

Summer 2022

Africa Focus

Sustainably powering
Africa's development



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Sustainably powering Africa's development

As the world in early 2022 seeks to balance multiple, vital and competing priorities, our eighth edition of *Africa Focus* focuses on issues related to sustainable development, infrastructure and international investment on the continent.

Africa has endless opportunities to implement policies and attract foreign direct investment into low-carbon energy, digital infrastructure and other projects that could also create jobs and stimulate the local use of renewable technologies.

The first article of this edition of *Africa Focus* covers "Transitioning from coal to renewables in Africa." Looking at options for development across the continent, it considers the role of gas in Africa's energy transition.

In "Energy transition, funding African infrastructure and sustainable finance," Sibusiso Zungu, a partner in our Johannesburg office, discusses South Africa's energy transition, current trends in African finance and challenges to achieving South Africa's sustainable development goals. His views are relevant, as Southern Africa debates how to balance short-term economic growth with long-term climate change needs while developing major infrastructure projects.

Increased internet access and related infrastructure in Africa could also have a profound impact across the continent on individual and national growth. Africa's demand for internet access, data center processing capabilities and related infrastructure means that the digital infrastructure is growing at a rapid rate, creating many opportunities for the continent. "Africa's digital infrastructure transformation" discusses the challenges, drivers and investment trends in aiming for universal, affordable digital infrastructure in Africa.

The People's Republic of China's relationship with Africa is well established, deep and thriving on many fronts. "China's pivotal role in supporting post-COVID growth in Africa" highlights how the historical context affects the current China-Africa relationship in Africa, as well as China's long-term plans for engagement with African nations

Finally, "Is 'low-carbon' hydrogen a useful option for Africa's energy needs?" explains how African policies can encourage hydrogen production through low-carbon processes.

As always, we welcome your thoughts and comments on these topics.



Mukund Dhar
Partner, White & Case LLP
Africa Interest Group Leader



Our eighth edition of *Africa Focus* focuses on issues related to sustainable development, infrastructure and international investment on the continent.

Transitioning from coal to renewables in Africa

Blocking funding for gas energy projects in Africa may seem like sensible climate policy. But is it?

By Gareth Hodder and Matthew Richards

Finding alternatives to fossil fuels is one of the most pressing environmental priorities of the 21st century. Despite national commitments to reduce greenhouse gas (GHG) emissions over the coming decades, some scientists predict that the world will remain on a trajectory to warm up by 3 to 4 degrees Celsius by the year 2100. The consequences of this would be dire. According to the UN Intergovernmental Panel on Climate Change, rising sea levels would likely inundate low-lying coastal areas, including cities; desertification would likely destroy agricultural production and render vast temperate regions of the planet—including much of Africa—functionally uninhabitable; and extreme weather events, such as hurricanes and typhoons, could become more frequent and more intense.

As the world aims for a cleaner energy future, the right environmental policy might seem to be to decline to fund new gas-fired power plants, gas pipelines or gas-based industries in Africa.

But could that actually hinder Africa's development and its move toward renewable technology?

GAS AS A BRIDGE BETWEEN COAL AND RENEWABLE ENERGY

Renewable energy currently accounts for roughly a quarter of new power generation worldwide, but it still lags behind new coal-fired capacity. Although the generally accepted ultimate goal is to replace fossil fuels entirely, there is a strong case for starting by replacing coal with natural gas, especially for baseload-generating capacity.

This is especially true in Africa's developing economies that need to

grow their generation capacity—and face a choice between coal and gas. Gas-fired generation does emit GHGs, and investments in gas-fired generation capacity may divert or delay investments in renewable energy projects.

So, is the best path to net-zero simply to ban new GHG-emitting generation capacity and focus exclusively on renewable sources instead?

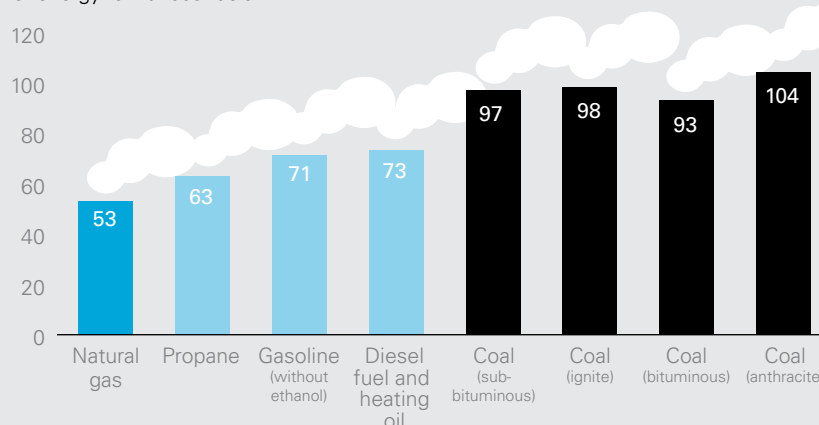
Burning gas generates fewer local pollutants (SO_x, NO_x and particulates) than coal and roughly half as much CO₂ per unit of energy (see Figure 1). Thus, policy and economic conditions that allow accelerated retirement of coal-fired power plants and their replacement with gas-fired plants could still yield significant reductions in GHG emissions.



Although the generally accepted ultimate goal is to replace fossil fuels entirely, there is a strong case for starting by replacing coal with natural gas, especially for baseload-generating capacity.

Figure 1. Natural gas generates approximately half as many CO₂ emissions per unit energy as coal.⁴

Kilograms of CO₂, emitted per million British thermal units (Btu) of energy for various fuels



Source: EIA



Woman cooking food in her kitchen over gas



Although Africa is blessed with huge potential for solar and wind power generation, the continent currently accounts for less than 1 percent of global solar power generation.⁶ In semi-arid rural areas of Southern Africa, solar photovoltaic generation offers particular promise as a renewable energy source.

Yet solar and wind power rely on the sun shining and the wind blowing. African nations that are growing their renewable capacity still face challenges managing the intermittent availability of sunshine and wind. In addition, many of them lack available storage technologies to materially increase these power supplies without new investments in gas or other reliable back-up sources.

Africa's rapid urbanization means the greatest demand for electricity comes from cities, where space constraints can make it difficult to install new solar and wind turbine facilities. Finally, most national and regional transmission and distribution grids were developed around central generation nodes. While these might be redeveloped over the course of a century to accommodate more local renewable energy facilities, it would be difficult to implement this as a short- or even medium-term solution.

IN AFRICA PARTICULARLY, A QUEST FOR "NET-ZERO" EMISSIONS MUST BALANCE WITH DEVELOPMENT PRIORITIES

Energy transition in much of sub-Saharan Africa is less about moving to renewables than about providing electricity where currently none exists. During the last decade, a larger share of the world's population gained access to electricity than ever before—except in sub-Saharan Africa, where it actually decreased.⁵

Although Africa is home to almost a fifth of the world's population, it accounts for only 4 percent of global electricity consumption. While electricity is nearly universal across North Africa, fewer than half of sub-Saharan Africans can access electricity.⁶

Therefore, African policy-makers face a challenging dilemma: Bridging Africa's energy deficit is crucial to the economic well-being of the continent and its people. Yet the impacts of climate change are likely to fall more heavily on Africa than other global regions.

Along with leaders in other emerging markets, African policy-makers argue that since wealthy, industrialized countries became prosperous through fossil fuel emissions, these countries

4%
of global electricity is consumed by Africa, which is home to almost a fifth of the world's population.

Source:
The Economist

should lead the way in reducing their GHG emissions to offset the impact of the developing world's quest for economic growth and greater prosperity. In addition, these countries should provide technology transfers and financial support necessary to help grow Africa's clean generation capacity.

With the exception of South Africa (and its fleet of coal-fired power stations), Africa's contribution to GHG emissions has historically been negligible. As recently as 2019, the continent accounted for less than 4 percent of global GHG emissions.⁷ While this may increase over time, it will very likely remain less than Europe, North America and Asia-Pacific. Measured by CO₂ emissions per capita, the difference between Africa's contribution to climate change and that of other regions and countries is stark (see Figure 2).⁸

Within Africa, South Africa is the largest GHG emitter (see Figure 3). When its new coal-fired Kusile and Medupi power stations finally become fully operational, they will further increase this load.⁹ In addition, South Africa's fleet of coal-fired power stations are aging, with all but three of them now more than 30 years old (see Figure 4).

Figure 2. Compared to other regions and countries, Africa's GHG emissions are modest

Growth in CO₂ emissions, 2018 – 2019

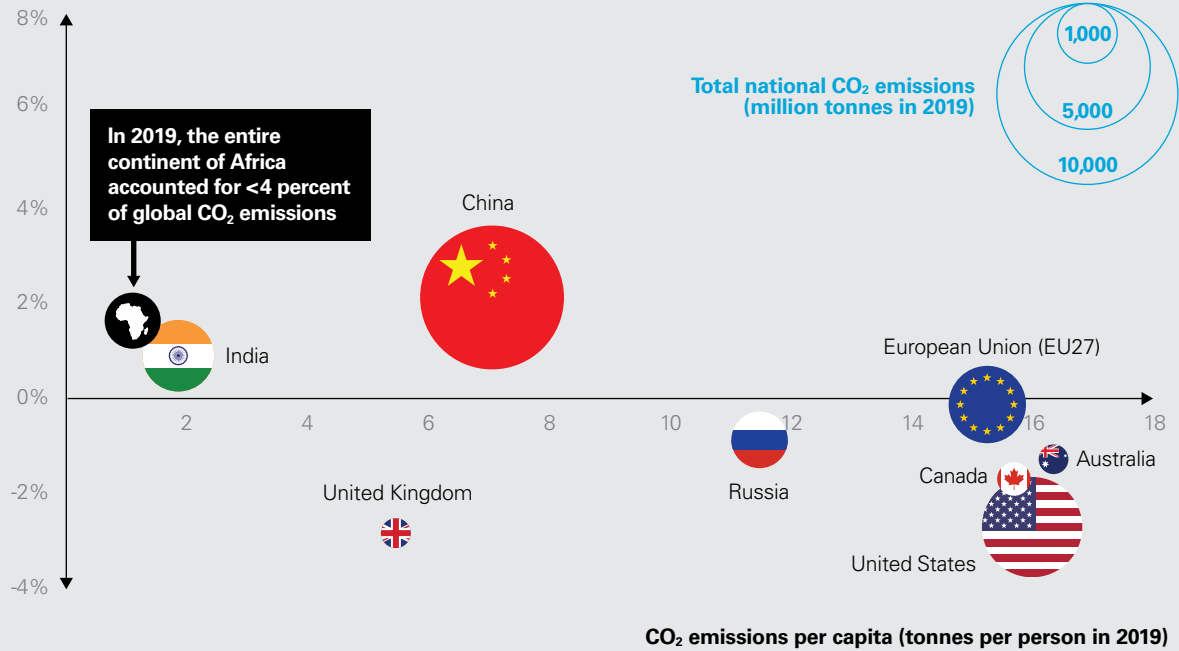
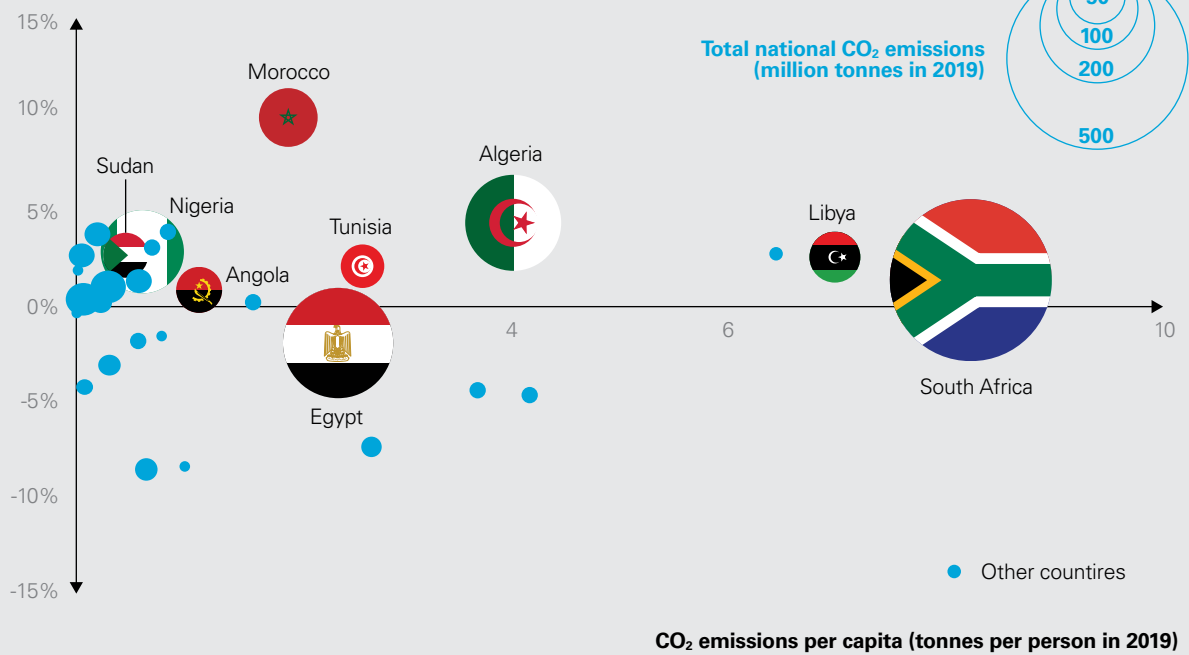


Figure 3. In 2019, South Africa was the largest GHG emitter in Africa

Growth in CO₂ emissions, 2018 – 2019

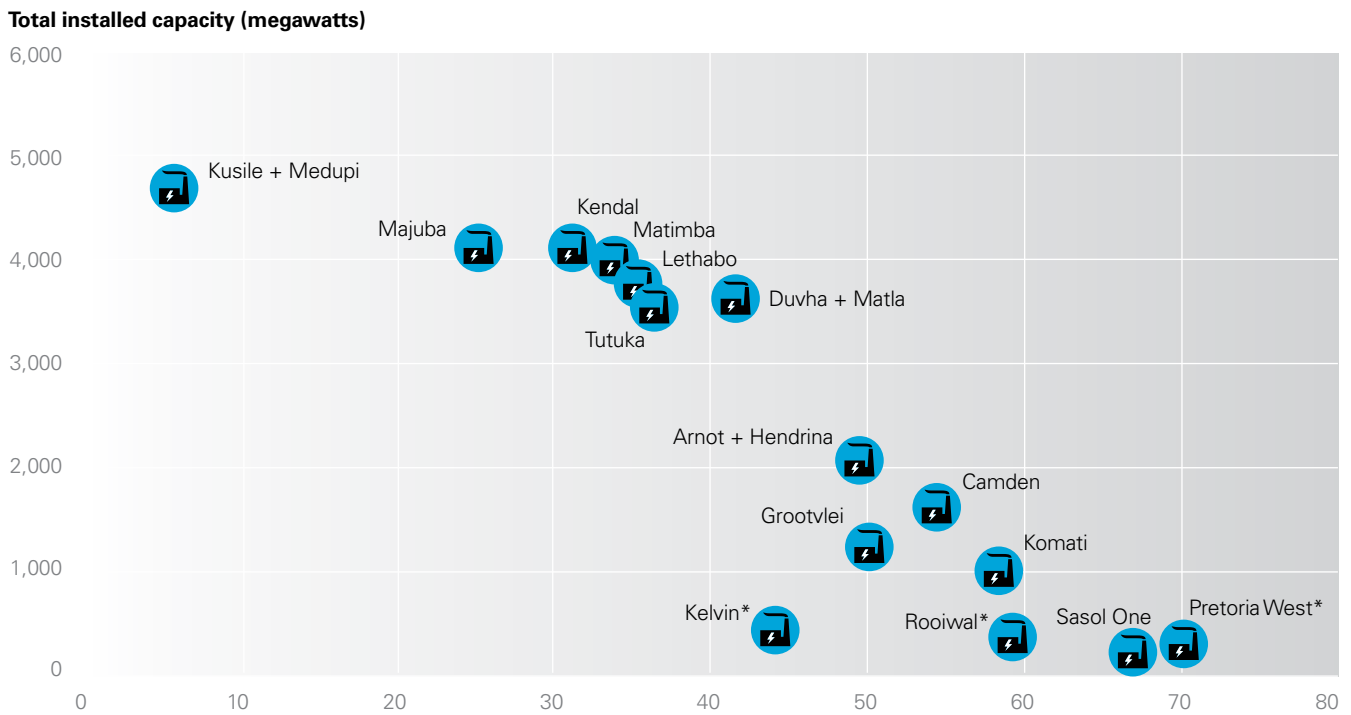


Notes: Annual production-based emissions of CO₂ are measured in million tonnes. Growth in CO₂ emissions means annual percentage growth in production-based emissions of CO₂. CO₂ emissions per capita means annual production-based emissions of CO₂, measured in tonnes per head of population, measured in tonnes per person. All three are based on territorial emissions, which do not account for emissions embedded in trade goods.

Source: The Global Carbon Project, reported by Our World in Data



Figure 4: South Africa's coal-fired power stations are nearly all more than 30 years old



Source: Eskom website; Global energy monitor

*not currently operational

South Africa's utility Eskom intends to shut down more than 20 percent of its current coal-fired generation capacity by 2030 and most of the remainder by 2050,¹⁰ and replace that capacity with renewable energy sources. However, the amount of reliable baseload required to sustain the southern African economies that rely on Eskom for power could make gas an attractive option—at least as a bridging technology if battery and hydrogen technologies do not become available at the required scale over this timeframe.

A WEALTH OF POTENTIAL

Africa's gas reserves are underexplored, but proven gas reserves should be sufficient to produce enough electricity to transform the continent.

Africa lacks the extensive transmission and distribution networks of Europe and North America, but it is expanding its existing networks (see Figure 5).

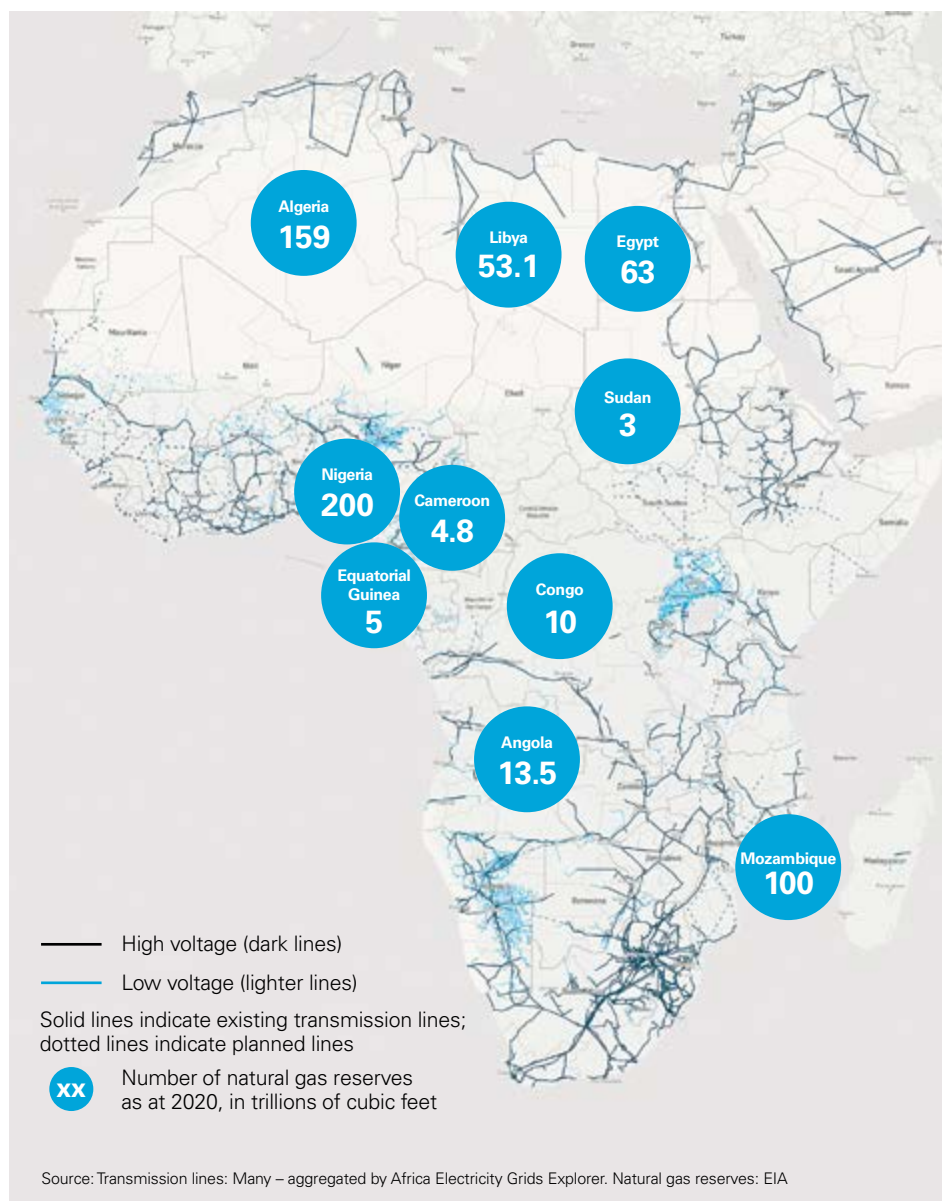
To minimize Africa's future GHG emissions, the countries with access to gas must prioritize it over coal or oil—while they simultaneously develop non-GHG-emitting solutions—and expand the continent's gas transmission network. While sub-Saharan African countries expect to have 60 million tonnes per year (mt/year) of export capacity of LNG by 2025 and a further 74 mt/year by 2030,¹¹ they also expect to increase their own use of natural gas through gas-to-power projects.

CONCLUSION

The pathway to limiting global warming requires ceasing all GHG-emitting power generation. This might be feasible over the long term. Yet with major GHG-emitting countries in the developed world proving slow to reduce their own emissions, it is unfair to expect that Africa's leaders will subjugate their own socioeconomic development to the world's need to eliminate GHGs.

In regions of Africa where both coal and gas are available, technology transfer and funding can be used as levers that encourage the use of gas over coal. Coupled with the development of an Africa-wide power transmission and distribution network, along with aggressive

Figure 5. Africa's power lines (existing and planned) and natural gas reserves



expansion of renewable energy sources and other non-GHG-emitting generation, this could reduce Africa's future impact on climate change while allowing Africa's economies to develop and transform the quality of life for their people.

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 2 UN Intergovernmental Panel on Climate Change 2022 at <https://www.ipcc.ch>
 3 The role of gas in today's energy transitions, IEA 2019 at <https://www.iea.org/reports/the-role-of-gas-in-todays-energy-transitions>
 4 https://www.eia.gov/environment/emissions/co2_vol_mass.php

5 World Bank, 2021 at <https://www.worldbank.org/en/news/press-release/2021/06/07/report-universal-access-to-sustainable-energy-will-remain-elusive-without-addressing-inequalities>
 6 The Economist, 2019 at <https://www.economist.com/graphic-detail/2019/11/13/more-than-half-of-sub-saharan-africans-lack-access-to-electricity>
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 8 Global Carbon Project at <https://www.globalcarbonproject.org>
 9 https://www.gem.wiki/Kusile_Power_Station; https://www.gem.wiki/Medupi_Power_Station
 10 <https://renewablesnow.com/news/eskom-looking-to-renewables-as-s-africa-is-reducing-coal-power-751345/>
 11 S&P Global, 2021 at <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/020921-sub-saharan-africa-could-green-light-74-million-mt-year-lng-capacity-by-2030-acting>

Energy transition, funding African infrastructure and sustainable finance

A conversation with White & Case partner Sibusiso Zungu

Sibusiso Zungu, a partner in our Johannesburg office, discusses South Africa's energy transition, current trends in African finance and challenges to achieving South Africa's sustainable development goals.

Let's start by talking about how South Africa's energy transition might be funded. At the 2021 United Nations Climate Change Conference (COP26), the UK, US, EU, France, Germany and South Africa announced a "Just Energy Transition Partnership" with US\$8.5 billion pledged over the next five years to support South Africa's decarbonization efforts.¹ How will this US\$8.5 billion be sourced and structured, and what specific investments will it fund?

Sibusiso Zungu: South Africa's energy supply relies heavily on coal. Although the current South African integrated resource plan of 2019 contemplates an energy mix comprising coal, nuclear power, renewable energy and natural gas,² South Africa is far from having an appropriate balance. From the outside, the heavy reliance on coal appears to be a South African problem only. In reality, though, it is wider than that. Stopping coal-fired electricity generation with no base-load alternative would put not only South Africa into the dark but also neighboring countries—including Eswatini, Lesotho, Zimbabwe and Botswana—because Eskom (South Africa's electricity public utility) supplies power to those countries.

The countries that committed US\$8.5 billion at COP26 have not specified the precise projects they will finance, how that funding will be structured and what conditions will apply. There has been talk of a mix of grant funding, concessionary funding and other forms of support to encourage the private sector to co-invest. Without knowing the necessary details of this funding, it is difficult to determine with certainty at this stage whether the support will work for South Africa. Any new funding that may be incurred at an Eskom level needs to be considered within the context of Eskom's existing debt levels, which the South African government announced will be addressed before the nation's 2024 general elections.³

The needs of employees, suppliers and other stakeholders must also be taken into account. In addition, the South African Department of Mineral and Energy's mandate⁴ creates competing tensions between the objectives of (1) helping to achieve South Africa's Nationally Determined Commitments (NDCs) to reduce greenhouse gas emissions under the Paris Agreement and (2) exploiting South Africa's coal reserves to benefit the country and its people.

Furthermore, disagreements also exist within South Africa's government about how to resolve the conflict between short-term economic growth and long-term climate change needs. The sooner this is resolved, the better for South Africa, as it will create policy certainty for investors.



Sibusiso Zungu
Partner, White & Case LLP
Africa Interest Group Leader



South Africa relies very heavily on coal. From the outside, that appears to be a South African problem. In reality, though, it is wider than that.



In his opening remarks at the third “South Africa-Mozambique Bi-National Commission Plenary Session” in March 2021, President Ramaphosa announced that South Africa will seek to bolster its energy security by tapping into neighboring Mozambique’s vast natural gas reserves.⁵ What infrastructure would need to be in place to make this a reality? How will that likely be funded?

Sibusiso Zungu: This is another massive debate. Should South Africa be investing billions of rands to transition from coal-fired to gas-fired electricity generation, or should it use those funds for other urgent national needs? Is gas-fired power a permanent solution or just a short-term bridging solution until renewable technologies improve? What other options exist? Nuclear power is being considered, for instance. South Africa’s Koeberg nuclear power station is currently the only one on the African continent.⁶ But that option is expensive. Hydroelectricity is also being considered, but we have not seen positive developments in this area recently.

In order to exploit gas from Mozambique at scale, a large pipeline will be needed from its northern provinces (where the gas fields are located) to South Africa. What would that pipeline’s purpose be after gas-fired power generation is phased out?

Some speculate about a “wider gas economy.” For instance, road transport might switch to gas, too. Other technologies, such as hydrogen and electric vehicles, are developing quickly. A wider gas economy might not materialize, in which case it would make little sense to invest billions in such a pipeline as only a short-term solution.

Moving on to infrastructure across Africa, five countries—South Africa, Morocco, Nigeria, Egypt and Ghana—currently account for more than 50 percent of all successful public-private partnership (PPP) activity in Africa.⁷ Recognizing the need to deploy private capital to fund public infrastructure, the African Development Bank may scale up its support for PPPs. What characteristics of PPP projects in Africa are similar to those elsewhere in the world, and what are unique to the continent? What does “best practice” look like?

Sibusiso Zungu: Governance challenges often make it impossible to tap effectively into the wealth of private sector funding available worldwide. A few successful examples of African PPPs do exist, but even these are far from “best practice.” South Africa has not closed a major PPP deal in the past five years. Experience has shown that PPPs in Africa frequently take a long time to move from feasibility to project implementation. During that process, many things can change, such as the needs of the host country and its political leadership. Many countries on the continent publish RFPs (requests for proposals) for transactional advisors on identified PPP opportunities, but few countries have actually implemented these PPPs. It seems that every time an RFP goes out, bureaucracy gets in the way and the process bogs down. How can one build credibility in the market if private sector partners have to wait for years before they are told whether their proposal has been successful or not? Of course, the COVID-19 pandemic disrupted things, and some companies that might have responded to the RFPs before the pandemic may no longer even exist.

Why do PPPs take so long to materialize in Africa?

Sibusiso Zungu: Typically, multiple government departments are involved in the approval processes, and each one takes an extremely long time to provide its input. Few African countries centrally coordinate their PPP processes, and public sector decision-makers often fear challenges in courts and the media. As in many other countries, the private sector in South Africa is prone to challenging government if it perceives procurement processes as improperly run. While this is a good counterbalance, it can scare public sector decision-makers into not making decisions at all.

Beyond the legislative and administrative PPP frameworks that some African countries do already have, for a PPP to work one must maintain clear policies and processes that private sector partners understand and trust. Underlying sociopolitical drivers are also important. A PPP framework cannot succeed if the host country is politically unstable or if investors believe they might not be able to get their money out of that country.

So, PPP frameworks are important, as are reliable legal systems generally. Private sector partners need confidence that, in the event of a dispute with a host government, they can trust the courts in that country to render fair judgments. Finally, a stable currency is also important.

Does scope exist to radically scale up PPPs as a mechanism for building the infrastructure necessary to capitalize on the African Continental Free Trade Area (AfCFTA) and to achieve the objectives of the African Union’s “Agenda 2063” strategic framework?



Should South Africa be investing billions in transitioning from coal-fired to gas-fired electricity generation, or would those funds be better used to fund other urgent national needs?

Sibusiso Zungu: Yes. PPPs are essential to optimizing the AfCFTA and realizing other African objectives. African governments simply don't have the public funds necessary to bridge the continent's infrastructure gap, without private sector support. A massive amount of work is needed to enable the free flow of goods and services across African borders, so bridging this gap likely will be a slow process. The AfCFTA is a groundbreaking initiative, but some African countries have yet to ratify it. As the AfCFTA gains momentum, it will likely catalyze infrastructure development.

Funding from the People's Republic of China (China) now accounts for almost all of the African continent's major infrastructure development projects.⁸ Have Western funders become less competitive in Africa? What options exist for Western funders and contractors to regain infrastructure market share in Africa?

Sibusiso Zungu: In recent years, Chinese loans often appeared attractive to African governments because their terms seemed better than those offered by the World Bank, International Monetary Fund and similar institutions. However, African governments are realizing that China does not offer debt funding for philanthropic purposes alone. It expects these countries to repay all loans, and requires a debtor struggling to settle its debt to engage in bilateral discussions to find a solution.

In practice, that solution is very seldom available for China to write off the debt. More frequently, it will vigorously seek loan repayment, which has sometimes stirred up controversy.

As a result, African nations are learning to scrutinize debt offers far more carefully. There is less naivete, which is better for both lender and borrower.

Are you seeing more interest from other parts of the world, such as the United States, in investing in Africa?

Sibusiso Zungu: US interest in Africa has always been there. However, we

have seen that the impetus varies across administrations. Recently, President Biden has adopted a more positive approach to Africa and has committed resources to strengthen the institutions that lead US efforts in emerging markets, including Africa. The signals so far have been positive, though we will have to wait and see what policies and priorities will be applied as these institutions become more active again in Africa.

Our final theme to explore is sustainable finance. What trends are emerging in Africa? How do you expect these to unfold?

Sibusiso Zungu: There is momentum in the market for sustainable finance. We are seeing and hearing about many initiatives in the market. This has also attracted scrutiny of these initiatives. For example, there is concern about "greenwashing": How does one really know whether a particular project or organization achieves and maintains good environmental, social and governance (ESG) credentials? Sustainable finance is intended to reward borrowers with a lower interest or coupon rate if they achieve certain ESG-related performance metrics and to penalize them if they do not. But it can be difficult to tell which is the case. Self-monitoring is a problem. Metrics and disclosures can be misleading.

For sustainability finance to really take off in Africa, lenders need to be able to trust borrowers' ESG claims and self-disclosures. Regulators with real enforcement powers (like the competition commission in South Africa and similar regulators elsewhere in Africa) could help. Companies would then report to that regulator, and misleading disclosures would trigger consequences.

Are you observing any particular types of sustainable finance that are especially popular in Africa? Where do you see this going?

Sibusiso Zungu: African banks have issued green bonds, and we've seen many African companies borrow funds for qualifying environmental projects, with some issuing their own green bonds. Sovereign entities in Africa are also starting to issue ESG-related debt.



How does one really know whether a particular project or group achieves demonstrably good ESG performance?

Again, though, issuers need to commit honestly to the principles underlying these instruments, to avoid compromising the credibility of the whole ESG concept. Good governance is crucial. For example, in South Africa we have the King Codes of Governance, but adhering to those Codes is only mandatory for companies that are listed on the Johannesburg Stock Exchange. Smaller and privately owned businesses can opt in to the Codes, but they have no legal obligation to comply. That said, there are obviously legal implications, or at least reputation risk, where businesses make misleading statements upon which lenders and investors then rely.

- [1 https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768](https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768)
- [2 http://www.energy.gov.za/IRP/2019/IRP-2019.pdf](http://www.energy.gov.za/IRP/2019/IRP-2019.pdf)
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Africa's digital infrastructure transformation

Affordable, universal digital access is key to Africa's growth and development

By Amaury de Feydeau, Martin Menski, Suzanne Perry and Mihret Woldesemait

Now, more than ever, Africa is looking to digital solutions to increase productivity and drive development.

Although increased internet access and related infrastructure could have a profound impact across the continent, Africa remains far behind much of the rest of the world in terms of fiber network and broadband connectivity, spectrum, and data center processing capabilities. Yet digital infrastructure is growing at a rapid rate in sub-Saharan Africa, spurred by strong investment incentives.

The potential for digital growth opportunities in Africa is vast, but it will depend critically on ensuring that digital access is affordable and widespread. This, in turn, will require significant capital from equity investors and financiers.

DIGITAL INFRASTRUCTURE DRIVERS AND CHALLENGES

The COVID-19 pandemic sharply accelerated African digital innovation and demand for more digital infrastructure across the continent.¹

Many of the industry-relevant regulatory policy changes made by sub-Saharan governments during the pandemic emphasized digital accessibility.² The African Union (AU) launched an online COVID-19 pass tool to simplify verification of public health documentation for travelers.³ Togo's Novisi, a digital cash transfer program launched in 2020 to support informal workers during the pandemic, signed up more than one million users during its first week.⁴ MTN Nigeria showed a 60 percent growth in data revenue at the height of the pandemic, far surpassing the growth in developed markets during that time.⁵

The AU's Digital Transformation Strategy 2020 – 2030 aspires to universal digital access and a single pan-African digital market by 2030.⁶ Achieving this would create a profound impact. For instance, the World Bank estimates that in Africa a 10 percent increase in mobile internet penetration could translate to a 2.5 percent increase in gross domestic product (GDP).⁷

Yet the digital divide across Africa remains stark. Fewer than one-third of Africans have access to broadband connectivity. Of the 25 least-connected countries in the world, 21 are located in Africa.⁸ Three hundred million Africans live more than 50 kilometers from a fiber or cable broadband connection. At just 36 percent, Africa's internet penetration compares poorly with the 62.5 percent global average.⁹

Still, approximately 473 million Africans are online, and an additional 300 million will likely join them by 2025.¹⁰ Achieving and surpassing this level of penetration is crucial to Africa's future growth.

One of the main obstacles to bridging this divide remains inadequate investment.¹¹ According to the World Bank, achieving universal, good-quality internet access across Africa will require investments of US\$100 billion, 80 percent of which is needed for core infrastructure to establish and maintain broadband networks.¹² This includes 250,000 new 4G base stations, at least 250,000 kilometers of fiber and migration to 5G, which, in turn, could dramatically increase the need for data centers.¹³

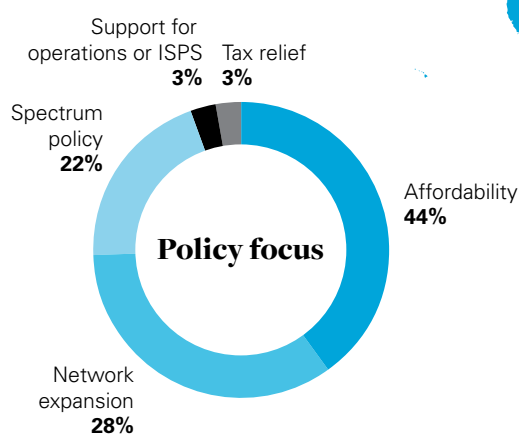


According to a report by the IFC and Google, Africa's internet economy is one of the largest overlooked investment opportunities available, with a potential to add US\$180 billion to Africa's GDP by 2025.

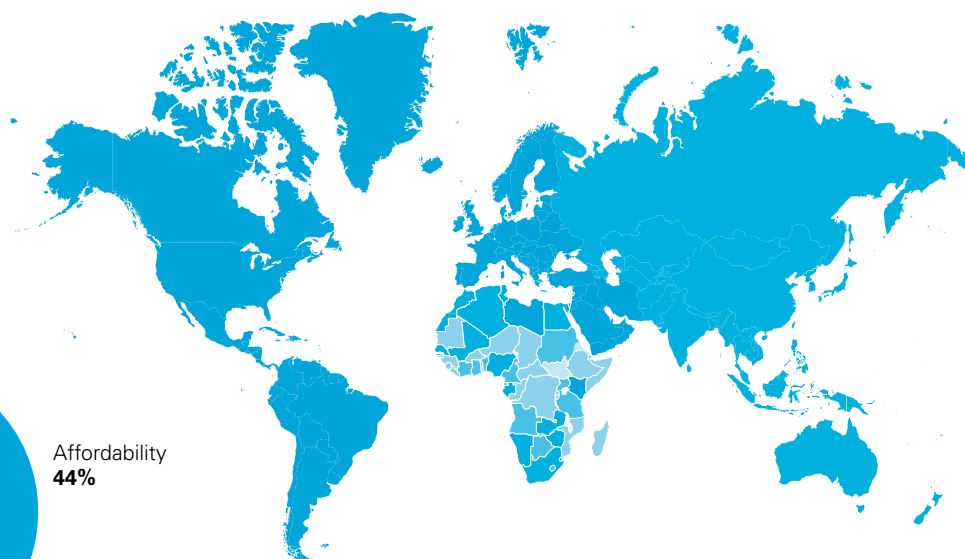


Figure 1: Internet access

Most policy changes related to digital infrastructure that were enacted by sub-Saharan governments in response to the COVID-19 pandemic, aimed to enhance accessibility by extending networks and to make services more affordable.



Source: World Bank (via Brookings Institute)



All individuals who have used the internet in the past three months are counted as internet users. The internet can be used via a computer, mobile phone, personal digital assistant, gaming device, digital TV, etc. Africa shown by country and the rest of the world by average for region (North America, Latin America, Europe, Middle East, Asia-Pacific).

Source: International Telecommunication Union (via World Bank)

INVESTMENT TRENDS IN AFRICAN DIGITAL INFRASTRUCTURE

Sub-Saharan Africa’s internet access is growing at one of the fastest paces in the world due to strong investment incentives.¹⁴ Africa’s youthful population and rapid urbanization are both strong drivers of demand for digitalization.¹⁵

Some of the most significant investment trends have been the following:

Mobile networks

Network coverage is rapidly expanding, mainly driven by upgrading 2G networks to 3G or 4G and network sharing.¹⁶ In 2020, 4G accounted for just 12 percent of the continent’s mobile phone connections and is expected to grow to 28 percent by 2025—though it remains below the current global average of 57 percent. However, only seven commercial 5G networks had been established in five African markets as of 2021.¹⁷

Average download speeds in Africa doubled between 2015 and 2019, while data costs halved.¹⁸ Africa’s mobile penetration may reach

50 percent (more than 600 million connections, 65 percent via smart phones) by 2025.¹⁹ Average African mobile traffic could more than quadruple to just over 7 gigabytes per month per subscriber, and 5G connections could approach 30 million African users by 2025.²⁰

Mobile devices will likely remain the primary method of internet access for people in Africa. Better 4G and 5G networks serving these devices would provide greater bandwidth, lower latency, improve spectrum efficiency and bring innovative “Internet of Things” products and services to Africa.²¹

Fiber-optic cables

The global fiber-optic submarine telecommunication cable systems market, valued at US\$23.4 billion in 2020, is forecast to grow by 7.1 percent per year and reach US\$37.8 billion by 2027.²² Only three African countries—the Central African Republic, Eritrea and South Sudan—lack a fiber-optic connection to the submarine cables circling the continent.²³

600+
million

mobile connections by Africans, with 65 percent via smart phones, are expected by 2025.

Source: infrastructure investor.com

By some estimates, African countries have rolled out more than 1.389 million kilometers of terrestrial fiber links, approximately 936,000 kilometers of which were already operational in 2018.²⁴ The 2Africa cable system—the largest subsea project, which will ring the entire African continent with a 23,000-mile-long, high-speed subsea cable—is expected to include 21 landings in 16 African nations and double the continent’s total internet capacity, once completed in 2024.²⁵ The Equiano subsea cable project will extend along the continent’s Atlantic coastline with landing points in Nigeria, Namibia and South Africa. The first phase of the project connecting South Africa and Portugal is expected to finish in 2022.²⁶

Yet fiber-optic networks have yet to fully penetrate Africa—particularly in the land-locked interior countries.²⁷ Widespread availability of high-speed (broadband) internet through fiber-to-premises connections to homes and offices remains sparse and is largely concentrated in a few capital cities.²⁸ For example, fiber-based

IT technician working on his laptop while standing inside of a server room



Running the diagnostics using a tablet in a server room



broadband service household penetration remains below 2 percent in sub-Saharan Africa, while South Africa's fiber-based broadband subscriptions represent almost half of all fiber-based broadband subscriptions in sub-Saharan Africa.²⁹

Data centers

Latency issues and concerns over data sovereignty are driving data center localization in Africa.³⁰

Although most African countries are currently relatively unrestricted regarding personal data, this might change in the future, in ways that would make it necessary to store regulated data in local data centers.³¹ Currently, Africa accounts for only 1 percent of global data center capacity.³² According to the African Data Centres Association, roughly two-thirds of that capacity is located in South Africa.³³ To bring the rest of the continent up to a similar density to South Africa would require roughly 700 new data centers of 1,000 MW capacity.³⁴

Indeed, Africa's data center market is expected to grow to US\$3 billion by 2025.³⁵ In 2020 and 2021 alone, four major pan-continental deals and investment commitments totaling US\$2 billion were concluded. These included Equinix's purchase of Main One (US\$320 million), West Indian Ocean Cable Company (WIOCC)'s investment in Open Access Data Centres (US\$500 million), Digital Realty's investment commitment to Africa (US\$500 million) and Liquid Intelligent Technologies' (Liquid) US\$500 million investment into its subsidiary, Africa Data Centres (ADC). ADC received a US\$300 million investment from the US International Development Finance Corporation (DFC) to acquire and expand data centers and enter new markets.³⁶ ADC has opened a new facility in Johannesburg and is constructing others in Nigeria, Togo and Kenya,³⁷ and it plans to build ten data centers in ten African countries over two years.³⁸ To date, Liquid has

US\$3 billion

growth in Africa's data center market, expected by 2025.

Source: africabusinesscommunities.com

also received US\$259 million worth of investment from the International Finance Corporation (IFC) to expand its data center capacity and roll out fiber-optic cables in Africa.³⁹ Local African businesses—including Vodacom/Safaricom, MTN, Rack Centre Nigeria, ADC and Teraco—have been at the forefront of this growing industry and together own more than 95 percent of Africa's data center capacity. International investors in hyperscalers have also begun to enter the market in recent years.⁴⁰

Financing challenges

To date, most African digital infrastructure projects have been funded through equity investments, rather than debt financings, and this is likely to continue.

For instance, a consortium of partners that include Facebook, MTN, Vodafone and Orange is funding the 2Africa cable, and Google and its co-investors are privately funding the Equiano project.⁴¹ Limited recourse

or non-recourse funding has yet to be seen at scale. The IFC invested US\$250 million in Liquid through equity and debt, and IFC's latest investment in February 2021 was by participating in Liquid's bond placement on Euronext Dublin.⁴² The IFC's US\$300 million investment in ADC was structured as a full-recourse corporate loan.⁴³

Yet as digital infrastructure assets demand larger capital expenditures, the need for more structured financing solutions will likely grow. The high costs of constructing and operating mega-data centers might also encourage shifts toward alternative funding sources that deploy capital more efficiently.

Energy is another important consideration. Expansion of co-location data centers and competitive pricing of services increasingly depends on energy costs and efficiency, since energy can account for 40 percent or more of a data center's operating expenses. Without cheap and reliable power, operating data centers in Africa will be challenging.⁴⁴ In South Africa, data center operators are highly exposed to the power shortages and regular load-shedding that plague the country, heightening reliance on expensive diesel or battery-power solutions.⁴⁵

Conclusion

According to the IFC and Google's e-Economy Africa 2020 report, Africa's internet economy is one of the largest overlooked investment opportunities available, with a potential to add US\$180 billion to Africa's GDP by 2025.

Africa has the world's youngest, fastest-growing and increasingly urbanized workforce, which is driving a rapid increase in its consumption of online services. Increased connectivity, in turn, creates more opportunities for innovative entrepreneurs with new technologies. However, digital transformation can only be fully realized if high-quality access to communication networks and services is made available at affordable prices.

Accelerating the type and pace of investments into digital infrastructure in Africa will be critical to ensure the growth of Africa's economies and livelihoods for years to come.

US\$180 billion

potential growth in Africa's GDP by 2025.

Source: FC and Google's e-Economy Africa 2020 report

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China's pivotal role in supporting post-COVID growth in Africa

China's relationship with Africa is well established, deep and thriving on many fronts

By Shaohui Jiang and David Li

To show the history of Africa and China's relationship, some scholars write of the discovery of ancient Chinese ceramics in East Africa and trading ties that date from the Song Dynasty (960 – 1279). When Zhou Enlai, then Premier of the People's Republic of China, visited Tanzania in 1965 he referenced the Chinese explorer Zheng He in proclaiming: "My colleagues and I do not find ourselves in a strange land. Intercourse between our countries dates back to 900 years ago."¹

Today, the Five Principles of Peaceful Co-existence that formally govern Chinese foreign policy to this day have a strong African connection.² China's interest in Africa ramped up considerably during the 1990s, strengthened even more through the following decade and has continued under current President Xi Jinping.

China's engagement and support in Africa was for many years an extension of political relations. For instance, African votes were instrumental for China's admittance to the United Nations.³ More recently, though, China's focus on Africa has become increasingly economic. For example, Africa's natural resources played a large role in China's growth for decades.

This historical context affects the current China-Africa relationship in Africa, as well as China's long-term plans for continued support and engagement with African nations.

FORUM ON CHINA-AFRICA COOPERATION

Since 2000, all the African nations (except Eswatini) have

conducted formal inter-government collaboration with China through FOCAC. In his keynote speech at the 8th Forum on China-Africa Cooperation (FOCAC) summit in Senegal in November 2021, President Xi Jinping proposed that over the next four years, China and Africa should collaborate on:⁴

- Fighting the COVID-19 pandemic
- Opening new prospects for China-Africa cooperation, expanding trade and investment, poverty reduction, strengthening cooperation on digital economies and promoting entrepreneurship by young Africans, and the development of small and medium-sized enterprises
- Promoting green development in the face of climate change, working to implement the Paris Agreement and strengthening capacity for sustainable development
- Upholding equity and justice and promoting true multilateralism

At this FOCAC summit, a "China-Africa Cooperation Vision 2035" was published that specifies nine programs across a wide range of sectors earmarked for implementation during the first three years of this initiative.⁵

CHINA-AFRICA FOREIGN DIRECT INVESTMENT

In economic terms, 2013 marked a pivotal milestone, as China overtook the United States (US) as the largest equity investor nation into the African continent, measured in terms of new foreign direct investment (FDI flows) (see Figure 1). FDI flows to Africa from



2013 marked a pivotal milestone, as China overtook the United States (US) as the largest equity investor nation into the African continent, measured in terms of new foreign direct investment.

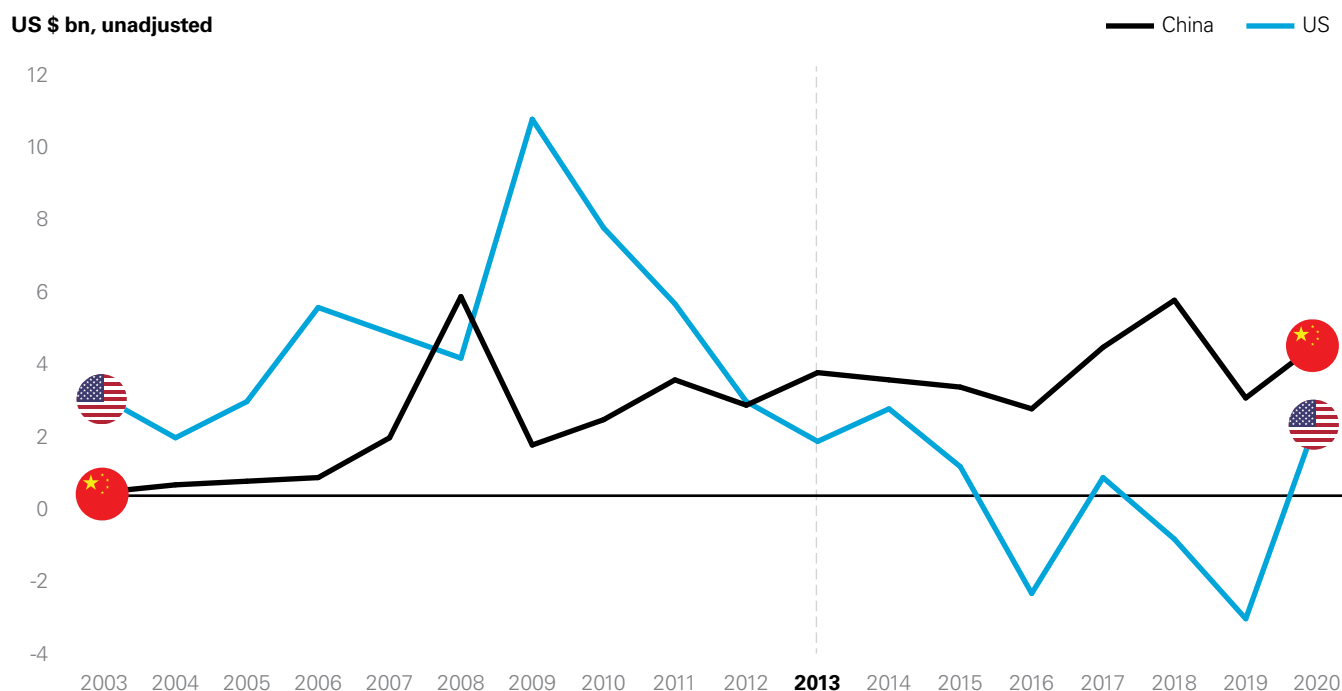
the European Union (EU) countries collectively continue to dwarf those of both China and the US, though.⁶ In 2020, the top African destinations of Chinese FDI were Kenya, the Democratic Republic of the Congo, South Africa, Ethiopia and Nigeria.⁷

Itself the largest single recipient of global FDI inflow during 2020 and 2021, China is well aware of the transformational impact of strong FDI flows. In addition, Africa in 2022 bears marked similarities, both demographically and economically, to China in the early 1970s.⁸

Current UN growth projections forecast that Africa's population will reach approximately 1.7 billion people by 2030.⁹ China therefore seems to be positioning itself to lead Africa's future FDI, and thus grow African markets to benefit its own trade.



Figure 1: Chinese FDI vs. US FDI to Africa, flow



Source: The Statistical Bulletin of China's Outward Foreign Direct Investment, US Bureau of Economic Analysis

This can be seen in China's diversification of investments away from mining and infrastructure to include service industries (scientific research, technology services and others), transportation, warehousing and postal services.¹⁰ It is further reinforced by Chinese support for infrastructure development projects under its Belt and Road Initiative (BRI), which is likely to remain a crucial component of China's international relations. In the Government Work Report presented at China's National People's Congress in March 2022, Premier Li Keqiang emphasized: "We will promote high-quality cooperation under the Belt and Road Initiative... We will, on the basis of consolidating cooperation on enhancing connectivity, move steadily to open up new areas of cooperation."¹¹ BRI projects include railways to link the continent's eastern seaports to the interior, such as a railway from Nairobi to Mombasa and a new line from Djibouti to Addis Ababa (then eventually to Dakar, Senegal, on the continent's west coast).¹²

The COVID-19 pandemic, sanctions imposed on Russia and other global events have had a profound

impact on China's outbound FDI and its economy generally. The Asia Development Bank now projects that China's GDP will grow at 5 percent in 2022 and 4.8 percent in 2023.¹³ This contraction in growth rates may be driving a strategic pivot by China back toward greater international engagement, which could have a positive impact on Chinese FDI into Africa.

According to UNCTAD, the combined effects of low commodity prices and the COVID-19 pandemic caused global FDI into Africa to contract by 16 percent in 2020 to US\$40 billion (down from US\$47 billion in 2019), while international project finance announcements—especially relevant for large infrastructure projects—contracted by 74 percent to US\$32 billion.¹⁴ FDI into Africa rebounded strongly in 2021, with preliminary UNCTAD estimates suggesting a total of US\$97 billion for the year (but US\$42 billion of this was due to the share swap between South African multinational Naspers and its Netherlands-listed investment unit Prosus).¹⁵ Barring other similar, singular transactions, FDI into Africa might continue to grow modestly

in 2022 and beyond. Significant infrastructure needs across the continent and growing populations may increase demand for project finance of all forms in Africa.

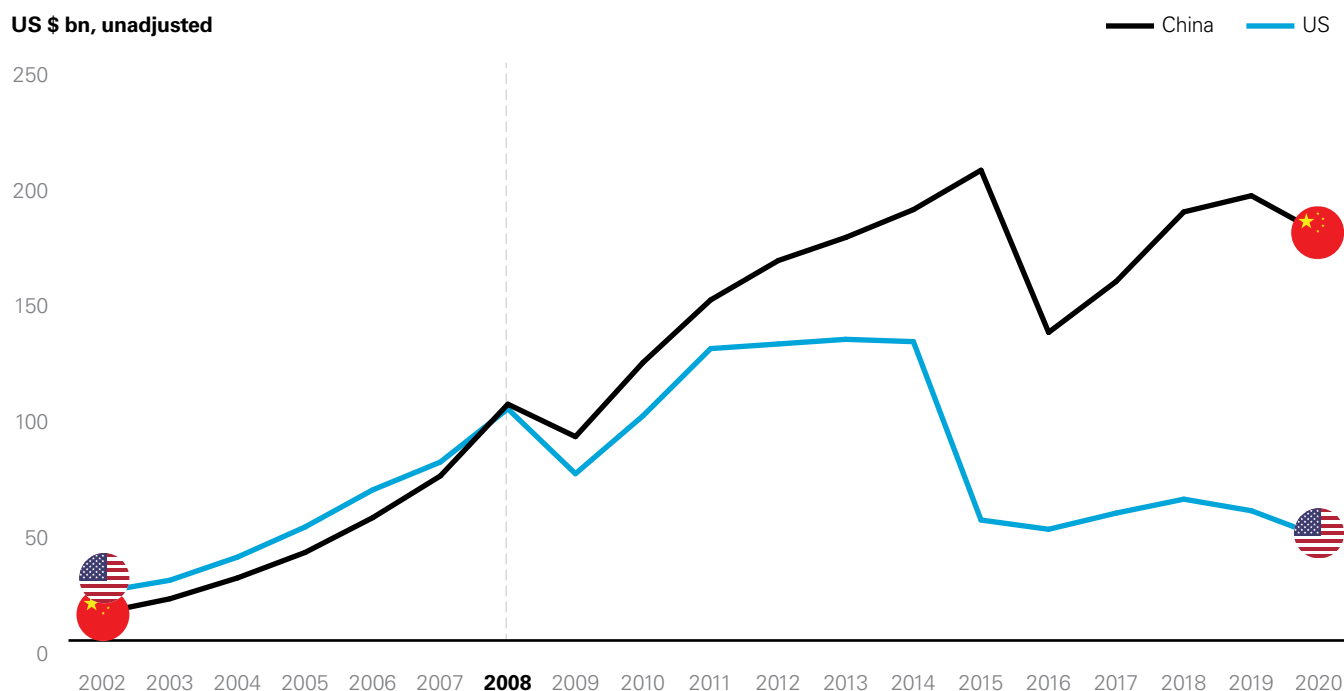
China is also increasing the links between its financial systems and those of African countries. As of October 2021, the Cross-Border Interbank Payment System (a payment system that offers clearing and settlement services for its participants in cross-border renminbi payments and trade) had 42 indirect participants in Africa from 19 African countries. The People's Bank of China (China's central bank) has signed a total of RMB 73 billion (approximately US\$11.5 billion) in currency swap agreements with the central banks of South Africa, Morocco, Egypt and Nigeria.

In addition, China has signed a memorandum of understanding on cooperation in financial supervision with seven African countries, including Egypt, South Africa and Nigeria—thus laying a foundation for steady, long-term bilateral development cooperation. China has also increased its involvement in African multilateral funding

Printing 100 yuan banknotes



Figure 2: US-Africa trade vs. China-Africa trade



Source: UN Comtrade

agencies, by joining the African Development Bank (AfDB), the Eastern and Southern African Trade and Development Bank, and the West African Development Bank. Through the AfDB, it has pledged to contribute a total of US\$996 million to the African Development Fund.

INTERNATIONAL TRADE

Trade between China and Africa has increased steadily in recent years. China has been Africa's largest single national trading partner for the past 12 consecutive years (see Figure 2), although trade between Africa and EU nations collectively continues to significantly exceed Africa's trade with either China or the US.¹⁶ According to the latest data released by the General Administration of Customs of China, the total bilateral trade between China and Africa reached US\$254.3 billion in 2021, up 35.3 percent from 2020, and African exports to China reached US\$105.9 billion dollars in 2021, up 43.7 percent from 2020.¹⁷ The bulk of this trade is with only five countries: South Africa, Angola, Kenya, Nigeria and Egypt.¹⁸

Although China's dependence on crude oil imports declined slightly

in 2021¹⁹, in 2020 three African countries (Angola, the Democratic Republic of the Congo and Gabon) accounted for 10.8 percent of those imports, worth US\$18.3 billion.²⁰ China also has a strong interest in African mining and minerals. Africa contains approximately half of the world's stock of manganese, an essential ingredient for steel production, and the Democratic Republic of the Congo alone produces more than 70 percent of the world's cobalt.²¹ Africa also has significant amounts of coltan (needed for electronics) and half of the world's known supply of carbonatites (a rock formation that is the primary source of rare earth minerals).²²

DEBT AND REPAYMENT

Between 2000 and 2019, Chinese financiers signed 1,141 loan commitments worth US\$153 billion with African governments and their state-owned enterprises, according to the China Africa Research Institute (although these numbers do not equate to actual African government debt, as their database does not track disbursement or repayment).²³



For African nations to continue to grow, they need friends who invest in them, recognize the vast potential of African markets and lend them funds needed to realize that potential.

Since FOCAC's establishment, Chinese companies have helped African countries to build and upgrade more than 10,000 kilometers of railways, nearly 100,000 kilometers of highways, nearly 1,000 bridges, 100 ports, 66,000 kilometers of power transmission and distribution networks, 120,000 megawatts of installed power-generating capacity, a 150,000-kilometer communications network and a network service covering nearly 700 million user terminals.²⁴ By 2017, McKinsey & Co. estimated that more than 10,000 Chinese companies were active on the continent.²⁵

Although Chinese loans to Africa sometimes are criticized by Western sources as "economic colonialism" and "debt-trap diplomacy,"²⁶ most Chinese loans have funded large-scale infrastructure projects, with the aim of enhancing economic growth and prosperity across Africa. In addition, these projects have made significant inroads into bridging the continent's energy deficit and supplying infrastructure to ensure the success of the African Continental Free Trade Area.²⁷ In fact, in keeping with the Five Principles of Peaceful Co-existence, China's loans typically are not accompanied by non-financial requirements (that could be considered interference in the internal affairs of the borrowing nation). The loan agreements frequently impose strict confidentiality on borrowers, though, with contracts governed by Chinese law and any disputes that arise to be settled by arbitration in China.²⁸ When African nations find themselves with repayment difficulties, China engages in bilateral discussions to resolve the issue and has sometimes written off debt with the poorest countries.²⁹

Still, Chinese loans are nowhere near sufficient to fund all of Africa's needs. In its 2018 African Economic Outlook, the AfDB estimated Africa's infrastructure needs as US\$130 – 170 billion per year, with a US\$68 – 108 billion financing gap.³⁰ In 2021, the International Monetary Fund estimated that Africa required US\$285 billion of additional financing by 2025 to fund an adequate COVID-19 response.³¹ By comparison, total external public debt across Africa amounted to approximately US\$726 billion in 2021.³²

CONCLUSION

The next four years will likely remain challenging in Africa (as perhaps in the rest of the world). The continent remains vulnerable to COVID-19 (according to the World Health Organization, only 11 percent of Africa's population is fully vaccinated),³³ and current global sanctions are impacting economic trends in ways that are not yet fully understood.

For African nations to continue to grow, they need friends who invest in them, recognize the vast potential of African markets and lend them funds needed to realize that potential. For many years, China has showed itself to be such a friend, and President Xi Jinping's comments at the 2021 FOCAC summit and otherwise show that it intends to remain one.

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Is “low-carbon” hydrogen a useful option for Africa’s energy needs?

African policies can encourage low-carbon hydrogen production processes

By Matthew Burnell

Hydrogen—abundant in water, biomass and other natural sources—is an important fuel in the global quest to reduce and eliminate greenhouse gas (GHG) emissions. Burning hydrogen produces only water vapor, without GHG emissions. This makes hydrogen an especially useful fuel in cases where GHG emissions are otherwise difficult to reduce, such as in the shipping, aviation and road transport sectors.

Hydrogen fuel can be produced through processes that are:

- 1. Green**—these use only renewable energy sources (water, solar, etc.), nuclear and certain biological processes such as anaerobic digestion,¹ and thus emit no GHGs
- 2. Carbon-intensive**—these use energy sources that emit GHGs (fossil fuels such as coal, gas, diesel, etc.)
- 3. Low-carbon**—these are powered by carbon-intensive sources where carbon capture is employed, or by a mix of carbon-emitting and non-carbon-emitting sources, and generate GHG emissions that fall within stipulated standards²

Low-carbon hydrogen production processes can be a valuable option in areas of the world that lack widespread, consistent renewable power sources but still aim to reduce their GHG emissions when they produce hydrogen fuel for storage, use and sale to others. Several African countries have already begun producing hydrogen and/or establishing hydrogen-related projects.

Africa has an opportunity now to implement national hydrogen policies that could attract more foreign direct investment into low-carbon hydrogen production projects, generate foreign exchange through hydrogen exports, create jobs and stimulate the local use of hydrogen-fueled technologies, all while contributing toward a global reduction in GHG emissions.³

LOW-CARBON HYDROGEN PRODUCTION OPPORTUNITIES

As a fuel source, hydrogen is not a new idea. The first internal combustion engine, invented in 1806 by Francois Isaac de Rivaz, was powered by hydrogen gas.⁴

As the world seeks to mitigate global warming, producing hydrogen at scale for the energy sector has emerged as a promising component of pathways to “net-zero” GHG emissions.⁵

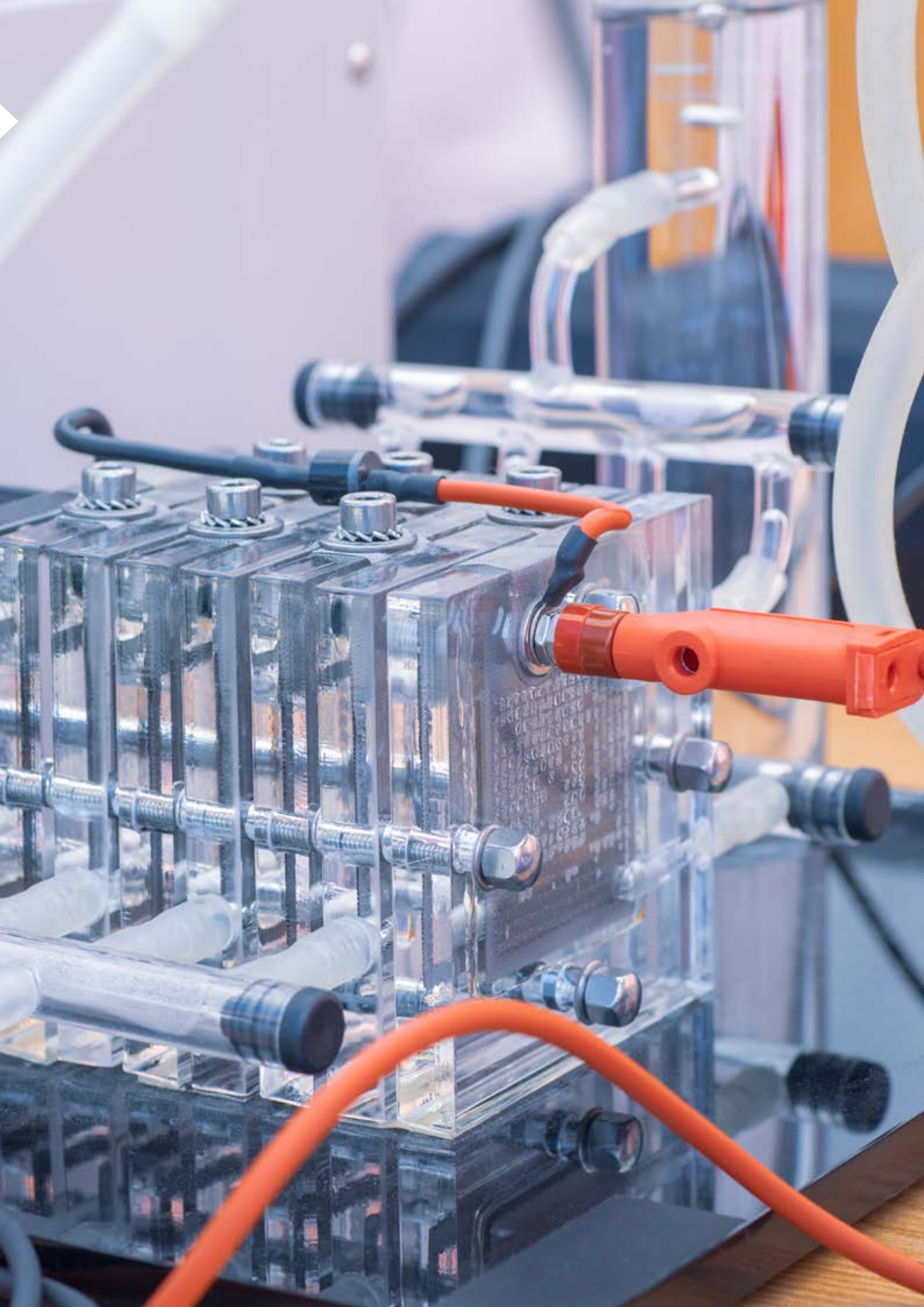
Key requirements for green hydrogen production processes include high levels of renewable energy sources (solar radiation, wind, etc.), a ready supply of water (including seawater), space for necessary infrastructure and logistical access to markets (see infographic).

Low-carbon hydrogen production processes work by pairing lower levels of renewable energy sources (for example, in regions where sun and wind are not always reliable) with nuclear electricity or fossil fuels (see infographic). This makes vast swaths of Africa well suited to green and low-carbon processes that could produce hydrogen fuel for use, storage and sale to others.

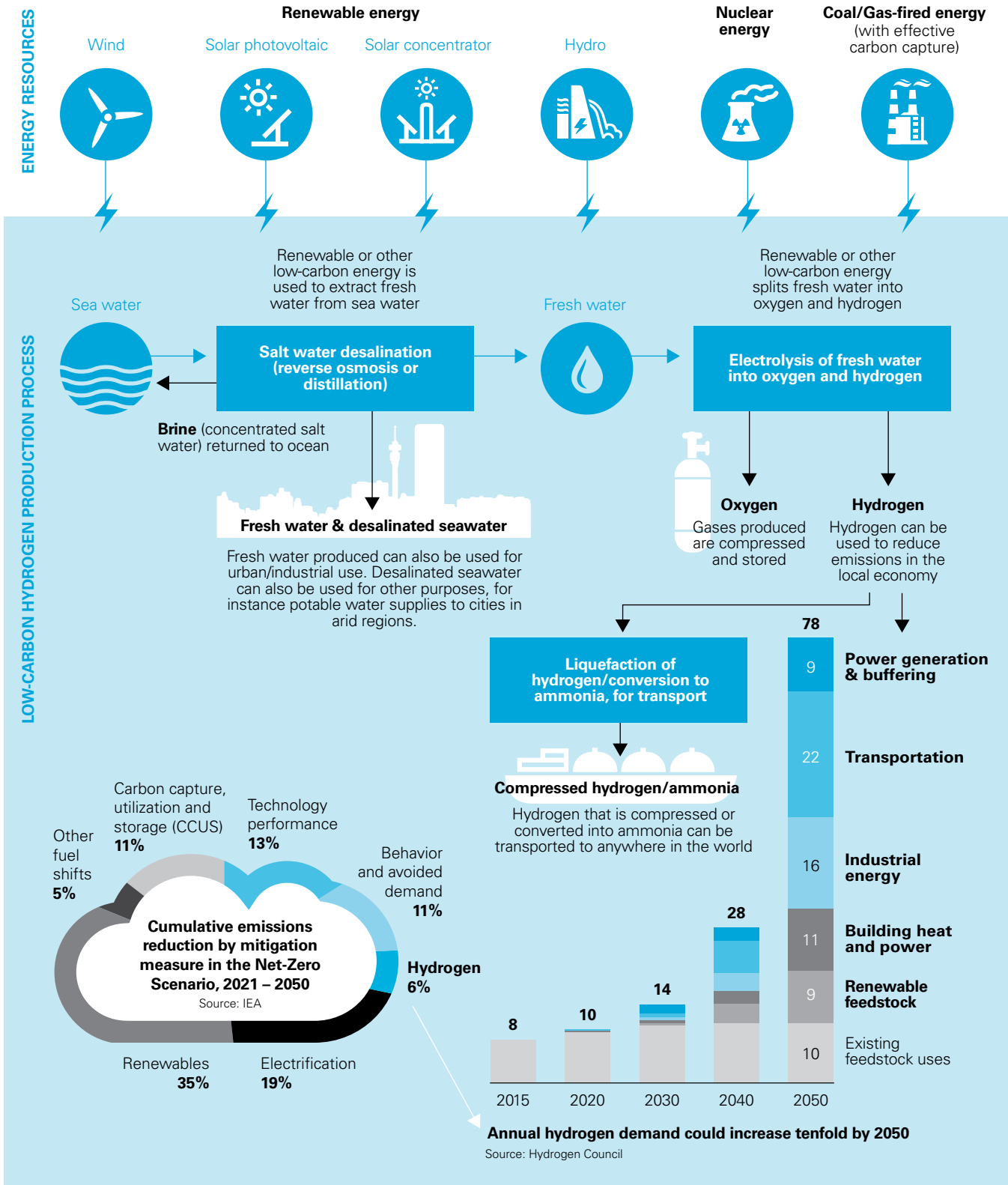


Vast swaths of Africa are well suited to green and low-carbon processes that could produce hydrogen fuel for use, storage and sale to others.

Led primarily by the private sector, a number of pilot hydrogen production projects are already proposed or under development in Africa.⁶ However, most African countries have not yet adopted legislation and incentives to promote green or low-carbon hydrogen processes. This is an opportunity lost.



Hydrogen is an important part of the Net-Zero by 2050 Emissions Scenario (NZE), but it is only one piece of the puzzle



Bus driving past power lines in South Africa



ESSENTIAL FACTORS FOR HYDROGEN PRODUCTION POLICIES

According to the International Energy Agency (IEA), the long-term use of hydrogen in the world's transition to clean energy requires national policies that support implementation, including strong demand-side measures to create clearly identifiable markets.⁷ To unlock private sector investment into green hydrogen, government policies should include:

1. Hydrogen targets and strategies:

Provide short, medium and long-term targets for hydrogen as a means to achieve decarbonization targets, linked to strategies to implement hydrogen as a fully scaled-up energy source.

2. Hydrogen demand creation:

Establish a local market for the hydrogen, to create demand to meet the supply contemplated. For instance:

- Offer subsidies to encourage the purchase of hydrogen-powered vehicles
- Provide incentives such as reduced taxes to encourage green hydrogen in energy production and manufacturing
- Impose mandatory minimum quotas for hydrogen use in high-potential sectors such as oil desulphurization and fertilizer production

3. Investment risk mitigation:

Introduce regulatory mechanisms

to help mitigate risks, such as demand uncertainty and value chain complexity.

4. Research and development, innovation, strategic demonstration projects and knowledge-sharing:

Promote research into reducing costs of producing and deploying hydrogen fuels in order to enhance economic competitiveness with fossil fuels.

5. Harmonized standards and fewer barriers:

Standardize definitions of and parameters for purposes of trading hydrogen and certifying credentials, to ensure green hydrogen can be legitimately accounted for in net-zero initiatives.

SOME AFRICAN “NATIONALLY DEFINED CONTRIBUTIONS” INCLUDE HYDROGEN

Each country that is a party to the Paris Agreement on Climate Change⁸ sets out how it intends to reduce its national GHG emissions and adapt to the impacts of climate change through national plans called Nationally Defined Contributions (NDCs).⁹

In the most recent NDCs, submitted in 2021, only five African countries (out of the 54 on the continent) mention hydrogen as a potential energy source. They are South Africa, Namibia, Mauritania, Tunisia and Cameroon.

South Africa’s NDC states that it requires concessional finance, debt restructuring and support from the international climate and development and finance community in order to develop infrastructure for “green hydrogen in support of electric vehicles and public transport.”¹⁰ Cameroon’s NDC goes further, stating that while it will continue to exploit on-shore and off-shore oil & gas resources, it plans to attract investors to develop projects relating to clean energies, such as hydrogen and ammonia.¹¹ Tunisia’s NDC similarly states that technology transfer programs are needed for hydrogen in the power and mobility sectors.¹²

The Mauritanian and Namibian NDCs provide detailed visions of using hydrogen to fulfill their net-zero GHG emissions goals, more closely aligned with the IEA’s requirements.

Mauritania’s NDC notes that:

- Steps must be taken to attract private sector investment, such as funding and tax incentives
- Markets already price carbon and trade carbon credits, and that carbon credits could finance investment in green hydrogen
- Renewable energy (including hydrogen) must account for at least half of energy generation by 2030¹³
- A national roadmap is being prepared on achieving low-hydrogen carbon, including potential demand-side uses of the hydrogen in industry, mining, transportation, agriculture (fertilizer), trawlers and international (exports of ammonia)¹⁴

Namibia plans to replace hydrocarbons with hydrogen for electricity generation.¹⁵ Its NDC specifically states that “green hydrogen will play a crucial role in reaching the emissions

neutrality goal” for Namibia. To give effect to this:

- Opportunities are being explored for green hydrogen pilot projects for low-emission transport solutions and fuel cells for remote power
- Pilot projects are underway for fuel cell systems for residential and tourism consumers
- A feasibility study is investigating the costs to produce, process and transport hydrogen for export and to position Namibia as a global leader in green hydrogen supply¹⁶

HYDROGEN POLICIES AND PRACTICES IN AFRICA

While many African countries did not explicitly mention hydrogen in their NDCs, a significant number have nonetheless adopted policies and/ or implemented hydrogen-related projects that at least partly align with the IEA’s factors (see Figure 1).

These include:

- **Morocco:** In 2020, Morocco signed a memorandum of understanding

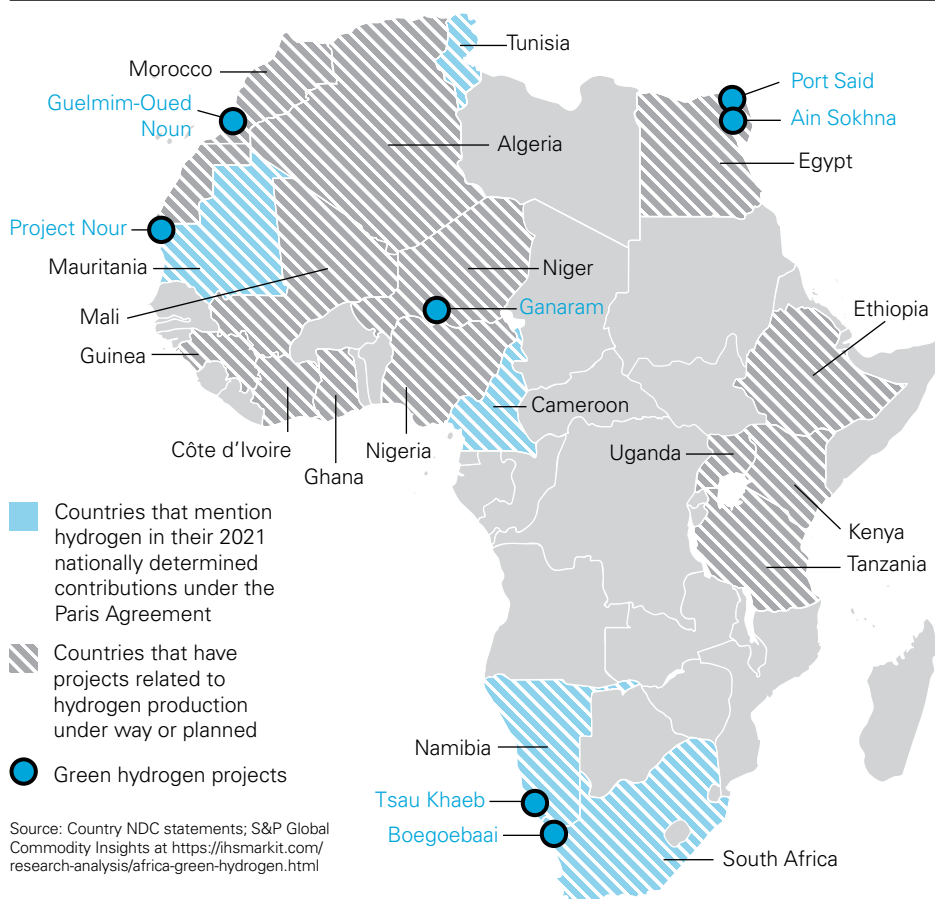
with Germany to build an industrial green hydrogen plant.¹⁷ Morocco has also signed a strategic partnership with the International Renewable Energy Agency (IRENA) to undertake green hydrogen studies and develop policies aimed at engaging the private sector¹⁸

- **Egypt:** Egypt has concluded an agreement of intentions with Siemens AG to commence discussions and studies to implement a pilot project for green hydrogen production, as a first step toward Egypt potentially exporting it¹⁹

- **Uganda:** In 2018, a Belgian energy company signed an agreement to power 3,000 households and businesses with back-up electricity in Uganda through hydrogen and battery storage²⁰

- **Namibia:** Namibia has announced preferred bidders for a US\$9.4 billion green hydrogen project to produce green hydrogen and green ammonia for export by 2026²¹

Figure 1: African countries that mention hydrogen in their NDCs under the Paris Agreement, and hydrogen projects under way or planned



– **South Africa:** In probably the most developed hydrogen program on the continent, the South African government and several private sector participants published the “South Africa’s Hydrogen Valley” report in October 2021 declaring hydrogen fuel cells to be a national priority.²² Catalytic green hydrogen hubs in Johannesburg, Mogalakwena and Durban will host pilot projects to launch the hydrogen economy. The report also envisages creating an integrated hydrogen ecosystem as an important part of South Africa’s Economic Reconstruction and Recovery Plan, with nine identified pilot projects that include adopting hydrogen fuel cell vehicles (mining trucks, buses), industrial (ammonia/chemicals) and building (fuel cell power) sectors.

These projects highlight how the private sector is a primary driver behind hydrogen production in Africa. For hydrogen to achieve its full potential in supporting these NDC objectives, African governments must implement regulatory reforms.

THE PRIVATE SECTOR: JUMP OR GET PUSHED

Private sector pioneers that are blazing the hydrogen trail will bring along others in their supply chains. Their supplier contracts will likely evolve to include provisions relevant to climate change mitigation. For instance, the Chancery Lane Project,²³ a collaborative effort to create contractual clauses that compel contracting parties to reduce their GHG emissions, proposes adding contractual rights to:

– Cancel supply contracts in order to pursue more climate-friendly services or goods (for instance, to allow a customer to notify a supplier of equivalent products/services with better GHG credentials and allow the supplier to match or improve within a reasonable time, after which the supplier can terminate the agreement) without facing penalties. For suppliers, the risk of a customer consistently requesting higher GHG emission compliance in order to exit agreements can be mitigated by (for example) limiting how frequently the customer can invoke this contractual right²⁴

- Terminate an agreement when a supplier’s GHG emissions present a material risk to the customer’s reputation or net-zero commitments²⁵
- Terminate an agreement when a supplier fails to supply the customer with information to audit the customer’s compliance with ESG commitments in the agreement
- Impose liquidated damages for contractual breaches
- Obligate a supplier to impose similar obligations on its own suppliers
- Comply with specific GHG standards, collect data and report compliance to a customer and allow for such information to be audited and verified²⁶

Private sector entities can also add individuals onto their boards who are responsible for integrating net-zero GHG emission goals into the corporate strategy and achieving those goals.²⁷

At the 2021 COP26 UN Conference on Climate Change, private sector participants called upon politicians to take the lead on developing and implementing metrics, guidelines and strategies to evaluate measures to reduce GHG emissions and achieve net-zero.²⁸ The IEA Standards to Develop and Promote Energy Efficiency and Renewable Energy Sources²⁹ are a good example of such guidelines.

Countries in Africa that succeed in developing such measures will be the most likely to benefit from private sector investments into hydrogen production for export and the development of local hydrogen markets, which in turn will support their own net-zero GHG emissions goals. At the same time, businesses will likely increase pressure on suppliers in their value chains, including those in Africa, to reduce their GHG emissions and hence their own indirect (“Scope 3”) emissions.³⁰

If current global warming trends continue and the resulting consequences become more directly observable, the pressures on both governments and the private sector will likely increase.

For countries that are fortunate enough to have the natural resources required to produce hydrogen at industrial scale—which includes many in Africa—this offers an opportunity to be seized.

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- 13 République Islamique de Mauritanie Ministère de l’Environnement et du Développement Durable Contribution Determinee National Actualisee CDN 2021 – 2030 (September 2021) at 14
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- 15 Namibia’s Updated Nationally Determined Contribution (2021) at page 15
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