can be generated very quickly, as soon as the plant produces electricity.”

HEATHER MCEWAN, VERRA



'Additionality' can be approached in several ways. Carbon credit financing can significantly reduce the final price of electricity, which is still largely subsidised on the continent. For example, our calculations show that for a price of \$25 per tCO₂eq on a mini-grid project in the Democratic Republic of Congo, carbon credit financing could reduce household bills by 6%.

For some products, such as improved cookstoves, carbon credits can cover up to the cost of production. In addition, as is the case with LPG improved cookstoves, they could allow more users to access the pay as you go system, by subsidising the required deposit price.

Furthermore, access to carbon credit financing can be especially helpful in offsetting the volatility of potentially volatile government subsidies or tax breaks. Subsidies are key in the off-grid sector, including on solar kits, and a lack of visibility on cash flows can undermine project bankability.

“RE projects in sub-Saharan Africa fulfil between 4 and 7 of the SDGs. This is a key element in the valuation of carbon credits.”

HEATHER MCEWAN, VERRA



Besides more clarity on eligibility criteria and additionality, project developers, particularly in LDCs, would need to engage in a less opaque and bureaucratic certification process. In fact, the process has become even longer since COP26, with States now required to sign a letter approving the project seeking certification. Certification agencies are working with the UNFCCC to draw up a standard letter of approval, which each State must then submit to the UNFCCC.

In order to reduce certification time and transaction costs, and, more generally, to achieve better economies of scale, certification bodies should make certification programmes more universal, moving from certification by project to certification by programme. According to El Hadj Mbaye Diagne, Senior Coordinator of the Africa Group for Article 6, the Programme of Activities or 'PoAs' that were introduced late in the Clean Development Mechanism have greatly boosted Africa's interest in the scheme, which has risen from 4% to 30%.

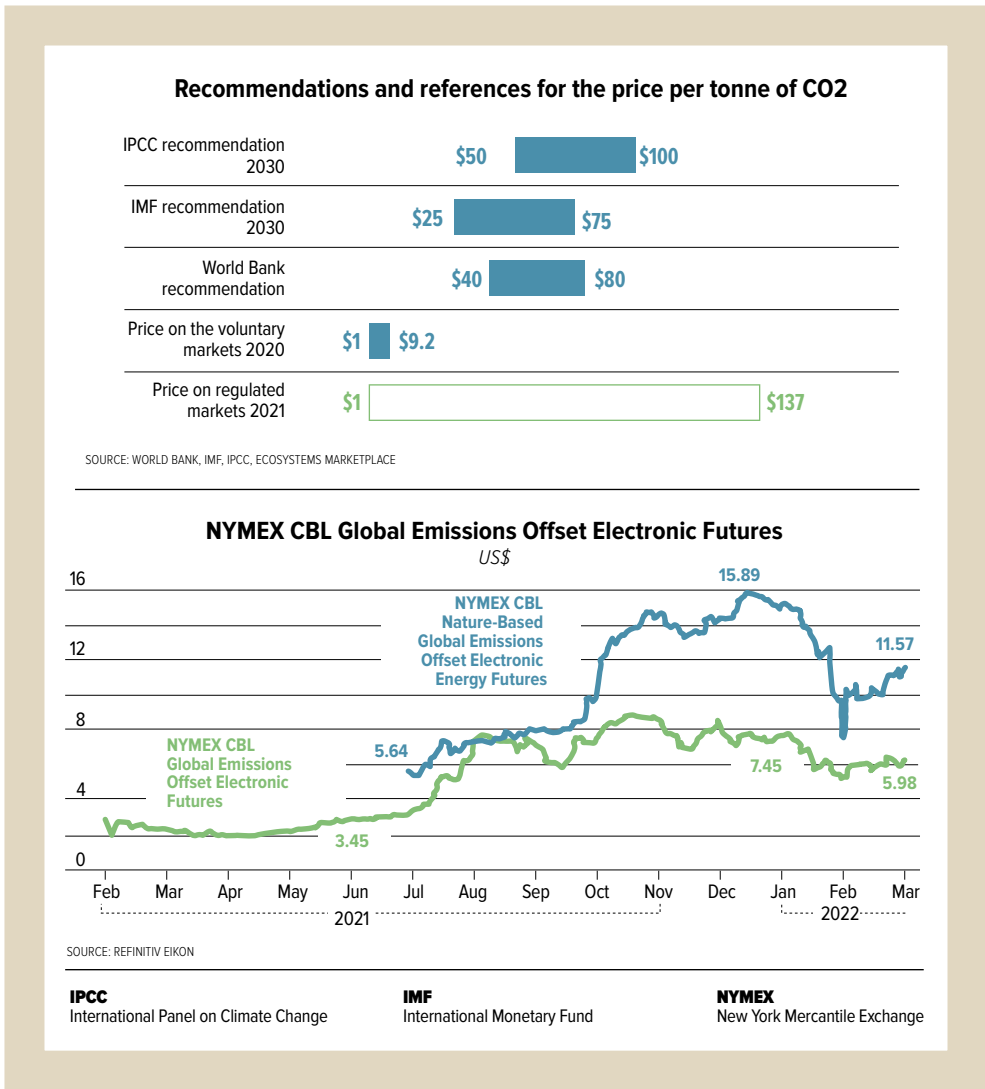
b. Ensure a price floor and set up upstream payment mechanisms

Although scientific consensus has put the price per tonne of CO₂eq by 2030 at between \$75 and \$100 to achieve the objectives of the Paris Agreement, and although some regulated carbon market prices have already reached €140 per tonne, voluntary carbon credit prices have stagnated at between \$1 and \$15 in recent years, depending on the industry.

Since COP26 and the increased pledges among stakeholders to achieve carbon neutrality, prices in the voluntary carbon markets have increased, with a floor price of \$1 to \$7 per tonne of CO₂.

Schemes like the TSVCM and the Voluntary Carbon Markets Initiative (VCMI) are working to structure demand to support prices. More specifically, they have suggested introducing a standard contract and a standard sales platform, but so far their impact has been limited.

National initiatives like in South Africa have thus far proven to be more impactful. Here, part of the carbon tax is payable in carbon credits, therefore ensuring a certain visibility of the demand for carbon credits and a price floor.



Beyond greater price visibility, the challenge for some project developers is benefiting upstream from the financing of carbon credits. This could be done at the development phase, before the credits have even been generated (note that carbon finance can theoretically be accessed once carbon credits have been generated). This would make it possible to integrate this additional financing directly into financing plans, thus reducing costs.

“We contribute to project finance by prepaying carbon assets and thus provide visibility on future cash-flows.”

FABRICE LE SACHÉ, Founder and Chairman, AERA



Carbon fund facilities financed by DFIs (junior tranches) and private parties (senior tranches) could bear volume and price risks though pre-purchasing carbon credits from developers in LDCs, thereby facilitating project development.

Nonetheless, implementing Article 6 requires institutional and human capacity building to develop adequate strategies. It will in particular necessitate the development of climate diplomacy, particularly in order to benefit from bilateral cooperation as envisaged through the 6.2 mechanism.

It will also very concretely necessitate the setting up of a carbon credit registry, where the 'corresponding adjustments' would be recorded (corresponding adjustments relate to host country NDC counts, so that the carbon emission reduction is not counted in both buyer and host countries). As well as to approving projects that receive voluntary carbon credit financing, with or without adjustments. This capacity building, for which planning must begin as of now, would put Africa in a good position when Article 6 finally launches.

“The new Article 6 mechanisms are likely to be more stringent than the CDM. This is why Africa has been fighting for Article 6 to include both institutional and human capacity building.”

TOSI MPANU-MPANU, COP Climate Negotiator



When it comes to voluntary markets, while Verra is proposing that a dual accounting system be undertaken by the (developed country) host company's government (not covered by their NDC) to avoid drying up the voluntary carbon market, the other main certifier, Gold Standard, is pushing for a change to voluntary carbon credits. Gold Standard says they should no longer be used to support offsetting claims, but as a company's contribution to developing countries' NDCs, as part of a broader CSR policy. As yet, there is no clear visibility on market trends, but governments will need to keep a close eye on them in order to best penetrate international carbon markets. DFIs should support governments to enable them to maximise the potential of Article 6 and voluntary carbon credits financing.

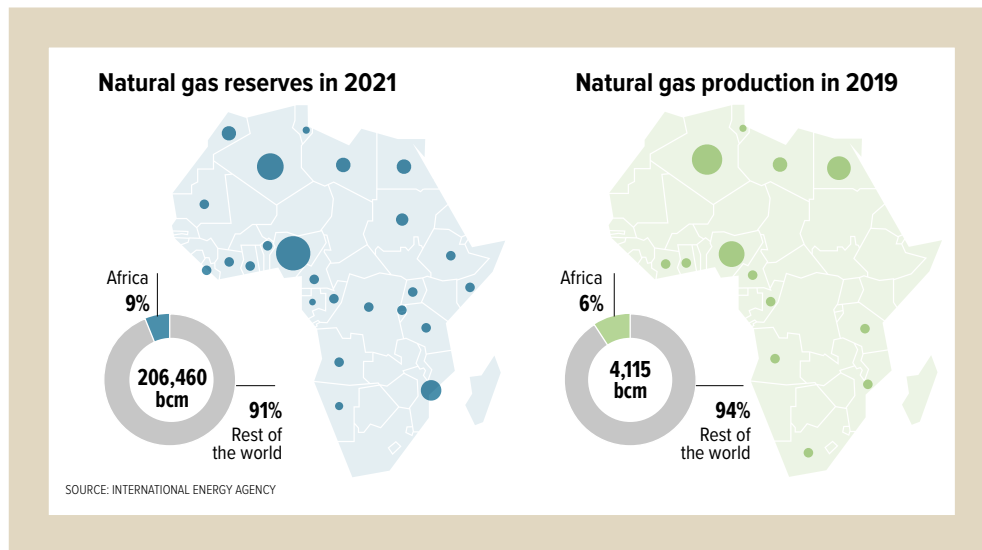
5. Make gas part of Africa's Just Energy Transition

a. Some major gas discoveries but difficult to finance

The continent has many gas resources that are under- or unexploited, with major gas discoveries in all regions in recent years (Mozambique, Tanzania, Mauritania, Senegal, Egypt, South Africa, Namibia, etc.). While natural gas is much less carbon-intensive than coal or oil, financing gas production projects or electricity generation via gas-fired power plants has become increasingly difficult in Africa.

The US Treasury recently issued guidance to multilateral banks around the world opposing any financing of oil, coal and natural gas production. It will only offer limited support for certain natural gas infrastructure, such as pipelines, in the poorest countries. The World Bank has also announced similar restrictions, as have many European development finance institutions.

While the AfDB has made the shift away from financing coal, it maintains that gas is essential to Africa's economic survival and will play a major role in the Just Energy Transition. The AfDB believes gas could be an option for transitional energy in Africa, provided that projects are included in the country's NDC, the bank has a clear additionality, local input is incorporated and that the projects can be shown to be on a low-carbon trajectory.



b. Gas provides a pathway to greener energy sources

To meet the climate targets set out in the Paris Agreement, Africa needs to radically change its energy mix by moving away from coal, which currently represents over 40% of primary energy demand (mainly concentrated in South Africa), to cleaner alternatives. This priority was agreed at COP26 where public and private stakeholders committed to ending international financing of coal. In a landmark agreement, the United States, Britain, France, Germany and the European Union joined forces to pledge \$8.5 billion to the decarbonisation of South Africa by supporting a just transition away from coal. However, phasing out coal cannot be achieved by relying exclusively on renewable energy.

“The AfDB sees a role for natural gas as a transitional energy source that can increase the amount of intermittent renewables in Africa’s power systems.”

DR. KEVIN KARIUKI, Vice President for Power, Energy, Climate and Green Growth at the African Development Bank



RE is key to reducing greenhouse gas emissions, but it will not be enough to ensure the continent’s supply security and meet an increasing energy demand, which is expected to triple over the next 20 years. Gas-fired baseload power generation can compensate for the intermittent nature of renewable energy generation, which ultimately increases the share of variable renewables in African electricity systems. With this in mind, Gas-to-Power projects could offer a favourable trade-off in terms of CO₂ emissions compared to coal or diesel power generation enabling a transition towards green technologies such as hydrogen, methanol or ammonia.

“Natural gas can play a key role in closing the energy gap and provide flexible baseload electricity. Renewables alone cannot fill this gap. New gas can enable more renewables on the system and provide a pathway to green hydrogen.”

JONATHAN HOFFMAN, Chief Development Officer, Globeleq



Since COP26, Africans have continued to advocate for further gas exploration and production while focusing on RE to help accelerate access to electricity and contribute to economic growth. *“There is a disconnect between the way Africans think about climate and energy issues, and the way our European friends think about them,”* says Mo Ibrahim, co-founder of the Africa-Europe Foundation and Chair of the Mo Ibrahim Foundation. Ibrahim believes that Europe cannot include gas in the European taxonomy, or continue to produce and supply fossil fuels (gas and coal) on the African continent, or increase its demand on Africa to reduce its dependence on Russia, while at the same time refusing to finance Africa’s gas projects. He calls this attitude ‘morally indefensible’.

BUSINESS CASE

KENYA ENERGY TRANSITION - APMC CASE STUDY (IBERAFRICA POWER LIMITED)

AP Moller Capital owns two 140 MW heavy fuel oil (HFO) fired power plants in Kenya (for a total national capacity of 2,990 MW, of which approximately 600 MW is from HFO power plants). These plants play a critical role in providing electricity during peak periods and stabilising the national grid that already has a high renewable energy penetration.

The high cost of HFO, and its unsustainable carbon footprint, is an opportunity for Kenya to transition its HFO plants to natural gas, which is less expensive and has a lower CO2 intensity per MW.

AP Moller Capital estimates that, with a modular approach, conversion from HFO to LNG (Liquefied Natural Gas) can be achieved within 2 to 3 years and will:

- reduce electricity costs by 25-30%
- extend the lifetime of the plants by about 15 years.
- reduce CO2 emissions
- create a new ecosystem for flexible gas-based power generation, and potentially for local commercial and industrial gas applications

Natural gas will also pave the way for a future transition to carbon neutral options such as hydrogen, methanol or ammonia.

6. Invest now in energy storage and hydrogen technologies

Large-scale electricity storage solutions, powered first by battery and later by green hydrogen, can provide energy systems with solutions capable of mitigating the variability of renewable resources, thereby accelerating their development and increasing their penetration.

a. A specific contractual and regulatory framework for storage solutions

With battery prices falling faster than expected, storage is beginning to play a greater role in energy markets. It is moving away from niche uses such as grid balancing to more mainstream uses such as replacing conventional backup power generators, providing power quality maintenance services, and supporting RE integration. The integration and efficient use of renewable resources, particularly in regions with weak grid infrastructure, will require greater energy storage.

In Sub-Saharan Africa, the market has so far been restricted by a lack of competitive financing, limited local technical expertise, a lack of familiarity with these new technologies, and the absence of an appropriate regulatory framework.

In most African countries, there is currently no clearly defined regulatory framework governing the role of energy storage operators, including associated charges and grid usage fees. Therefore, a new contractual and regulatory framework is needed to maximise the use and efficiency of the electricity grid. This is an important prerequisite for leveraging more financing for electricity storage. It is among the goals outlined in the Climate Investment Funds' Global Energy Storage Programme, which is aiming to secure more than \$2 billion in concessional climate finance for investments in energy storage in emerging markets, including investments through pilot projects and regulatory reform.

“Storage addresses a clear need for grid stabilisation, but pricing remains a challenge to secure bankable long-term agreements with national utilities.”

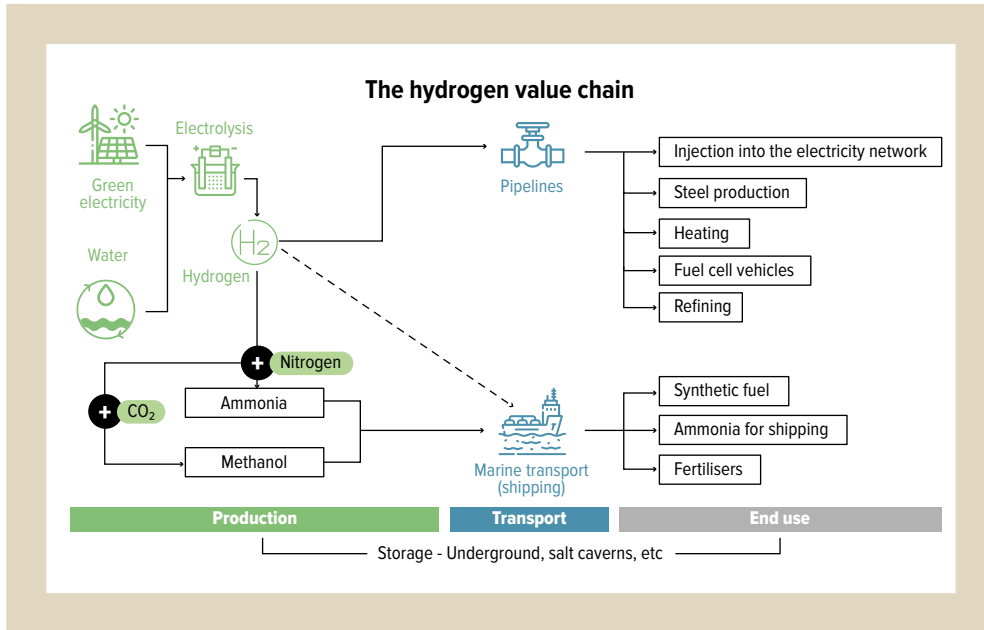
GILLES PARMENTIER, CEO, Africa REN



b. Invest now in the production and transport of green hydrogen

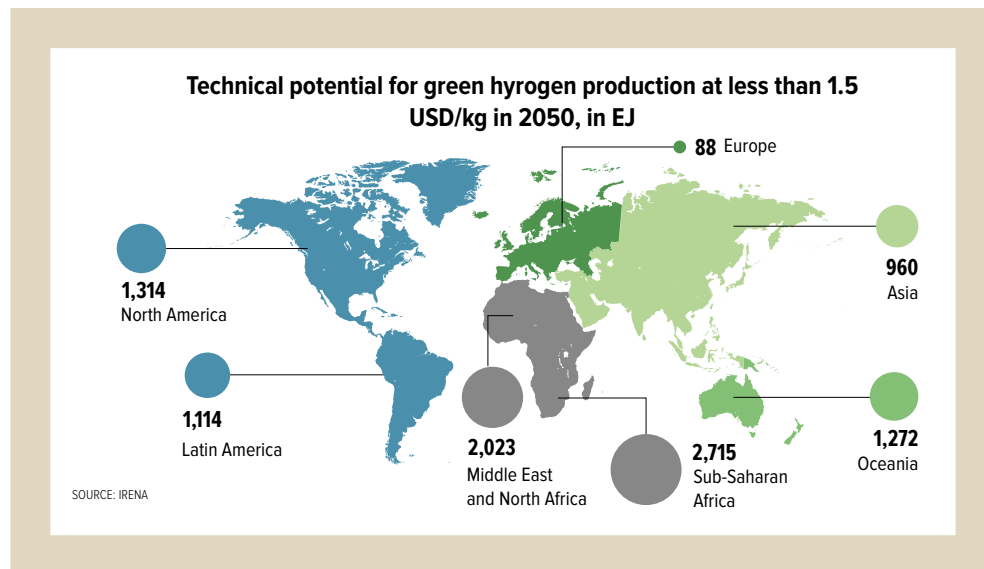
Hydrogen is set to play a crucial worldwide role in achieving zero emissions by 2050. Bloomberg New Energy Finance predicts that low-carbon hydrogen, known as green hydrogen, could account for up to 22% of global energy consumption by 2050. To meet its target of a 55% reduction in greenhouse gases by 2050, the European Union's REPowerEU plan is relying heavily on hydrogen. Germany in particular plans to import 40 GW of 'green' hydrogen from North Africa by 2030.

Africa's vast renewables potential partnered with increasingly lower production costs compared with fossil fuels, availability of land for large-scale solar or wind farms, access to water and proximity to Europe with its growing demand, should enable the African continent to provide large-scale hydrogen production at a competitive price, thus playing a major role in the European Union's strategy of diversifying its low-carbon energy supply.



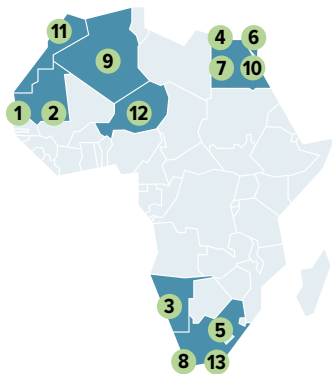
“The cost of electricity is a key factor in the cost price of green hydrogen. Morocco, with its solar, and especially wind, resources, is perfectly positioned.”

TARIK HAMANE, Vice President Global Hydrogen Development , Total Eren



Some ten green hydrogen projects, at varying stages of maturity, are currently under development in Africa. South Africa, Egypt, Morocco, Mauritania and Namibia are planning large-scale projects. But despite its many advantages, several obstacles remain, and concrete action needs to be taken to overcome them.

Snapshot of some key hydrogen projects



Projects & Initiatives	Country	Progress
1 Aman Power-to-X (30 GW)	Mauritania	Agreement signed
2 Nour (10GW)	Mauritania	Agreement signed
3 Tsau Khaeb National Park (2-phase) (3GW)	Namibia	Preferred tender selected
4 Port Said, Waste to Green Hydrogen (1GW)	Egypt	Feasibility study
5 Boegoebaai (250-300 MW)	South Africa	Feasibility study
6 EEHC / Siemens (100-200 MW)	Egypt	Agreement signed
7 Ain Sokhna (50-100 MW)	Egypt	Agreement signed
8 Vredendal (100 KW)	South Africa	Advertised
9 ENI / Sonatrach Energy Transition MoU	Algeria	Agreement signed
10 ENI / EEHC / EGAS	Egypt	Agreement signed
11 Guelmim - Oued Noun (Total Eren)	Morocco	Advertised
12 Emerging Energy Corp / Niger government	Niger	Agreement signed
13 Nelson Mandela Bay	South Africa	Advertised

Create appropriate and predictable frameworks to help overcome initial economic barriers

Eventual demand for hydrogen will drive investment across the value chain. It is therefore necessary to stimulate this demand by creating a level playing field that allows for a coordinated transition of the various end-user sectors.

Governments and regulators in both producer and buyer countries need to create appropriate and predictable frameworks to encourage transition and help overcome initial economic barriers. They need to help set the rules and standards that will allow markets to develop and provide targeted support and risk mitigation instruments to cover large initial investments. A range of policies relating to areas such as robust carbon pricing, facilitating land rights acquisition, and environmental permits and approvals will be vitally important. Development finance institutions will need to play a leading role in creating this favourable policy and regulatory environment, and in safeguarding against political risks.

Although at this stage the main market for green hydrogen produced on the African continent would be for export, governments should not ignore hydrogen's potential for domestic markets. Green hydrogen could become an important tool for supporting national sustainable energy goals and decarbonisation strategies. According to ESMAP, "Green hydrogen could provide developing countries with a powerful technology to support national sustainable energy objectives and decarbonization strategies. Green hydrogen could enhance national energy security by reducing the exposure to oil price volatility and supply disruptions where it is produced locally, while also lowering energy sector costs over time in countries that rely heavily on diesel. It could also provide an array of decentralized services that could cover all energy needs in buildings, transport, and industry, while helping to shield critical infrastructure from power supply disruptions, therefore bolstering climate and extreme weather resiliency."

Make it easier to finance production and transport infrastructure

The full potential of green hydrogen can only be achieved if steps are taken to reduce costs and close the economic gap between green hydrogen and alternative fossil fuel solutions.

One of the challenges is the amount of upstream investment needed to put in place the infrastructure required to produce and transport green hydrogen. Since the cost of electricity can account for up to 60% of the total cost of hydrogen production, competitive pricing will be a key factor for success. By producing close to RES-abundant sites, the overall cost of hydrogen production will be reduced. Increasing the production of green hydrogen requires

an unprecedented increase in electrolysis capacity and corresponding RE capacity. The sooner these investments in large-scale production are made, the sooner hydrogen will be cost-competitive and the economic gap with fossil fuel-based electricity production can be closed.

While much of Africa's hydrogen potential in Africa lies in its export potential to Europe, the logistics of transporting hydrogen, both in terms of availability and cost, is another challenge. In order to be transported by ship, for example, hydrogen must be pressurised, cooled to a temperature of -253°C and either liquefied or converted to ammonia, or transported via a different chemical carrier. However, shipping is not the only method of transporting hydrogen. One of the most cost-effective options could be achieved by repurposing existing gas pipelines to transport hydrogen, for example from Tunisia or Morocco to Europe. The focus should be on the cost of 'delivered' rather than 'produced' hydrogen. Upstream investments, not necessarily economically viable, in pipelines, intercontinental transport capacity, and refuelling infrastructure will be essential to achieving the critical size required for competitive green hydrogen.

Support from development finance institutions and concessional funds will have a significant role in kicking off the first production and transportation projects.

BUSINESS CASE

AMAN - MAURITANIA'S 30 GW GREEN HYDROGEN 'POWER-TO-X' PROJECT DEVELOPED BY CWP

In May 2022, CWP and Mauritania signed a framework agreement for the development of a \$40 billion green hydrogen project, a large-scale and game-changing project for the region.

For green hydrogen projects, the second biggest cost after electricity is that of electrolyzers. Mauritania is naturally favoured with proximity to the ocean, sunlight and wind resources, allowing for optimal use of electrolyzers at competitive rates.

The project will include 18 GW of wind capacity and 12 GW of solar capacity. It will generate approximately 110 TWh at full capacity and is

expected to produce 1.7 million tons per annum of green hydrogen or 10 million tons per annum of green ammonia for local use and export.

The project will also provide cheap electricity, as well as fresh water to local communities and agriculture, obtained from desalination of ocean water.

Ammonia is expected to become an important source of transport fuel in the coming years, especially in shipping, due to its ease of transportation and storage compared with hydrogen, in addition to the existing market dominated by fertiliser production.

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September 2022

