



How the U.S. Can Better Support Africa's Energy Transition

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Since U.S. President Joe Biden took office in 2021, his administration has made U.S. support for climate action overseas a central component of its foreign policy agenda, with much of the focus on helping accelerate the global energy transition.¹ In high-income regions where people generally take energy for granted, carbon emissions are high and renewable energy markets are thriving. There, the energy transition is primarily about rapid decarbonization and the replacement of fossil fuels with clean technologies. But most African countries face a very different energy landscape: they currently emit very few carbon emissions, have vast energy deficits that endanger lives and hinder economic development, and have trouble accessing finance for new energy infrastructure. As a result, the outlook and objectives for their energy transitions inevitably differ.

Given these differences, achieving a worldwide transition will be no easy feat. In recent years, the global energy landscape—complex at the best of times—has been roiled by factors including Russia's invasion of Ukraine, economic turmoil, and a continuing (and increasingly contentious) debate between rich and lower-income

countries over responsibility, justice, and the meaning of the energy transition itself.

Many of the most important policy discussions between the United States and Africa today take place against this backdrop and are influenced by the energy transition's connections to climate, investment, security, and geopolitics. Where do U.S. efforts to advance international climate action align and conflict with the visions African countries have put forward for their own energy transitions, and what implications do they have for Africa's energy future?

Africa's Goals for its Energy Transition

No universal definition exists for what the energy transition entails. African visions for the energy transition vary significantly across the continent—but certainly include more than decarbonization. Two recent documents provide a sense of how leaders across Africa conceive of their priorities. The Kigali Communique, "Ensuring a Just and Equitable Energy



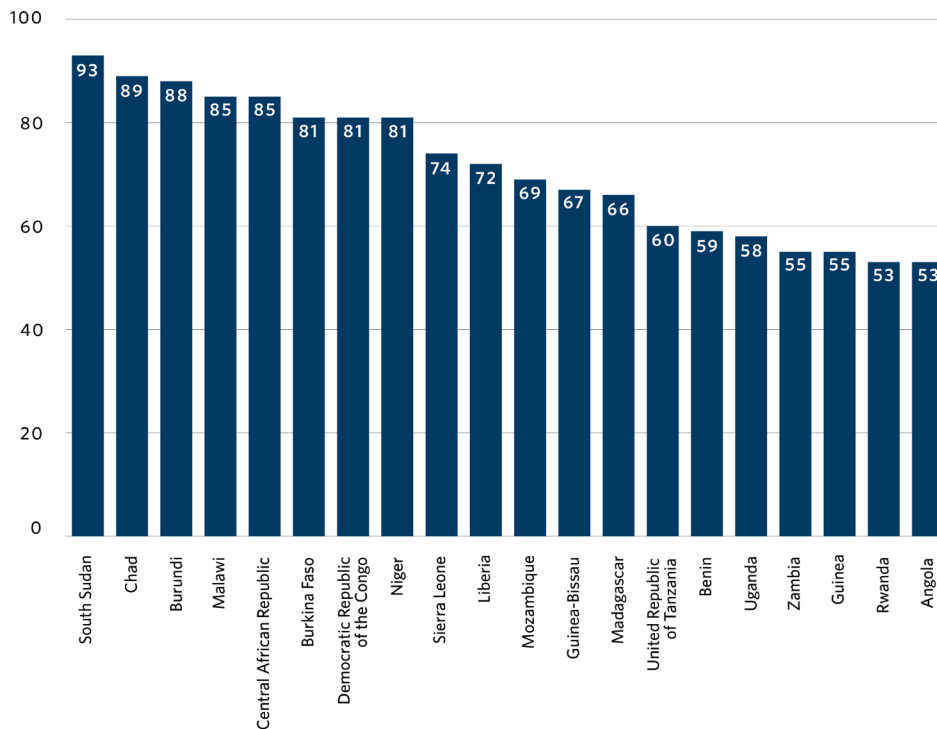
Transition in Africa,” was signed in May 2022 by high-level representatives from the Democratic Republic of the Congo, Ghana, Kenya, Malawi, Morocco, Nigeria, Rwanda, Senegal, Uganda, and Zimbabwe and sets out seven principles for a transition.² And the African Common Position on Energy Access and Just Transition, led by the African Union Commission and other pan-African institutions, articulates a similar framework.³ Both documents conceive of an energy transition that includes: achieving universal access to modern sustainable energy; powering economic development, industrialization, and job creation; and deploying clean technologies to decarbonize energy systems and put Africa on track for climate-friendly development. The continent’s ability to ultimately achieve these goals will be shaped by a combination of technological innovation, cost reductions, climate ambition, and the support provided (and constraints imposed) by international partners including the United States. This section assesses where Africa stands

today in achieving each of these three goals, with a particular focus on the electricity sector.⁴

Universal Electricity Access

Ensuring universal access to “affordable, reliable, sustainable, and modern energy for all” by 2030 is one of the United Nations’ seventeen Sustainable Development Goals and is the first of the Kigali Communique’s seven principles, indicating the degree to which many African countries consider it a primary development objective.⁵ Indeed, energy poverty is a disproportionately sub-Saharan African crisis. Across North Africa, electricity access rates are relatively high, ranging from 62 percent in Djibouti to 100 percent in Egypt, Morocco, and Tunisia.⁶ But a total 567 million people across sub-Saharan Africa lacked access to electricity in 2020, with the region accounting for more than three-quarters of the world’s total unelectrified population and all twenty of the world’s least electrified countries (see figure 1).⁷

Figure 1. Share of Population (%) Without Access to Electricity in the World’s Twenty Least-Electrified Countries, 2020

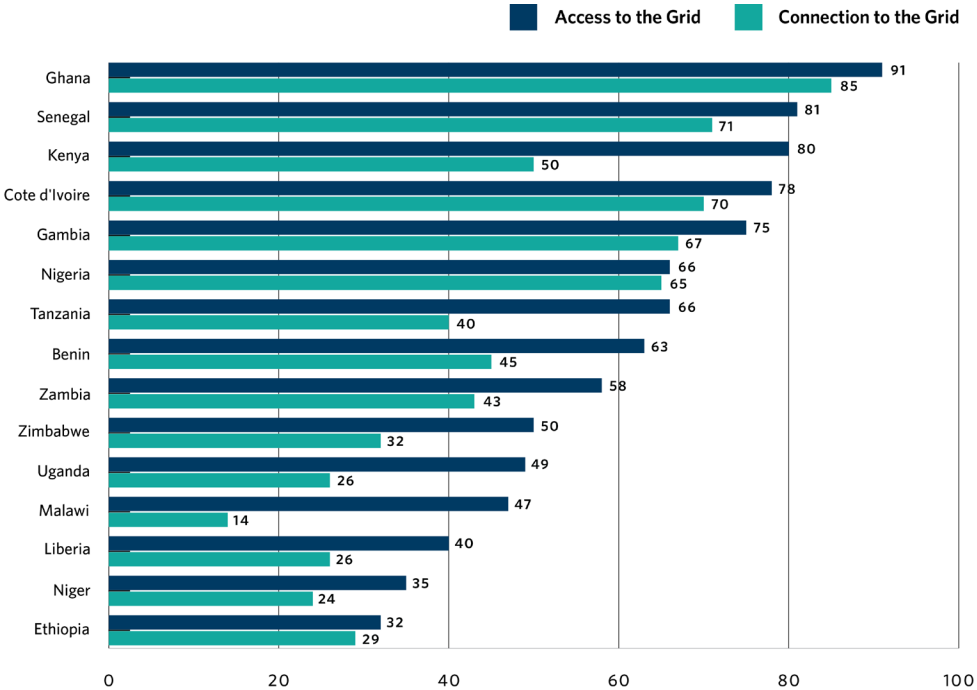


Source: “Energy Progress Report,” Tracking SDG 7: The Energy Progress Report, “Electricity access rate, Total (%),” International Energy Agency, International Renewable Energy Agency, United Nations Statistics Division, World Bank, and World Health Organization, accessed January 2023, <https://trackingsdg7.esmap.org>.

Addressing this will require more than simply expanding energy infrastructure. An electric grid may serve the area in which a person lives, but that does not guarantee that a household or business is actually connected and able to consume power. A recent Afrobarometer survey found that 68 percent of areas surveyed across thirty-four African countries had access to an electric grid—but only 57 percent of households in those areas were connected. In certain countries, the gap between access and connection is even more significant: in Kenya, one of the continent’s leaders in electrification, the grid covers 80 percent of enumeration areas, but only 50 percent of respondents reported a connection (see figure 2).⁸

Sub-Saharan Africa made significant progress in expanding electricity access over the past decade. Between 2010 and 2020, an average of 25 million people gained access to electricity Africa each year, a rise driven largely by significant gains in a few outstanding markets including Kenya, Senegal, Rwanda, Ghana, and Ethiopia.⁹ More recently, however, those gains have begun to roll back. Between 2018 and 2020, the number of people in the region without access *increased* annually by about 4 million people.¹⁰ Contributing factors include the increased complexity of expanding service to remote and lower-income populations, the impacts of COVID-19 and pandemic-related economic fallout, supply chain hurdles, and rising global inflation.¹¹

Figure 2. Access to the Grid vs. Connection to the Grid in Surveyed Areas, 2019-2020



Source: Hee Eun Lee, Woo Young Kim, Hyo Kang, and Kangwook Han, “Still Lacking Reliable Electricity From the Grid, Many Africans Turn to Other Sources,” Afrobarometer, April 8, 2022, https://www.afrobarometer.org/wp-content/uploads/2022/04/ad514-pap10-still_lacking_reliable_electricity_from_the_grid-many_africans_turn_to_alternative_sources-afrobarometer-10April22.pdf.

Electricity for Economic Development

Africa’s goals in the electricity sector go beyond achieving universal access. Many of the continent’s broader economic objectives depend in large part on securing sufficiently abundant, reliable, and affordable

power supplies to drive industry, manufacturing, small businesses, and communications.¹² In particular, the *reliability* of electricity represents a critical enabler of economic development, but it remains poor across most of the continent. Across thirty-four African countries, Afrobarometer found that only 43 percent of

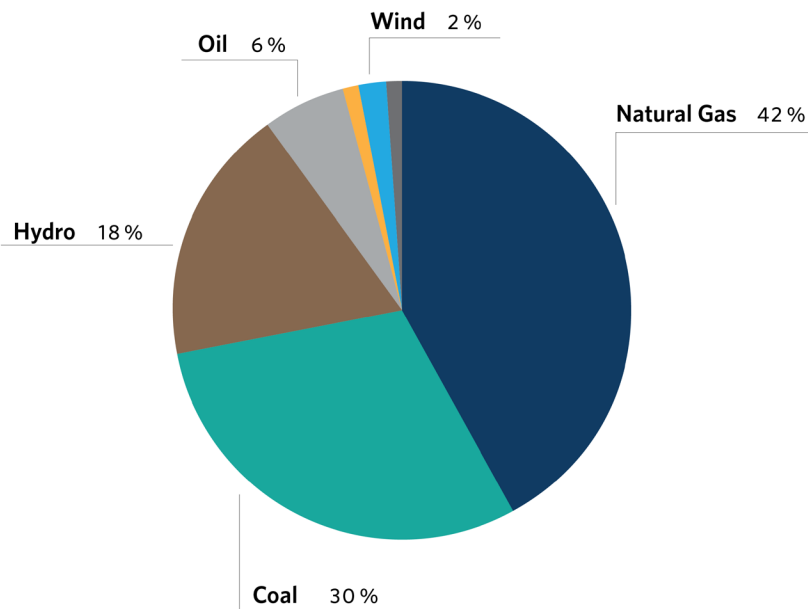


respondents had access to electricity that worked “most” or “all” of the time.¹³ For African businesses, this poses a major economic challenge. The widespread unreliability of grid-based power increases costs significantly, as firms suffer productivity losses or must procure expensive backup supply, usually in the form of diesel generators. Calculating the cost of industrial tariffs for grid power, plus the additional cost of backup generation weighted for how often grid power is unavailable, reveals that firms in sub-Saharan Africa pay an average \$0.22 per kilowatt hour for reliable electricity, more than in any other region of the world and twice what firms pay in the United States and Europe.¹⁴ This hinders the global economic competitiveness of African countries and represents a significant barrier to both the creation of new businesses and to job creation.

Clean Energy Deployment and Decarbonization

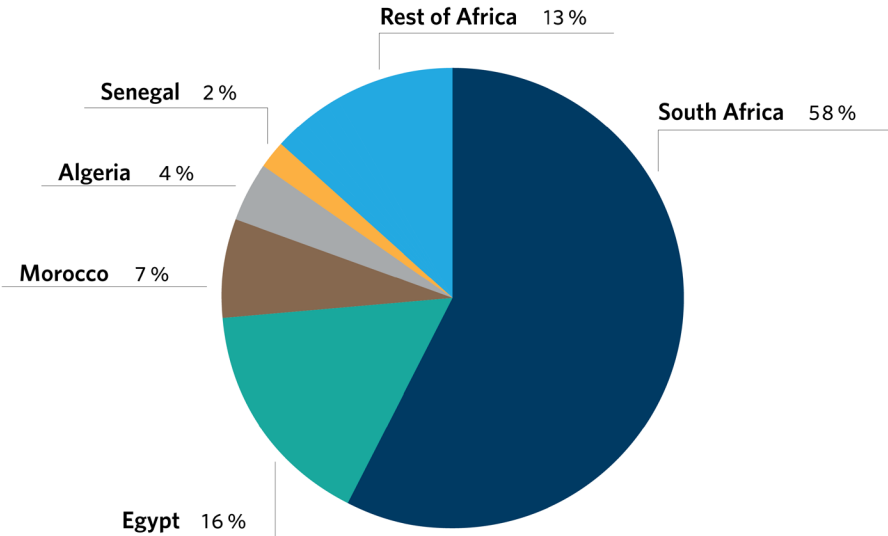
As of November 2022, several African countries including Nigeria and South Africa have put forward pledges to reduce their total emissions to net zero, and others are discussing or are in the process of doing so. Achieving that goal will depend in large part on transitioning to renewable electricity. At least four African countries (Cape Verde, Kenya, Malawi, and Tanzania) aim to achieve 100 percent renewable electricity generation by or before 2050.¹⁵ But today, the continent’s electricity mix remains dominated by fossil fuels, with coal, natural gas, and oil accounting for more than three-quarters of total power generation in 2019 (see figure 3).¹⁶ However, because so many African markets generate so little electricity, this mix disproportionately reflects a handful of major (and heavily fossil-fuel-dominated economies) including

Figure 3a. African Electricity Generation by Source (%), 2019



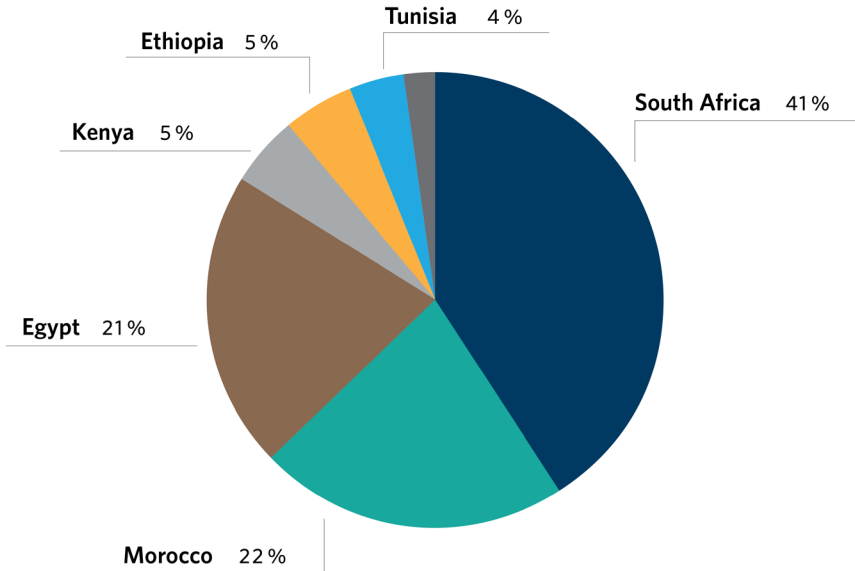
Source: “Africa,” International Energy Agency, “Electricity Generation by Source, Africa 1990-2020,” accessed January 20, 2023, <https://www.iea.org/regions/africa>.

Figure 3b. Share by Country (%) of Africa's Total Installed Solar Generation Capacity, 2020



Source: "Renewable Energy Market Analysis: Africa and Its Regions," International Renewable Energy Agency and African Development Bank, 2022, Annex B: Basic indicators for Africa by region and country, 316-317, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf?la=en&hash=BC8DEB8130CF9CC1C28FFE87ECBA519B32076013.

Figure 3c. Share by Country (%) of Africa's Total Installed Wind Power Capacity, 2020



Source: "Renewable Energy Market Analysis: Africa and Its Regions," International Renewable Energy Agency and African Development Bank, 2022, Annex B: Basic indicators for Africa by region and country, 316-317, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf?la=en&hash=BC8DEB8130CF9CC1C28FFE87ECBA519B32076013.



Algeria, Egypt, Nigeria, and South Africa.¹⁷ While Africa’s renewable electricity sector is growing, the continent still accounts for less than 3 percent of the world’s total installed renewable capacity—and the bulk of it is heavily concentrated in just a handful of African markets including Egypt, Morocco, and South Africa.¹⁸

Between 2000 and 2020, renewables investment in Africa grew by an average 96 percent per year, far above the global rate of 7 percent—but only accounted for 2 percent of total global investment over that period (and a very small net addition of renewable capacity).¹⁹ Investment was also heavily concentrated in just a handful of major markets, with 75 percent going to Egypt, Kenya, Morocco, and South Africa.²⁰

Table 1: Summary of Renewables Investment in Africa (2010–2020)

	Total	Notes on Regional Distribution	Distribution by Technology
Southern Africa	\$22.4 billion	South Africa accounted for 85% of investment.	Solar (PV and thermal): 60% Wind: 35% Other: 5%
North Africa	\$17.5 billion	Morocco and Egypt received the bulk of investment.	Solar (PV and thermal): 68% Wind: 32%
East Africa	\$9.7 billion	Kenya accounted for 58% of total investment.	Geothermal: 30% Wind: 30% Bioenergy: 20% Solar PV: 12% Small Hydro: 10%
West Africa	\$3.9 billion	Distribution was relatively wide, with 21% going to Nigeria.	Solar PV: 62% Wind: 16% Biofuels: 12% Small Hydro: 10%
Central Africa	\$1.3 billion		Solar PV: 50% Small Hydro: 50%

Note: East Africa technology distribution adds up to over 100 percent, likely as a result of rounding.

Source: “Renewable Energy Market Analysis: Africa and Its Regions,” International Renewable Energy Agency and African Development Bank, 2022, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf?la=en&hash=BC8DEB-8130CF9CC1C28FFE87ECBA519B32076013.

Three Areas Where U.S. Policy Aligns With Africa’s Energy Transition Goals

The current state of African electricity systems varies, as do countries’ specific visions for what their energy transitions should entail and how they should be implemented. Given this complexity—and the degree to which energy intersects with broader policy issues—it

is unsurprising that U.S. efforts both align and conflict with African objectives. But the specifics are important: beyond driving policy discussions on climate and energy, they also shape other dialogues; influence the scale, scope, and destination of available public and private finance; and help create the conditions for diplomatic cooperation (or discord). Here are three main areas of alignment.

Expanding Electricity Access

The U.S. Strategy Toward Sub-Saharan Africa commits to helping African countries pursue their energy access goals, aligning with the continent's prioritization of the access issue.²¹ More broadly, the United States has made support for expanding access to electricity (and to energy, more broadly) a major component of its foreign policy and development assistance portfolio in Africa for the last decade. Examples include:

- **Power Africa:** Launched in 2013, Power Africa aims to advance economic growth, health, and education by expanding electricity generation and access across Africa. The initiative aggregates financing and other tools from across the U.S. government, coordinates their application, and seeks to create an efficient, one-stop-shop for African governments, the private sector, and others seeking U.S. assistance. It has enjoyed bipartisan congressional support since its launch and is backed up in legislation by the Electrify Africa Act of 2015.²² Power Africa aligns with African efforts to connect users to electricity solutions, targeting 30,000 new connections by 2030—and it has recently made connections for productive uses (including health clinics, in particular) a central part of its programming.²³
- **The DFC's Energy Access Commitments:** The U.S. Development Finance Corporation (DFC) has committed to investing in energy access solutions across developing markets, including in Africa. The agency's five-year Roadmap for Impact aims to expand electricity access to at least 10 million people by 2025.²⁴ And DFC has put specific effort into sourcing energy investment opportunities in Africa, including by basing key staff on the continent.

Decarbonizing Energy Systems

The Biden administration has continued long-standing efforts to support clean energy in Africa, including by emphasizing the issue in its U.S. Strategy Toward Sub-

Saharan Africa and through assistance from agencies including the U.S. Agency for International Development (USAID), the U.S. Trade and Development Agency (USTDA), the State Department, and others.²⁵ It has also enhanced specific agencies' mandates in this space and has joined major international efforts to support long-term decarbonization in specific countries, including several in Africa. These efforts align with African goals to pair decarbonization with economic development, and they aim to support development pathways that achieve both climate targets and broader economic and social objectives. For example:

- **DFC's Climate Mandate:** In April 2021, the DFC committed to increasing its climate-focused investments (including mitigation, adaptation, and resilience) to 33 percent of its entire portfolio by FY2023 and to updating its development strategy to prioritize climate-focused investments, including a focus on clean energy.²⁶ This expanded climate focus—combined with the agency's goal to increase energy access, its commitment to achieve a net zero emissions investment portfolio by 2040, and existing limitations on the portfolio's carbon emissions—incentivizes the agency to prioritize clean energy infrastructure wherever possible.
- **Just Energy Transition Partnerships:** At COP26 in November 2021, the United States joined the governments of France, Germany, South Africa, and the United Kingdom as well as the European Union in announcing the creation of a Just Energy Transition Partnership (JETP) to support South Africa's decarbonization.²⁷ The partners committed to mobilizing an initial \$8.5 billion over three to five years to accelerate decarbonization of the power sector; protect vulnerable workers and communities; create an enabling environment for continued investment; repurpose coal mines for renewable energy and agriculture; and support technological innovation and job creation in sectors like green hydrogen and electric vehicles.²⁸ A year later, at COP27, South



African President Cyril Ramaphosa released the JET Investment Plan, identifying a total \$98 billion needed over five years. U.S. contributions to the initial \$8.5 billion commitment included \$20 million in grants and technical assistance and \$1 billion in commercial loans from DFC.²⁹ (Note: The DFC has not yet committed to financing specific projects in South Africa, so the content of its intended \$1 billion contribution remains to be determined.)

- **Net Zero World:** The U.S. Net Zero World initiative aims to build on the concept of the South African JETP to help other countries rapidly decarbonize, advance economic growth, and power job creation. It draws on a diverse swath of policy and financing tools from across the U.S. government; participating U.S. agencies include: the Export-Import Bank, the Millennium Challenge Corporation (MCC), the Department of Commerce, the DFC, Department of Energy, Department of State, USAID, Department of the Treasury, USTDA, the U.S. African Development Foundation (USADF), and the U.S. national laboratories.³⁰

Diversifying Clean Energy Supply Chains

The International Energy Agency estimates that bringing global energy emissions to net zero by 2050 will require quadrupling annual solar PV capacity additions by 2030, calling for a massive scale-up in the manufacturing chain and polysilicon production.³¹ Today, China dominates all stages of solar PV manufacturing capacity and supplies the vast majority of raw minerals important to the manufacturing process, including aluminum, cadmium, molybdenum, tellurium, tin, and zinc.³² The United States has made it an explicit priority to diversify clean energy supply chains (including those

for solar, wind, and batteries) because this dependence on China creates significant technical, commercial, geopolitical, and human-rights vulnerabilities. To date, U.S. actions have included imposing import restrictions on Xinjiang-produced solar and requiring companies importing products containing polysilicon to document all entities involved in their manufacture, manipulation, or export.³³ These restrictions create an incentive and opportunity to support solar PV supply chains elsewhere in the world—including in Africa, where countries like the Democratic Republic of the Congo, Gabon, South Africa, and Zambia hold significant reserves of the minerals critical for clean energy technologies.³⁴ Indeed, the U.S. Strategy Toward Sub-Saharan Africa commits to “pursuing public-private partnerships to sustainably develop and secure the critical minerals that will supply clean energy technologies needed to facilitate the global energy transition.”³⁵ U.S. agencies are already prioritizing projects to expand clean energy manufacturing in emerging markets, including for example the DFC-supported First Solar thin film solar manufacturing facility in India.³⁶ Theoretically, such support could be replicated in Africa. But ironically, energy poverty stands in the way, at least in the near-term. Electricity makes up 20 and 40 percent of wafer and polysilicon production costs respectively, so retail electricity prices play a major role in determining whether a country can produce solar PV elements competitively.³⁷ China’s market domination to date depends in large part on its cheap supply of abundant coal-fired power—but African power supply is generally so limited, and its costs still so high, that competitive manufacturing opportunities remain challenging.

Three Areas Where U.S. Policy Risks Undercutting Africa’s Energy Transition Goals

The instances in which U.S. policy conflicts with African visions for the energy transition can make partnership on climate and energy issues more challenging. It can also

influence the tenor of broader diplomatic engagement. Here are three examples of such areas.

U.S. Policy on Support for Gas-to-Power Projects in Africa Remains Unclear

The U.S. position on international public financing for gas-to-power projects continues to be a source of confusion and concern for African partners, many of whom consider natural gas to be an important part of their energy transitions.³⁸ In various policy documents and announcements, the Biden administration has attempted to strike a balance between aggressive action to limit global carbon emissions and flexible support for development and energy security priorities, particularly in lower-income regions like Africa. Examples include:

- **Executive Order on Tackling the Climate Crisis at Home and Abroad:** On January 27, 2021, Biden issued an executive order addressing a wide range of both domestic and international climate actions. Among other things, it directed an interagency group (including the Secretaries of State, Treasury, and Energy; the Export-Import Bank; and the DFC) to identify a way for the United States to “promote ending international financing of carbon-intensive fossil fuel-based energy while simultaneously advancing sustainable development.”³⁹
- **U.S. Treasury’s Fossil Fuel Energy Guidance for Multilateral Development Banks:** In response to that executive order, the U.S. Treasury released a policy document laying out how it would direct development banks to approach fossil fuels. It states a clear opposition to coal and oil-based projects, as well as to gas exploration and production—but supports midstream and downstream natural gas projects (for example, gas-fired power plants) when they support countries eligible to receive assistance from the International Development Association (IDA), the arm of the World Bank responsible for helping

the world’s poorest countries, fragile and conflict-affected states, or small-island developing states that also can demonstrate no feasible clean energy alternative; have a significant positive impact on energy security, energy access, or development; and align with the Paris Agreement.⁴⁰

- **COP26 Pledge to End International Fossil Fuel Financing:** At COP26, the United States and thirty-eight other countries signed a pledge to “end new direct public support for the international unabated fossil fuel energy sector within one year of signing this statement [by the end of 2022], except in limited and clearly defined circumstances that are consistent with a 1.5°C warming limit and the goals of the Paris Agreement.”⁴¹
- **U.S. Strategy Toward Sub-Saharan Africa:** The White House strategy emphasizes the importance of African agency in shaping energy transition pathways, stating that the United States will “work closely with countries as they determine how to best meet their specific energy needs, which include pursuing energy access and economic development goals through technologies such as energy efficiency and renewable energy, as well as gas-to-power infrastructure.”⁴²

While each of these policy statements includes nuanced language indicating flexibility on downstream gas-to-power financing in poor and vulnerable countries, the messaging—both externally to diplomatic and private sector partners and internally to career agency staff—has at times been vague and contradictory. Moreover, the specific ways in which this policy will be implemented by individual agencies remains unclear. The DFC, for example, committed to achieving a net zero emissions investment portfolio by 2040, but it has not yet released a plan for how it will do so—and has not demonstrated how that commitment will shape the agency’s approach to financing actual gas-to-power projects.⁴³ This continued uncertainty prompted several African



heads of state—including from Malawi, Nigeria, and Uganda—to publish strongly worded pieces arguing for the importance of gas in helping Africa provide critical near-term energy supplies, transition away from oil-fired power generation, and expand clean cooking solutions.⁴⁴ These public interventions have kept pressure on Washington and other international partners to clarify their positions and maintain flexibility for Africa, but the issue has not yet been resolved.

U.S. Support for Energy Transitions Focuses on Major Emitters, Excluding Most of Africa

Early U.S. support for country-specific energy transitions through initiatives like Net Zero World focuses predominantly on large, coal-dependent, high-emission economies. This excludes the vast majority of African countries, as South Africa constitutes the continent's only major coal-dependent economy with globally significant emissions.⁴⁵ While international partners are developing a potential JETP for Senegal, the United States has made no concerted effort to broaden support for holistic energy transitions in other smaller, less energy-intensive African markets. This emphasis risks missing an opportunity to shape transitions in some of the world's most rapidly growing economies and worsening diplomatic tension with African leaders.

Available U.S. Tools Don't Meet the Moment

Finally, U.S. support for African energy transitions is hampered by the fact that available U.S. tools focus heavily on catalyzing private capital for infrastructure. This is true not only of explicitly investment-focused mechanisms, such as DFC loans and guarantees, but also of most of the grants and technical assistance provided by other agencies (including early-stage project support by USTDA and grants and technical assistance provided to private sector companies by USAID and the USADF). This means that the United States is well-equipped to support privately sponsored energy infrastructure, particularly new power plants, in countries with sufficient investor appetite and the

grid capacity to expand power supply. But in many African countries, significant new supply cannot be added without greater public investment in enabling infrastructure, including grid systems, and without significant strengthening of public utilities and other institutions.

Outside of grant capital provided by the MCC—some of which has gone to energy infrastructure—the United States has limited ways to provide such support bilaterally and at scale. As the cost of capital continues to rise, investor risks increase, and African grids max out the amount of wind and solar capacity they can integrate, Washington (along with other development partners) has found it increasingly difficult to catalyze private capital—not because they're not prioritizing the issue but because the pipeline of investment-ready projects across the continent is so limited.⁴⁶ For example, as of October 2022, the DFC had approved financing for only one utility-scale clean energy project in Africa since the Biden administration took office, despite a significant focus on the energy sector.⁴⁷ This reflects the challenges across African energy markets and the need for an expanded U.S. toolbox.

Recommendations

While U.S. efforts to advance climate action overseas will likely never align perfectly with African energy objectives, significant opportunities exist to strengthen ties with African partners. U.S. policy could do far more to advance African energy transitions and reduce diplomatic tensions by targeting three reforms.

First, the Biden administration should clarify to both government partners and investors the U.S. position on gas-to-power financing and demonstrate what that policy (with all its nuances) will mean in practice by advancing a real-world project to completion. Second, it should broaden country-specific energy transition support to lower-income economies across Africa, building assistance programs that recognize the unique nature

of African transition needs and couple decarbonization with the expansion of energy for industrialization, manufacturing, and other economic activities. Third, it should modernize U.S. tools by expanding support for critical public infrastructure, increasing the support available in the form of grants, and embracing a strategy modeled on the MCC's Compact structure, in which support for energy investment would be embedded within a much longer-term plan to support an economy-wide energy transition plan co-developed with local leaders.

About the Author

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