MS THESIS

CHINA'S CLIMATE FINANCE APPROACH IN AFRICA: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

As the world transitions to clean energy sources to combat climate change, the demand for critical minerals and strategic resources essential for renewable energy technologies has significantly amplified. In this regard, Africa holds the vast reserves of such critical minerals and resources. Africa has become a geopolitically significant region for the future of global energy security. This study seeks to provide a comprehensive understanding of China's climate finance approach in Africa, particularly through renewable energy cooperation under the Forum on China-Africa Cooperation and South-South cooperation mechanisms. China's climate finance aim is not only to promote sustainable development, but also to secure access to critical minerals, for energy security and dominance in the global green energy market. Besides, China is simultaneously expanding its economic influence and projecting soft power for its energy security. Essentially, climate finance serves as an approach that allows China to position itself as a development partner of Africa, which emphasizes principles of mutual benefit, sovereignty, and non-interference. Similarly, China is navigating growing competition from other global powers by offering an alternative model of climate finance in Africa. China's climatefinance approach in Africa for both cooperation and geopolitical influence. Therefore, research examines the dynamics of China's climate finance approach in Africa and the challenges which China may face in the process of climate financing in the region because its climate financing approach is unparalleled with the traditional donors.

Keywords: *Climate Financing, Energy Security, Critical Minerals, Mutual Benefit, Green Energy, Development Partner, Strategic Resources*

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CHAPTER-I

1. INTRODUCTION

Many developed states are providing the climate financing to the developing nations for the mitigation and adaptation of the climate change, through the multinational and bilateral channels. However, China iscontributing to climate finance with a different approach under the mechanism of South-South Cooperation. The China climate financing model based on the state-owned financial institutions, state-owned enterprises, and state-backed insurers, which is visibly integrated with aid with trade and investment.

Since, China oppose the official measurement, reporting, and verification (MRV) for sustainable development finance in the earlier years by considering itself as not formally obliged with the provisions of the UN Framework Convention on the Climate Change as the Annex II the developed countries.In this way, China model for climate finance strengthen its geopolitical influence on Africa for greater interest in securing natural resources and minerals for its energy security. China's climate-related finance shifted to outbound in 2017 by greening its projects, like the Belt and Road Initiative. As a result, China climate financedis about 32% in Africa from 2017 to 2021, which is the second-largest recipient region after Asia, with its overall financing accounting for 52% for the lower-middle-income countries(Cichock & Ian, 2024).

Under the Forum on China-Africa Cooperation (FOCAC), China initiated 100 clean energy projects, including solar, wind, hydro, and biogas, as well as the training programs. In the 7th ministerial meeting of the forum, a passed declaration for a strategic partnership to combat the climate crisis in the region. As the more core document titled the China-Africa Cooperation Vision 2035. Whereas the amount related to climate aid (finance) in the region is approximately

39.1% between 2000 and 2017, which is second highest after Asia Thus, the project lengthwise, Africa is on top of the rest of the recipient regions(UNDP, 2023).

1.1. Background of Study

Climate change has become the phenomenon of many disruptions from natural disasters ranging to gamut of threats including food, water and economic insecurity without the disparities of gender, race and color as resulting of these climate related threats compelled the international community to concern about their future fate to co-existence with the environment in order to sustain in the Anthropocene epoch where nature is paying back due to the humans unsustainable exponential growth by unbridled burning fossils fuels since the Industrial revolution(Herman, 2018).

1.1.1 Role of Climate Finance in Addressing Climate Crisis

However, aim to address the climate crisis international states are taking global climate actions for the adaptation and mitigation under the global climate regime such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris agreement of 2015.Where the developed states are obliged with the theme of common and different responsibilities to assist the climate vulnerable developing states. Moreover, peruse the global efforts to limit the increase in temperature to 1.5°C (Fawzy, Osman, & Rooney, 2020).

Similarly, under the international climate change regime to address the climate crisis the "Climate Finance" considers as a key global action effort in order to avoid the cascading effects of climate change. Additionally, it is defined as"the sum of bilateral and multilateral economic support to developing nations for environmental purposes. It comprised a two-pronged process based on mitigation (transition to renewables) and adaptation (resilient infrastructure) in the changing global climatic patterns (Lucatello, 2016).

To fight against the crisis, globally transitioning to low-carbon energy solutions and sustainable development is critical to limit the temperature and demand a huge account of money. According to the World Energy Transition Outlook 2022, only the developing countries need \$5 trillion per year for the transition of the energy, and by 2050, \$9.2 trillion per year to net-zero by 2050 (International Rewnewable Energy Egency, 2022).

1.1.2. The Global South and Africa

The historical emissions of the greenhouse gases emitted by the counties that are known as high-income countries, including in the regions (North America, Europe, Central Asia, East Asia, and China). They are responsible for 75% of global CO2 emissions and have pumped almost 2453 billion tCO2e into the atmosphere since the 1850s for the exponential economic growth (Chancel, Voituriez, & Bothe, 2023). Comparably, the Africa that is not responsible for the considerable amount of greenhouse gases emissions, with less than 4% emissions, is immensely affected by climate change as the region is already facing the problem of poverty, which increases the awful effects of climate change, as the International Panel on Climate Change examines that region is at high risk of water and food insecurity(IPCC, 2022).

To amidst the changing weather patterns of the globe, China financing efforts are underway to tackle the "climate change" in the meantime with regards to climate finance in the African Region and by reflecting itself as the representative of the Global South under its soft power, which is based on the anti-colonialism conflicting with the United States (US) corporate-based power, which brings developing countries into resentment against the "Americanization" that was majorly affected in the post-War on Terror in the Muslim World and more notably after the invasion of Iraq in 2003 (Sotirović, 2024).

1.1.3. Evolution of China's Climate Finance Approach in Africa

The emergence of China's green soft power in the developing world as in 1992 the Rio Earth Summit under the principle of the common but different responsibilities—China opposed the emissions reduction draft for the developing countries and demanded funding from the developed countries, where China depicted itself as responsible country among the Global South(Nitza & Longhurst, 2024).As China funding to Africa contributed immensely to achieving the Sustainable Development Goals (Agenda for 2030), specifically in the micro economy of the region through FDI for the aiming to access clean water, technological innovation, climate action, and life on earth. Subsequently, the Forum on China-Africa Cooperation, which was instituted in 2000, is considered a key instrument to achieve sustainable development in the region, and at the start of the first forum summit, environmental protection and capacity building were discussed as key themes. For instance, the topmost hydro-project is named the "Cabaca Hydropower Project "of 2017, with a value of 67.7 billion, and it will generates about 2171 megawatts of electricity(Chihwai, 2024).

Furthermore, China remains the leading country in South-South Cooperation, with a contributing amount of US$0.6 billion in 2021-22, which is 15% of overall green investment. In 2021, China committed to halting its overseas coal-based projects and enhanced its focus on the renewable projects where it pledged to launch 30 clean energy projects in Africa at the China-Africa Cooperation forum of 2024 (Climate Policy Initiative, 2024). Additionally, in the summit-2024, China pledged to enhance cooperation with the African Union-aligned vision with 10 partnership goals, including one of them being green development and common security with a reflection of a common and shared future with Africa.As the “UN general secretary Antonio Guterres said that the partnership will drive the renewable industry revolution”(People,s Daily Online English, 2024)

As per the data figures, the climate-related projects figure accelerates between 2021-24 to 138, including the renewable energy, transportation, and resilient infrastructure. Besides that, around 90 low-carbon projects were introduced, such as hydropower, solar, wind, nuclear, and biomass, with the aim to generate 224 GW of clean energy by 2030(Patel, 2024). Whereas the regions need US$200 million annually for the adaptation measure by 2030(Tadesse, 2010).

As a consequence, the China climate finance for the African region will fill the gap of many global inequalities and may lead to addressing climate change for the shared future. “As the region comprises 17% of the world population, such climate-related finance alters the vulnerability in addition to driving the global efforts to reduce anthropogenic gases. Essentially, climate change is a global phenomenon that does not belong to any particular state; therefore, joint efforts are compulsory to fight against the climate crisis(Yu, 2014).

1.1.4. China Securing Mineral Resources for Energy Security

Aiming to transition to a renewable energy source requires huge amounts of the critical mineral, which also brings challenges to future energy security, as the electric car uses six times more amount of mineral as compared to conventional combustion-engine cars and wind farms requires eight times more demand for de-carbonization. Moreover, the shift in clean energy to meet the Paris Agreement goals, the demand for the rare earth elements may increase to 40% for copper, 70% for cobalt and nickel and almost 90% for lithium (Internatioal Energy Agency, 2021).

Although, South Africa contains 90% of the platinum reserves, Guinea contains the world's largest reserves and 700,000 tons of lithium reserves. Moreover, South Africa has 80% of global chromium being exported in 2020. Notably, alone the Democratic Republic Congo accounts for over 70% of cobalt mined globally and 60% of global cobalt is exported to China. Additionally, 50% of critical mineral reserves contain Africa as result with the resources of the Africa is considers as a crucial for the energy transition (MO Ibrahim Foundation, 2022) .

Consequently, China may looking forward through the climate finance approach in the Africa as a source of long term geo-economic and geo-political interest by securing the mineral resources for the green technology. As international system is anarchic in nature a there is no power above the states that guarantee it for the help in any subject by considering that China is accelerating its influence to the African region for broader interests for the survival and aiming to secure resources that are crucial for the future energy security and green assets.

1.2 Problem Statement

As China's climate finance initiatives lingering to draw the attention, the financial assistance provided to address Africa climate vulnerability and promote sustainable development is growingly significant. However, the rising engagement of China also raises concerns about its expanding influence as Africa holds nearly half of the world's critical mineral reserves. As, China may access the vital resources which are crucial for its energy security and transition to low energy solutions. Furthermore China climate finance approach in Africa could provide a leverage to secure African mineral resources, evolving its geo-economic and geo-political interest. This approach presents also challenges including governance and intensifying competition with other major powers. Therefore, research aims to explore China’s climate finance approach in Africa and the challenges and opportunities China may face as it seeks to secure mineral resources for its green energy for the survival in the future of low carbon energy and by navigating the geo-economic and geo-political competition in the region.

1.3. Significance of Study

This research will contribute to understanding about China's climate finance in Africa, and the challenges and opportunities. As climate finance is considered crucial for the mitigation and adaptation of climate change. However, the Chinese finance is contrary to the traditional donors, which follows the international structure, for instance, measurement, reporting and verification (MRV) under the international climate change regime. As China is offering an alternative model of climate financing from traditional donors.

Simultaneously, it will explore the potential opportunities evolving from China's climate finance model under the South-South mechanism for securing the critical mineral resources that are essential for renewable technologies and also for future energy security. Furthermore, it will unveil the challenges that are aligned with China's climate financing in Africa, such as the transparency, governance and the emerging interests of the other global players in the region.

As a result, research will be insightful for policymakers, by providing an understanding of the contrasting climate financial model of the Annex developed countries which are-financing under the UN Framework. This will also help to examine their own global climate finance efforts and navigate the potential opportunities that are associated with climate finance. Besides, that the challenges related to the global completion for the critical minerals in the region for future energy security. For researchers and academia, research will find a contemporary perspective on China's climate finance as an approach to Africa for an emerging economy like China.

1.4. Objectives of the Study

a) To examine the dynamics of China's climate finance approach towards Africa.

b) To analyze the potential challenges, China might face in the process of its climate financing in Africa.

c) To evaluate the potential opportunities China may from its climate financing in Africa.

1.5. Research Questions

a) What are the dynamics of China's climate finance approach towards Africa?

b) What are the potential challenges, China might face in the process of its climate financing in Africa?

c) What are the potential opportunities, China may have from its climate financing in Africa?

1.6. Delimitation(s) of the Study

The research will primarily examine China's climate finance in the African region. As there are other regions which are beneficiaries of the China climate finance but focus will be Africa through the Forum on China-Africa Cooperation under the South-South mechanism, for green energy partnership. Additionally, research will particularly focus on China's climate finance from the period of 2017 to 2024 because in 2017, for the first time, China initiated climate finance by a greening its trans-regional project, the Belt and Road Initiative (BRI).

The research will deal with the scope of climate financing in the region with respect to green energy and climate adaptation initiatives. Moreover, it will be confined to analyzing only challenges and opportunities in regard to China as it will not focus on the other traditional climate financiers. Similarly, will not discuss in detail any specific country and the sub-regions within Africa.

1.7 Literature Review

A literature review for this research is important to address the research questions of research such as the dynamics of climate finance in Africa and comprehensive examination of the existing research and the policy documents. By reviewing the literature, it can identify the key aspects of China climate finance in Africa, such economic, political or environmental. Additionally, it helps to analyze the challenges that China may face in the climate financing in Africa, for instance, global governance, as well as the opportunities China may grab. The existing literature helps to identify the knowledge gap for the further investigation.

1.8. Review of Related Literature

The book "The Future we choose: Surviving the Climate Crisis by Christiana Figueres and Tom Rivett-Carnac" which was published in the year of 2020, provides a brief understanding of the role of global climate cooperation and finance for the mitigation of environmental crises. Although the book mainly focuses on global climate action to tackle the climate crisis, it also discussed global climate cooperation and diplomacy for sustainable development. As a consequence, this helps to understand the challenges and opportunities related to China's climate finance in Africa. On the other hand, the book discussed the ten actions under the theme of call for actions and transforming into discusses opportunity(Figueres & Carnac, 2020).

As Christiana Figueres and Tom Rivett-Carnac concluded by cracking the climate crisis is an opportunity for the reshaping the global economy more resilient and sustainable and will demonstrate to address the global inequalities. Furthermore, shed the light on the importance of the climate financing in achieving the sustainable economic development and considers as the climate solution through financing the renewable energy and resilient infrastructure. Therefore, it is crucial for the developing nations to crack financial resources for the adaptation. Also highlighted the role of the financial mechanism to address the climate change such as carbon pricing and cap-and carbon taxes to international for the sustainable approach towards the environment. Also, authors are optimistic about to tackle the climate crisis because it leading towards the future which is not recognized by any calamity(Figueres & Carnac, 2020).

As a result, in the case of China's climate finance in Africa, this book has valuable insight insightful to analyzing, China African financing, where China has an opportunity to transform the African region in regard to clean energy and the resilient infrastructure as well as vital because the region is already facing the effects of the climate change. However, potential opportunities with the context of China financing because Africa contains reserves of critical minerals for green energy technology. Whereas the authors mention the opportunities related to green future investment, it might shield a sustainable economy for the long term future. The core message of the book is an integrated and coordinated approach to address the crisis with instruments like financial assistance and, more prominently, the book provides an optimistic way forward for international climate cooperation or partnership. Therefore, China climate efforts in Africa in the case of solar and hydro projects associated with the author's interpretation. To decarbonizes the world and garb the potential opportunities.

The article titled as "Climate Finance, Africa and China's Role" by the Ye Yu and published in African East-Asian affairs in 2014 discussed the key concepts of the Climate Finance based on the theoretical perspective, and explore the challenges related to China climate finance approach in the region to mitigate and adaptation in the changing weather patterns. Additionally, highlighted that China is the second-largest economy in the world and considered similarly as the large emitter of greenhouse gases. As Africa needs huge sums of money for the transition of low-carbon energy, in this case, China is contributing to climate finance for Africa but through a different approach from the traditional donors(Yu, 2014).

However, China is itself doing climate financing through bilateral and multilateral under the machinima of South-South cooperation, which is considered as the conflicting of traditional climate-related financing. As China is considered as the largest trade partner of the Africans and in contemporary times, the relationship will evolve into a modern style of strategic partnership in the future because, due to the domestic transformation of China, it will be beneficial for Africa for sustainable development of the future. Furthermore, he discussed theoretically climate finance and the concept in general with the (CDBR), which is a cornerstone of the UNFCCC where developing countries contribute less(Yu, 2014).

As well as the role of the OECD and its development assistance committee (DAC) in climate finance, it was named as official development assistance, and afterward and the formation of the Green Climate Fund (GCF) for funds other than the pledges for the mobilization of after diversified resources in order for effective climate financing. As, he articulated, that Africa is already prone to grave problems such as poverty. For that aim, Africa needs sufficient funds for adaptation and mitigation, saying that the region needs US$675 by 2030 for a low energy solution. Other than that point, the challenge for China-African cooperation is external pressure from the traditional donors. For blaming China for financial assistance aims to surpass the World Bank. Moreover, China considers it the late comer in financing assistance for Africa, but China covers renewables for long periods in the region. Hence, the finance to address climate change in the region is new for China(Yu, 2014)

In conclusion, the China climate finance will pave the way to leveraging China by increasing its exports of renewable technologies to Africa as well as the other world. On the other hand, as the result of the collaboration, the imports from Africa will also help to foster its renewable industry because the region is highly reliant on mineral imports. Subsequently, it will mutually advantage both the partners under the climate financing and alter the external pressure from the traditional donors that challenged China's role in climate cooperation.

The article titled as “Green Soft-Power? Checking in on China as a responsible stakeholder” by the Agnieszka Nitza, Kerry Longhurst and Katarzyna Skiert-Andrzejuk published in Polish Political Science Yearbook in April 2024.The authors questioning the authenticity and effectiveness China’s multilateral environmental leadership and its bilateral actions, questioning the authenticity and effectiveness. Unveils the China international policies on the Climate Change negotiations regime that China perused its green soft-power in the “International Climate Politics” by marking key events such as Kyoto Protocol in 1997 where China formally obliged to cut emissions in 5.2 percent. Afterward, China again a responsible image in the international and by greening the Belt and Road initiatives where the China takes a serious responsibility to mitigate global environmental issues.(Nitza & Longhurst, 2024)

As a result, China's role is seen as progressive in the international climate negotiations which started in 1997 by aiming to reduce its carbon emissions. A clear indication that it is seeking a climate reputation in international politics for its enhancement of green soft power. Also, China challenges the traditional view of green –soft power which is embedded with the western values aiming for democracy promotion. Furthermore, China's role in the multilateral arena as it is obliged alongside the European Union and United States in the Conference of Parties but contrary to the bilateral climate action which are inconsistent and challenge its green image.

The article titled as "China and Africa Model for the South-South Cooperation" by the Asante, Richard published at Shanghai Institutes for International Studies in 2018 it comprehensively highlighted the historical background of the China-African partnership with respect to the colonial era and the emergence of South-South cooperation. Afterwards, the Brandt Report identified the dire economic consequences developing countries, especially between North and South because of the western approach in Africa is exploitative. Subsequently, in 1990, the economic crisis paved the way for the China-Africa partnership under the Forum on China Africa Cooperation (FOCAC). In 2012, the official development assistance (ODA) fell drastically, by the development assistance committee of the OECD. Moreover, the economic crisis of 2008 gave the alternative to an American Model (Asante, 2018).

The Forum on China-Africa Cooperation considers the key drivers for China's rejuvenation as well as the economic development of Africa. Furthermore, he articulated that some scholars look as it is the blessing for the Africa and other as the problematic but in actually it is considering as mutual beneficial reason African Countries as resource-rich and lack of financial resources to exploit it. Contrary to that China is not resource-rich but have ability to exploit the unproven resources. As a consequence, it is mutually constructive and beneficial for both China and Africa. Hence, China is also providing the loan in an easier, quicker way with respect to the World Bank and IMF. The author also underlined that China's commercial loans may put African countries into debt crisis.(Asante, 2018)

As a consequence, the China-Africa Partnership and its implications are still under discussion. It invites further investigation that cooperation is really mutually beneficial for China and Africa, as some suggest people in the region may be problematic for economic sovereignty and others argue that blessings argue to Africa. The partnership has some potential opportunities as well as risks. Therefore, the effectiveness of the south-south model for sustainable economic development and the source of economic risk is that the region is still under uncertainty and wants future investigation. On the other hand, China's development approach in the region is more flexible and faster than the western donors. That is why China's financial approach attracts African countries and this will advantage the China to expand its economic influence through financial assistance.

The article titled as “Africa-China Relations and the Issues of South-South Cooperation” by the Nana Kwame Nkrumah and Daniel Dramani Kipo-Sunyehzi published at African Journal of Political Science in 2024 and it briefly unveils China-Africa relations and notably the foreign policy of China towards Africa, which is based on the non-interference principle where as China is replicating the western principles which impacted the African people badly in past. On other hand China non-interference policy keeping undemocratic regimes in the Africa. He also concluded the issues related to the South-South Cooperation by referring to the exports of raw materials from Africa and imports from China of finished goods leading to the trade imbalance by giving the example of Nigeria, as it relations reflected with China as with the Global North. As a consequence, it has been criticized by many international leaders and international relations practitioners that it is a neo-imperialism approach(Kipo Sunyehzi & Nkruma , 2024).

The China development approach in Africa will fill China's need for raw materials for future energy security and has harsh ramifications for Africa, for instance, the trade imbalance. More importantly, it's increasing dependency on China as it exports finished products after manufacturing the product with the gain of imported raw materials from Africa. Therefore, the cooperation under the Forum on China-Africa Cooperation will be an opportunity for China.

The article titled "Research on the technical cooperation for renewable energy between China and South Africa" by the Xiaohongb Yan , Xiaoyi Tian ,Hui Li and Hongli Guo published at the Frontiers in Energy Research in 2024 highlighted that South Africa, which is a highly resource-rich country related to raw materials of renewable energy such as solar and wind energy, but in the past decades, it has been extremely reliant on fossil fuel for energy sources, and, in 2008 South Africa faced acute energy crisis and declared a "state of disaster".(Yan, Tian, Li, & Guo, 2024)

In early 2010, China and South Africa both signed the Memorandum of Understanding on energy cooperation. As well as in June 2023, both parties organized a conference with the 170 Chinese companies with local South African enterprises for cooperation in renewable energy investment. The Scientific Research Level Cooperation for the significance for the energy transition, challenges in the renewable transition because of international competition with the western countries which transition political, cultural influence, international standards, governance structure and efficient finance structure, energy transition impact the South Africa as the country has been heavily reliant on fossil fuels for energy needs. (Yan, Tian, Li, & Guo, 2024)

As a result the economic condition of the individuals who are aligned with the previous fossil fuel industries. For that matter, individuals need compensation and other skills programs to reduce the threats to the energy transition in South Africa. Furthermore, need for an innovation mechanism for cooperation, including storage, transportation and supply and, more significantly, the need for the exchange of technical young talent from both China and South Africa with public-private cooperation, for the beneficial outcomes of renewable cooperation.

The report titled as “Climate Inequality Report 2023”(Chancel, Voituriez, & Bothe, 2023) the report highlighted the emissions related to the responsible countries that pumped the gases into the atmosphere for their industrial growth and marked the Climate Injustice through the disproportional vulnerability of climate change. Moreover, underline the key climate related events which are Global south confronting in frontline due to the lack of financial resources as well as the economic deprivation which is aligned with the climate crisis that is badly effecting the life of the ordinary people in the society due to the climate related disruption such as heatwaves , water scarcity and mortality which lessen the agricultural productivity similarly the unprecedented floods displaced people so as result need flow of dollar on every tone of carbon for the adaptation. In this case need for the carbon budget to lift the number of people from the poverty to alter the climate change related disastrous effects. This report also underlined that carbon inequalities is higher among the countries which will become difficult for the efforts for the poverty alleviation.

As a consequence, China's climate finance for Africa can potentially lift people from the grave concerns of poverty through finance for climate change. Similarly, address global climate injustice through climate finance in Africa. On the other hand, finance efforts may serve the mutual interest under the notion of win-win cooperation.

1.9 Research Gap

The research gap is to explore China’s climate finance in Africa as there is limited knowledge of a specific Chinese climate finance model for geo-political and geo-economic interest in the region. The current investigations focus on China’s financial aid through the loans and grants practices and its cooperation for the economic revival. Also, the partnership for flexible trade and investment to address many regional issues such as poverty, health and political issues.

As a result, the climate finance approach of China has less investigation ranged with the border interest to influence the region and the challenges under the Forum on China-Climate Cooperation. Significantly, to address this research gap, it will provides comprehensive understanding about the potential opportunities and challenges around the China climate financing approach in Africa.

1.10. Theoretical Framework

Structural-realism is the international relations theory by the prominent scholar of international relations Kenneth Waltz, and the theory chiefly outlines China climate finance approach in Africa: Challenges and Opportunities. As, he argued that states seek wealth, advantage, maintain their relative position, improve their welfare, to achieve survival in the international system (Burchil, et al., 2005).

As Waltz wrote his theory of international politics in 1979 and used the expression "Structural Realism" in terms of the structure of the international system and focused on the international system by arguing that the international system is anarchic and shapes the behavior of the states. Additionally, due to the anarchic international system, the states are unitary actor and finally rely on their resources for "Self Help", which as result compels states to secure security and resources. Also, it encourages the states for the relative gains to increase their position relative to other states for the survival in the international system(Rabidas, 2021).

According to the Waltz understanding about the international structure by considering three facts such as the ordering of the states, character of the states and the distribution of the capabilities. The states survive in the international system with the policy of the self-help and all states are "like states" in their function because all states are sovereign but different in their capability. As a result each state perform same function for their survival and national interest. More, notably in the international system states are more concern about the individual survival and compelled the states who will gain rather than both of us gain. States believe in the relative gain over the absolute gain(Siddiqi & Mirza, 2023).

Another structural realism theory named as the offensive realism defines international system as for the survival in the anarchic system stated should seek to maximize the power because they possess the inner drive to dominate for the odds of the survival(Siddiqi & Mirza, 2023). Furthermore, Waltz argued that states desire security for the survival in the international system and its theory is "refers as the defensive realism" which is contrary to the offensive realism in which J.Mearsheimer argues that the structure of the international system provides 'powerful incentives for states to look for opportunities to gain power and argues that 'a state's ultimate goal is to be a hegemon in the system. On other hand, Waltz's view that a state's goal is survival(Sutch & Elias, 2007).

1.10.1. Application of Structural-Realism Theory

As the structural-realism defines the international system is anarchic. Therefore, China securing the resources for the survival through the instrument of climate finance. As Africa is rich in the resources of the critical mineral which considers as the key for the China's energy security. Moreover, for the global dominance in the renewable energy amidst the era of changing weather patterns where the world is transitioning to the renewable source of energy to address the concern of climate crisis.

Where, South Africa contains 90% of the platinum reserves, Guinea contains the world's largest reserves and 700,000 tons of lithium reserves. Moreover, South Africa has 80% of global chromium being exported in 2020. Notably, alone the Democratic Republic Congo accounts for over 70% of cobalt mined globally and 60% of global cobalt is exported to China. Additionally, 50% of critical mineral reserves contain Africa as result with the resources of the Africa is considers as a crucial for the energy transition (MO Ibrahim Foundation, 2022) .

Therefore, China may looking forward through the climate finance in the Africa as a source of long term geo-economic and geo-political interest by securing the mineral resources for its green technology. As international system is anarchic in nature a there is no power above the states that guarantee it for the help in any subject by considering that China is accelerating its influence to the African region for broader interests for the survival and aiming to secure resources that are crucial for the future energy security and green assets.

Moreover, as grounded theory argues that states wants relative gain for the survival in the international system by enchasing its capacity. Whereas, China is increasing its capacity through the engagement in the African region through the function for the policy of global politics for the self-help. However, China may face the challenge of the counter balance from the other global competitors for the survival because all states are functioning in international structure for their survival.

Structural realism relies heavily on the self-help concept within its theoretical framework. Anarchy prompts states to focus on their survival first which frequently leads them to use different tactics for enhancing power capabilities and acquiring important resources. The access to vital energy resources and economic expansion needs become crucial because China views climate finance in Africa as an essential element of its self-help strategy.

In accordance to theory China utilizes its renewable energy financing in the African sector to pursue its global political objectives. China must reduce its greenhouse gas emissions because it holds the position of being the planet's largest polluter while pursuing renewable energy adoption. China needs a continuous flow of critical minerals including cobalt lithium and rare earth elements because these resources enable solar panel wind turbine and electric vehicle battery production. China supports renewable energy development in Africa through financing while ensuring its access to vital core resources needed to build clean energy technology production facilities and protect its global energy security.

Significant China climate finance efforts in Africa as a tool to achieve its extensive political and strategic interests across Africa. China has intensified its power in Africa by utilizing investments together with trade alliances and foreign aid which stem directly from its desires to exploit Africa's abundant resources. The approach fits within China's diplomatic and economic framework for deepening political connections and economic relationships with developing nations which includes Africa. China regards Africa as a dual-purpose strategic area because it serves as a development partner and a key supplier of necessary minerals and resources for its accelerating industrial growth in future.

As a consequence, climate financing China establishes a stronger global power position because it allows the acquisition of fundamental resources. The expanding worldwide interest in green technologies has triggered a growing intensity of mineral resource competition across Africa. China holds a powerful advantage through its investments in Africa because they grant the country superior control over resources that Western nations traditionally obtained from Africa. China advances its global power dominance through strategic resource acquisition which positions it to lead the worldwide green energy market.

1.11. Research Methodology

Research Design

This study investigate the China's climate finance approach in Africa focusing on the challenges and opportunities. Furthermore, that how China Climate finance approach in Africa advantage to serve its energy security national interest. The study used qualitative and quantitative data to gain a well-rounded comprehensive understanding. The qualitative date gathers from the published sources, while quantitative data from the statistical sources such as reports, global database related to the climate finance and investments in Africa. The type of the research will be descriptive to analyze the challenges and opportunities by using both the qualitative and the quantitative data by analyzing the quantitative data and explain in the qualitative data for the findings and conclusion.

Data Collection

The source of the data will be secondary for aiming to find the reality as source includes the newspapers feeds, journal articles, books, policy documents or briefs, international institution reports, international affairs magazines ,research groups published papers, and the expert's opinion.

Data Analysis

As well, for the analysis of the data will be based on qualitative by using the thematic analysis by conceptualizing the China climate finance with the broader international theory such as the structural realism. As result by employing the thematic analysis with conceptualization helps to interpret the China's climate finance approach in Africa.

1.12. Ethical Concentration

To achieve the targeted research objective, ethical considerations such as honesty, and integrity while reporting, data collection and analysis with the aim of contribute in the discourse of China's climate finance approach in Africa will be considers on priority.

1.13.Organization of the Study

Chapter-1: Introduction:This chapter explores climate change, the role of climate finance in addressing the crisis, and, importantly, China's climate finance initiatives in Africa, including their evolution and the national interests driving China's involvement in climate financing.

Chapter 2: The Dynamics of China Climate Finance Approach in Africa: This chapter aims to explore the Objectives and Mechanism for the geo-economic and geopolitical motives of China behind climate finance in Africa under the mechanism of South-South Cooperation through the Forum on the China-Africa Cooperation by highlighting the key financial tools.

Chapter 3: Challenges in the China Climate Finance Approach in Africa: This chapter will discuss the challenges related to climate finance such as governance and the geo-political in the Africa. Where, the global players also looking towards Africa as opportunity for the greater geo-economic and geo-political interest for the resources.

Chapter 4: Growing Opportunities in China Climate Finance in Africa: This chapter will aim to provide the insights about the potential opportunities that are aligned with the climate finance in Africa such as the market expansion, secure the mineral resources for its future energy security through the influence from its climate financing.

Chapter-5: Findings and Conclusion: This chapter will provide the clear outcomes of the research based on existing knowledge. Furthermore, for conclusion, provide a concise summary and the lesson from the research aim to fill the gap and for the further investigation.

CHAPTER-II

2. THE DYNAMICS OF CHINA's CLIMATE FINANCE IN AFRICA

Introduction

As in the beginning of the 21th century, China diversified its energy security policy to attain vital resources from the world producing countries for its future energy security. As China was 60% dependent on the Middle East earlierof the 2011, to alter the dependency, China diversified its international energy policy for its greater interests. As a result, China proactively engage with Africa by initiating development projects and investments. However, this engagement ambition was to stabilize the booming economy of the country. More importantly, to control the new international market for the renewable energy products, which considers as the reliable source of energy. Furthermore, China's dynamic aim for its partnership with Africa is for the international energy security reason for the growing demand for vital minerals and resources in the post-carbon neutral world(Attah & Kyirewiah, 2023).

China emerged as a prominent world leader within global climate finance operations as it delivers substantial financial support to Africa where impact of climate change runs most severe. The pressing requirement for climate finance becomes evident because Africa faces devastating effects from both temperature rise and severe weather along with environmental destruction. The Intergovernmental Panel on Climate Change has confirmed that Africa faces increased occurrences of severe droughts together with floods and heatwaves that worsen both poverty levels and agricultural productivity and elevate food insecurity across the continent. Over its climate finance initiatives while registering significant gains based on its strategic goals within the region(IPCC, 2022).

Furthermore, China uses geo-economic and geopolitical strategies in its Africa climate finance activities. Chinas approach to supplying climate finance differs substantially from Western methods because of ideological differences. Western ODA financing follows established regulations and multinational rules while China implements its South-South Cooperation model in its loans. The South-South model builds its foundation upon three key values: mutual respect and refusal to meddle with other states and country sovereignty. The approach delivers better flexibility since it leaves out standard donor bureaucracy and conditional funding. China chooses practical results including infrastructure construction and power supply provision above the western donor requirements for environmental and political conditions(Yu, 2014).

China combines financial loans and investments with trade agreements within their climate finance approach as a fundamental method of operation. The deployment of Chinese overseas financing channels occurs through financial institutions such as China Development Bank (CDB) and China Exim Bank together with major Chinese enterprises. China implements a dual-strategy by interweaving development assistance with business operations to generate projects that bring mutual gain between recipient countries and Chinese objectives. Through this model China attains both its climate objectives alongside crucial important resources required for its future economic expansion(Cichock & Ian, 2024).

Meanwhile, the increasing domestic needs for China in energy consumption, similarly the need for resources and minerals is driving the China’s foreign policy towards Africa. As China's consumption share was 7 percent in the 1990s, which doubled in 2000, with 15 percent including resources like aluminum, copper and nickel. In this context, China had the state's own oil companies which explored resources by strengthening international affairs by focusing on bilateral agreements, aid and trade. Additionally, China’s hunt for resources was mainly in the developing states. For instance, in the case of Bolivia and Philippines(Zweig & Jianhai, 2005).

2.1 Conceptualizing China’s Climate Finance an Approach

The long-term energy security strategy of China depends heavily on the vast natural resources existing across Africa including cobalt, lithium and rare earth elements. The minerals serve as critical components in renewable energy technology manufacturing to build solar panels wind turbines and electric vehicle batteries that China needs to progress toward green energy. The financial support for renewable energy projects in Africa enables both an energy supply to the continent and secure Chinese access to vital resources. By emphasizing both environmental sustainability and resource acquisition China relies on Africa to become a fundamental strategic component in its global green economy transition and secure energy supply plans(MO Ibrahim Foundation, 2022).

China holds an exceptional chance to strengthen its worldwide influence through climate financing because Africa demands urgently needed climate-resilient infrastructure as it possesses abundant natural resources. The critical requirement of abundant investments in renewable energy facilities alongside infrastructure development reaches its peak point in sub-Saharan Africa because energy access remains scantly available. Multiple African countries having poor power infrastructure and unstable electric supply systems create an investment opportunity for Chinese renewable energy projects using solar, wind and hydropower technologies to provide better energy access and lower fossil fuel usage. The projects serve two strategic purposes for Africa by supporting economic growth and climate change mitigation while enabling greater participation in global clean energy evolution(Yan, Tian, Li, & Guo, 2024).

In addition to the clear environmental benefits, China’s climate finance initiatives in Africa also serve its broader geopolitical strategy. Climate finance enables China to build strong diplomatic bonds with African countries while helping these nations overcome previous foreign power marginalization. China gains popularity as the pre-eminent development and climate collaboration partner in the region through its financing approach which avoids political and governance obligations. The Forum on China-Africa Cooperation (FOCAC) plays an essential role by formalizing these relationships as it creates an enhanced collaboration platform across climate change sectors and energy and infrastructure development(Sotirović, 2024).

The increasing occurrence of extreme weather events alongside growing requirements to adapt to climate change creates an opportune moment for China's financial approach toward climate change to benefit Africa's climate resilience development. The substantial opportunities in Africa have to navigate key difficulties related to governance structures alongside debt sustainability issues as well as the necessary equilibrium between economic development and environmental protection. Despite various obstacles China's climate finance initiatives deliver one-of-a-kind approaches towards sustainable development for Africa. The China's motivations for climate finance operations together with the operational methods and consequences on sustainable development strategies and resource management initiatives in Africa.

2.2 China's Climate Finance Approach Model

The climate finance model that China provides to African nations stands distinct from standard Western ways of handling development assistance internationally. The traditional Western method of climate finance through official development assistance (ODA) operates under international governance standards yet China accomplishes its climate finance missions through state-supported financial institutions while combining international trade and investments to meet its geopolitical and monetary aims. The model reshaped global climate finance operations yet created significant concerns about the outcomes and investment methods that China utilizes to develop sustainable projects in Africa(Chihwai, 2024).

As China’s Climate finance particularly for the infrastructure developments and energy infrastructure that support climate adaptation. The climate finance approach is China’s diplomatic and economic framework for deepening economic relationships with developing nations which includes Africa. Simultaneously, to gain access to Africa's resources such as oil minerals and other critical raw materials fundamental for China's economic growth

2.3 State-backed Financial Institutions

State-owned financial institutions known as China Exim Bank and China Development Bank (CDB) take priority roles in making China's climate finance model work. China relies on two state-owned financial institutions to carry out climate-financed investments which fund large renewable energy projects and infrastructure throughout Africa. Chinese banks together with state-backed companies directly execute climate-related projects which depart from Western financing methods that depend on the World Bank and other international institutions(Brautigam, 2009).

The energy infrastructure finance operations of China Exim Bank encompass African solar and wind energy projects together with the implementation of energy-efficient technologies. The banks involve themselves in implementing climate projects while providing backing to Chinese enterprises that handle construction tasks and offer materials and technological resources. The control mechanism enables China to direct project execution toward matched targets between African development goals and its strategic international agenda.

2.4. The "Aid with Trade" Model

China incorporates climate finance directly into its expanding trade and investment activities across Africa by making these financial resources stem from its economic expansion. "Aid with Trade" represents a distinctive financial method compared to typical Western ODA because it maintains fewer trade requirements China aligns its financing with commerce deals through which recipient nations must purchase products manufactured by Chinese businesses(Yan, Tian, Li, & Guo, 2024)

As a result, African countries choose this model as their primary power source because it provides budgetary assistance for renewable energy development despite concerns about dependency on external resources. South Africa along with other countries benefit substantially from Chinese climate finance because it supplies necessary funding to transform their energy systems .Significantly,practice shows that Chinese energy infrastructure funding requires African states to buy their technology products more often than not including solar panels wind turbines and hydropower apparatus. The active participation of Chinese firms in both designing and executing power infrastructure projects gives China extra power to control project execution methods. China achieves dual objectives by combining climate finance with trade and investment policies to accomplish both environmental and economic and geopolitical projects in Africa.

2.5 Non-interference and SovereigntyModel

China wins over African nations by refraining from enforcing established Western environmental controls that normally come with financing agreements. The non-intervention philosophy of China appeals positively to African governments because they favor it over Western financing terms which frequently include demands to move toward democracy or follow particular environmental controls. These particular funding terms appeal massively to governments who perceive Western assistance as being accompanied by political requirements(Kipo Sunyehzi & Nkruma , 2024).

Therefore, its non-interference diplomatic method China formed strong political relationships with African states which strengthen its global political position. China's non-invasive funding approach provides a trusted financial cooperation to sovereign nations in African countries such as Ethiopia, Nigeria and Angola.

2.6. China Acquisitions for Energy Security

As part of its overall geo-economics and geopolitical strategy China closely merges its climate finance measures with projects for mitigation and adaptation while sharing financial resources for supporting natural resource exploration. The continent of Africa contains extensive reserves of vital minerals including cobalt, lithium and nickel and rare earth elements which form the basis for manufacturing renewable energy products and electric transportation systems. The move towards green economy in China has led to heightened demand for minerals needed during the production of renewable energy technology(Internatioal Energy Agency, 2021).

As a consequence, Chinese funding of African renewable energy projects adds energy security benefits to the region through access to vital materials while enabling clean energy development across the continent .China stands as the leading importer of cobalt and lithium in the world because these key minerals serve as crucial components for electric vehicle batteries and solar energy storage systems Moreover, China maintains lasting control over vital energy resources in Africa by investing in local renewable energy infrastructure which enables its enduring leadership ahead of other stakeholders in global clean energy transformation.

2.7. China's Influence in Africa's Energy Landscape

Chinese initiatives for African renewable energy transition operate within the framework of its Belt and Road Initiative (BRI) which promotes economic and diplomatic engagement between China and Africa .The BRI of China supports major infrastructure financing through investments which includes substantial deployments of renewable energy systems across different African countries. Similarly, initiative supports power accessibility by enabling Chinese investments to create solar facilities and hydropower structures along with wind power plants throughout Kenya Ethiopia and South Africa(Hazzan, Longlong's , Ogunyemi's, & Abeka's, 2023).

Therefore, China has established partnerships through the BRI enabling African countries to alter their energy portfolio and decrease their fossil fuel consumption. The Nairobi Wind

Power Project in Kenya utilizes funding from the China Development Bank to secure clean renewable power that meets country needs along with building a robust economic bond with China. Additionally, China's increasing influence in African energy systems is elevating its global standing in green technology production while building its international development influence.

2.8 China's Energy Security Interests in Africa

China is the second the largest creditor by providing infrastructure and energy financing. Africa, 20% of the exports goes to China, including metals and minerals. However, before 2005, Africa's external debt was only 2%, which increased by 17% in 2021.China applies its African climate finance model as a permanent component of its extended strategy which aims to establish lasting partnerships throughout Africa. The Forum on China-Africa Cooperation functions as China's ongoing mechanism to serve as a dependable partner for Africa's developmental needs by providing financial aid and technological services focused on climate change. The long-term commitment enables China to participate in African sustainable development while becoming the lead power in African energy sectors(Munyati, 2024).

The climate finance practices of China in Africa break new ground regarding global climate governance. China follows a different strategy from Western models through non-invasive governance structures and trade-oriented assistance while maintaining country sovereignty thus integrating climate financing with economic and political expansion. The Chinese government implements major participation in African green energy transformation through its state-developed financial networks alongside local government and enterprise partnerships. The long-term viability of this model faces uncertainties because debt sustainability challenges outweigh governance standards and the risk of fostering dependency exists. Despite the critical evaluation of China's climate finance initiatives there remains a chance to advance African sustainable development through Chinese energy strategies and expanding Chinese geopolitical influence.

1.9 Greening the Belt and Road Initiative and China's Interest

Chinese President Xi Jinping established the Belt and Road Initiative (BRI) in 2013 to create a global infrastructure development program enabling better Asian and European and African economic collaboration. A contemporary version of the historic Silk Road development serves multiple purposes by boosting communication, business ventures and political agreements among member states. The BRI promotes economic growth as its core vision while simultaneously creating significant environmental funding opportunities particularly within African spaces to develop green economies(Hazzan, Longlong, Ogunyemi, & Abeka, 2023).

The BRI represents one of the biggest infrastructure programs in current history because it incorporates funding for roads along with railways ports as well as energy generation facilities and additional infrastructure. The BRI began as an economic expansion project that linked nations through infrastructure but has currently evolved sustainability into a foundational objective. In 2020 more than 140 different countries had joined.

Belt and Road Initiative China has brought widespread changes to African infrastructure systems. The BRI funds now dedicate an increasing portion to climate-resilient initiatives mainly through renewable energy project investments along with shifting away from basic mining and transportation priorities. China embraces a new foreign aid philosophy that positions the country as a crucial contributor to alter the African climate challenges.

2.10 Integrating BRI with Climate Finance Objectives

Through the BRI China implements renewable energy development in African territories to fulfill its climate objectives. The low-carbon transformation of China has created a growing necessity for clean energy technologies across the nation. Africa holds top position for China's green energy transition because it possesses plentiful renewable energy sources alongside substantial mineral resources(International Rewnewable Energy Egency, 2022).

China applies the BRI's renewable energy focus as a vehicle for financial gain while advancing its economic strategy through coordinated foreign operations. Chinese investments into African energy infrastructure make the continent a vital supplier of resources which China requires for its green energy plans. Amid various EV battery and solar panel requirements China requires African resources of cobalt, lithium, nickel and related minerals to support its clean energy evolution.

Thus, BRI initiatives China obtains vital long-term energy materials at the same time Africa receives developmental support from these acquisitions. China obtains substantial power control over African natural assets through its financial backing of BRI projects which solidifies its standing as a global energy market leader.

2.11 Climate Finance for Renewable Energy Projects

The infrastructure projects in Africa which concentrate on renewable solar, wind and hydropower installation. The renewable energy projects funded by China represent a main portion of its climate financing dedication to Africa where they supply power growth while helping Africa shift away from fossil fuels. China dedicates its energy financing strategy in

Africa to solar power projects because many African regions still lack adequate power distribution systems(Reimagined, 2024).

Ethiopia benefits from Chinese funding for its wind power ventures since this funding has enabled the nation to expand its energy supply beyond traditional sources. The funding provided by Chinese businesses as part of the BRI framework the Adama Wind Farm has established 120 MW of clean power capacity for Ethiopia. These power generation initiatives constitute essential measures to overcome Africa's energy shortage needs since they support both Chinese climate objectives and regional development needs.

2.12 China’s Energy Diplomacy in Africa

Chinese diplomacy is different from the West, which is based on the principle of non-interference and mutual development. Therefore, China grants debt relief, grants loans, infrastructure and, currently, muted aid in terms climate finance. In this case, China strategy is to empower its state-own businesses to go out by financially supporting these companies. Aiming to access the vital resources and critical minerals because China understands the anarchical nature of international relations. However, China is aware of the sensitivity of the resources gained for industrial needs may lead to any international confrontation but China adapted the cooperation for its energy security(Zweig & Jianhai, 2005).

Therefore, China stands as a preferred international partner for numerous African states because of its non-interference policy which appeals best to countries that historically experienced Western marginalization .African nations seek infrastructure investment from China because they find its financing more acceptable than the conditional funds provided by the IMF and World Bank. By implementing this approach China has secured massive diplomatic support worldwide which establishes the country as a global economic leadership force in Africa's developing market.

2.13 Geo-Political Ambitions to Counter Western Influence

China considers Africa to be a key contributor to its worldwide strategic initiatives in global terms. Many African governments feel they neglected by Western powers since those nations have maintained little influence in international environmental discussions. Some African leaders see the Kyoto Protocol and Paris Agreement as instruments that provide substantial advantages to developed nations through excessive Global South greenhouse gas emission requirements. China implements a policy that grants sovereign freedom and avoids political interference making its methods more welcome than western developmental aid programs(Sotirović, 2024).

As a result, the Chinese climate finance approach roots in mutual benefit and cooperative principles enables China to build stronger partnerships with numerous African nations thus expanding its diplomatic presence in Africa. China provides funding to African countries without political or governance conditions which creates an atmosphere of trust and mutual value so they can achieve climate goals according to their individual priorities

2.14 Geo-Economics Interest to Securing Access to Critical Resources

The substantial natural resources found in Africa contribute to why China implements its climate finance strategy in the continent. The transition of China to a low-carbon economy requires more critical minerals such as cobalt lithium nickel and other rare earth elements. The materials serve essential purposes in China's expanding renewable energy operations where they produce electric vehicle batteries and solar panel components(Internatioal Energy Agency, 2021).

The renewable energy financing initiatives in Africa China supports Africa's climate goals and simultaneously obtains essential materials which will be crucial for future developments China's economic growth depends on African resources which serve as crucial elements for the nation's sustainable energy transformation and will sustain their importance in upcoming economic development.

2.15 Securing Long-Term Energy Security

Africa holds 30% of the world's abundant critical minerals, which are key to the emerging clean technology. Globally, these mineral reserves are 55% of cobalt, 47.65% of manganese, 21.6% of natural graphite, 5.9% of copper, 5.6% is nickel, 1% is lithium, and 0.6% is iron. Importantly, these minerals are significantly crucial for economic transformation and emerging opportunities for technological advancement. Considering the significance of these minerals to the national economic security of China, as China used the term "strategic minerals". Also, China developed the National Mineral Resources Plan (NMRP) for 2019 to 2020(Reimagined, 2024).

The strategic minerals need for long-term energy security serves as the fundamental reason why China directs its climate finance to African regions. The Chinese dependence on clean energy technology together with its accelerated economic growth requires African mineral resources to fulfill its long-term energy goals. Africa serves as the foundation of China's energy strategy due to the worldwide interest in renewable energy technologies that include electric vehicles and solar power(Patel, 2024).

As a conclusion, China implements its climate financial activities across Africa because of multiple political, economic and strategic interests. The large mineral reserves throughout Africa serve as essential components for China to fuel its economic expansion while moving toward a low-carbon system. China pursues its energy security and green energy leadership by establishing Africa as both essential strategic cooperation and natural resources center in its long-term strategic plan. By renewable energy project funding China promotes both sustainable energy conversion and provides continuous access to vital resources. The strategic approach plays a central role in China's global leadership target of green technology and enables the country to use Africa's resources for simultaneous energy development and economic expansion.

2.16 Geopolitical Competition in Africa

The United States is reliant on China for its imports of rare earth elements (REEs), with 80% of its imports of these minerals. As a consequence, which detersthe US into a perilous energy security position. As internationally, the demand has amplified from 2003 to 2021, with62,500tons to 125,000tons. In response, the Department of Defense to recognize the "jeopardies in the supply chain for critical minerals in February 2021. However, recently China has been extracting the majority of the rare earth minerals, which are 58%of the global amount of rare earth elements(Bekoe, Daly, Sindle, Deatherage, & Burchard, 2022).

China and Africa face the major obstacle of increasing geopolitical rivalry between different nations. The growing significance of Africa in global climate financing has caused other international powers such as the United States and European Union and India to increase their engagement on the continent. Africa stands at the core of two national interests for powerful countries because it offers essential help in climate challenge solutions while providing its abundant natural resources (Nitza & Longhurst, 2024).

Hence, obtaining resources and trade routes together with political dominance will likely emerge from international competition. Western nations demonstrate intensifying disapproval of Chinese activities in Africa through their accusations of debt-trap domination and anti-governance practices. The dangerous geopolitical conflict between China and other world powers creates potential challenges to its long-term African strategy because African nations might face mounting pressure from the global actors

2.17 Debt Sustainability Concerns in Africa

The increasing Chinese footprint throughout Africa via the BRI brings new worries about African nations facing sustainable debt management challenges. African states might encounter difficulties handling their financial debts because China provides more beneficial loan agreements than Western Development Assistance funds. The existing debt burdens of numerous African nations may worsen due to the extra loans obtained through BRI initiatives (Kipo Sunyehzi & Nkruma , 2024).

Consequently, the economic dependence on debt resulting from BRI projects threatens African countries' ability to remain self-governing by making them prone to economic emergencies and Chinese political intervention. Even though Chinese financing policies are more adaptable than Western standards the growing debt prevents long-term sustainability of these projects.

2.18 China's Climate Finance for Africa's Green Transition

Accordingly, China's Global Energy Finance Database (CGEFD) from 2000 to 2023 China Development Bank (CDB) and the Export-Import Bank of China (CHEXIM). These banks provided 367 loans of the amount $209 billion to the 68 countries for energy-related projects.

Whereas, for Africa, $502 million for the renewable energy projects has been provided. Since, China committed to financing green energy in the Ninth Session of the Forum on China-Africa Cooperation. Similarly, China halted its fossil fuel-related finance projects(Lu & Morro, 2024).

Furthermore, in 2023, China's energy-related engagement was greenest ever since 2013 with the amount of USD 7.9 billion. Frequently, engagement is based on the partnership of renewable allied technology. Importantly, Africa became the largest beneficiary of China's renewable partnership by exceeding the Middle Eastern region. China positions the Belt and Road Initiative as its essential mechanism for African climate finance that supports renewable energy projects because these initiatives drive sustainable development across the continent. The Chinese government invests considerably in solar power and wind energy along with hydropower projects to provide Africa with increased sustainable energy capacity during its green development transition. (Nedopil, 2023)

In Conclusion, China pursues this move to achieve dual goals by securing vital resources needed to support its energy security and economic expansion plans The BRI generates crucial challenges about the long-term debt responsibility and its impacts on the environment as well as the benefits which local populations receive from it. The initiative represents a distinctive path for African countries to obtain financing and professional support to support their green energy transformation yet requires strategic oversight of associated potential challenges. The BRI's long-term success in Africa depends on resolving business and trade questions along with enabling countries to achieve sustainable development through the initiative.

2.19 The China’sClimate Finance Initiative in Africa

China’s climate finance activities strengthen diplomatic bonds between China and African countries. China established itself as the key development partner for African nations by extending financial support toward the development of infrastructure along with energy systems while enhancing climate protection measures during the last decade. China uses FOCAC together with the Belt and Road Initiative to strengthen its position as Africa's main climate action partner by focusing on mutual growth opportunities (Chihwai, 2024).

China advances its status as a worldwide power in economic and climate change leadership through this active partnership development. China positions as the primary factor in Africa's future by providing climate finance without requiring political terms commonly used by Western countries.

2.20 Role of Chinese Enterprises in Climate Finance

State-owned and private Chinese enterprises take a dominant position in delivering all climate finance projects that China implements across Africa. China incorporates Chinese firm expertise to make its climate finance initiatives both financially sustainable and technologically. As the Sino hydro along with State Grid Corporation of China executes multiple projects for renewable power generation throughout Africa by supplying technological expertise and building systems for solar wind and hydroelectric installations. The operation involves joint cooperation between these companies and African governments which ensures nations receive proper technical assistance to accomplish climate finance projects (Chihwai, 2024).

However, the criticisms related to China's climate finance model although it offers various beneficial aspects. A major concern exists about developing debt dependence between

African nations. The recourse to Chinese debt by numerous African nations enables them to execute large-scale infrastructure projects including renewable energy development. The favorable loan terms Chinese institutions normally offer surpass Western ones but accumulated debt presents future financial hurdles.

Furthermore, criticism claims China gives insufficient attention to governance and social issues when prioritizing its infrastructure development programs. Chinese development projects have faced criticism when local communities were not well-involved during decision-making and they now doubt these projects long-term success.

2.21 Africa's Transition to Renewable Energy

Through its climate financing program China offers Africa the chance to speed up its transition from fossil fuels to renewable sources of energy. Various African nations including South Africa together with Kenya and Morocco have established plans to shift away from fossil fuels but their progress shows both expense and time constraints. The implementation of renewable energy projects including wind farms solar power facilities and hydropower infrastructure depends heavily on extensive capital investment as well as specialized engineering knowledge and advantageous financial agreements which China extends as financing support (Yan, Tian, Li, & Guo, 2024).

The Chinese support for Africa's renewable power transformation remains in harmony with Africa's climate sustainability plans while advancing China's green energy strategies. The increasing number of people in Africa over time leads to greater energy needs throughout the region. According to the International Renewable Energy Agency in 2022 Africa requires $7 trillion between 2022 and 2050 to develop renewable energy sustainably. The financing efforts of China help fill the funding gap through programs including the Belt and Road Initiative (BRI) and its diplomatic support to African governments(International Rewnewable Energy Egency, 2022).

China supports South Africa's transition to clean power through its investments in both Jasper Solar Energy facility and Kusile Power Station. Through these projects South Africa cuts its carbon emissions while improving its energy portfolio since it depends less on coal sources African nations gain the advantage of skipping past heavy pollution from Western industrialization while achieving both environmental protection and economic development through Chinese investments.

2.22 Africa's Economic Development

Through its climate finance China assists African countries in their industrialization process by funding crucial development projects for infrastructure. China directs its investments toward building power generation projects as well as railway systems ports and road network infrastructure. The infrastructure projects receive vital importance by enabling trade and they promote industrial development that will drive Africa's economic expansion until it achieves the Sustainable Development Goals (Chihwai, 2024).

African renewable energy projects enable Chinese companies to create employment opportunities and foster local capacity through their participation. The construction phase of solar farms and wind power plants uses mainly African workers who later become part of operating and maintaining teams. Chinese companies teach employees through training programs essential knowledge for operating and maintaining energy systems in local areas(Asante, 2018).

As a result, infrastructure financed by Chinese funding enables the operation of energy systems that serve factories together with industries and agricultural production facilities. As China finances the construction of the Grand Ethiopian Renaissance Dam (GERD) through a joint investment scheme the power plant will deliver 6,450 megawatts of electric energy to serve millions of citizens. The project serves Ethiopia’s energy requirements while simultaneously strengthening its industrial capabilities due to its ability to supply dependable electric power to manufacturing sectors.

2.23. Debt Sustainability for Africa

The debt sustainability aspect poses a significant challenge for African countries that accept climate funding from China because their financial responsibility becomes increasingly under scrutiny. China's climate finance strategy with state-owned financial institutions such as China Development Bank and Export-Import Bank of China faces criticism because it triggers African debt levels to rise. The debt levels of countries in Kenya and Angola plus Zambia show signs of being stressed by existing financial obligations so their future receipt of Chinese-backed infrastructure loan funds has the potential to worsen the situation (Kipo Sunyehzi & Nkruma , 2024)

Furthermore, the World Bank in 2021 published research showing sub-Saharan Africa's debt keeps expanding yearly and most debt comes from infrastructure project financing. The beneficial loan terms that China offers over Western creditors mask long-term negative impacts that could break the financial stability of African countries. Countries may face economic instability from debt crises after Chinese-backed projects fail to generate expected revenue since they become unable to fulfill their loan payment commitments.

Conclusion

China's climate finance initiatives in Africa present significant opportunities for the continent, especially in renewable energy, industrialization, and sustainable development. Expeditious renewable energy facility deployment serves as fundamental for African energy independence and future sustainability. These opportunities need to be combined with initiatives to enhance local content development together with capacity growth and economic unification strategies.

As result, The China's climate finance in the Africa along with private sector stakeholders including Chinese investors to make and inclusive climate proof economic policies priorities.Africa's renewable energy projects will achieve financial and technical benefits.Importantly, it will benefits the China's international market for the renewable industry as these vital minerals resources are key to produce the renewable technology.

CHAPTER-3

3. CHALLENGES IN THE CHINA CLIMATE FINANCE APPROACH IN AFRICA

Introduction

As, Africa became a significant resource for China to import vital resources and the export destination for Chinese products. Consequently, China established a partnership with Africa which based on mutual benefits, aiming to gain international influence amongst the developing nations. Furthermore, it constructed the infrastructure, aid and climate finance to avoid the cascading effects of climate change. Subsequently, the trade volume between China and Africa in 2000 was US$10.6 billion, which reached a record-time high in 2021 with US$254 billion(Yigit, 2024).

In this regard, Climate finance stands essential for helping Africa manage the rising risks from climate change. Climate-related disasters now affect Africa at an accelerated rate due to increased frequency of adverse events combined with mounting intensity levels. The funding of adaptation measures through climate finance enables the construction of disaster-resilient infrastructure and the crucial support from climate finance.As well as the development of renewable energy sources which decreases greenhouse gas emissions. Climate resilience initiatives in Africa require substantial financial investment (Scott, 2023).

Simultaneously, China has become one of the leading countrywhich is providing climate finance to Africa under its South-South cooperation framework which it operates in the developing countries. The bilateral environmental programs between China and African countries function as an opposition framework to conventional North-South monetary resources to show the basic power of collaboration among developing countries tackling environmental change issues (Brautigam, 2009).

In Conclusion, Africa needs substantial financial backing because it faces major environmental and social challenges which prevent achievement of its climate adaptation goals. Climate resilience initiatives in Africa require Where, China is supporting by developing infrastructure to combat with climate change. The expanding Chinese participation in climate finance operations has still encountered significant obstacles toward implementing climate projects across Africa because geo-political and geo-economic interest to secure the rare earth element for the future energy transition.

3.1 Interests of External Actors

Africa’s export of cobalt to China, which is considered as the substantial for the future green energy transition. The 70% reserves of the critical mineral are particularly situated in the Democratic Republic of the Congo. Consequently, many international players have their own geo-economic interests, which may lead to great power competition in the African region. The combination between China’s resource-driven geopolitical agenda and its climate finance commitments presents vital doubts among the global player on existing initiatives(Carmody, 2025).

Africa received only $30billion through overseas development assistance (ODA). It requires $277 billion annually to meet the target of sustainable development goal of 2030.However, European Union defense spending on the invasion of Russia invasion of Ukraine in 2022 and President Donald Trump's economic nationalism drastically affected the European Union climate financing fell by 28%. Respectively, the EU recognized the geopolitical and supply chain significance of the African region by supporting the low carbon power houses.

Notably, the EU is facing energy insecurity due to geopolitical tensions with the traditional international partners such as the United States(Kouam, 2025).

The European Union is looking forward at Africa as an opportunity based on the donor-beneficiary model through green-business partnership. In 2021, the EU launched the Global Gate Initiative (GGI) of €300 billion for green investment including infrastructure loans for renewable energy and critical minerals. The prime example of its investment in Africa is the project with the name Libido Corridor. This project objectives to link Zambia and the Democratic Republic of the Congo. The project which contributes to the supply chain of the EU battery factories. Importantly, a company like Spiro which launched plants for production in Benin and Togo. The EU is accessing the €1trillion in return of these climate-related investments by securing the critical minerals for the new energy market(Kouam, 2025).

The EU recognizes the strategic importance of the region as the region contains abundant renewable energy resources. The North Africa solar and wind potential will serve the European Union for the green energy transition and, importantly, serve its energy security interests. Since 2020, under the Global Gate Initiatives, several projects, such as the 1.7 GW renewable energy project, for instance, in Tunisia and an undersea electrical connection between Egypt and Greece. Also, the TeraMED initiative goal is to install 1 terawatt of renewable energy capacity in the Mediterranean region in 2020. The European Union approach related to climate-resilient investments in Africa underlines the geo-economic interests in Africa by enhancing the manufacturing of the clean energy technology and trading across the European region(Emran, Knaepen, & Jaïdi, 2025).

Hence, Natural resources in Africa serve as the main focal point of China's growing investment in Africa specifically through the approach of climate finance. Natural mineral resources combined with fossil fuels that exist across Africa serve essential purposes for China through its energy security requirements as well as industrial production needs along with its clean energy transformation. Cobalt and copper as well as lithium and rare earth metals play critical roles in producing electric vehicles while enabling development of solar panels and green technologies(Scott, 2023).

The ongoing sustainability of China’s climate finance approach faces continuous doubts. Chinese investments provide vital benefits in the immediate future but might fail to establish permanent institutional strengthening in African building capabilities. The pattern of financing utilized by China includes massive funding support combined with infrastructure project builders yet may produce unsustainable debts within African countries. The model proves challenging for climate finance projects whenever they mainly pursue economic returns such as resource extraction and energy infrastructure instead of environmental and social sustainability targets (Shen, 2020).

The Chinese method of engaging with African climate finance activities bases its approach on practical partnership models and mutually advantageous solutions. China emphasizes sustained political and economic relations with African countries which often need structural improvements because they are poorly developed .Chinese investments into African infrastructure and electricity systems and technology advancements help African countries develop their ability to administer climate funding and execute climate change adaptation and mitigation programs.

China should create an equilibrium between financing resources and strengthening African institutions in order to properly address these problems. China should direct its investments toward building African institutions by establishing both governance proficiently and advanced technical capacity systems. The development of sustainable resilient institutions to properly handle climate finances under Chinese guidance can provide African countries with the capability to manage climate change independently over the long term.

3.2. International Organizations

China's African climate finance strategy responds to both its domestic objectives together with the international requirements enforced by World Bank and International Monetary Fund (IMF) and United Nations. Global institutions define climate finance policies together with standards which force China to conform its environmental and finance initiatives to worldwide principles. Under traditional Chinese policy China prefers bilateral agreements alongside South-South cooperation throughout these arrangements present less restrictions than Western institutions maintain (Jiboku, 2015).

The World Bank together with the IMF along with other international organizations maintain concerns regarding the environmental sustainability of projects supported by Chinese financing in Africa. The controversy involves examining how these initiatives bear compliance with international targets for green emission reductions and sustainable development. External pressure should compel China to develop detailed monitoring systems that check the environmental and social compliance of its climate finance projects. China faces substantial barriers to find proper equilibrium between its international foreign policies and worldwide environmental responsibilities(Jiboku, 2015).

The diverging management strategies between China and international organizations result in occasional conflicts since the organizations push for enhanced standards of environmental accountability and transparency in climate finance projects. China prioritizes fast corporate expansion and financial aid to other nations through unilateral pacts which omit the extensive social and environmental evaluation procedures implemented by multilateral organizations. China must now balance global environmental obligations including Paris Agreement targets with its geopolitical needs because international pressure is mounting.

3.3 Strengthening Regional Cooperation

Regional integration stands as a top priority for the African Union due to the considerable challenges which result from fragmentation in climate finance. The African Union dedicates efforts to create a unified strategy that will address climate change across the entire continent. The African Climate Policy Centre (ACPC) functions as a prominent initiative to build African nations' capability of properly accessing and handling climate finance. The African Climate Policy Centre makes it the mission to unite climate finance operations across the continent while fostering teamwork and ensuring climate plans integrate smoothly with African Union Agenda 2063 objectives(Munyati, 2024).

The African Union actively works to develop regional climate resilience programs that unify national efforts to tackle mutual challenges between countries. The designed programs serve to develop regional working partnerships focused on renewable energy development as well as water management practices and sustainable agricultural approaches. These initiatives face delays because political support is insufficient and the implementation requires technical expertise and extra funding. The African Union has developed climate action frameworks yet these frameworks remain underutilized in their essential form to fight against Africa's widespread climate crisis. The focus on national interests above regional cooperation by numerous African states results in a failure of national policies and actions to remain synchronized(Tedeku, 2025).

Regional economic communities serve as important institutions because they help African countries coordinate their activities within the continent. Regional economic communities (RECs) including Economic Community of West African States (ECOWAS) and East African Community (EAC) implement climate resilience programs through their regional approach for integrating climate policies and uniting national targets with regional target sets. Most of these bodies operate without enough operational power as well as insufficient political authority to force policy agreement among African governments. African governments along with The African Union and Regional Economic Communities need to coordinate their efforts to guarantee climate finance delivers benefits to African countries as a unified body rather than pursuing individual national interests (Petrie, 2015).

China stands as a major investor of African climate finance contributing significantly to regional cooperation which helps resolve fragmentation issues in climate finance programs across the continent. China uses its South-South cooperation strategy to provide essential financial assistance for building infrastructure and fostering climate resilience throughout different African nations. As China uses its Forum of China-Africa Cooperation (FOCAC) platform to create deeper relation with African nations to fight against climate change. The China delivers major economic assistance to Africa through personal bilateral relationships but its participation in African Union-made regional climate finance programs remains marginal. Bilateral agreements between China and African countries generate fragmented climate finance projects because individual countries receive funds despite the lack of coordination between projects at the regional scale. The bilateral partnership model China supports its relations with African (Raza & Khan, 2024).

As a result, connection between China and regional institutions like African Union and RECs needs improvement to resolve this problem. China can strengthen African cooperation by backtracking its climate finance support to national plans according to regional objectives which ensures effective utilization of funds while also promoting alignment with long-term climate targets. By joining regional climate initiatives China can establish a finance distribution system which applies collective African needs instead of pursuing specific national interests. The support China offers to regional integration should move past monetary participation alone. China brings opportunities for improving African state institutions and those of regional organizations through its technical expertise. China should establish regional centers of excellence for climate finance to create better cooperation and educational exchanges and improve best practice application across the continent. The utilization of international climate finance in Africa will strengthen because of this approach which enables the positive results from this climate financing.

3.4 China-Africa Partnership in Climate Finance

China uses the Forum on China-Africa Cooperation (FOCAC) as its primary instrument to strengthen its climate finance initiatives directed toward Africa. The Forum on China-Africa Cooperation enables China to boost its funding for green infrastructure development and renewable energy projects and climate adaptation programs across the African continent. The African nations receive strategic assistance for transitioning towards low-carbon operations through climate change adaptation programs(Cissé, 2024).

China faces various challenges in delivering climate finance solutions to Africa through issues of governance and foreign policy along with legal and monetary restrictions and socio-environmental risks. Climate finance's effectiveness decreases and regional coordination becomes more complex because climate finance operates without integration across the African continent. China's engagement with Africa's climate finance activities led to major contributions toward building infrastructure while strengthening renewable energy installations along with projects for climate resilience. These climate initiatives require better alignment as well as stronger governance systems and a more balanced approach that protects environmental sustainability and delivers economic outcomes (Alex-Oke , et al., 2025).

Consequently, China’s climate finance initiatives will reach their maximum potential through intensified cooperation between China and African countries for sustainable climate solution development. The implementation requires increased financing for renewable power installations and climate-resilient facilities while centering their designs for local community needs. The partnership between China and African countries through direct participation of local populations during climate project development leads to superior environmental and population-based outcomes of climate finance initiatives.

3.5 Governance Challenge in Climate Finance Implementation

The management and distribution of climate finance heavily depends on governance systems for its effective operation. Climate finance can only achieve its desired outcomes when African governments create firm administrative frameworks for fund management as well as project progress tracking together with climate project accountability systems. Mostly, the African states experience major governance issues which make their climate funding unsuccessful. Inefficient resource management occurs because African countries possess weak institutional systems, inadequate regulatory processes along with insufficient capabilities to handle substantial funding sources(Eladawy, 2025).

The absence of proper governance systems causes extended project delays while simultaneously promoting monetary misappropriation in addition to preventing full transparency in funding distribution processes. The implementation of China-financed large-scale infrastructure projects exhibits these issues. Climate finance programs become ineffective at reaching their objectives because weak governance systems leave them exposed to performance weaknesses. The 2024 study identified East African climate finance projects suffering from delayed government processing procedures and inadequate agency coordination which caused problems with their climate adaptation interventions (Patel, 2024)

As a result, various countries within Africa experience worsened governance issues because there is no standardization of regulations and policies between nations. The diversity of laws and systems used to handle climate finance between nations leads to problems for unified border project management and generates substantial operational inefficiencies .The divergent regulatory system in Africa prevent the development of unified plans for adaptation and mitigation that reduces the entire continent's ability to adapt through climate finance.

Furthermore, the spread of corruption functions as a major threat that weakens the impact of climate finance in Africa. Investments into climate initiatives lead to substantial redistribution of funds since a large portion goes to non-climate programs and corruption schemes. The funding allocation becomes dysfunctional because corrupt political leaders give financial advantages to their alliances instead of using these resources to help vulnerable communities affected by climate change. The inappropriate use of funds creates one of the major obstacles preventing successful climate project implementation across Africa (Dube, 2022).

The problem of corruption intensifies due to insufficient oversight of climate finance management. Lack of proper monitoring procedures for tracking funds has caused both efficiency problems and fraud events to occur. The public loses faith in climate finance systems because funds become untraceable and planned activities fail to produce meaningful outcomes. International donations from China along with other donors have encountered multiple controversies concerning fund utilization and implementation delays in climate adaptation projects(Dube, 2022).

Thus, dispersion of resources without fairness constitutes a severe difficulty that develops through corrupt practices. The delivery of support for building climate change resilience stands hindered because such inequalities block most affected communities from accessing the support they need Climate finance effectiveness suffers from corruption while the legitimacy of climate policies and controlling institutions faces serious damage through this system of abuse.

Moreover, the legal environment of Africa creates important obstacles that impede climate finance investments across the region. The region's climate finance projects face sustainability risks because officials rarely enforce contracts and properties remain unsafe to own and land ownership remains ambiguous. Many African nations fail to create properly developed legal structures protecting investors and guaranteeing equal resource sharing. Chinese as well as foreign investors will keep away from climate projects because of existing legal uncertainties(Mohieldin, Kenewendo, & Wambui, 2023).

The implementation of climate finance projects often faces delays or gets completely terminated because of extensive legal disagreements about ownership of specific land areas as well as conflicts regarding community compensations and contract binding terms. Legal confusion concerning land ownership produces conflicts that stem from interactions between local populations and both state agencies and foreign investment groups. The legal vagueness acts as an obstacle that increases the risks for investors and local communities thereby restricting the complete potential of climate finance .Climate finance projects face financial risks because the current legal structure to manage this funding is not developed to a sufficient level(Bekana, 2023).

Subsequently, the absence of strong contract enforcement and unclear property rights systems causes financial damage to investors together with donors. China faces elevated concerns about its climate finance investments in infrastructure and energy projects which extend across numerous countries in the region .The risks can be minimized through African government initiatives which focus on improving their legal framework by building clear property rights with strong environmental protections.

Respectively, the successful deployment of climate finance initiatives struggles in Africa because of substantial technical obstacles apart from monetary obstacles. A critical infrastructure and technical expertise deficit exists across Africa making its progress in developing sophisticated climate adaptation projects difficult. African countries find it challenging to use climate finance resources effectively because their limited capacity in areas of climate data collection and project management and climate-resilient infrastructure operation. Large-scale complex climate projects need both specialized expertise and advanced infrastructure systems because they are difficult to implement at this operational level.

Renewable energy projects constitute the base of several African climate finance programs yet demand expert engineers together with environmental scientists as well as financial specialists to drive their implementation. A number of African nations lack enough qualified personnel in these disciplines which compels them to depend on international experts to execute these projects. The knowledge sharing and technological transfers from Chinese partners alongside other foreign actors have proven vital for enhancing African climate resilience.

However, African countries develop a complex relationship with such external entities because dependency on outside aid can become problematic. African countries stay dependent on foreign professionals for their development needs which restricts their ability to achieve independent sustainable progress in coming years (Buchner, et al., 2023).

The Chinese government delivers essential training plans and technology-sharing programs toward improving technical capabilities as components of its climate finance initiative. Chinese initiatives under South-South cooperation allow the transfer of clean energy technologies from solar panels and wind turbines to African states which helps them decrease their fossil fuel dependency. Single technology transfers do not create sustainable technical abilities within African nations over extended periods. The initial funding from Chinese investments allows renewable energy projects to develop but African nations experience challenges with inadequate infrastructure as well as a shortage of trained personnel needed to sustain and expand these initiatives. A technological shortfall hinders climate finance benefits while preventing sustainable project development(Cubitt, 2014).

The lack of developed infrastructure affects critical sectors of many African nations because their transportation systems and water management systems and agricultural sectors are in poor condition. Executive sectors require modern climate-resilient technologies to carry out climate adaptation projects but their implementation faces barriers from inadequate infrastructure. Multiple investment costs arise from the establishment of irrigation systems along with flood protection equipment and renewable energy distribution systems which African nations often need to bolster. The ability to maximize climate finance projects depends heavily on having appropriate infrastructure because insufficient infrastructure reduces the long-term achievements of climate adaptation initiatives(Bratton & Logan, 2014).

Therefore, dual strategy should be implemented for handling Africa's limited technical capabilities together with inefficient infrastructure. The development of local expertise demands stronger emphasis on teaching programs and information exchange initiatives and education and practical skill development programs. Effective climate project management requires governments of Africa and international financial institutions and foreign partners to join collective efforts toward training their workers to handle climate projects successfully. Major investments in infrastructure are essential because they enable development of physical and technological systems that will support adaptation solutions and mitigation techniques. Multiple stakeholders including public and private groups should allocate resources through sustained commitment to build essential infrastructure that will support climate finance initiatives.

3.6 Environmental Sustainability

The continuous support of climate finance initiatives faces challenges because economic benefits often take precedence over environmental conservation efforts. Climate finance initiatives in Africa receiving Chinese funding face criticism because their emphasis on economic advancements makes them underperform as sustainable environmental solutions. The large infrastructure works such as hydropower dams as well as mining sites often generate immediate financial returns but leave enduring environmental problems that harm natural habitats while hurting biodiversity and creating water pollution(Lwesya, 2015).

Then these, projects claim to have green benefits although they lead to environmental deterioration. Economic gains through infrastructure construction and natural resource extraction typically reduce attention directed at ecological sustainability over extended periods. The implementation of China's climate financing projects in Africa faces skepticism regarding their genuine contribution to environmental sustainability in Africa because it appears their development goals might conceal environmental damage.

The enduring positive effect of climate finance on Africa depends on maintaining total focus on environmental sustainability with comprehensive evaluation of development's ecological consequences. Projects must focus on achieving economic growth benefits alongside developing long-term climate resilience features in environmental sustainability goals. Environmental sustainability requires status as the foundation of climate finance projects with financial institutions needing strict regulations to analyze environmental impacts before they grant financial approval(Gemayel, Rosa, Maheshwari, Ungerer, & Lindner., 2025).

To succeed in the long-run climate finance plans for Africa must employ integrated approaches which simultaneously handle environmental sustainability and social sustainability goals. The design of climate-induced projects needs to fulfill two essential goals: emissions reduction alongside development advancements which encompass poverty alleviation and employment opportunities and neighborhood empowerment. The alignment of climate finance projects between environmental sustainability and social sustainability objectives helps Africa create enduring positive outcomes from climate funding(Gemayel, Rosa, Maheshwari, Ungerer, & Lindner., 2025).

Several financial as well as technical along with environmental and social obstacles limit the effectiveness of Africa's climate change adaptation measures through Climate Finance systems. Climate finance faces multiple barriers because not all countries receive fair financing opportunities while buildings adequate technical systems and maintaining environmental and social safety remain essential requirements. The resolution of these difficulties requires that African authorities together with international partners develop multi-tiered strategies focused on financial and technical empowerment, enhanced access to climate capital for vulnerable countries and absolute integration of social safeguards into all climate-funded initiatives(Adom, Mukoki, Ngwenya, & Simatele , 2024).

The Chinese participation in African climate finance initiatives holds positive and challenging aspects for the region's sustainable development prospects. China makes substantial investments in African infrastructure and renewable energy but needs to enhance transparency standards as well as boost environmental sustainability commitments and accountability measures in these funding programs. The combination of proper challenge resolution alongside projects that integrate environmental and social priorities will enable Africa to achieve maximum benefits from climate finance thus creating sustainable resilience

Africa faces major problems because its climate finance sector exists in an inherently fragmented condition that creates barriers to both effectiveness and sustainability. The vast number of more than 50 nations in Africa maintains different regulatory environments and climate strategies alongside their own institutional capabilities. Different funding entities such as international organizations and bilateral donors and private investors fund separate projects throughout Africa because of regional diversity. The different entities attract financial support successfully but their insufficient communication about resources leads to lower efficiency in funding distribution and development programs(Climate Policy Initiative, 2024)

Climate finance in Africa operates without coherent coordination which creates problems because efforts to face climate challenges on a continental scale experience duplicated projects and insufficient coordination. The varied donors who support similar projects in different countries execute them independently of established regional and continental climate strategies. Such resource duplication produces unproductive spending while leading toward parallel initiatives that prevent potential collaborative advantages. Funding distributions under current practices tend to target institutions that can handle monetary support even if the most affected regions fail to receive adequate aid (Dafermos, 2025).

The uneven distribution of funds exists on two levels as well as across the entire funding structure. Nations with sound institutional structures and effective political relationships gain additional funds while dangerous climate zones including Sahel regions and small island nations find excessive difficulties in obtaining funding amounts sufficient to address their needs. The current inequality systems continue because the least able to handle climate change effects receive the least support. Environmental and climate change outcomes suffer because climate finance lacks equal distribution across the African continent thereby preventing full regional benefit from international financial support (Dafermos, 2025).

Climate finance programs are poorly supported through the lack of an all-encompassing strategy for the African continent which would enhance financial coordination. Separate climate finance objectives remain the norm for independent countries and regions throughout the world. The lack of cohesive alignment between continental strategies and national goals decreases both the financial value of climate adaptation and mitigation funds allocated to Africa and their overall effectiveness. A consolidated climate finance plan will allow African nations to maximize their financial assets as they develop enhanced climate impact resilience (Abbass, et al., 2022).

As climate finance aims primarily to enhance environmental sustainability it sometimes creates unintended negative effects on social components during large-scale projects which include infrastructure development and resource extraction. Local communities face the most critical social danger from Africa's climate finance projects which result in their forced relocation. The development of large hydropower facilities and infrastructure projects along with extraction efforts necessarily requires communities dwelling near locations to move away from their homes. The process of moving people leaves people without their earnings destroys their way of life and breaks apart their cultural and social structures(Abbass, et al., 2022).

As Consequence absence of social protection measures in African climate finance projects by several national governments exposes underprivileged populations to unfavorable results from these programs. African communities suffer forced relocation from Chinese-backed development projects that do not provide sufficient compensation to families or site resettlement planning. Social restlessness together with project failure develops from inadequate consideration of social impacts which weakens the advantages of climate finance initiatives while simultaneously affecting already disadvantaged and vulnerable areas.

Additionally, Chinese-backed investment projects frequently cause conflicts between foreign investors and local communities because the defending groups lose their access to vital natural resources needed for survival. The breakdown of local land tenure arrangements with inadequate community engagement during climate finance project planning stages usually leads to such conflicts .Without adequate social risk evaluation in climate finance projects the poverty reduction and sustainable development objectives remain unattainable while existing inequalities continue to intensify.

Climate finance projects must implement strong social safeguards while actively involving local communities to decide project requirements as a vital approach for reducing social risks during implementation. Prior to project initiation social and environmental assessments must be carried out together with essential compensation payments for displaced communities and active participation by local members during both planning and execution of climate projects.

Conclusion

The issue of governance along with transparency stands as a major concern when examining Chinese-financed projects across the African continent. The critics believe China's slow pace of imposing Western donor transparency requirements results in project corruption alongside inefficient arrangements and unaccounted practices. Many major African governments thank China for its non-interference policy although this policy creates uncertainty about how long its projects will survive.

Significant China’s climate finance efforts in Africa as a tool to achieve its extensive political and strategic interests across Africa. China has intensified its power in Africa by utilizing investments together with trade alliances and foreign aid which stem directly from its desires to exploit Africa's abundant resources. The approach fits within China’s diplomatic and economic framework for deepening political connections and economic relationships with developing nations which includes Africa. China regards Africa as a dual-purpose strategic area because it serves as a development partner and a key supplier of necessary minerals and resources for its accelerating industrial growth in future.

CHAPTER-IV

4. GROWING OPPORTUNITIESFOR CHINA'sCLIMATE FINANCEIN AFRICA

Introduction

The critical minerals are vital for solar, wind and battery technologies. As the World Bank outlined that 3 billion tons of minerals are required for the wind and solar sources of energy to limit the global mean temperature to 2°C. Contemporary, the race to secure these resources has been exacerbated. Where, the United States, European Union and their allies are more concerned about geopolitical for energy and security as aiming to away from Russian fossil fuels after the invasion of Ukraine. Thus, African continent becoming the significantly imperative for the major powers like the USA, China, and Russia to secure the supplies of the critical minerals. In this regard, for the past 15 years, China has developed a dependence on securing critical minerals. As a result, the lingering engagement of China in securing vital minerals from Africa(Dabelko, et al., 2022).

Climate change generates severe difficulties across Africa leading to elevated temperatures followed by droughts and floods which causes widespread food shortage. These environmental pressures threaten both African natural ecosystems and social systems and economic infrastructure on the continent. Building resilience and establishing a low-carbon climate-resilient economy in Africa demands major financial backing because this region stands as the foremost climate change victim. The limited emissions contribution of Africa fails to justify the severe consequences from climate change the continent faces since there is an urgent requirement for comprehensive climate finance strategies (Patel, 2024).

The objectiveof China’s climate finance extends beyond funding because it requires strategic investments in combination with infrastructure and renewable energy systems and climate adaptation solutions for building resilience projects. The appropriate allocation of climate finance enables Africa to explore its green economic potential while resolving fundamental problems of energy shortage and harmful environmental effects in addition to poverty challenge. The African development of climate finance finds China as its essential major contributor to the region's climate financing process. China supports Africa's climate action through its infrastructure development and renewable projects and development services which present exceptional prospects to establish sustainable futures.

4.1 Secure the Rare Earth Elements

Renewable energy resources amount to an ample part of Africa because it boasts abundant wind corridors together with energetic solar irradiance and considerable hydropower capabilities. These renewable energy resources that exist in Africa are not fully utilized. The International Energy Agency (IEA) reports that sub-Saharan Africa's excessive population of 57% people lacks access to electricity which blocks development while magnifying economic and social poverty and restricts manufacturing and farming progress .All regions require energy access as their basic foundation to raise living quality alongside industrial expansion while securing economic sustainability. The accelerating energy requirements throughout Africa demand immediate implementation of environmentally friendly sustainable energy options due to fast-growing population numbers and upgrading cities (Amoah , Amoah, Kwablah , & Asiama, 2025).

The scarcity of energy in Africa finds its resolution through renewable energy resources. Africa possesses vast wind, solar and hydropower potential which enables the solving of energy access challenges and decreases fossil fuel dependency while decreasing its impact on global warming. Through its climate finance operations China leads the initiative to solve these problems. Through financial backing and technological assistance from China the implementation of renewable energy installations has expanded in Africa making positive contributions to sustainable power solutions (Sanya & Tembo 2025; Zhao & Liu 2024).

China implements support for African regional integration through joint projects that cover multiple nations and financial assistance systems. The collective effort of African governments and China called the African Renewable Energy Initiative (AREI) the continent pursues expansion of renewable power generation. African Renewable Energy Initiative (AREI) works as a strategic plan to expand Africa's power capacity through borderless infrastructure development that supports regional climate resilience as well as national energy requirements (Yang & Zhang, 2024). The Chinese participation in regional power projects combines financing methods to boost both regional cooperation and integration development.

Regional projects need the establishment of enhanced governance structures and regulatory balance among African states for them to reach success. The execution of regional projects fails to progress straightforwardly because countries in the area have separate national policies and regulatory systems. China's climate finance initiatives will produce sustainable impact if they operate through a unified regional governing system that supports local governance needs as well as socio-economic contexts and long-term climate objectives (Patel, 2024).

Africa maintains fragmented climate finance operations despite receiving increasing international support from China and other partners. The delivery of united climate change actions by African governments is limited because of multiple conflicting regulations and contrasting policies and divergent operational approaches. Better results from China's climate finance initiatives will emerge through unified regional coordination of their efforts to support African development plans. Such a framework must adapt to diverse situations across nations but maintain collaboration between African states to optimize the usage of climate finance for solving critical climate problems (TNI, 2025).

The surge of Chinese involvement in African climate financial activities creates opportunities while simultaneously generating complex issues that need attention. China utilized major financial resources to push forward African nations as they switch toward a decarbonized sustainable economic framework. A sustainable increase in Africa's growth depends on the development of better governance mechanisms as well as debt management systems and environmental impact assessments. China needs to maintain its backing of regional cooperation because such cooperation will overcome the key obstacle of fragmented collective action in order to direct Africa's climate finance systems toward achieving its long-term objectives.

4.2 Market Expansion for Exports

The renewable energy transition projects in Africa receive extensive backing from China. Pose financing through China Exim Bank together with China Development Bank guides the operation of major renewable energy development activities that span across the continent. These financial institutions deliver favorable loans and capital investments which serve as essential elements for constructing infrastructure used to produce renewable energy. Africa depends heavily on these renewable energy facilities including solar parks wind farms and hydropower plants to solve its energy shortage and expand its energy supply options(Chihwai, 2024).

The Benban Solar Park serves as a major Chinese investment project established as the largest solar energy facility in Africa. The support from the China Exim Bank this project advances Egypt’s renewable energy policies while creating employment opportunities and strengthening the national economy. China invested heavily into the Lake Turkana Wind Power Project in Kenya resulting in major growth of Kenya's renewable energy capability. Through their investments African countries achieve several goals; they decentralize their dependency on fossil fuels and build advanced power systems which withstand climate-related challenges (Patel, 2024).

Renewable energy projects in Africa have expanded through the Belt and Road Initiative (BRI). The BRI enables China to finance numerous infrastructure projects with a focus on renewable energy development thus advancing Africa’s transition to green energy while strengthening local economic potential. The investments from China are creating the critical foundation for energy transmission and distribution networks in remote parts of Africa which expands the availability of clean electricity to areas that lacked.

China supports African economic transitions through financial backing since it represents part of its overall strategic aid for industrialization and modernization across the continent. China implements strategic investments in renewable energy manufacturing such as solar panels wind turbines along with electric vehicles which drives industrial growth alongside sustainable economic possibilities (Agyekum & Donkor, 2024).

The development of Africa’s renewable energy technology sector through solar energy value chain advancement stands as a major example of Chinese participation. The establishment of solar panel production facilities by China creates an opportunity to bridge energy gaps and create employment opportunities which support local economic growth. African industries develop their ability to produce and export renewable energy technologies because of this development which positions Africa to compete in the worldwide renewable energy market.

Technology transfers through China's funding model empower African nations to depart from buying expensive renewable technologies which generates opportunities for their domestic industries (Qiu, 2024).

The EV infrastructure investments made by China have helped Africa move forward toward environmentally friendly transportation systems. Multiple nations across Africa have joined forces with Chinese firms to construct essential facilities for electric vehicles through the building of charging stations together with production plants in regions like Kenya and South Africa and Egypt. Economic development through these investments leads to carbon emission reduction and generates new employment options within automotive manufacturing and renewable energy fields (Agyekum & Donkor, 2024).

The aggressive investments for clean energy projects involving wind farms and bioenergy projects undertaken by China contribute to Africa's industrialization initiative. China actively supports African states as they work towards decreasing their fossil fuel reliance through establishing new energy alternatives in the region. Chinese banks provide financial support that lets Kenya together with Morocco and South Africa expand their energy diversity through extensive wind and solar energy project development (Sanya & Tembo 2025). The green transformation process serves as a key requirement for Africa to maintain sustainable growth by reducing the environmental damage from industrial development.

Green transitions encounter several problems while being implemented. For the sustainable industrial growth of Africa several industries need to focus on local innovations combined with capacity strengthening of their local operational capabilities. China's financial support must serve as a dual purpose to build infrastructure while giving African states the required technological competence to operate and preserve their renewable energy systems for continued sustainability (Patel, 2024).

China's climate finance intervention throughout Africa implements extensive infrastructure construction which extends into transportation development alongside water machinery deployment alongside agricultural sustainability programs together with industrial modernization improvements .The invested capital establishes fundamental structures that will support a diverse sustainable economy in the future. Green infrastructure projects spearheaded by China serve multiple purposes by decreasing fossil fuel consumption and fostering industrial parks which both withstand climate change and meet world sustainability standards.

4.3. Global Dominance in Renewable Energy

The Asian nation's dedication to renewable energy produces many favorable changes across African nations. The primary advantage of these investments stands as increased access to energy resources. China’s climate financing of big renewable energy projects will contributes to resolving Africa's growing power demand particularly within countries with sizeable energy access problems. The support of economic development and industrialization through job creation stems from these activities.

Renewable energy projects involving solar and wind farms provide construction-related jobs as well as maintenance jobs during operation which minimizes unemployed workers while developing local economies. Africa achieves economic stability when it transitioned to renewable energy because it no longer depends on expensive fuel imports for its power needs. China’s green energy projects work together with Africa’s climate targets by lowering carbon emissions which establishes support for both adaptation and mitigation activities according to global climate agreements.

The clear advantages of China’s energy investments require attention to specific challenges which must be resolved. The majority of African nations face significant government management problems as their main national issue. Many countries encounter substantial operational limitations together with insufficient capabilities which make it difficult for them to handle and execute large-scale infrastructure projects. Some countries suffer from inadequate regulatory systems and technical deficiencies which creates slow progress and inefficient management of climate finance payments (Mungai et al., 2024).

Some of the projects backed by China have received criticism because they focus on fast construction alongside immediate economic payoffs rather than lasting environmental and social preservation. These unanticipated environmental issues including ecosystem destruction and water resource contamination will reduce the sustained value of project operations .African hydropower facilities supplying clean energy to power grids have sparked worry about how they affect native wildlife populations together with water supply levels and the natural communities that depend on these resources.

China employs a non-interference policy as part of its South-South Cooperation model which presents both positive and negative aspects. African states benefit from policy-based independence in decision-making under the Chinese policy yet transparency issues emerge in some projects. Weak monitoring systems and evaluation frameworks create barriers to verifying that projects will achieve environmental and social criteria thus damaging the long-term success potential and sustainability of the initiatives (Patel, 2024).

China's climate finance intervention throughout Africa implements extensive infrastructure construction which extends into transportation development alongside water machinery deployment alongside agricultural sustainability programs together with industrial modernization improvements. The invested capital establishes fundamental structures that will support a diverse sustainable economy in the future. Green infrastructure projects spearheaded by China serve multiple purposes by decreasing fossil fuel consumption and fostering industrial parks which both withstand climate change and meet world sustainability standards.

The investments China conducts within hydropower projects delivered essential support towards decreasing energy poverty throughout East and Southern African territories. China supports development of the Grand Inga Dam in the Democratic Republic of Congo through financing to create 40,000 MW of power generation which would serve most of the continent. These infrastructure projects make African countries better equipped to handle climate change by giving them dependable energy systems that do less harm to markets that supply fossil fuels (Qiu, 2024).

China dedicates its climate finance support to extend beyond power production by focusing on essential infrastructure development. Water management investments alongside agricultural initiatives stand as vital elements for improving food security because they provide water resources to drought-prone African regions. Through their collaboration with the African Development Bank (ADB).China has established programs which provide financial support to construct infrastructure systems to combat water shortages and implement agricultural irrigation programs while preventing floods. Climate resilience has become a foundation of Africa's extended development roadmap because of these initiatives which help progressively develop sustainable growth opportunities (Shen et al., 2024).

4.4. Challenge the Western Dominance in the Region

The delivery of climate finance by China follows South-South Cooperation principles which establish methods for developing countries to work together against mutual development challenges. South-South Cooperation differs from traditional donor-recipient relationships because it supports mutual respect between partners while preventing political interference and allowing maximum. In Africa numerous states have tolerated years of assistance from above that forces political conditions on them. The Forum on China-Africa Cooperation (FOCAC) has enabled China to increase its financial support especially for renewable energy generation and agricultural resilience development and climate adaptation initiatives across Africa

Forum on China-Africa Cooperation functions as an organization which facilitates Chinese-African cooperative efforts based on African country independence while focusing on resolving essential needs. Through their partnership model China can provide funding while conducting technology exchanges and developing capacities which enables African countries to create suitable solutions for their particular environmental and socio-economic circumstances. The partnership model achieves mutual success which establishes successful climate finance frameworks delivering lasting effects for Africa's development progress.

Traditional North-South financial aid practices differ from South-South Cooperation approaches because they attach environmental and political requirements such as political transformation and environmental governance standards. The Chinese funding approach lacks such prerequisites which allows recipient African nations to utilize their funding according to their domestic development requirements. China has become the preferred financial option for African countries because they can remain independent in their climate change efforts while pursuing their development interests.

4.5 Soft-Power for the South-South Cooperation

Two flagship financial institutions belonging to the Chinese state lead its funding efforts throughout Africa: China Exim Bank alongside China Development Bank (CDB). The state-owned financial institutions of China help African nations by offering special loan terms to back projects that include renewable energy systems as well as roads and agricultural development and water management systems. Low-interest loans and extended repayment terms set by the banks support African countries during their climate project funding requirements in resource-challenged areas.

China Exim Bank and CDB play the central role in directing China's financial support toward climate-related projects across Africa. The Chinese government-neutralized banks enable substantial financing support for African countries to establish renewable energy projects because these projects help decrease carbon pollution and develop eco-friendly economies. These banks financed the development of solar and wind power facilities together with hydropower projects and energy distribution networks in Kenyan and Egyptian and South African territories

Chinese enterprises deploy along with financial institutions to carry out climate finance project implementation. China’s climate finance institutions receive project implementation support through companies that specialize in construction activities as well as energy and infrastructure development. The Chinese firms Sino hydro construct large hydropower plants throughout East Africa and State Grid Corporation develops solar and wind energy projects across North Africa and Southern Africa

China's climate finance initiatives promote joint development between Chinese private companies and African local firms that work together to create climate projects. These cooperative partnerships establish both the sustainability and local authority over climate projects to support long-term achievements as well as African industrial development and economic expansion.

China has invested substantial climate funding in Africa but doubts exist about how these resources match Africa's development plans for the future. The substantial climate finance investments by China must receive stronger integration within the local governance structures and development plans of African countries for creating enduring and inclusive growth outcomes. African countries need to handle climate finance through capable institutions while guaranteeing these investments serve all people and create social progress

A significant boost of sustainability in African development through Chinese climate finance would emerge when the programs directly support country-specific goals. Diversity analysis comprises environmental evaluations with equal attention to socio-economic effects of planned initiatives. Direct community benefits should be part of every investment project especially when it comes to creating jobs and enhancing local capacity and fostering technological development in the area. Operations like solar parks and wind farms delivering clean energy require proper design because they must generate local job prospects and deliver technical training and boost local industrial frameworks. This strategic method enables Africa to control climate change effects and simultaneously create stronger resistance against environmental risks while decreasing poverty rates.

Chinese financiers and African governments should advance their coordination efforts toward integrating climate finance investments into national plans for climate adaptation and mitigation. Chinese climate finance projects funded through their programs fail to consult with African stakeholders during planning thus leading to project design conflicts while also causing operational inefficiencies. The implementation of strengthened partnerships along with increased stakeholder relationships will help ensure development projects match Africa's sustainable agenda.

African regional integration serves a vital purpose in tackling fragmentation while increasing effective climate finance implementation throughout the continent. Through its actions the African Union sets new regional coordination platforms to help member states work together and address shared climate issues. The African Union works through Agenda 2063 to bridge Africa's climate finance plans with sustainable development targets and economic expansion and social integration objectives (Petrie, 2015).

Through its efforts to bring together governments with businesses and communities the AU develops a consolidated climate finance system which tackles the obstacles from segmented regulations and policies. But regional integration needs to solve the problems that occur because of varying levels of governance and contrasting policy guidelines and institutional abilities between African countries. African governments together with their Chinese partners must demonstrate both political determination to guarantee climate finance benefits reach all areas of the continent equally.

Like most African countries, Africa as a continent also faces many challenges on its climate finance effort due to the fragmented approach that other countries implement in different policies and regulating actions to act on climate change. Therefore, regional integration is key and the African Union has a responsibility to integrate African areas. To this end, the AU has worked to ensure that Africa's climate finance strategies are aligned with the AU's Agenda 2063 which puts emphasis on economic development, peace and sustainability. By integrating the combined resources, knowledge, and expertise of African countries, climate action is likely to be more successful and in line with development objectives from further into the future.

Challenges to coordination of fragmented climate action and regulatory discrepancies for the flow of climate finance need to be overcome through regional cooperation. African countries have bonded to promote cross border energy infrastructure and energy access for all through the African Renewable Energy Initiative (AREI) and other regional initiatives. China and other international partners are funding these projects to increase the capacity of renewable energy, reduce greenhouse gas emissions, and increase climate resilience in the continent.

As the China's role in deepening regional integration in Africa is substantial. China is a significant investor in cross border energy systems that are an essential infrastructure project, where it is a key player in the financing of multi country climate projects. For example, China's financial contribution to the East African Power Pool (EAPP), a regional energy market that links East Africa's power systems and promotes energy trade between countries, has contributed to higher levels of electricity access. This approach to energy infrastructure is, thus, an integrated one, and it helps economic cooperation while also making more efficient use of resources, hence, lowering the energy generation and distribution cost

China is also involved in regional climate adaptation initiatives and supports regional infrastructure projects. China works to build African countries' climate resilience by financing initiatives such as water management system, flood prevention projects and agriculture resilience programs. The example here is the African Water Facility (AWF) that has supported China's funding for water management and conservation projects aimed at preventing the effects of droughts and floods in the vulnerable areas

However, prospects for the success of these projects in the African region hinges on stronger governance structures and improved regulatory frameworks in most African states. China could partner with the African Union to build effective and contiguous environments for large scale, sustainable projects if it wants to help coordinate or realign policies that will have a positive impact on the people of Africa

Conclusion

The partnerships significantly depends on the presence of sound policy and legal frameworks to provide the right environment for private sector investments. China's focus on establishing the policy and legal environment for sustainability and scalability of its investments in recipient countries is a key part of its strategy to providing climate finance in Africa. Lack of clear regulations, financial incentives and legal protections might deter private capital and investments in green infrastructure are prevented from achieving their full potential.

China's climate finance efforts also involve its work on improving the legal and regulatory frameworks in Africa. Private investors find it easier to participate in climate projects because China offers them technical expertise of African nations and policy guidance to create the laws and regulations and the rules that govern such projects. In South Africa and Kenya for instance, policies have been made to provide incentive for private sector involvement in renewable energy projects, and this policy has been proven successful. In addition, there are feed-in tariffs, tax incentives and subsidized loans that have attracted private capital inflow into Africa's market of renewable energies

China further recommends the adoption of regional policy coordination to ease the restraints for cross border investments in green energy and infrastructure. In French, it is also necessary to align policies with each other for large-scale projects on multiple countries in Africa. For instance, China has been supporting regional initiatives like the African Renewable Energy Initiative (AREI) to increase the continent's renewable energy capacity. AREI provides a good example of how Africa could overcome its fragmented regulatory landscape to ensure that private capital flows across borders.

China also helps African countries to implement, lending itself to private sector engagement, stronger financial frameworks. For example, China advocates for the creation of green finance taxonomies that assign investments into an ‘environmentally sustainable’ classifications, as well as green bond markets on which African governments and businesses can raise capital for climate projects. China provides the private investor with the tools and confidence to invest in the expanding green economy by improving the financial infrastructure

Yet, for such efforts to be completely successful, African states must not only adopt the right policies, but also be able to develop the institutional capacity to enforce them. Financial oversight can be strengthened, transparency increased and regulatory quality enhanced to encourage private investment, and ensure that it is used effectively. China’s participation in boosting these systems is important, but should only occur alongside a pledge to strengthening African governance structures to ensure long term and sustainable investment.

CHAPTER-V

5. MAJOR FINDINGS AND CONCLUSION

5.1. Major Findings of the Study

a) China conducts its African climate financing through its distinctive South-South partnership framework against Western North-South aid structures. The model focuses on government-to-government cooperation by avoiding global organizations to use state institutions and financial institutions and state-owned enterprises. The China's core climate financial support programs in Africa through South-South collaboration practices together with the Belt and Road Initiative and different funding methods.

b) The financial climate support China extends to Africa takes the form of cooperative agreements more than traditional donor's relationships. China implements this policy as part of its internationalapproach to develop strategic partnerships with African nations through climate cooperation byclimate financing through loans and investments to build various eco-friendly infrastructure and renewable energy facilities across Africa China uses financial aid run by its government through loans and grants to expanding its influence in Africa.Similarly, China's climate finance for the Africa. China is granting concessional loans and grants in addition to green bonds and investments toward building essential infrastructure projects. The different financial tools function as essential instruments for China to reach its climate finance objectives for energy transition the while solving Africa's development requirements.

c) Greening the Belt and Road Initiative (BRI) the China has undertaken financing multiple renewable energy projects across Africa for solar power and wind and hydroelectric. China uses the BRI to achieve its climate finance approach through multiple interconnected mechanisms.

The BRI China acquires key resources and makes enduring economic connections with African nations. China establishes strong partnerships with African countries that contain vital minerals important for renewable energy development. Consequently, an initiative of the Belt and Road Initiative serves dual objectives such as reduce the climate vulnerability in the Africa and notably secure the resources which are key for the future energy security.

d) China expands its climate finance approach through investments directed at developing essential infrastructure. As well as renewable energy project financing. Critical infrastructure programs such as road building and harbor construction and electricity transmission development serve Africa’s dual need of economic growth and energy security. Through its infrastructure investments China establishes long-term advantages for Africa by improving energy accessibility and fuel independence and supporting economic expansion. The infrastructure initiatives support China's strategic agenda through its need to secure access to mineral resources found within Africa. Through infrastructure financing projects China builds control of African mineral supply chains by enabling the extraction and transportation of minerals which it needs for its green energy transition.

e) The energy transition support from China to Africa encounters multiple obstacles attributed mostly to geopolitical tensions together with institutional problems and societal and ecological considerations. The main complication which hinders China's climate finance approach in Africa arises from direct confrontations against western power blocs. Western nations led by the United States and members of the European Union hold titles to being the main contributors of climate finance to developing countries that includes those across Africa. There major international instrument is the Green Climate Fund (GCF) alongside other multilateral frameworks provides specific climate finance standards that require Measurement Reporting and Verification (MRV) systems to be implemented.

f) International organizations together with Western countries have expressed negative reactions to China's distinct approach. Several commentators maintain that China's climate financing methods intensify African countries' debt problems because it favors borrowing over grant funding although this raises doubts about their debt sustainability. Several African nations remain burdened with heavy debt after implementing Belt and Road Initiative (BRI) infrastructure projects financed by China through their investments in hydro-dams and solar power facilities. The crucial sustainable development infrastructure projects of Africa have problems because their loans enforce strict repayment terms and high-interest rates thus threatening regional economic stability.

g) The China’s presence in Africa has sparked doubts about possible neo-imperialist practices. China's rising African footprint as Beijing's systematic pursuit of essential resources needed for renewable technology such as cobalt and lithium and other natural minerals. The integration of climate finance with resource extraction creates two major problems for China because it strengthens Africa's dependence on foreign capital and supports the continental exploitation of natural resources for China's political and economic aims. As, the combination of large-scale infrastructure projects funded by China through financing of hydroelectric dams and solar farms has generated significant conflicts with local communities.

h) Large infrastructure projects financed by China within African territory expose Africa to substantial environmental hazards because of their resource extraction-related work. China supports renewable energy development across Africa but the country leads extraction efforts of cobalt lithium and rare earth elements from the region. The minerals act as vital components that allow renewable energy technology to create solar panels and power electric vehicle batteries. The extraction process produces substantial environmental damage because regions with insufficient environmental regulations. These green technology projects enabled by the use of African natural resources create sustainability problems for future development. Several initiatives create heightened environmental problems because existing environmental protection systems have insufficient standards which results in permanent damage to ecological areas as well as local resident

i) China's climate finance initiative in Africa includes strategic acquisitions of vital resources which enable China's green technology development. Current global progress toward renewable energy systems requires a steady increase in cobalt, lithium, platinum and rare earth element consumption because these minerals remain vital for solar panel manufacturing and battery production for electric vehicles along with other renewable energy technology applications. The extensive mineral wealth found across Africa plays an essential role because it helps China transition its energy system. As, Democratic Republic of the Congo (DRC) provides more than 60% of cobalt supply worldwide which powers electric vehicle batteries Platinum alongside lithium and other essential minerals for renewable energy production can be found in appreciable quantities in three African nations including South Africa along with Guinea and Namibia. China has secured resource access through its investments and climate finance operations which support sustainable mining operations alongside infrastructure building for renewable energy systems.

j) The climate finance model between China and Africa supports the construction of renewable power utilities including solar, wind and hydroelectric generation while these systems depend on fundamental minerals for their proper operation. The large energy projects funded by

China in Africa give the nation access to essential resources for its renewable energy business while making it a major force in global environmentally-friendly technology this connective systems strengthen Africa to use its resources to benefit both national growth and serves the broader energy security objectives of China. The rise of Chinese influence over African mineral resources gives Beijing significant geo-strategic benefits because global demand for these minerals continues to increase during the energy transition period. China can control global energy markets for electric vehicles along with solar panels and wind turbines since it maintains control of essential African mineral resources.

k) The Forum on China-Africa Cooperation (FOCAC) maintains a critical role in advancing China-Africa joint initiatives for climate change and sustainable development initiatives. Through the FOCAC platform China maintains its ability to work with African states about financing climate initiatives alongside high-priority matters of energy security and economic progress. China stands to become a key development partner for Africa because it continues investing in renewable energy infrastructure and adaptation initiatives China uses this strategic partnership as a means of expanding its geopolitical power in Africa to become the leading global force in South-South international cooperation. Importantly, China takes a leadership role in developing countries by investing in African renewable projects and climate adaptation works while demonstrating its position in Global South leadership. The strategic geographical location intends to balance Western power influence as well as establish an international development system where African and other developing nations acquire greater self-reliance in shaping their developmental path.

5.2 Policy Recommendations

I. The implementation success of climate finance programs in Africa depends on solving governance problems that disrupt the helpful effects of financial support. African governments need to enhance their ability to administer climate finance together with better financial transparency and stronger monitoring and evaluation systems to eliminate current obstacles. African nations have to create solid regulatory systems which uphold international criteria for climate finance management.

II. The development requires elevated joined efforts between Chinese and African governments working together. When governance systems get improved through mutual efforts China and African governments will successfully distribute climate funds to their most needed recipients. A partnership between governments and international organizations must maintain consistent audits together with open financial records and community participation when establishing performance standards. The participation of local communities in climate finance decisions leads to increased project success because it entails selecting initiatives that serve community needs and priorities.

III. International actors particularly China should develop strict monitoring systems to assess the progress of their funded projects so these initiatives fulfill their environmental and social obligations. The use the modern technology for fund tracking and defined accountability systems for implementing agencies will help in achieving these measures. Better oversight systems implemented by China will help establish permanent favorable outcomes from their African climate finance programs for vulnerable local communities.

IV. An abundance of governance issues stands as the primary obstacle against successful execution of climate finance throughout Africa. The combination of weak governance structures together with corruption and insufficient financial management has blocked the delivery of effective climate projects which worsens the situation for African nations dealing with climate change. Prospective reforms alongside enhanced openness and stronger supervision frameworks will empower African nations to enhance climate fund management and build enhanced ability to endure climate impacts.

V. Future initiatives aiming to enhance climate finance success in Africa need to boost governance mechanisms and technical expertise creation while promoting shared partnerships among African states. African nations need to construct well-developed institutional structures and enhance their project management abilities for climate finance initiatives. The development of institutional capacity and efficient resource management requires parallel partnerships with international organizations specifically China. Regional coordination needs improvement because it enables climate finance initiatives to support Africa's wider development objectives and ensure resources distribute fairly throughout the continent. China needs to maintain its partnership with African nations to construct climate finance solutions which will address environment-related and social issues throughout the continent. The cooperation between China and Africa must handle these obstacles to build a stronger and environmentally sustainable future for Africa.

5.3. Conclusion

The partnership between China and Africa regarding climate finance exists as an active and developing the diplomatic relationship between these two significant world actors. China has steadily acknowledged African territories as important both for their development needs and their political significance. This study indicates that China's climate finance activities in Africa exist as economic and political connections along with their development and humanitarian roles. South-South Cooperation and the China-Africa Cooperation Forum serve as mechanisms through which China tries to shape African climate finance structures by providing financial instruments that support adaptation and mitigation efforts across the continent.

The research demonstrates that Chinese involvement in Africa brings valuable advantages but also deals with multiple significant problems. The three chapters of this study emphasize how this cooperation contains both an opportunity perspective and obstacle considerations that must be recognized. The cooperation with African sustainable development goals China will enhance African climate resilience while becoming a vital partner in African development. Africa alongside China has a chance to enhance its global position through leadership in international climate finance.

The China’s key motivations and operational approaches toward climate finance projects across Africa. This research explained how China determines its climate financing strategies through its efforts to build global power alongside protection of economic and strategic goals. China engages with Africa through the essential South-South Cooperation program that creates financial and technical aid transfers between developing states. This framework functions together with the China-Africa Cooperation Forum as the main instrument for building a beneficial relationship. The investments China makes in climate-related tasks enable diplomatic relationship development with Africa and natural resource acquisition and global political expansion.

China dedicates its financial instruments to build major infrastructure networks coupled with renewable energy projects and programs for climate resilience. The infrastructure projects received recognition for their vital role in maintaining Africa's enduring sustainability because of rising climate change sensitivity. The Chinese government has dedicated large sums of money for developing renewable energy projects across Africa through solar power generation and hydropower solutions while working to cut fossil fuel reliance and drive sustainable growth. Through financing critical infrastructure projects in transportation and communication sectors China provides essential components for Africa to reduce its carbon emissions and enhance economic growth.

The African climate finance encounters multiple substantial obstacles that threaten to reduce China's initiative success rates. The chapter reveals that governance and political matters stand as one of the biggest concerns regarding implementation of climate finance projects. Various levels of political stability together with institutional capacity along with governance complexity distinguish the political settings across African nations. The governance of climate finance funds becomes difficult because of these circumstances. Multiple governance failures result in inefficient climate finance distribution and usage since important funds often experience mismanagement or conversion away from planned uses.

The issue of corruption within particular African nations stands in the way of achieving successful climate finance implementation. Various nations face problems in implementing climate projects because weak governance structures and insufficient political determination cause delays and inconsistent development throughout Africa. The participation of diverse stakeholders during project implementation causes the process to become more complex which limits eventual success. The financial assistance helps African countries yet fulfills key Chinese objectives at the same time. Chinese expansion in Africa serves China's strategic goal of obtaining rare earth metals and minerals that China needs for its green energy development. The financing methods deployed by China have developed stronger economic connections between Chinese and African markets which extends China's status as a world economic leader.

The geopolitical structure across Africa. The climate finance sector in Africa receives funding from several international sources including China but also includes corporate investors from the United States and European Union and World Bank institutions. The power struggle for Africa's climate policy leadership resulted in combined working partnerships as well as opposing objectives between multiple actors. Many observers evaluate China's international initiatives regarding Africa by analyzing modern global power dynamics between China and traditional Western nations. China carries on a strategic dance with African countries which allows its financial growth plan to operate alongside African independent path for development.

This China's emerging financial opportunities for climate-related projects in the African region. The partnership between China and African nations delivers worthwhile advantages which boost both African development and climate adaptability despite the troubles mentioned earlier. The substantial natural resources of Africa create one of the strongest opportunities because they gain increased value through global climate efforts. The worldwide shift toward green energy will drive intense increases in mineral demand for crucial renewable energy technology ingredients including cobalt together with lithium and copper. Africa has numerous resources at its disposal which China can benefit through its climate finance programs thanks to its position as a top mineral consumer across the globe.

Asia’s rising energy demands create a new opportunity for Chinese climate financing operations in the continent. The lack of access to electricity affects more than 600 million people across Africa because they need extensive clean energy solutions. Renewable energy investments from China enable the closure of energy deficits while supporting the global battle against climate change. Three clean energy choices including solar power wind energy along with hydropower present accepted methods that serve to meet Africa's energy needs through lowering dependence on fossil fuels thus helping mitigate climate change. These projects simultaneously benefit China because they fulfill national green energy goals while establishing a market for its clean energy technological products.

Climate finance programs initiated by China in African territories have the ability to establish new employment opportunities while driving economic advancement within the green energy sector. The Chinese support of large-scale renewable energy installations and infrastructure projects enables Africa's emergence of a green economy which subsequently creates positions for employment across construction operations and manufacturing establishments along with technological sectors. African countries can become more economically resilient while simultaneously lowering their unemployment through this development.

Furthermore, China's climate finance initiatives in Africa while discussing both positive aspects and difficulty factors of their cooperation. The benefits China provides to Africa through its climate finance initiatives include necessary funding and technical expertise however Africa faces several complicated hurdles related to management oversight and political challenges and rivalry from international players. The successful realization of China’s climate finance initiatives in African territories depends on solving these current obstacles.

The Chinese engagement with Africa creates massive potential benefits for the participating countries. Natural resources combined with energy requirements and expanding green economic frontiers in Africa create multiple avenues for cooperation which China's financial backing can transform into concrete opportunities. This strategic partnership using sustainable development combined with better governance systems will lead to mutual long-term benefits for China and Africa. The political and economic goals of African national governments determine the effectiveness of climate finance projects through their direct impact on success rates. The pursuit of immediate economic development by certain African governments makes it challenging to win their political backing for climate finance projects. The ineffective utilization of climate finance demand improvements in governance along with transparent financial management and political stability across the continent.

Chinese investments in mining facilities together with infrastructure development work allows China to handle crucial mineral supply chains throughout African territories. China benefits from surging worldwide energy needs at the same time it enhances its political position in the energy market. Through investments in mining operations and railways and ports infrastructure China establishes sustained political-economic connections with African countries during their acquisition of vital resources. The investments China makes in Africa demonstrate strategic importance in creating a global energy powerhouse since other world powers aim to reduce their dependence on Chinese critical minerals. China uses this strategic geopolitical position to support worldwide political objectives which consist of expanding its influence across Africa while reaching beyond its borders.

The climate finance programs initiated by China in Africa resulted in substantial funding for new infrastructure projects that mainly focused on energy development. The investments serve as a fundamental solution for Africa's persistent energy shortage since it blocks economic development across the continent. Through its financial support China built big renewable energy facilities such as solar farms wind power plants and hydropower dams that increase power access throughout Africa.

TheClimate finance in African energy infrastructure China has established fundamental economic development bases in the region. The development agenda of Africa depends strongly on dependable energy because it drives industry progression while fostering employment generation together with poverty alleviation. The development of renewable energy projects alongside energy infrastructure projects provides Africa the chance to evolve its economic structure and generate industrial opportunities for local populations

The Chinese-funded projects developers train African workers how to implement renewable energy technologies extending to photovoltaic panel setups together with wind generator upkeep and hydroelectric operations. The acquired skills develop resilient professionals who tackle the rising African interest in green energy production. Through its climate finance initiatives China establishes a lasting impact on local economies by creating employment opportunities and building the necessary skilled workforce needed for Africa's renewable energy transition.

China pursues climate finance projects in Africa because it enables the country to establish itself as the primary leader in South-South cooperation. Traditional North-South development aid through Western institutions imposes requirements while enforcing their cultural norms yet China offers development programs based on shared benefits and respects national independence. Numerous African nations consider China to be a superior partner because it offers flexibility and practicality when compared to western countries

As the structural realism defines the existence of an anarchic structure in global interactions. Waltz declares through his theory that because world politics lacks any controlling bodies states need to maintain survival independently by utilizing their own capabilities. Such political arrangements let states center their national security needs above other matters while focusing on independent methods to reach their targets. In climate finance contexts China continues to create strategies through self-help principles which simultaneously address domestic problems and reinforce its international power status.

The anarchic nature of the environment has driven China to implement its specific climate finance initiative in Africa. The lack of a global authority for energy security protection has led China to pursue vital resource acquisition through climate finance projects which matches structural realist analysis. Through its African climate finance program China helps develop renewable infrastructure and obtains exclusive access to vital mineral resources to promote its green energy transition. The production of solar panels wind turbines and electric vehicle batteries requires these fundamental minerals which serve as essential components for China's elongated vision of carbon emission reduction and energy security strategy.

The African climate finance approach of China comprises two essential goals. Climate change mitigation becomes possible for African nations through funding provided by the first purpose. The control China gains over essential key resources becomes possible through this financing strategy which supports its green technology sector development. The self-serving nature of resource acquisition perfectly corresponds with structural realist principles for survival and independent development. China secures essential resources to meet its energy transformation needs by investing in African renewable power projects while establishing control over resource-rich African nations

Structural realism promotes states to focus on achieving comparative advantages above all else. States in an anarchic system make relative power calculations about their gains in addition to absolute gains since their survival depends on their position relative to the achievements of other actors. State activities stem from this pursuit of comparative power because nations seek to rise in power and reach for dominance to guarantee survival. China uses its African climate finance programs as a way to boost its global political influence because they strengthen both resource acquisition and diplomatic position.

Within its Belt and Road Initiative framework China uses renewable energy developments across Africa as a vital component for pursuing power maximization. The BRI China supplies both money and construction materials for African nations to expand their renewable energy operation projects using solar energy and wind power in addition to hydropower generation facilities. Through these investments Africa strengthens its energy security which helps China maintain its position as a leading global force in the green energy transition. By implementing various projects China secures critical resources and develops enduring economic relationships between themselves and African states and builds its political influence across Africa.

China's environmental finance platform for Africa exists to solve environmental crises while establishing its presence in a worldwide arena that has become highly competitive. China actively searches for critical minerals in Africa because these materials form the basis of green technologies needed to achieve renewable energy transition. China relies on getting cobalt, lithium and rare earth elements for solar panels, electric vehicles, and wind turbines because these minerals form the core of its green energy initiative The increasing global need for vital resources has made Africa an essential zone where China and Western powers engage in a critical materials supply competition.

Complex global political relationships become more strained because China follows a South-South cooperation approach through direct official agreements with governments to fund climate initiatives. China acts as an independent partner to African states in their climate finance initiatives by creating bilateral funding agreements with grants and concessional loans. Through its chosen funding model China is able to evade complex Western climate finance regulations thereby securing financial backing and increased influence. China can improve its climate finance mechanism for African development by adapting programs to match continental targets and implementing strong management systems. Long-term research is essential to understand China's climate finance effects on Africa's political-making and economic situation especially regarding governance structures along with geopolitical power and resource utilization.

China strengthens its energy security both at home and abroad through sustainable power infrastructure development along with securing essential natural resources which simultaneously disrupts international western dominance. Chinese climate-related project investment now enables Beijing to control the strategies of several African nations which results in expanded Chinese influence across the continent. The growing Chinese influence in African mining industry demonstrates both financial investment and control over essential mineral extraction for green energy transitions alongside geopolitical strategic needs.

The renewable energy sector in Africa provides China with opportunities to enhance its political relationship with African governments as well as strengthen its regional dominance. Western powers express increased caution about Chinese influence over Africa because of its expanding power in the region along with its ability to mold future African energy operations.

The competition between China and Western countries reaches its peak point during the worldwide shift toward low-carbon systems because stakeholders view essential minerals as fundamental requirements to preserve energy security and reach economic expansion objectives.

Africa increasingly depends on Chinese financial support to tackle climate challenges. Africa needs Chinese financial support to overcome its dual problems of climate change and energy scarcity because the continent has steadily increased its dependence on China for resolving these issues. During the previous ten years China emerged as a major global donor for renewable energy projects across Africa by financing both solar power facilities and hydropower facilities. The increasing use of Chinese climate funding creates doubts about Africa's future political self-determination together with its economic freedom.

The relationship between African nations and China exists as a problematic form of dependency. African states obtain essential infrastructure and energy safety through Chinese loans alongside mounting debt challenges because of their financial commitments to China. These financial deals produce concerns among critics about African states needing to provide China with political and economic favors for ongoing funding support. The rapid increase of Chinese capital puts Africa at risk of losing its economic independence because the continent develops deeper connections to both Chinese economic interests and political influence.

The environmental financing approach of China in Africa comes with substantial safety concerns but simultaneously creates essential advantages that benefit all participating sides. Africa benefits from Chinese investments in renewable energy infrastructure since these investments develop critical energy projects which address the persistent energy shortages across the region. Chinese financial support allows Africa to quicken its solar farms construction and wind power plant and hydropower dam development resulting in power distribution to millions of people and lower fossil fuel dependence.

The climate finance programs from China have led African regions to obtain different economic resources for developing their infrastructure. Through the transfer of Chinese knowledge and technology African states have developed their renewable energy industries to create employment and sustained economic expansion. Construction of renewable energy platforms stimulates regional economic activity since it enables the delivery of cost-effective sustainable power to residences businesses and industrial facilities located in rural areas.

The main advantage of China's climate finance operations in Africa for the country is securing vital minerals that support its developments in green technologies. The global market expansion of clean energy technologies provides China with strategic opportunities to dominate Africa's extensive mineral deposits which contain cobalt lithium as well as rare earth materials. China requires these crucial materials to build electric vehicles and batteries as well as solar panels during its sustainable energy change. China secures renewable energy resources for itself through its investment in African renewable energy infrastructure while simultaneously addressing the power deficit across the continent. Through this strategic move China establishes itself as the top global power when seeking African natural resources in aggressive competition with particularly Western nations that target the same resources.

China secures its long-term energy security by investing in Africa’s renewable energy projects to ensure access to crucial minerals that it needs for power generation. China increases its political power on the African continent through its climate finance initiative which secures additional natural resources. Building strategic control of African regions through loan financing enables China to advance both its economic and political goals in the region. China builds its international power base by expanding its influence across Africa enabling global leadership during the migration towards a sustainable economy.

The overall advantages of Chinese climate finance to Africa must be balanced against several potential environmental and social risks that need thorough evaluation. Renewable energy investments from China can decrease African dependence on oil-based fuels but these projects face sustainability challenges for future environmental outcomes. Environmental degeneration and ecological damage against China's infrastructure activities in Africa occur mainly through natural resource extraction-based initiatives. The enhancement of China-Africa relations requires African governments to manage Chinese investment terms effectively while keeping their independence intact despite receiving climate finance from Beijing. African nations need better management transparency in combination with project accountability to make Chinese-funded projects support their long-term development objectives.

Hydropower projects supported by China's funding have become targets of criticism because they harm both natural ecosystems and the local inhabitants living near these facilities. The building of reservoirs and dams resulted in population displacements while destroying ecosystems thus changing water ecosystems that African communities need for fishing and agriculture. The extraction activities related to China's green technology minerals have frequently resulted in deforestation and erosion of soil and various forms of environmental damage

The implementation of Chinese-funded initiatives across Africa leads to major social risks together with environmental hazards. The mistreatment of local workers by African-based Chinese companies remains a critical matter because these enterprises regularly break local labor regulations. The hiring of Chinese employees by certain Chinese companies instead of local people has resulted in diminished local employment possibilities and economic development for African communities. The social sustainability and poverty alleviation potential of Chinese-funded projects have become subjects of concern when viewing their outcomes in beneficiary regions.

Social powers and cultural considerations from Chinese investments into Africa require dedicated evaluation. Chinese investments fail to grasp local community requirements which produces development initiatives that do not comply with the socio-economic targets of African nations. Destinations of indigenous populations by large infrastructure projects created social unrest that intensified the social sustainability challenges. China's climate finance initiatives across Africa present both substantial economic advantages and environmental benefits but produce major sustainability and societal imbalance problems. To achieve sustainability and preserve social equity and long-term development goals African governments and international organizations must collaborate toward proper implementation of Chinese-funded projects.

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