



## Discussion Paper

# Proposal and Financial Models for Scaled-up FOCAC 9 Green Energy Projects



**DEVELOPMENT  
REIMAGINED**

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# CHAPTER 1

## INTRODUCTION



# 1. Introduction

The Ninth Forum on China–Africa Cooperation (FOCAC 9), held in September 2024, placed green development and energy transition at the forefront of its agenda, including a landmark commitment to implement 30 clean energy projects across Africa within the next three years. This commitment signals a pivotal opportunity to accelerate Africa’s clean energy transformation through strategic partnerships—leveraging China’s technological expertise and Africa’s vast renewable energy potential.

In the context of rising energy demands, climate vulnerability, and infrastructure gaps across the continent, this discussion paper aims to explore viable, scalable models for clean energy deployment under the FOCAC framework. By drawing on China’s strengths in clean energy innovation and low carbon technologies—particularly its “new three”<sup>1</sup> products (solar, lithium batteries, and electric vehicles)—and experience in green infrastructure development, the paper provides a roadmap for turning the FOCAC commitment into high-impact, high-quality outcomes.

**Figure 1.** Key Steps in this Discussion Paper’s Approach

## Proposals and financing models for scaled-up FOCAC 9 green energy projects

In three steps, this discussion paper explores the nature of clean energy finance African countries have secured from China, identifies key Chinese stakeholders in overseas finance and clean energy project implementation, and finally proposes a set of African clean energy projects for FOCAC 9 green energy financing.



This paper begins with an examination of the status and trend of China’s clean energy financing in Africa since 2010, including an overview of the financing models employed and the stakeholders involved. Next, this paper provides a review and classification of existing clean energy feasibility studies in Africa, with a snapshot on their relevance to Chinese stakeholders.

<sup>1</sup> Zhang, J and Nedopil, C, (2024, April). China Green Trade Report 2023. [Available here](#)



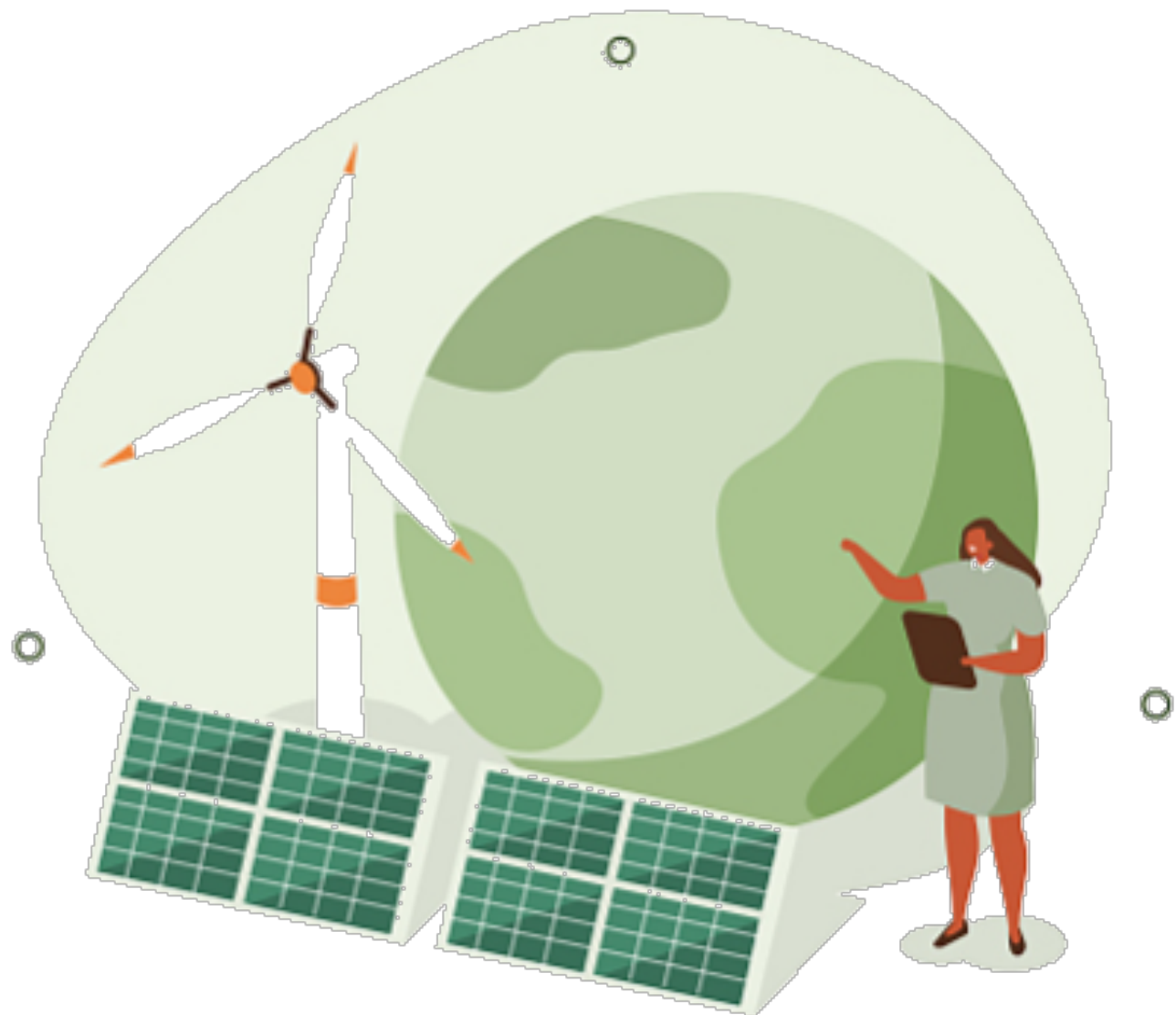
Grounded in practical experience across climate strategy and energy policy from Africa’s own Programme for Infrastructure Development in Africa (PIDA), it aims to contribute to the design of impactful, scalable green energy initiatives under the FOCAC 9 framework. Finally, the paper concludes with a set of strategic proposals to guide the development of FOCAC 9’s “30 clean energy projects”, aligning them with Africa’s development priorities and climate resilience goals.

This discussion paper is primarily intended for stakeholders within China’s international climate financing architecture, including policy and commercial banks, government agencies (CIDCA, MOFCOM), and actors engaged in FOCAC implementation. It also offers insights to African policymakers seeking to mobilize funding for clean energy infrastructure. Ultimately, this paper serves as both a resource and a call to action: to raise awareness among Chinese stakeholders of Africa’s emerging clean energy opportunities and to lay the groundwork for a more coordinated, equitable, and results-driven China-Africa clean energy partnership—one that transforms ambition into scalable action.



CHAPTER 2

# Chinese Clean Energy Financing in Africa



## 2. Chinese Clean Energy Financing in Africa

Africa's energy and climate goals require a scale of investment that far exceeds current levels. In 2022, total energy investment on the continent was under USD 90 billion, while the International Energy Agency (IEA) estimates that annual investment must exceed USD 200 billion by 2030 to align with the continent's energy access and decarbonization needs.<sup>2</sup> Crucially, two-thirds of this figure must go toward clean energy. To meet this target, annual clean energy investment must more than quadruple within the decade.

While domestic public and private resources play an important role, external partnerships remain critical. Among these, China stands out as Africa's largest infrastructure development partner. The bulk of external debt the continent has secured from Chinese financial institutions has been for Africa's infrastructure development, with energy having a pivotal role in continental and country priorities.<sup>3</sup> Additionally, clean energy increasingly features as a shared development priority between Africa and China, underscored by China's pledge under FOCAC 9 to implement 30 clean energy projects in Africa.

As attention shifts toward greening China-Africa cooperation, understanding the forms of funding and their costs to African countries becomes increasingly important. This section reviews Chinese green energy financing to Africa since 2010, examining emerging trends, key actors, and the financing models being deployed. It sets the foundation for exploring how these instruments can be scaled and aligned with Africa's clean energy priorities and realities.

### 2.1 Trends

China has been a key player in energy financing in Africa. Between 2012 and 2021, China was the largest bilateral energy financier on the continent.<sup>4</sup> According to AidData, from 2010 to 2021, China committed over USD 56.1 billion to 280 energy-related activities across Africa.<sup>5,6,7</sup> Around one-third of those projects supported energy infrastructure in transmission and distribution, with another third focused on clean energy generation—mostly hydro. A quarter of the projects targeted smaller-scale interventions such as solar streetlights, and technical assistance.

However, in terms of financial volume, the picture shifts significantly: fossil fuel projects, though accounting for only 10% of project count, absorbed 45% of total committed financing. Clean energy and transmission projects followed in financial share. By contrast, capacity-building and solar application projects, primarily aid-funded, had modest financial values, making their scale

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<sup>2</sup> International Energy Agency. (2023). Financing Clean Energy in Africa.

<sup>3</sup> Acker, K and Brautigam, D. (2021). Twenty Years of Data on China's Africa Lending. [Available here](#)

<sup>4</sup> Moses, Oyintarelado. (2023, November 27). Who Finances Energy Projects in Africa? [Available here](#)

<sup>5</sup> Aiddata. (2025). Global Chinese Development Finance Dashboard. [Available here](#)

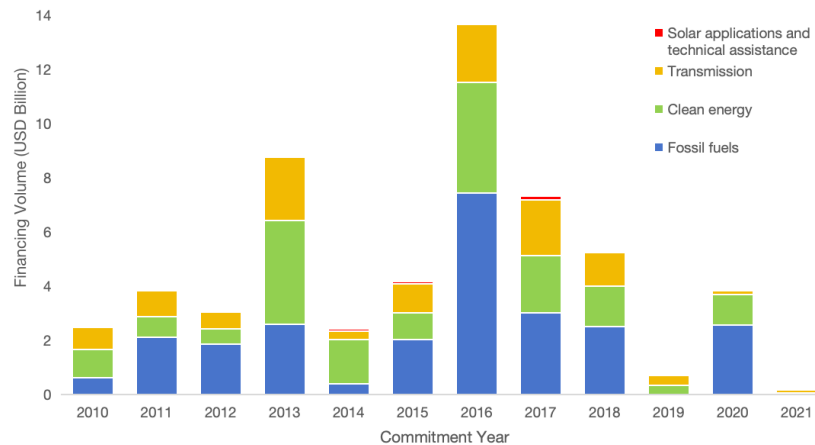
<sup>6</sup> Unless otherwise noted, all data referenced in this section is drawn from AidData. AidData is one of the most comprehensive datasets available for tracking Chinese financing in Africa. While it contains some redundancies and inconsistencies, it remains a valuable resource for analyzing trends and understanding the Chinese financing landscape in Africa. This report has made effort to correct potential errors to ensure accuracy.

<sup>7</sup> 2010–2021 are the commitment years; 2021 is the latest year for which data is available.



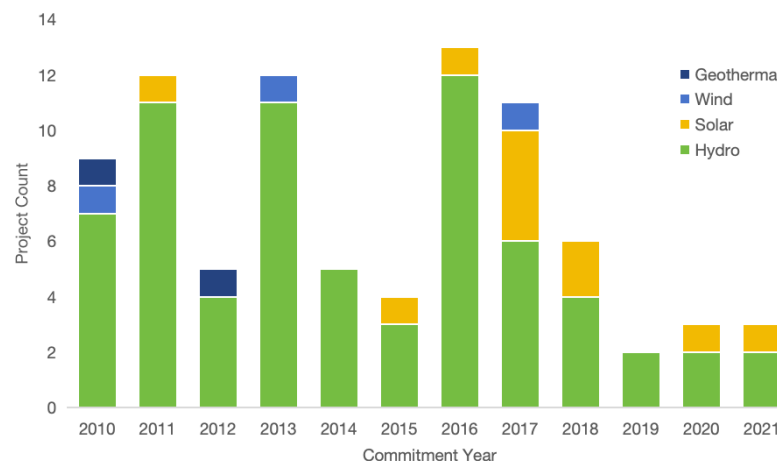
incomparable to large infrastructure projects (see Figure 2).<sup>8</sup> Additionally, the overall financing trend across all categories was strikingly aligned: commitment volumes peaked in 2016, followed by a sharp decline, with a modest recovery observed in 2020.

**Figure 2. Chinese-Financed Energy-Related Projects to Africa by Value (2010-2021)**



Zooming in on renewable energy projects, 85 projects, approximately 30% of the total, focused on renewable energy development, with cumulative commitments exceeding USD 18.6 billion. Hydropower dominated this portfolio, representing 81% of project count and an even greater 90% of total renewable energy financing. Solar and wind projects follow, both in terms of number and investment value, while geothermal energy had a minimal presence (see Figure 3).

**Figure 3. Chinese-Financed Renewable Energy Projects to Africa by Count (2010-2021)<sup>9</sup>**



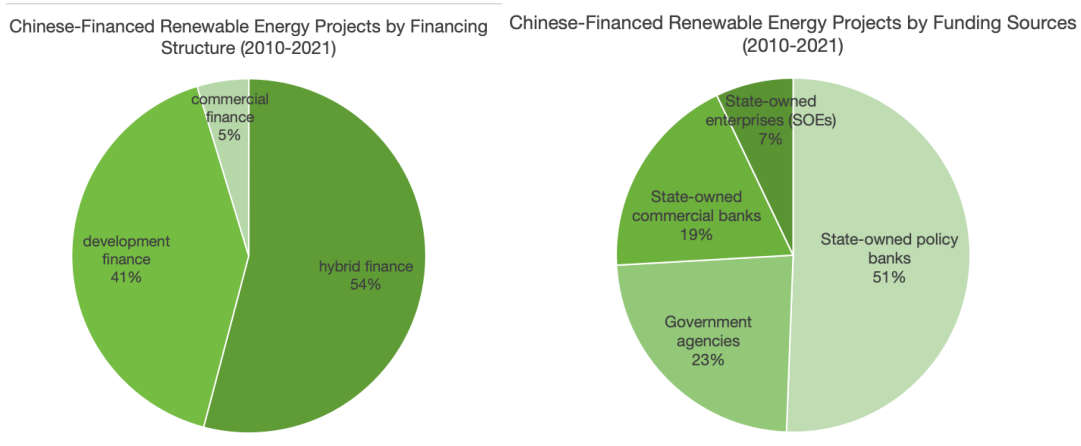
<sup>8</sup> Financing volume data is unavailable for a number of projects, particularly those involving technical assistance and solar application donations.

<sup>9</sup> Note: This figure presents project count rather than financing volume, as hydropower overwhelmingly skews total financial value. A count-based view offers a clearer picture of the diversity and evolution of renewable energy engagement.



Of the 85 projects, 69 (81.1%) were financed through loans, while the remainder were supported by grants. In terms of financing structure, the majority of projects were backed either by a combination of development and commercial finance or solely by development finance (see Figure 4). Chinese state-owned policy banks are the primary funding sources, providing roughly half of the total financing, followed by government agencies and state-owned commercial banks (see Figure 4). Among them, the China Export-Import Bank (China Exim Bank) is the largest financier, funding 49% of the projects, followed by the Industrial and Commercial Bank of China (ICBC) at 15.3%, alongside notable contributions from the Ministry of Commerce and the Bank of China (BoC).

**Figure 4. Chinese-Financed Renewable Energy Projects by Financing Structure and by Funding Source (2010-2021)**



As AidData’s records end in 2021, complementary evidence from Development Reimagined’s China-Africa Climate Action Tracker (DR’s Climate Tracker) suggests that similar financing patterns have continued in 2023 and 2024.<sup>1011</sup> In particular, China Exim Bank remains the primary loan provider for most China-financed climate projects in Africa, accounting for nearly three quarters (73%) of all projects documented in DR’s climate database.

Most of these projects were financed bilaterally, except for 11 projects (12.9%), which were co-financed. The leading co-financing partners are multilateral development banks (MDBs) and national development finance institutions (DFIs), such as the African Development Bank (AfDB), German Development Bank and International Finance Corporation (IFC).

Although data is not available for all projects, recorded figures from AidData indicate an average interest rate of 3.5%, an average maturity period of 16.3 years, and an average grace period of 5.5 years. These terms suggest that Chinese financing for renewable energy projects in Africa is generally concessional, offering relatively favourable conditions compared to standard

<sup>10</sup> Development Reimagined. (2024). Visual Insights: China-Africa Climate Action Tracker. Available here.

<sup>11</sup> It is important to note that Development Reimagined and AidData use different methodologies and scopes; figures from these datasets are therefore not directly comparable and should be interpreted separately.



commercial loans. The extended maturity and grace periods provide borrowing countries with greater flexibility, reducing immediate debt repayment pressures and making large-scale energy infrastructure projects more financially viable. Annex 1 provides five case studies on the financial modalities utilized.

In terms of destination, Chinese renewable energy financing extended to 34 African countries, though it was heavily concentrated in a few key nations, including Zambia, Angola, Ethiopia, and Cameroon (see Figure 5). This uneven distribution reflects China’s strong strategic and economic ties with resource-rich countries like Zambia and Angola, which are central to its broader investment and trade agenda. Additionally, China’s focus on hydropower—leveraging its firms’ expertise and concessional financing—has directed funding toward countries with significant hydropower potential, such as Zambia and Ethiopia.

**Figure 5.** Chinese-financed Renewable Energy Projects to African Countries by Count (2010-2021)



Overall, between 2010 and 2021, the number of Chinese energy-related projects in Africa first showed a steady upward trend, peaking in 2016 and 2017, before it declined sharply. This downturn coincided with a slowdown in China's economic growth, a broader recalibration of Chinese overseas lending and growing concerns over debt sustainability in African countries. During the same period, renewable energy—aside from hydropower—remained a minor component of China's energy financing portfolio in Africa, reflecting both limited demand from African partners compared to other infrastructure projects and a lack of strong commercial incentives for the Chinese side to export these technologies.

However, this trend appears to be shifting. According to DR's Climate Tracker, Chinese climate-related engagement in Africa gained renewed momentum in 2023 and 2024, with renewable energy accounting for nearly two-thirds (65.8%) of all documented activities.<sup>12 13</sup> Solar and photovoltaic projects made up the largest share (58%), followed by hydropower (29%), wind (8%), and smaller contributions from biomass and hydrogen. Although engineering, procurement, and construction (EPC) contracts represented roughly two-thirds of these projects, the data points to a growing prominence of renewables—particularly solar PV—in China-Africa energy cooperation, corresponding to the rising demand across the continent and China's push to export its clean energy technologies.

## 2.2 Stakeholders

As China expands its role in global climate finance, the range and complexity of stakeholders involved have grown. Historically, China's climate financing in Africa's energy sector was dominated by state-owned policy banks—particularly China Exim Bank—funding large infrastructure projects through concessional and hybrid lending.

Since the early 2010s, the financing landscape has become more diversified, though not uniformly. AidData figures from 2010 to 2021 (see Figure 6) show that policy banks remained the dominant source of financing, peaking in 2013 and accounting for the bulk of commitments by 2015. Commercial banks briefly emerged as major players in 2016—surpassing policy banks in financing volume that year— but their involvement declined in subsequent years. Government agencies, mainly offering grants and zero-interest loans, contributed relatively small amounts throughout the period. While there was a slight resurgence in 2021, this remained marginal in comparison to the volumes from policy and commercial banks. Chinese state-owned enterprises (SOEs) maintained a steady presence, but their direct financial contributions were minimal.

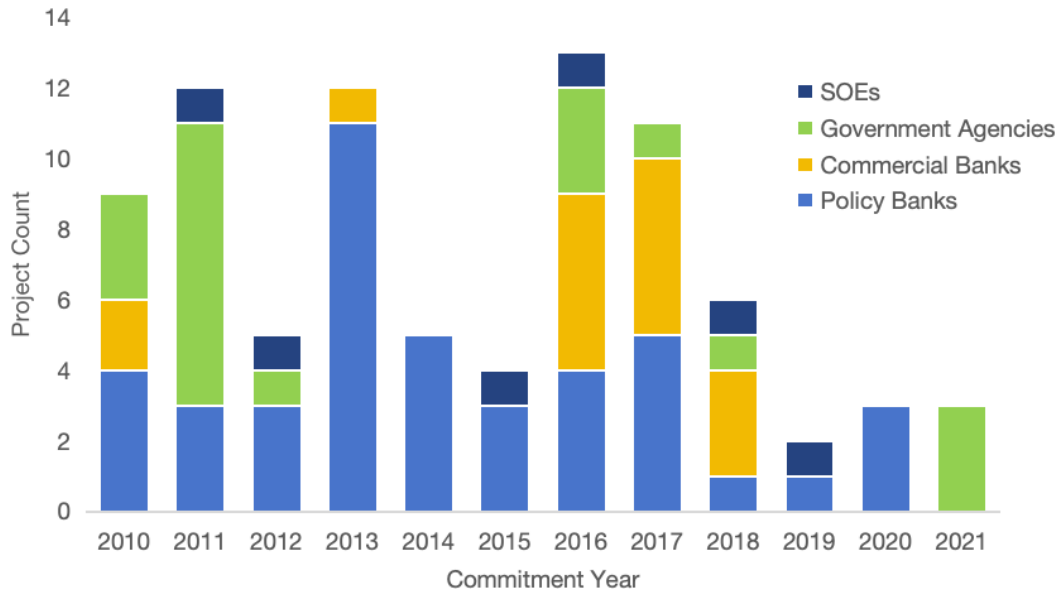
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<sup>12</sup> Development Reimagined. (2024). Visual Insights: China-Africa Climate Action Tracker. Available [here](#).

<sup>13</sup> Note that Development Reimagined's dataset includes a broader range of engagements, such as EPC contracts and equipment supply, which inflates activity counts compared to financing-focused databases. Please find the details of its methodology [here](#).



**Figure 6. Chinese Renewable Energy Financing Trend by Funding Agency Type (USD Billion, 2010-2021)**



While AidData does not indicate a sustained expansion in the role of commercial banks and SOEs in financing renewable energy projects in Africa, DR’s Climate Tracker documents a diversification trend over the past two years, which shows a rising share of projects involving joint ventures and multi-stakeholder financing arrangements, especially in solar and wind energy. The Tracker highlights how firms such as China Energy, PowerChina, and the China State Construction Engineering Corporation are engaging not only as contractors but also as co-investors in climate-related infrastructure.

This observation aligns with recent research pointing to a broader structural shift in China’s overseas lending.<sup>14</sup> Since around 2015, China has gradually transitioned from a reliance on “policy-based finance” (such as grants and concessional loans) toward more “commercial-oriented finance”.<sup>15</sup> This shift reflects an effort to enhance financial sustainability, distribute risk more effectively, and align more closely with international development finance norms.

Overall, China’s climate financing landscape is characterized by a blend of public and private actors, including government ministries, policy banks, commercial banks, development cooperation agencies and corporate contractors. These stakeholders operate at various levels of the financing value chain—from policy formulation and project financing to on-the-ground implementation and diplomatic engagement. Annex 2 summarizes the major stakeholders

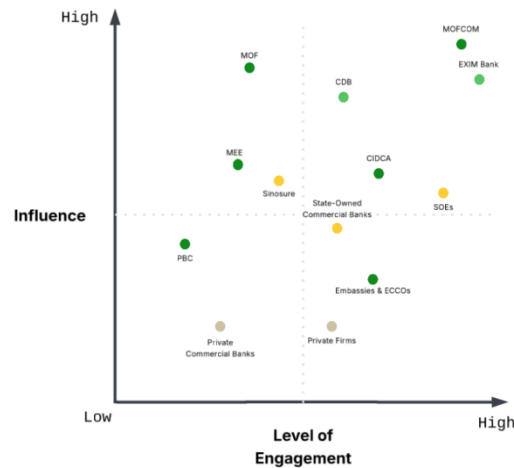
<sup>14</sup> Wu, Tianyi and Chen, Yunnan. (2024). China’s creditor diversification in Africa: Impacts and challenges of rising infrastructure debt-financing by Chinese commercial creditors. [Available here](#)

<sup>15</sup> Wu, Tianyi and Chen, Yunnan. (2024). China’s creditor diversification in Africa: Impacts and challenges of rising infrastructure debt-financing by Chinese commercial creditors. [Available here](#)



involved in China’s climate financing in Africa, while Figure 7 illustrates the influence and level of engagement of each stakeholder.<sup>1617</sup>

**Figure 7.** Influence-Engagement Matrix for Chinese Stakeholders in Climate Financing



Several trends are reshaping stakeholder roles in China’s renewable energy financing landscape. While Chinese financing was historically bilateral and dominated by large-scale infrastructure projects, there is a growing shift toward more collaborative, blended financing approaches.<sup>18</sup> Chinese banks are increasingly partnering with African and international DFIs to share risks and adopt multi-stakeholder governance approaches.<sup>19</sup> At the same time, China is pivoting toward “small and beautiful” initiatives, including off-grid solar kits and community-based energy solutions, as seen in programs like the Africa Solar Belt.<sup>2021</sup> These programs tend to be grant or donation based. In these emerging models, government agencies such as CIDCA, MOFCOM and Ministry of Ecology and Environment (MEE) play a more prominent role in

<sup>16</sup> Rudyak, M. and Chen, Yunnan. (2021). China’s lending landscape, approach to debt and the Common Framework. ODI emerging analysis. [Available here](#)

<sup>17</sup> Definition of Influence:

High: Direct authority over finance, policy, or large-scale investment decisions.  
 Medium: Can shape outcomes or influence negotiations but not in a leading role.  
 Low: Limited or indirect impact on strategic or financial decisions.

Definition of Engagement:

High: Directly funds, implements, or co-develops projects on the ground.  
 Medium: Supports or enables project activity, including negotiations, facilitation.  
 Low: Advisory or policy-only role, not involved in direct project implementation.

<sup>18</sup> Chen, Y. and Emery, T. (2025). Greener on the other side: mapping China’s overseas co-financing and financial innovation. [Available here](#)

<sup>19</sup> Lu, Y., Springer, C., and Steffen, B. (2023). Collaborating for Sustainable Development: The Role of Cofinancing in Shaping Outcomes of Chinese Lending and Overseas Development Finance Projects. [Available here](#)

<sup>20</sup> Song, J, and Ireri, B., (2024, August 30). How China and Africa Can Better Collaborate to Close Sub-Saharan Africa’s Energy Access Gap. [Available here](#)

<sup>21</sup> The Africa Solar Belt Program aims to provide 50,000 African households with solar home systems.



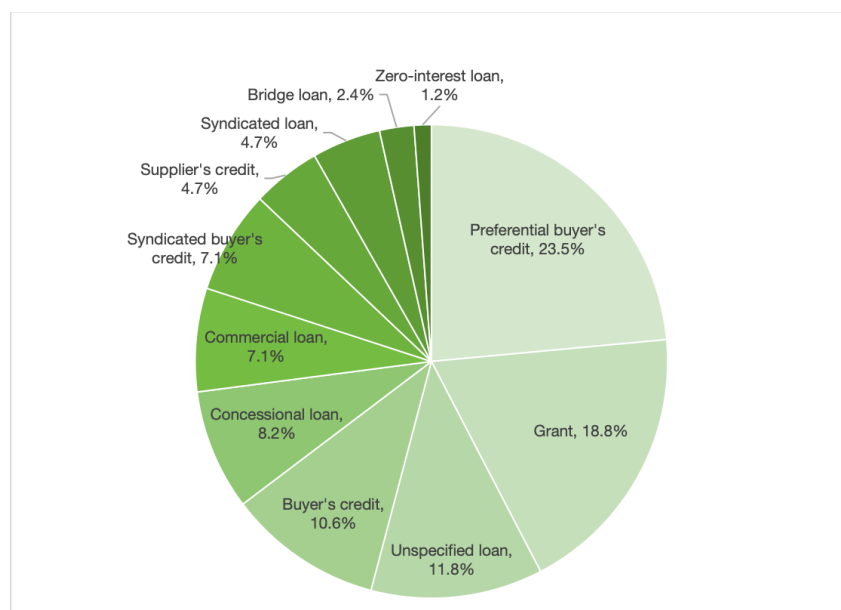
project design and implementation.<sup>22</sup> Nonetheless, Chinese policy banks and commercial banks will continue to be the primary financiers of large-scale renewable energy projects in Africa.

## 2.3 Financing Models

China employs a range of public and private financing models to support renewable energy development in African countries, such as grants, concessional loans, preferential buyer’s credits, export buyer’s credits, supplier’s credits, syndicated loans.<sup>23</sup> Annex 3 outlines these models and their associated stakeholders.

An analysis of the 85 Chinese-financed renewable energy projects between 2010 and 2021 reveals that preferential buyer’s credits and grants were the most frequently employed financing mechanisms (see Figure 8). This is aligned with previous findings that highlight the dominant role of the China Exim Bank. Additionally, the frequent use of preferential buyer’s credits reflects China’s emphasis on export promotion, allowing Chinese firms to supply equipment and services under concessional terms. This model is likely to remain prominent, particularly in light of commitments made at FOCAC 9, where USD 30 billion out of a total USD 51 billion was allocated to credit lines.<sup>24</sup>

**Figure 8.** Share of Different Financing Models by Project Count in Chinese Renewable Energy Financing to Africa (2000-2023)



Furthermore, the FOCAC 9 Action Plan commits to delivering 1,000 “small and beautiful” livelihood projects, and to advancing the Declaration on China–Africa Cooperation on

<sup>22</sup> For instance, MEE recently announced a public tender worth RMB 19.5 million to support Africa Solar Belt Program in Gabon. The procurement is being carried out through the state-owned enterprise CATIC International Trade & Economic Development Ltd. The tender covers the supply of 4,300 residential solar power systems and 1,000 long-range outdoor flashlights. Tender details are [available here](#).

<sup>23</sup> Brautigam, D. and Hwang, J., (2016). China-Africa Loan Database Research Guidebook. [Available here](#)

<sup>24</sup> Development Reimagined. (2024). Outcomes of FOCAC9. Available [here](#).



Combating Climate Change through supply assistance, policy exchanges, capacity building, and joint research.<sup>25</sup> Within this context, grants will continue to play an important role in China’s public climate financing in Africa, especially for small-scale and community-level renewable energy interventions such as solar streetlights and household solar solutions.

These diverse financing models reflect China’s efforts to balance commercial interests, development goals, and diplomatic commitments. However, each model carries distinct advantages and limitations depending on the project context. An understanding of these trade-offs is important for assessing the long-term effectiveness and suitability of China’s renewable energy financing in Africa. The table below outlines the main strengths and weaknesses of key financing models.

**Table 1.** Comparison of Chinese Public Financing Models for Renewable Energy in Africa

Financing Instrument	Advantages	Disadvantages
Grants	<ul style="list-style-type: none"> <li>- Non-repayable</li> <li>- Ideal for small-scale and off-grid projects</li> <li>- Enhances local capacity</li> </ul>	<ul style="list-style-type: none"> <li>- Limited in scale</li> <li>- Typically restricted to specific areas (e.g., solar street lighting, training, and one-off technical aid)</li> </ul>
Zero-Interest Loans	<ul style="list-style-type: none"> <li>- Minimal financial burden</li> </ul>	<ul style="list-style-type: none"> <li>- Limited availability</li> <li>- Small in volumes, insufficient for large-scale projects</li> </ul>
Concessional Loans	<ul style="list-style-type: none"> <li>- Below-market rates lower debt servicing costs</li> <li>- Suitable for large infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>- Can still be debt-heavy for vulnerable countries</li> <li>- Often tied to Chinese contractors/suppliers</li> </ul>
Master Facility Loan	<ul style="list-style-type: none"> <li>- Enables large-scale, multi-project funding</li> <li>- Useful for long-term strategic partnerships</li> </ul>	<ul style="list-style-type: none"> <li>- Usually resource-backed (e.g., oil)</li> <li>- Very rare</li> </ul>
Preferential Buyer’s Credits	<ul style="list-style-type: none"> <li>- Below-market rates lower debt servicing costs</li> <li>- Suitable for large infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>- Can still be debt-heavy for vulnerable countries</li> <li>- Often tied to Chinese contractors/suppliers</li> </ul>
Export Buyer’s Credits	<ul style="list-style-type: none"> <li>- Accessible at both policy and commercial banks</li> </ul>	<ul style="list-style-type: none"> <li>- Often at commercial terms</li> <li>- Can exacerbate debt burdens</li> </ul>

<sup>25</sup> Ministry of Foreign Affairs, PRC. (2024). Forum on China-Africa Cooperation Beijing Action Plan (2025-2027). Available [here](#).



	- Quicker decision-making and disbursement	
Commercial Loans	- Accessible at both policy and commercial banks  - Quicker decision-making and disbursement	- Often at commercial terms - Can exacerbate debt burdens
Syndicated Loans/Buyer's Credits	- Diversifies financial risk - Leverages multiple lenders' capital and expertise	- More complex structuring - Higher fees and administrative costs

To support the implementation of 30 clean energy projects in Africa without exacerbating debt vulnerabilities, China should adopt a balanced and targeted mix of public and private financing models. Concessional loans remain essential for projects that are vital to livelihoods but have long or uncertain returns. However, given the often slow and complex nature of obtaining concessional financing, private commercial finance can serve as a faster, more flexible option for commercially viable projects with clearer revenue streams. It is important that project design should ensure financial viability and long-term returns, thereby attracting a broader pool of financing sources—including blended finance mechanisms that combine public, private, and development finance. This approach can enhance both the sustainability and scalability of renewable energy investments across the continent.



## CHAPTER 3

# **Analysis of Existing Clean Energy Feasibility Studies and Relevance to Chinese Stakeholders**



### 3. Analysis of Existing Clean Energy Feasibility Studies and Relevance to Chinese Stakeholders

Guided by FOCAC 9 and its Ten Partnership Actions, Africa’s clean energy collaboration with China falls into at least three categories.<sup>26</sup> First, “Connectivity”, where Africa’s regional connectivity infrastructure ambitions are recognized. A pillar of these ambitions is PIDA. Through PIDA, power transmission and interconnector projects play a significant role in bridging energy generation gaps at a country level by creating power pools between neighbouring countries as well as Africa’s sub-regions. Although the continent has a target of one power pool per sub-region, the three most advanced power pools to-date are the Southern African Power Pool (SAPP), West African Power Pool (WAPP), and the Eastern Africa Power Pool (EAPP).<sup>27</sup>

Second, “Green Development”, where Africa and China have committed to launch 30 clean energy project, these fall under five sub-groupings, namely geothermal, green hydrogen, hydroelectric, solar, and wind energy. Furthermore, this commitment is grounded on Africa’s 2030 renewable energy goal of 300GW, highlighting the importance of energy generation projects.<sup>28</sup>

Third, a financial commitment from China of about USD 51 billion to fund FOCAC 9 commitments including clean energy development. These funds are split into USD 30 billion in credit lines, USD 10 billion worth of investment, and about USD 11 billion in various forms. Accordingly, as a pivotal step towards unlocking FOCAC 9 commitments, African countries have a shared responsibility of developing a pipeline of projects to recommend for collaboration with Chinese partners.

#### 3.1 Project Selection Methodology

In the process of building a pipeline of 30 African clean energy projects to be funded by China, the following **four** criteria are considered in this discussion paper:

1. **Type of energy project** – proposed projects need to fall under the scope of FOCAC 9 Partnership Action “Connectivity” or “Green Development”.
2. **Project status** – to fast-track investor, lender and other stakeholders’ decision-making, a project must have a completed feasibility study and therefore be working to secure further financial endorsements.
3. **Renewable energy generation potential** – for each subset of renewable energy under consideration, countries with the highest energy generation potential are prioritized.

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<sup>26</sup> The National Committee of the Chinese People’s Political Consultative Conference. (2024, September 6). Xi proposes partnership actions to jointly advance modernization with Africa. [Available here](#)

<sup>27</sup> Elabbas, M.A.E., de Vries, L., and Correljé, A. (2023, November). African Power Pools and regional electricity market design: taking stock of regional integration in energy sectors. [Available here](#)

<sup>28</sup> The People’s Republic of China Ministry of Foreign Affairs. (2024, September 5). Forum on China-Africa Cooperation Beijing Action Plan (2025-2027), (2024). [Available here](#)



4. **Regional representation** – as a continental commitment from China, each African region should be represented by at least one proposed project. Additionally, efforts are made to minimize bias through country over-representation.

A key determinant of feasibility study selection is accessibility. Following engagement with both public and private sector stakeholders, including each of Africa’s regional power pools, project information sensitivities emerge as a barrier to feasibility study access. Therefore, the 42 projects and proposed project sites assessed in [section 3.3](#) and [3.4](#) to follow are concessions that balance information availability with the four project selection criteria outlined above. Additionally, on account of structural differences between feasibility studies, a consistent analysis across energy types could not be achieved. Feasibility study summary statistics are illustrated in Figure 9 below.

**Figure 9.** Summary Statistics from Feasibility Studies Identified

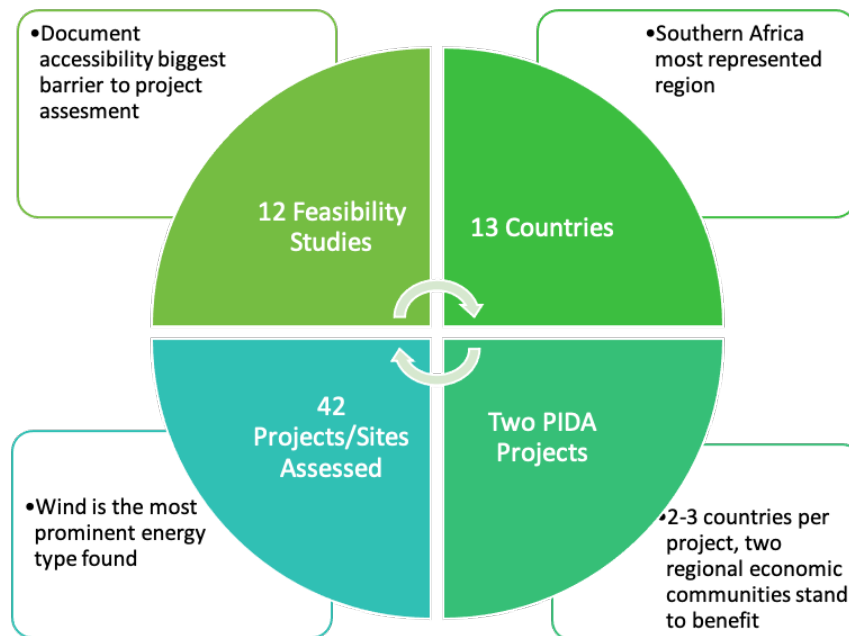
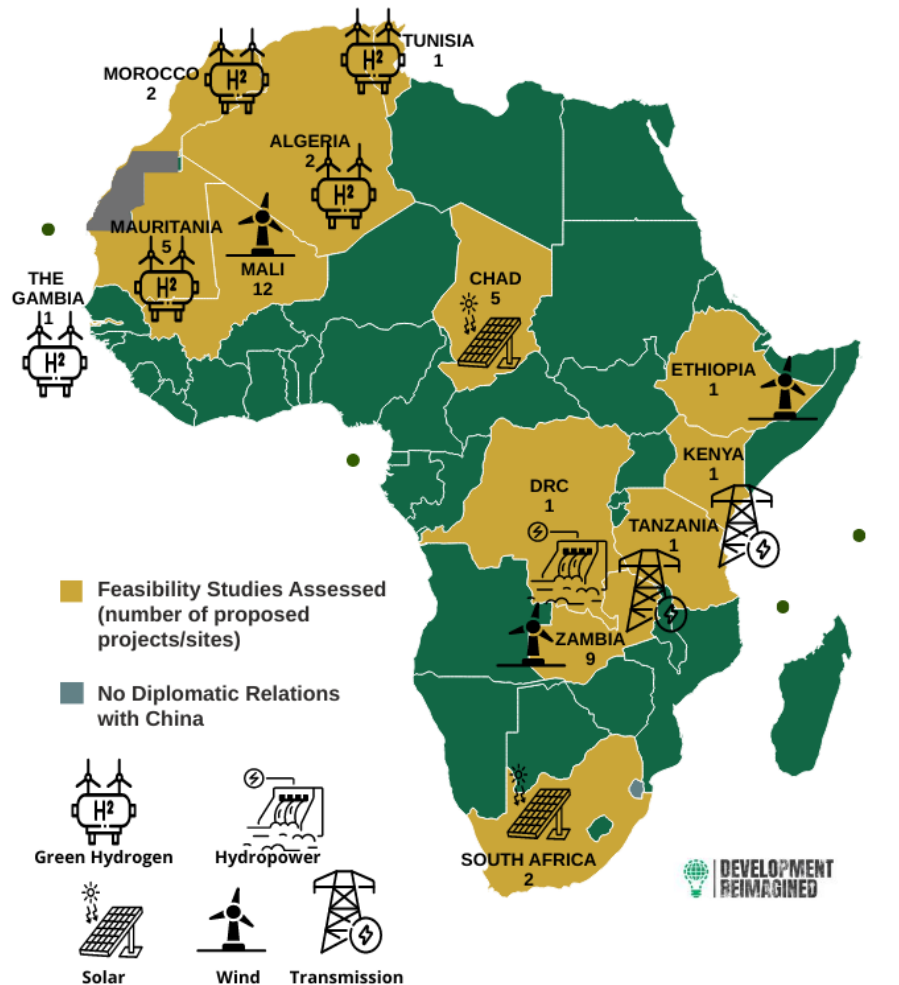


Figure 10 below gives an overview of feasibility studies identified and the types of energy projects assessed.



**Figure 10. Geographical Distribution of Feasibility Studies Assessed**



### 3.2 Project Relevance to Chinese Stakeholders

To complement project selection with FOCAC commitment alignment, this discussion paper categorizes projects according to research findings from Development Reimagined’s China-Africa Climate Action Tracker, an open data platform with a record of China’s climate and energy engagement with Africa between November 2021 – December 2024.<sup>29</sup>

From DR’s Climate Tracker, this section adopts four of the relevant categories of engagement, namely aid, grants, loans, and investment. Secondly, projects assessed are sub-divided into three clusters of financing models for Chinese stakeholders:

<sup>29</sup> Development Reimagined, (2025). Visual Insights: China-Africa Climate Action Tracker. [Available here.](#) Development Reimagined’s China Africa Climate Action Tracker is an interactive database tracing China’s climate footprint in African countries since the announcement of the China-Africa Climate Declarations during the 8th FOCAC in Nov 2021, with regular updates leading up to the end of 2024.



- **Cluster A** targets grant-based financing and zero-interest loans for small-scale renewable energy projects.
- **Cluster B** aims to secure public-private partnerships for utility-scale solar and wind energy projects.
- **Cluster C** targets blended finance, large concessional lending and investment for green hydrogen and Africa’s regional integration projects such as cross-border energy transmission.

Lastly, a range of Chinese stakeholders are paired with each cluster of financing models as potential funders of projects proposed in each cluster. Along with proposed project funders, clusters also include an overview of estimated project funding requirements, types of projects, as well as social, economic and environmental overviews of African energy projects recommended for funding in each cluster.

Although all projects assessed have completed feasibility studies, publicly accessible data indicates that these projects are still working on securing further financial endorsements.

## Cluster A

**Table 2.** Cluster A Projects Overview

<b>Potential Funders</b>	CIDCA, MOFCOM, Chinese Embassies in Chad, Mali, and South Africa
<b>Total Projects Assessed</b>	21 (16 recommended for funding)
<b>Recommended Projects – Estimated Finance Needs</b>	USD 11 million
<b>Project Types</b>	hydroelectric power; solar PV mini grids; solar PV irrigation; wind energy generation
<b>Financial Tools</b>	Grants; zero-interest loans

**Table 3.** Proposed African Energy Projects Suitable for Grants and Interest-Free Loans

<b>Project/Feasibility Study Title</b>	<b>Country (sites)</b>	<b>Generation Capacity (MW)</b>	<b>Identified Funding Gaps (USD)</b>
Luapula Hydro Power Plant – Mumbotuta CX	DRC; Zambia	271	1,4m
Remote PV mini grid electrification system in Chad	Chad (Gelendeng)	2	9.5m



Estimation of wind resources in Mali	Mali	N/A <sup>30</sup>	N/A <sup>31</sup>
Alternative Renewable Energy Sources for Irrigation in South Africa	South Africa – Douglas and Vaalharts (Northern Cape province)	20kWp 29,5kWp	60k 90.5k

### Project A.1 - Grants to carry out technical, economic, and financial viability studies for hydroelectric power in the DRC and Zambia

This power plant has been identified as a priority project by the Southern African Power Pool (SAPP), Southern Africa Development Community (SADC), as well as the African Union (AU) through PIDA.<sup>32</sup> Out of the five potential sites along the Luapula River, Mumbotuta CX has an ideal combination of a low levelized cost of energy (LCOE), high rate of return, and would contribute 23% of the power plant’s estimated energy generation potential. The most recent technical screening at Luapula has validated Mumbotuta CX’s technical viability.<sup>33</sup> Additionally, development of Mumbotuta CX would significantly boost industrialisation efforts of DRC and Zambian rural communities, as well as agriculture and mining communities in regions such as Katanga, Copperbelt, Central, and Luapula Provinces.

Given the site’s remote location, it should create minimal environmental or social concerns. But despite being remote, Mumbotuta CX remains accessible using existing road networks in Zambia. However, further environmental and economic assessments are required, and would represent the bulk of Mumbotuta’s next phase of feasibility assessment. Accordingly, recommendations are that USD 1.4 million in grant funding be secured from China to complete technical, economic, as well as financial viability studies. For advanced stages of Mumbotuta CX’s development, zero-interest or concessional loans are recommended.

### Project A.2 - Grants for solar mini grids in Chad

With a national solar radiation potential of about 6 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day), Chad has some Africa’s highest solar production prospects.<sup>34</sup> In a study of two villages, a large town, and two large rural communes, household and village energy requirements positively correlate with overall village size with Gelendeng’s energy needs leading. Similarly, initial investment as well as operation and maintenance costs over a 25-year

<sup>30</sup> Criterion not identified in feasibility study. Additional funding recommended for further project technical and financial feasibility assessments.

<sup>31</sup> Ibid.

<sup>32</sup> New Partnership for Africa’s Development (NEPAD)– Infrastructure Project Preparation Facility. Feasibility Study for the Luapula Hydro Power Plant. [Available here](#)

<sup>33</sup> Ibid.

<sup>34</sup> Hassane, A.I., Tahir, A.M., Hauglustaine, J-M., Manshoor, B and Batcha, M.F.M, (2022). Techno-economic feasibility of a remote PV mini-grid electrification system for five localities in Chad, (2022). [Available here](#)



lifetime are largely determined by village energy needs. As a result, Gelendeng's cash outflow estimates of USD 9.46 million and USD 2.87 million respectively lead all villages assessed.<sup>35</sup>

Levelized Cost of Energy (LCOE) estimates of about USD 0.3 per kWh are indistinguishable across all villages assessed and are already about 33% more competitive than the LCOE of Chad's state utility company. Additionally, considering LCOE's greater sensitivity to project subsidization than discount rates, grant funding from China is recommended for any of the five PV mini grid projects proposed in Chad.

### **Project A.3 - Grants for further wind energy feasibility assessments in Mali**

In a year-long technical assessment of 12 potential wind turbine installation sites across Mali, wind resource potential was generally found to be less than 5m/sec, particularly in the more populated Southern regions of the country. Therefore, at those wind speeds, most sites in Mali cannot ensure economic feasibility of a wind energy project.<sup>36</sup> While Northern towns of Timbuktu and Gao possess ideal mean wind speeds to support technical viability of wind projects, further considerations are needed. These include availability of nearby energy transmission infrastructure, national electricity grid connection status, as well as the size of a supporting population to eventually utilise energy generated.

Indications are that wind potential is relatively high in Northern Mali, but economic feasibility may be compromised by infrastructure and utility gaps. Grant-based funding from Chinese financiers would aid implementation of additional feasibility studies that identify the scale of project finance needs, inclusive of energy transmission and distribution. Additionally, equipment could be sourced from Chinese suppliers once project needs have been clarified.

### **Project A.4 - Interest-free loans for solar-powered irrigation in South Africa**

At about 5.63kWh/m<sup>2</sup>/day and 8-10 hours of sunshine received daily, South Africa has the third greatest practical solar potential on the continent.<sup>37</sup> Additionally, solar also has the highest renewable energy potential in seven out of nine South African provinces, particularly in the Northern Cape province.<sup>38</sup> Furthermore, due to its superior environmental conditions, this province has the lowest land area requirements for solar systems.

Although not currently as prominent in terms of contribution to gross domestic product (GDP) relative to historical data, South Africa's agriculture has an important contribution to overall economic development.<sup>39</sup> However, the sector's declining profitability necessitates a transition away from climate-vulnerable rain-fed irrigation, as well as irrigation dependent on an unreliable

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<sup>35</sup> Ibid.

<sup>36</sup> Badger, J., Kamissoko, F., Mads, O.R., Larsen, S.E., Guidon, N., Hansen, L.B., Dewilde, L., Nørgård, P.B and Nygaard, I. (2012). Estimation of wind resources in Mali. [Available here](#)

<sup>37</sup> Barnard, S.A., Grové, B., van der Stoep, I and Moyo, R., (2022). Technical and Financial Feasibility of Alternative Renewable Energy Sources and Technologies in Irrigated Agriculture. [Available here](#)

<sup>38</sup> Ibid.

<sup>39</sup> World Bank Group, (2025). Agriculture, forestry, and fishing, value added (% of GDP) - South Africa. World Bank Group. [Available here](#)



and increasingly costly national grid. Therefore, a more sustainable, commercially viable alternative assessed is a solar irrigation system.

Despite an average payback period of 3-5 years, farmers in South Africa face funding bottlenecks among other challenges.<sup>40</sup> In terms of economic feasibility, by some estimates, between USD 60k – USD 90.5k is required to install, operate, as well as maintain a solar PV irrigation system. Solar output for such systems would range between 20kWp – 29,5kWp. Additionally, they would need to be operated and maintained at less than USD 3k – USD 4.5k per year over a 20-year life-cycle to achieve break-even life-cycle costs.

To further enhance feasibility, excess electricity generated would need to either be consumed beyond irrigation requirements, stored for future use, or sold at competitive prices to the national grid. Additionally, farmers would need to engage in additional research into the complementarity of solar PV-wind hybrid systems.

Considering the small-scale of estimated solar energy needs by South Africa’s agriculture sector, interest-free loans may be ideal.

## Cluster B

**Table 4.** Cluster B Projects Overview

<b>Potential Funders</b>	Large Chinese SOEs such as PowerChina and Sinohydro, China Development Bank, China Exim Bank, China-Africa Development Fund (CADFund), China-Africa Fund for Industrial Cooperation (CAFIC), Chinese commercial banks
<b>Total Projects Assessed</b>	9 (9 recommended for funding)
<b>Recommended Projects – Estimated Finance Needs</b>	USD 1.6 billion
<b>Project Types</b>	Solar PV; Wind
<b>Financial Tools</b>	PPP

<sup>40</sup> Barnard, S.A., Grové, B., van der Stoep, I and Moyo, R. (2022). Technical and Financial Feasibility of Alternative Renewable Energy Sources and Technologies in Irrigated Agriculture. [Available here](#)



**Table 5.** Proposed African Energy Projects Suitable for PPPs

Project/Feasibility Study Title	Country (sites)	Generation Capacity (MW)	Identified Funding Gap (USD)
100MW Solar PV in Bati, Ethiopia	Ethiopia (Bati)	100MW	5.8m
Onshore wind energy potential for electricity generation in Zambia	Zambia (Choma Mwinilunga Lusaka Mpika Chanka Petauke Mansa Malawi)	800MW (25 x 4MW turbines per site)	1.6bn (~200m per site)

### Project B.1 - PPP to fund utility solar PV in Ethiopia

In line with a national solar energy generation capacity goal of 5,300MW by 2030, a 100MW solar PV project in Bati, Ethiopia, is assessed as technically as well as environmentally and economically feasible.<sup>41</sup> National solar energy generation potential is among the highest on the continent, a geographic advantage that complements a low, estimated power production cost of USD 0.06 per kWh.<sup>42</sup>

Over a 20-year project lifetime, 70% of the project is proposed as debt-financed, with the remaining 30% as equity, and debt secured at a 7% interest rate over a 15-year payback period. On the other hand, NVP forecasts are positive throughout the project’s life-cycle, affirming prospects of consistent cash flow generation and overall project viability.

However, despite the high quality of information at hand and the project’s technical merits, broader macroeconomic concerns remain due to Ethiopia’s 2023 sovereign debt default.<sup>43</sup> Accordingly, a private entity should build the solar power plant, operate it for a set period of time while it recovers its initial investment, and later transfer project ownership to the government of Ethiopia.

### Project B.2 - PPP to fund wind energy in Zambia

Out of eight potential wind energy sites assessed, a leading determinant of project economic viability is wind speed. Accordingly, Lusaka’s 8m/s wind speeds stand out, as does its estimated capacity factor of 44%.<sup>44</sup>

<sup>41</sup> Sy, J.B., Haile, A and Degife, W. (2020). Feasibility Study of a 100MW Photovoltaic Power plant at Bati, Ethiopia Using RETScreen.

[Available here](#)

<sup>42</sup> Ibid.

<sup>43</sup> Reuters. (2023, December 23). Ethiopia becomes Africa’s latest sovereign default. [Available here](#)

<sup>44</sup> Mutale, S., Wang, Y., Yasir, J., Banda, A and Aboubacar, T. (2023). Economic feasibility of onshore wind energy potential for electricity



Financially, NPVs vary considerably, from about USD 162.5 million in Petauke and USD 179.7 million in Malawi, to a peak of USD 316.3 million in Lusaka. Similarly, internal rates of returns (IRR) range from a loss-making -6.4% in Petauke and a more viable 3.7% in Malawi, to Lusaka’s 82.1%. Although the size of project funding needs is not explicitly stated in feasibility studies carried out, comparison with similarly sized onshore projects in Zambia imply an investment need of about USD 200 million.<sup>45</sup> In terms of project payback periods, a negative correlation exists between wind speeds at a site and how soon an investment is projected to recover invested funds. As a result, Lusaka leads with about 2.9 years, while Choma, Malawi, and Petauke trail at 5.1, 5.1 and 5.7 years respectively.

Despite achievement of economic feasibility at all eight sites, distance to sites negatively impacts project costs. Secondly, the assumed tariff of USD 0.07/kWh in financial models used may not be attractive to most investors and independent power producers, signaling a need for cost-reflective tariffs that promote wind and other renewable energy investments in Zambia.<sup>46</sup> Lastly, domestic costs of borrowing are at commercial terms in completed feasibility studies, with interest rates as high as 30%, compressing potential return on investment. As a result, sovereign credit at more competitive costs would strongly support project viability.

Similar to Ethiopia, macroeconomic concerns remain due to Zambia’s 2020 sovereign debt default. Therefore, a build, operate, and transfer model may be suitable.

## Cluster C

**Table 6.** Cluster C Projects Overview

<b>Potential Funders</b>	China Exim Bank, Chinese commercial banks, Asian Infrastructure Investment Bank (AIIB); co-financing from African Multilateral Financial Institutions (AMFIs) and Chinese SOEs or policy banks
<b>Total Projects Assessed</b>	12 (8 recommended for funding)
<b>Recommended Projects – Estimated Finance Needs</b>	USD 116.4 million
<b>Project Types</b>	Energy Transmission; Green Hydrogen
<b>Financial Tools</b>	Blended finance; preferential buyer’s credits; concessional loans; commercial loans; investment

generation in Zambia. [Available here](#)

<sup>45</sup> Power Technology. (2022, January 20th). Pensulo Wind Farm, Zambia. [Available here](#)

<sup>46</sup> Mutale, S., Wang, Y., Yasir, J., Banda, A and Aboubacar, T. (2023). Economic feasibility of onshore wind energy potential for electricity generation in Zambia. [Available here](#)



**Table 7. Proposed African Energy Projects Suitable for Blended Finance and Investment**

Project/Feasibility Study Title	Countries (sites)	Transmission/ Generation Capacity (MW)	Identified Funding Gap (USD)
Kabwe (Zambia) to Iringa (Tanzania) Power Transmission Interconnector	Kenya; Tanzania; Zambia	530 (Tanzania to Zambia); 458 (Zambia to Tanzania)	~110m – Mbeya to Iringa interconnector <sup>47</sup>
Comparative techno-economic potential study to produce green hydrogen products via CSP-PV-hybrid-power-plants for MENA	Morocco (Laâyoune)	100	4.1m
Combined Production of Wind Energy and Green Hydrogen on the Northern Coast of Mauritania	Mauritania (Boulanoir, Nouadhibou, Nouakchott, Nouamhar, Tasiast)	4 (per site)	N/A <sup>48</sup>
Hybrid renewable energy for electricity and hydrogen production in Batukunku village <sup>49</sup>	The Gambia	0.6	2.3m

### Project C.1 - Blended finance for the Kabwe-Iringa PIDA project linking East and Southern African power pools

Bridging the gap between energy generation, industrial and residential access in East and Southern Africa, Kabwe-Iringa plays an important role in PIDA Priority Action Plan 2 by completing SAPP and Eastern Africa Power Pool (EAPP) connectivity.<sup>50</sup> As a sub-component of the Zambia-Tanzania-Kenya (ZTK) interconnector project, Kabwe-Iringa includes nine

<sup>47</sup> Additional 597km of transmission lines and three substations also require funding. However, costing exercises were not part of the initial Kabwe-Iringa feasibility study. Therefore, all quoted capital expenditure and project returns are based on existing feasibility study infrastructure cost and project return forecasts.

<sup>48</sup> Project funding gaps not identified in feasibility study. Additional funding may support further financial feasibility assessments.

<sup>49</sup> Hybrid system includes a backup, diesel-powered generator.

<sup>50</sup> New Partnership for Africa's Development. (2017). Power Transmission Interconnector – Kabwe (Zambia) to Iringa (Tanzania) Project Information Memorandum. [Available here](#)



substation additions and modifications, and about 1,300km of new electricity transmission lines split between Zambia (908km) and Tanzania (414.2km). In addition to electrical energy transmission improvements, completion of ZTK would also facilitate improved capacity and reliability of Zambian telecommunication when Zambian telecom firms connect with East African Submarine cables.<sup>51</sup>

While this project is shared by three countries, infrastructure development responsibility and ownership have been assigned to each country for transmission assets within their respective borders. However, private sector participation opportunities lie in engineering, procurement, and construction (EPC) when implementing Kabwe-Iringa. Therefore, preferential buyer's credits would be recommended in Kenya and Tanzania where sovereign debt default concerns are not present.

With minimal sensitivity identified to capital expenditure fluctuations, projected returns are estimated at USD 2.6 billion over a 25-year horizon, creating a massive financial gain considering an estimated capital expenditure of USD 314 million. Accordingly, Zambia and Tanzania, through their respective state-owned energy utility companies, seek patient, concessional loans for construction and project commissioning phases, as well as grants from multilateral financial institutions. Additionally, commercial funding may be needed if funding gaps arise.

### **Project C.2 - Investment in Moroccan green hydrogen**

In scenario-based studies carried out in Algeria, Morocco, and Tunisia, five potential green hydrogen production sites are assessed. Site selection criteria in each country include availability of infrastructure such as road networks that support access to the site, independence from environmentally protected areas, and above-average renewable energy generation potential – in this case, solar and wind energy.<sup>525354</sup> Distributed across Algeria, Morocco, and Tunisia, studies find that hybrid-energy systems that either combine concentrated solar power (CSP) or photovoltaic (PV) cells with wind technologies outperform single CSP-PV hybrid systems. Additionally, from the perspective of economic competitiveness, sites with low wind variability and a high annual wind capacity factor rank more favourably than sites with good solar conditions.<sup>55</sup>

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<sup>51</sup> Ibid.

<sup>52</sup> Tractebel Engineering GmbH. (2024). Comparative techno-economic potential study to produce green hydrogen products via CSP-PV-hybrid-power-plants for MENA. [Available here](#)

<sup>53</sup> Maaloom, V., Bououbeid, E.M., Ali, M.M., Yetilmez, K., Rehman, S., Ménézo, C., Mahmoud, K.A., Makoui, S., Samb, M.L and Yahya, A.M. (2024). Techno-Economic Analysis of Combined Production of Wind Energy and Green Hydrogen on the Northern Coast of Mauritania. [Available here](#)

<sup>54</sup> Modou, L.C., Ebrima, B., Abideen, H and Haruna, A.B. (2023). Techno-economic feasibility study on Hybrid renewable energy for electricity and hydrogen production in Batukunku village, The Gambia. [Available here](#)

<sup>55</sup> Tractebel Engineering GmbH. (2024). Comparative techno-economic potential study to produce green hydrogen products via CSP-PV-hybrid-power-plants for MENA. [Available here](#)



Based in Morocco, Laâyoune's coastal site and its very high wind record the best LCOE of about USD 32.4 per MWh and a USD 4.3 per kg levelized cost of hydrogen (LCOH).<sup>56</sup> In land use and water consumption assessments, this site also ranks ahead of the four alternative sites. In terms of employment prospects, Laâyoune also leads, aligning with a hypothesis that the site's superior wind generation characteristics would support higher energy generation ambitions and in-turn, drive labour requirements higher.

Due to economies of scale, larger green hydrogen plant sizes lead to lower capital expenditure (CAPEX) costs. Accordingly, 100MW plants are estimated to cost 27% - 30% less in CAPEX than 5MW plants, or between USD 1.5 million – USD 1.6 million. Depending on the electrolysis method adopted, projected CAPEX ranges from USD 3.8 million when alkaline electrolysis (AEL) is used, to USD 4.1 million when proton exchange membrane electrolysis (PEM) is used. However, assuming fixed operational expenditure (OPEX), PEM costs about 33% less per kW than AEL.

Considering Laâyoune's high technical and economic merits, investment by Chinese financiers in the 100MW green hydrogen plant is recommended using PEM. Additionally, securing the technical expertise of Chinese firms would strongly support execution of the project through a Morocco-China EPC partnership.

### **Project C.3 - Commercial loans for green hydrogen in Mauritania**

Two coastal and three near-coastal sites in Mauritania possess promising, wind-based green hydrogen generation potential.<sup>57</sup> With mean annual wind speeds ranging from about 8 meters per second (m/s) to 52m/s, average annual capacity factors that range between 47%-52%, as well as a steady source of coastal winds, there would be reliable energy generation throughout the year at all five sites identified. While energy generation capacity ranges from 1.5MW-4MW, annual capacities vary more significantly due to differences in wind turbine manufacturers selected. Estimated LCOE is relatively low across sites assessed, with Nouadhibou standing out at USD 0.06 cents per kWh, and about USD 1.70 per kilogram of hydrogen (kg/H<sub>2</sub>).

While all five sites identified have been assessed as economically viable for green hydrogen investment, the 4MW wind turbines manufactured by Nordex present the highest net present values (NPV) of USD 7.5 million – USD 11.6 million, the greatest benefit-cost ratios of 3 - 4.11, and shortest payback periods of 2.2 – 3 years. In terms of project funding, commercial loans may also be suitable for these five high-quality clean energy projects. Additionally, considering the increasingly competitive global landscape of wind turbine suppliers, alternative manufactures like Goldwind and Envision should be explored.<sup>58</sup>

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<sup>56</sup> Tractebel Engineering GmbH. (2024, January). Comparative techno-economic potential study to produce green hydrogen products via CSP-PV-hybrid-power-plants for MENA. [Available here](#)

<sup>57</sup> Maalooum, V., Bououbeid, E.M., Ali, M.M., Yetilmez, K., Rehman, S., Ménézo, C., Mahmoud, K.A., Makoui, S., Samb, M.L and Yahya, A.M, (2024). Techno-Economic Analysis of Combined Production of Wind Energy and Green Hydrogen on the Northern Coast of Mauritania. [Available here](#)

<sup>58</sup> Bloomberg NEF, (2025, March 17). Chinese Manufacturers Lead Global Wind Turbine Installations, BloombergNEF Report Shows.



## Project C.4 - Commercial loans for green hydrogen in The Gambia

According to Global Energy Monitor data, The Gambia is one of six African countries with green hydrogen generation potential.<sup>59</sup> With its long-term, the country has an estimated peak solar generation potential of 6.76KWh/m<sup>2</sup>/day and demonstrated wind generation potential due to open wind and Westerly coastal winds.<sup>60</sup>

Wind energy viability is illustrated by an existing 150KW wind turbine unit that powers Batukunku Village, one that occasionally produces excess electricity and earns the village income through an off-take agreement with the National Water and Electricity Company.<sup>61</sup> Additionally, despite having a relatively high upfront infrastructure cost for the proposed hybrid energy system, this project's estimated annual income of USD 630,752 implies a 3.5 to 4-year payback period and continued inflows if installed infrastructure continues to be maintained and repaired when necessary.

Considering the strong financial viability of this project, commercial loans may be ideal, with additional The Gambia-China partnerships to procure required equipment at competitively low prices and flexible payment terms.

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[Available here](#)

<sup>59</sup> Modou, L.C., Ebrima, B., Abideen, H and Haruna, A.B., (2023). Techno-economic feasibility study on Hybrid renewable energy for electricity and hydrogen production in Batukunku village, The Gambia. [Available here](#)

<sup>60</sup> Ibid

<sup>61</sup> L. C., Modou; Ebrima, B., Abideen, H, and Haruna, A. B., (2023, May 30). Techno-economic feasibility study on Hybrid renewable energy for electricity and hydrogen production in Batukunku village, The Gambia. [Available here](#)



CHAPTER 4

# Conclusions and Proposals



## 4. Conclusions and Proposals

As China deepens green development cooperation with Africa under the FOCAC 9 framework, scaling up renewable energy financing is both a strategic necessity and an opportunity. To fulfill its commitments of delivering 30 clean energy projects under FOCAC 9, China should expand the use of both public and private financing models. Concessional loans remain crucial for infrastructure and community-level projects that offer long-term benefits but limited short-term returns. Meanwhile, commercial and blended finance instruments can be leveraged for bankable projects to accelerate deployment and share risk.

Stepping up renewable energy investments in Africa serves multiple Chinese interests: it enables the export of Chinese green technologies, strengthens development partnerships, improves energy access and livelihoods across Africa, and contributes meaningfully to global decarbonization efforts. However, to avoid exacerbating debt burdens, financing should be tailored to local conditions, and greater emphasis should be placed on structuring financially viable projects that attract diverse capital sources.

Beyond public finance, bridging Africa's renewable energy investment gap requires the active engagement of Chinese private sector capital. This paper proposes three strategic priorities to catalyze such engagement: **(1) De-risking investment and enhancing project bankability, (2) Leveraging innovative financing mechanisms, and (3) Strengthening project readiness.** These approaches aim to align Chinese private sector capabilities with African energy needs, while reinforcing FOCAC as a platform for high-impact, commercially viable climate collaboration.

### Proposal 1. De-risking Investment and Enhancing Project Bankability

#### (1) De-risking through blended finance and policy tools

Reducing the real and perceived risks of clean energy investments in African markets is critical to attracting Chinese private capital. Blended finance structures, where concessional funding from development finance institutions can absorb early-stage or political risks, can help instill greater confidence in commercial investors. Chinese policy banks could expand their support through guarantees and first-loss tranches.

In parallel, Chinese financial institutions and embassies should engage with African governments to promote investor-friendly regulatory frameworks, including long-term power purchase agreements (PPAs), stable tariffs, targeted tax incentives, and currency risk mitigation tools. These risk-mitigation strategies can create a more predictable environment for Chinese companies to operate profitably, allowing private capital to crowd in without displacing essential public financing.

#### (2) Diversifying investments and business models

The Chinese private sector should actively seek to diversify its clean energy investments—not



only in terms of geography, but also in project type, scale, and business model. Beyond utility-scale generation, opportunities exist in decentralized solar, mini-grid systems, battery storage, and climate-smart energy solutions for agriculture and small industries. Engagement should also move beyond traditional EPC roles toward joint ventures, local equity partnerships, and service-based business models. To enable this, a FOCAC Green Investment Platform can be established to connect African developers with Chinese investors and technology providers, offering a transparent pipeline of pre-screened, bankable projects with clear financial and ESG metrics. Such diversification would allow private actors to better manage risk while tapping into high-growth segments of Africa's energy transition.

### **Proposal 2. Leveraging Innovative Financing Mechanisms to Expand Cross-Border Capital Flows**

Innovative financing tools are critical to expanding the pool of Chinese investors in Africa's renewable energy landscape. One promising instrument is the Green Panda Bond—RMB-denominated bonds issued in China's domestic market by foreign entities for environmentally sustainable projects. It enables foreign issuers to tap into China's vast capital pool, valued at USD 21 trillion as of 2022, broadening access to climate financing.<sup>62</sup> In 2023, Egypt issued Africa's first 3-year Sustainable Panda Bond worth RMB 3.5 billion (USD 480 million), backed by guarantees from the AfDB and AIIB.<sup>63</sup> Proceeds were earmarked for clean transport, energy, and sustainable water systems under Egypt's Sovereign Sustainable Financing Framework.<sup>64</sup>

This successful issuance demonstrates a replicable model that enables African sovereigns and development finance institutions (DFIs) to tap into China's capital market. To replicate, African development banks and regional DFIs with sound credit ratings should be encouraged to issue Green Panda Bonds focused on renewable energy infrastructure. These instruments can be backed by partial guarantees from multilateral development banks to mitigate risk and attract Chinese institutional capital. Meanwhile, Chinese green funds, commercial banks, and insurance companies should be incentivized to invest in these bonds through blended finance structures co-designed with African and international partners.

Importantly, these mechanisms shift operational decision-making to African institutions—reducing the perception of debt dependency on China—while still catalyzing Chinese capital for green development.

### **Proposal 3. Strengthening Project Readiness for Renewable Energy Investment in Africa**

A major barrier to scaling up renewable energy investment in Africa is the lack of a consistent, high-quality pipeline of bankable projects. Despite the continent's vast renewable energy potential, project preparation remains fragmented and under-resourced. Feasibility studies, data, and early-stage assessments are scattered across private consultants, national agencies, and

<sup>62</sup> SCMP. (2023). China's onshore bond traders cut off from pricing and transaction services amid regulatory tightening on financial data.

<sup>63</sup> Asia Infrastructure Investment Bank. (2023). AIIB, AfDB Guarantee Africa's First Sustainable Panda Bond.

<sup>64</sup> African Development Bank Group (2023). Egypt issues Africa's first Sustainable Panda Bond worth 3.5 billion RMB backed by African Development Bank and Asian Infrastructure Investment Bank.



multilateral institutions, often using non-standardized methodologies. As a result, many proposals fail to provide the integrated environmental, financial, and socio-economic insights required to meet investor expectations. This lack of readiness not only delays funding but also perpetuates the false perception among external stakeholders, including Chinese investors and contractors, that Africa lacks viable clean energy projects.

To address this gap, China can play a catalytic role by offering targeted grants and technical assistance for pre-investment activities—such as resource mapping, regulatory advisory, and early-stage project design. Additionally, Chinese private sector players can proactively engage through joint development agreements with African counterparts, bringing technical expertise and upfront capital to help advance projects toward bankability. Such partnerships enable early alignment on project design, regulatory compliance, and climate finance requirements, ultimately improving the success rate of projects securing investment.

At the same time, African governments and regional institutions must prioritize project preparation and mapping. National investment promotion agencies should coordinate with research institutions, regional power pools, and African multilateral development banks to consolidate project data and standardize feasibility frameworks. African institutions like the NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF) should be scaled up to accelerate the delivery of well-prepared, investment-ready renewable energy projects that can mobilize diversified sources of financing, including from Chinese public and private stakeholders.



## Annex 1. Case Studies of African Renewable Energy Projects Funded by China and AIIB

Table 1. Case Studies of African Renewable Energy Projects Funded by China

Project Name	Receiving Entity	Funding Agency	Financing Model	Funding Overview	Terms	EPC Contractor
Adama Wind Farm I and II (204 MW in total)	Government of Ethiopia (Ethiopian Electric Power Corporation)	China Exim Bank	Preferential buyer's credits (PBC)	China Exim Bank provided 85% of the financing through preferential buyer's credits (approximately USD 393 million), the Government of Ethiopia financed the remaining 15%	A 2% interest rate, a 7-year grace period (8 year for project II), and a 20-year maturity	Hydrochina Corporation, and CGC Overseas Construction Co. Ltd. (CGCOC)
Garissa Solar Power Plant (54.66MW)	Government of Kenya	China Exim Bank	Government concessional loan (GCL)	China Exim Bank provided RMB 867.2 million (approximately USD 135.8 million) of government concessional loan	A 2% interest rate, a 10.25-year grace period, and a 20-year maturity	China Jiangxi Corporation for International Economic and Technical Cooperation (CJIC)
Caculo Cabaça Dam and Transmission Line Project (2171MW)	Government of Angola	ICBC China Exim Bank China Construction Bank Bank of China China Minsheng	Syndicated loan facility	A group of Chinese commercial and policy banks provided 85% of the financing through a syndicated loan facility (USD 4.1 billion). The loan is structured	A maturity of up to 15 years and an interest rate of LIBOR plus a 3.6% margin	CGGC-Niara — a joint venture of China Gezhouba Group Corporation (60% stake), Boreal



		Bank (private) Ping An Bank (private)		primarily through buyer's credits (PBCs). China Export & Credit Insurance Corporation (Sinasure) provided the export credit insurance.		Investments Limited (37.5% stake), and NIARA Holding (2.5% stake)
Kafue Gorge Lower Hydropower Plant (750MW) <sup>65</sup>	Zambia Electricity Supply Corporation (ZESCO)	China Exim Bank ICBC	Syndicated buyer's credit facility	China Exim Bank and ICBC provided a USD 1.53 billion syndicated buyer's credit. Zambia's Ministry of Finance provided a sovereign guarantee in support of the loan and Sinasure provided credit insurance.	a 15-year maturity, a 2-year grace period, and interest rate of 6-month LIBOR (0.9% in May 2016) plus a 9.4% margin <sup>66</sup>	Sinohydro Corporation Ltd.
Ruzibazi Hydroelectric Power Plant Project (15MW) <sup>67</sup>	Government of Burundi	MOFCOM	Grant	The Chinese government provided a grant of USD 80 million for the project <sup>68</sup>		Sinohydro Bureau 14 Co Ltd

<sup>65</sup> Ibid.

<sup>66</sup> The borrowing terms are not disclosed. These are the terms for another loan provided by Development Bank of South Africa for the project. Aiddata assumes the same borrowing terms.

<sup>67</sup> CGTN Africa, (2023, June 16). Chinese-funded hydropower project expected to light up Burundi. [Available here](#)

<sup>68</sup> African Development Bank recorded US\$60 million. Aiddata recorded the commitment at US\$80 million, and an interview with the Chinese project manager revealed it to be US\$70 million. For consistency, Aiddata is referred to here.



As non-regional members, Egypt and Rwanda have also secured energy finance from China-led multilateral development bank, the Asian Infrastructure Investment Bank (AIIB). These two examples are summarized in Table 2 below.<sup>69</sup>

Table 2. Case Studies of African Renewable Energy Projects Funded by AIIB

Project Name	Receiving Entity	Funding Agency	Financing Model	Funding Overview	Terms	EPC Contractor
Benban Solar Park	Al Subh Solar Power S.A.E., Rising Sun Energy S.A.E, Sunrise Energy S.A.E <sup>70</sup>	AIIB	Senior loan	USD 210m, non-sovereign (senior) loan with 25-year power purchase agreement in place with the Egyptian Electricity Transmission Company (EETC)	-	SKE Electrónica y Electricidad SA; Enviromena Power System LLC; ACCIONA <sup>71</sup>
Accelerating Sustainable and Clean Energy Transformation (ASCENT) Rwanda <sup>72</sup>	Republic of Rwanda	World Bank (lead financier); AIIB	Majority concessional loan	USD 300m as World Bank International Development Assistance (IDA) credit, USD 100m loan from AIIB, and USD 103 from the Government of Rwanda	60% of the funding is concessional, with a 5-year loan maturity.	ASCENT will be implemented by the Development Bank of Rwanda and Rwanda Energy Group subsidiary, Energy Corporation Limited (EDCL)

<sup>69</sup> As of April 2025, AIIB has approved USD 60.2 billion in financing, with 314 projects funded across 38 member states. 22% of projects categorised under energy. 56% of funding has been secured by sovereigns, while the balance has been channelled towards non-sovereigns.. Funding summaries [available here](#) (retrieved May 5<sup>th</sup>, 2025).

<sup>70</sup> Early Warning System. (2025). Egypt Round II Solar PV Feed-in Tariffs Program (AIIB-000035). [Available here](#)

<sup>71</sup> ACCIONA. (2025). Benban Photovoltaic Complex. [Available here](#).

Full EPC list available in project information summaries,

<sup>72</sup> Asian Infrastructure Investment Bank. (2024). Project Summary Information. [Available here](#)



## Annex 2. Key Chinese Stakeholders in Climate Financing and Their Roles

Stakeholder	Type	Primary Role
Ministry of Commerce (MOFCOM)	Government Agency	Oversees and approves China's foreign aid, including grants and interest-free loans; supports renewable energy deployment via South-South cooperation programs.
Ministry of Finance (MOF)	Government Agency	Budgets and approves interest-free and concessional loans, evaluates debt sustainability of recipient countries, and ensures fiscal discipline in lending practices.
China International Development Cooperation Agency (CIDCA)	Government Agency	Coordinates China's foreign aid, including climate-related assistance and concessional financing instruments.
People's Bank of China	Central Bank	Sets regulatory frameworks for green finance (e.g., green bond guidelines)
China Development Bank	Policy Bank	Provides middle- and long-term market-based loans for large-scale energy infrastructure, including renewable energy projects; supports China's national initiatives such as BRI.
Export-Import Bank of China	Policy Bank	Primary lender for Chinese climate financing to Africa: offers concessional loans, export buyer's credits and preferential buyer's credits for renewable energy projects in Africa.
China Export & Credit Insurance Corporation (Sinosure)	State-Owned Insurance Company	Provides credit risk insurance for China's overseas lending and BRI projects against non-payment risks
State-Owned Commercial Banks (such as ICBC, BOC)	State-owned Banks	Provides non-concessional and syndicated loans; supports PPPs
State-Owned Enterprises (SOEs)	Implementing Agencies / Investors	Develop, construct, and sometimes co-finance renewable energy infrastructure; often act as EPC contractors and technology suppliers.
Chinese Private Energy Firms and Investors	Private Sector	Invest in solar, wind, and battery storage technologies in Africa; increasingly active in distributed and off-grid energy solutions.
Chinese Embassies / Economic & Commercial Counsellors' Offices (ECCOs)	Diplomatic / Liaison Offices	Facilitate bilateral cooperation, policy dialogue, and support implementation of renewable energy projects at the country level.



## Annex 3. Chinese Public and Private Finance Models and Relevant Stakeholders

Public or Private Financing	Financing Instrument	Feature	Involved Stakeholder
Public	Grants	Non-repayable funding, typically for small-scale solar projects, technical training, and feasibility studies.	MOFCOM, CIDCA, MOF
	Zero-Interest Loans	Loans with 0% interest.	MOFCOM, MOF
	Concessional Loans	Below-market-rate loans (often 1–2% interest), denominated in CNY. Typically include 5-year grace periods and 10–20 years maturity. <sup>73</sup>	China Exim Bank
	Master Facility Loan	Large credit lines set under a framework agreement to finance multiple sub-projects, often backed by natural resource revenues or sovereign guarantees.	CDB, China Exim Bank
	Preferential Buyer's Credits	Export financing with concessional interest rates, denominated in USD. Often covers up to 85% of the contract value for projects involving Chinese contractors.	China Exim Bank
Both	Export Buyer's Credits	Export-oriented loans to foreign governments and companies to purchase Chinese goods and services, typically on commercial terms.	China Exim Bank, Chinese Commercial Banks
	Commercial Loans	Loans on commercial terms, with interest rates usually set to the benchmark interest rate, grace period and maturity vary.	CDB, China Exim Bank, Chinese Commercial Banks
	Syndicated Loans/Buyer's Credits	Loans co-financed by a group of policy and/or commercial banks to spread financial risk for large-scale projects.	China Exim Bank, Chinese commercial banks
Private	Supplier's Credits	Deferred payment arrangement offered by Chinese companies for African buyers to purchase their goods and/or services.	Chinese companies
	Bridge Loan	Short term loans used to cover a funding gap.	Chinese commercial

<sup>73</sup> Wu, Tianyi and Chen, Yunnan.(2024, November 5). China's creditor diversification in Africa: Impacts and challenges of rising infrastructure debt-financing by Chinese commercial creditors. [Available here](#)



# About Development Reimagined



**DEVELOPMENT  
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Development Reimagined (DR) is a pioneering, African-led, women-led, Africa-first and award-winning international development consultancy, with headquarters in Beijing and offices in the UK and Kenya. DR was created in response to the complexities of global poverty and sustainable development – which requires new ideas, and new solutions. DR - and the clients we work with - invest in thoughtful insights backed by cutting-edge analytics and deep relationships.

Since its creation in 2018, DR has developed industry-leading expertise embedded in practical experience on five of the world's most consequential issues: Africa-China relations, development finance, climate action, global trade, and decolonising development. We aim to develop and promote African perspectives and leadership by working with African and other countries, organizations, and brands to develop inclusive, sustainable, and scalable strategies for growth and change – including through trade, finance and other foreign policy, while providing thought leadership to reshape humanitarian and development aid from and to all over the world into more equitable and exit-able systems.

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