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MATERIALIZING CLIMATE FINANCING IN SOUTH AFRICA AND INDONESIA: GAPS FROM THE PAST, PRESENT, AND FUTURE

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Abstract: Developing countries need financial assistance from developed countries to support their efforts in climate change mitigation and adaptation through climate finance commitments and technology transfer mechanisms. The actual funding disbursements fall short of meeting developing countries' requirements despite international agreements, including the post-2025 climate finance goal. The research study analyses the trends of climate finance from the past, present, and future in South Africa and Indonesia. The research investigates how institutional capacity, governance frameworks, and financing systems affect climate finance success through its secondary data and comparative case study methods. The research results show that concessional loans make up the majority of climate finance distribution, which increases debt risks while hindering successful adaptation results. Institutional fragmentation, limited private sector participation, and weak transparency mechanisms further constrain effective utilisation. The paper argues that unless climate finance frameworks prioritise grant-based funding, accountability, and alignment with national development strategies, Global South countries will continue to face systemic barriers to climate resilience and low-carbon transitions.

Keywords: Indonesia; South Africa; Climate Finance; Global South; Global North.

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INTRODUCTION

Climate finance is widely regarded as an important driving force in the global effort to mitigate and adapt to the devastating impacts of climate change, particularly in developing regions. Southeast Asia and Africa, both of which are highly vulnerable to the adverse effects of climate change, face significant challenges in securing adequate financial resources for adaptation and mitigation efforts. These regions are already experiencing extreme weather patterns, rising sea levels, and other climate-related disasters, but their financial resources are limited, necessitating external support from developed countries. Despite the international commitment to support these regions, climate financing has often fallen short, leaving significant gaps in the ability of these countries to meet their goals in combating climate change.

To date, climate financing has been insufficient historically to tackle the level of the challenge in developing countries, particularly in Southeast Asia and Africa. According to the climate finance landscape established through international agreements such as the UNFCCC, small-scale projects were initially prioritised, where a large amount of capacity building and technology transfer was needed, rather than large-scale investment infrastructure for real change. Alternative financial mechanisms were created to bring climate-related funds, but the flows were small and had a narrow geographical scope. Thus, climate financing should also be challenged to provide technological transfers to developing countries so they can adapt to climate change better than by only focusing on cash transfers, which have proven ineffective.

In addition, based on the 2009 Copenhagen Conference of the Parties summits, it was outlined that developed countries were to provide $100 billion per year by 2020 for developing countries to mitigate and adapt to climate change; however, this target also fell short. This goal, however, was regarded as more of a political tool than a representation of a real climate finance mechanism to support vulnerable countries. By 2020, however, the promised finance had not been fulfilled, and developing countries, particularly in Southeast Asia and Africa, still needed large amounts of finance for climate mitigation and adaptation (UNEP, 2023). This, for instance, has hampered South Africa's ambitious target of reducing its emissions by 34% in 2024 and 42% by 2025. The country's adaptation and mitigation financial needs are approximately 12 billion dollars to achieve its climate targets by 2030. Therefore, one can say that one of the climate finance challenges is not making promises or pledges, but rather the political will to ensure that financial pledges are implemented or put into action.

Furthermore, over-reliance on loans to finance climate action projects instead of grants has made a lot of vulnerable countries highly indebted. For example, climate finance in the form of loans has caused countries like Indonesia and Vietnam to incur external debt burdens. This put many countries in a difficult position: the need to finance climate projects, and pressures of servicing their previous debts (OECD, 2016). In Africa, however, countries like Ethiopia and Chad were even more forced to struggle to fund climate resilience. They spend most of their income servicing debts rather than investing in their economies to tackle climate change (Watkiss, 2023).

Finally, climate finance must be integrated into other development issues. Both climate adaptation and mitigation should not be treated as separate from poverty reduction and economic growth strategies. A more holistic approach should instead be taken to allow climate finance to support sustainable development, job creation, and poverty reduction, especially for regions where climate-sensitive sectors such as agriculture and fisheries predominate (Watkiss, 2023).

The research investigates historical, current, and upcoming climate finance deficiencies that affect developing nations by using South Africa and Indonesia as case studies that represent African and Southeast Asian regions. The study evaluates three aspects of climate finance, which include its mobilisation process, the existing institutional and governance challenges towards climate finance, and its effects on adaptation and mitigation activities. The paper is structured as follows: the next section reviews relevant climate finance literature; the methodology section outlines the qualitative comparative approach; the results and discussion analyses key findings; and the final section presents the conclusion.

The three aspects stated above are formulated here as the explicit research questions of this study. Research Question 1 asks how climate finance is mobilised and disbursed in South Africa and Indonesia, and how past, present, and future gaps appear in those flows. Research Question 2 asks what institutional and governance challenges constrain the effective use of climate finance in the two countries. Research Question 3 asks how climate finance, as mobilised and governed, affects adaptation and mitigation activities in the two countries. The conclusion returns to these three questions one by one.

LITERATURE REVIEW

Climate finance plays a critical role in addressing the impacts of climate change, particularly in developing countries like South Africa and Indonesia, which are highly vulnerable to climate risks. These countries hailing from the global south face significant barriers in financing their climate mitigation and adaptation goals due to their slow level of economic growth. The global framework for climate finance was largely shaped by the Paris Agreement in Article 6, which emphasised the need for developed countries to support the financing of climate actions in developing countries through various mechanisms, including bilateral and multilateral channels. In this light, in November 2022, the participating Parties of COP27 reached an agreement to establish a fund aimed at addressing loss

and damage (L&D) caused by climate-related impacts. Operationalised the following year at COP28, the Loss and Damage Fund is a crucial advancement in recognising and addressing the disproportionate impacts of climate change on vulnerable countries and communities (Beylier, 2024).

The historical gap in climate financing has permanently set countries on a different development path because weak countries continue to wallow in poverty as climate change keeps impacting their lives and livelihoods. In contrast, the developed countries continue to be rich. Vulnerable communities are increasingly at risk of extreme droughts, floods, heat waves, and so on due to limited funding for large-scale adaptation and mitigation projects. This financial shortfall bears the consequences for the continuing difficulties with which these regions cannot achieve their sustainable development goals (SDGs), as well as the impact of climate change (OECD, 2013).

In the realms of climate financing in Southeast Asia and Africa, the current trend shows there has been some success in securing funding, but still, a lot remains to be done. Current financing flows cannot yet meet the region's needs. An example is that the cost of adaptation in Africa alone is forecast to amount to about $30 to $50 billion annually until 2030. In contrast, current financial flows are very far short of this target. Although some progress has been made, most of this climate finance is going towards mitigation, and still less towards adaptation. This continues to be a major challenge because the actual needs on the ground do not correspond with the funding priorities as perceived by the organisation (OECD, 2016).

While Southeast Asia benefits from a larger share of international climate finance, securing enough financial resources for climate adaptation is challenging. Some of the most climate-vulnerable countries of the region are the Philippines, Indonesia, and Vietnam, which are very vulnerable to natural disasters such as typhoons, flooding, and sea level rise. Indeed, the adaptation financing that has been allocated has not been in proportion to the region's needs. Adaptation finance in Southeast Asia is important because the region will likely suffer substantial future impacts from rising temperatures and changing precipitation patterns (Watkiss, 2023).

In addition, climate change-induced disasters worsen where climate finance loans are predominantly concessional, as in the Philippines and Indonesia. In this context, the balance between climate finance and debt repayment requirements is of great concern. While nations such as Cambodia and Bangladesh see substantial amounts of climate financing, the overwhelming part of these funds comes in the form of loans, enabling debt burden and making the financing less effective. It is a particularly troublesome issue for least developed countries (LDCs) because they often face debt distress and otherwise lack the means to handle new loans without further burdening their finances (OECD, 2013).

Another severe challenge in the present system of climate finance is transparency and accountability. There is a plethora of climate funds, including the Green Climate Fund (GCF) and the Adaptation Fund, which are meant to provide funds to vulnerable countries, and the effectiveness of these funds in successfully achieving their realised goals is ambiguous in many cases. Concerns exist over the misallocation of resources, as there are no proper tracking mechanisms or reporting on the disbursement and utilisation of funds. This inefficiency is not only an unwarranted limitation of the potential effects of climate finance but also contrary to trust in international financial institutions (OECD, 2016). This has now hampered countries in the global south, especially African countries like South Africa, one of Africa's highest-receiving climate finance countries.

One possible solution is establishing a New Common Quantified Goal (NCQG) for climate finance. This would be a major boost for the annual flow of climate finance from rich to poor countries over and above the current $100 billion target. The NCQG could be aligned to the needs of developing countries and could help support adaptation and mitigation efforts in a balanced way. These funds need to be increased and made more flexible to grant rather than loan funding so that vulnerable countries do not become more burdened with debt due to climate finance (UNEP, 2023).

At the same time, debt for climate swaps or green bonds could be an innovative way for Southeast Asia and Africa to deal with their financial situation. This can be done through mechanisms that allow countries to lower their debt burdens while financing them through climate projects. In countries like Zambia or Ghana, debt-for-climate swaps could cancel part of the external debt against concessional credits devoted to climate adaptation and mitigation. It could allow these countries to get much-needed fiscal space to finance their climate needs without meeting debt repayment requirements (OECD, 2013).

Climate finance should become more transparent and accountable. Establishing clear reporting lines on how climate funds are allocated and used will mean that the money is used most effectively and that the neediest countries and communities receive it. The possible ways in which this could look could be through reinforcing the GCFs and other multilateral funds' role in tracking and reporting on climate finance to ensure it is in line with a country's destination and is having a real impact on the ground (OECD, 2016).

The question of how the Loss and Damage Fund fits into this wider architecture remains open. South and Alpay (2024) ask whether the Fund can strike a responsive chord in global climate finance, a question that matters for both case countries because loss and damage sits alongside, rather than inside, the established adaptation and mitigation funding channels discussed above.

Intermediaries also shape whether finance reaches its intended users. Chaudhury (2020) investigates the role of intermediaries in shaping climate finance in developing countries through lessons from the Green Climate Fund, showing that the institutions standing between a fund and a project influence how finance is directed and accounted for. That finding reinforces the transparency concern stated above: tracking disbursement alone is not enough if the intermediary layer itself is not understood.

Climate Finance In South Africa

In particular, South Africa's move from coal-fired power to renewables has helped it secure international climate finance, which it has done with remarkable success. Announcing $8.5 billion in concessional loans and grants from donor nations like the US, UK, France, Germany, and the EU, the Just Energy Transition Partnership (JETP) is one of the biggest climate finance programmes aimed at developing nations. It was unveiled at COP26 in 2021 (Seiler et al., 2023). However, despite this milestone, South Africa faces challenges in absorbing and deploying these funds efficiently, primarily due to institutional fragmentation, regulatory uncertainty, and limited technical capacity at municipal and provincial levels (Affairs, 2020). Moreover, while green bonds have emerged as promising tools, their uptake in South Africa remains relatively modest. According to Banga et al. (2020), a lack of standardised impact measurement frameworks and limited investor confidence are key barriers to market growth. The Development Bank of Southern Africa (DBSA) issued one of the country's first green bonds in 2019, but the proceeds were small compared to the broader energy transition needs estimated at $250 billion through 2050 (Presidential Climate Commission, 2022).

The emergence of green bonds has been identified as a promising mechanism to raise capital for climate projects in South Africa. Both public and private sectors have used green bonds to finance renewable energy projects, energy-efficient buildings, and low-carbon infrastructure (Winkler et al., 2020). However, significant financial gaps remain, particularly in scaling up the transition to renewable energy, as financing remains insufficient compared to the required amount for South Africa's energy transition.

Recent scholarship on the South African partnership adds two qualifications to this account. Gürtler (2025) examines what space for justice exists within the just energy transition partnership with South Africa, while von Lüpke (2025) identifies and assesses key factors driving international cooperation in the same partnership. Together, these studies underline that the partnership cannot be judged on its

headline amount alone: its cooperative foundations and its distributional consequences are part of the gap between pledge and delivery. Barriers on the ground point in the same direction. Mirzania et al. (2023) analyse barriers to powering past coal and their implications for a just energy transition in South Africa, and Cock (2019) examines resistance to coal inequalities and the possibilities of a just transition in South Africa. Both studies treat coal dependence as a social and political problem, not only a technical one, which helps explain why deployment lags behind announcement.

Climate Finance In Indonesia

Indonesia, with its large carbon footprint primarily due to deforestation and reliance on coal, has also faced difficulties in meeting its climate finance needs. The country's case is interesting because the country is highly vulnerable to climate change, and at the same time, it is among the highest emitters of greenhouse gases. However, the country has received substantial amounts of international climate finance, yet studies show that significant gaps exist in financing for climate mitigation projects like renewable energy development. Despite receiving substantial international climate finance, there are notable gaps in funding for renewable energy development (Doe et al., 2023). The effectiveness of climate finance is often undermined by bureaucratic inefficiencies and the political influence in the fossil fuel sector, as most of its political leaders are among the key shareholders in the fossil fuel industry.

Recent studies have highlighted that while Indonesia has made significant progress in using international climate finance for deforestation reduction efforts through initiatives like REDD+. Though the pace of change remains slow due to challenges in policy implementation and governance. The REDD+ is a climate policy that aims to provide performance-based financial support to developing countries to conserve their forest to enhance carbon sinks. Indonesia, being among the largest countries endowed with a lot of forest, this policy will enable it to reduce its emissions from forest. The country has also explored innovative financing instruments like green sukuk to mobilise private sector investment in its renewable energy sector. This is affirmed by the UNDP 2018 report on climate finance, which outlines that the government of Indonesia issued its first sovereign green sukuk in 2018, raising $1.25 billion, with proceeds allocated to climate-related projects, including renewable energy and energy efficiency initiatives.

Musari (2022) extends this instrument discussion by proposing a blended Islamic finance model that integrates green sukuk with cash waqf linked sukuk as a fiscal instrument in Indonesia, intended as a model for fighting climate change. The proposal is relevant here because it shows that the green sukuk story does not end with sovereign issuance: domestic Islamic finance instruments are also being designed to widen the funding base for climate projects, even though their scale remains far below the financing needs described above.

Comparative Insights: South Africa Vs. Indonesia

Different approaches to mobilising climate money in the Global South are exemplified by South Africa and Indonesia. South Africa's approach is built on large-scale, politically driven finance models like the JETP, which strives to operationalise a just transition framework incorporating labour unions, civil society, and local government. However, inconsistent policy coordination and execution delays, especially within the state-owned utility Eskom, have seriously hampered investor trust and cash deployment (Winkler et al., 2020). Moreover, the JETP has faced criticism from local stakeholders who argue that the transition must be more inclusive and address socio-economic vulnerabilities at the community level (Africa, 2022).

Indonesia, on the other hand, has embraced a more technical and institutionalised approach to climate finance, integrating climate goals into its larger planning and budgetary framework. Indonesia has shown early leadership in incorporating climate policy into public financial

management through the issuance of green sukuk bonds and Climate Budget Tagging (CBT) (Kimura et al., 2025). However, there are still issues with making sure that these money flows are successfully converted into tangible adaptation and mitigation results. Implementation risks are still present due to governance problems such as poor interministerial coordination, inconsistent data, and competence gaps brought on by decentralisation (Chelminski, 2022). Underdeveloped domestic capital markets, a dearth of bankable project pipelines, and a lack of de-risking tools to attract private investment are structural limitations that both nations face (Banga et al., 2020). Furthermore, the urgency of its energy sector reform shapes South Africa's climate finance environment more than Indonesia's abundance of forest resources and mineral deposits, which enable sector-specific climate initiatives like REDD+ and key mineral development. Therefore, opposed to Indonesia, where land-use change and industrial policy are prioritised, the political economy of coal in South Africa has a greater influence on the course of climate funding. Notably, Indonesia has used fiscal incentives and intergovernmental transfer channels to incorporate climate change into subnational planning in a more proactive manner.

In contrast, climate finance initiatives in South Africa are sometimes fragmented or mismatched across several levels of government, reflecting the country's more centralised and politically charged approach. In conclusion, despite the fact that both South Africa and Indonesia face significant gaps in climate finance, their different institutional structures, political economies, and natural resource endowments necessitate different strategies and difficulties. Thus, a comparative perspective highlights the significance of adjusting climate finance frameworks to governance structures, sociopolitical dynamics, and macroeconomic data.

The comparative picture is sharpened by country-specific partnership studies. Rahmanitya and Ardiansyah (2023) analyse Indonesia's Just Energy Transition Partnership as a strategy for achieving energy security, which frames the Indonesian partnership in energy-security terms rather than only in emissions terms. Pindiriri and Kwaramba (2024) examine green budget tagging and resource mobilisation in developing countries, a theme that connects directly to Indonesia's Climate Budget Tagging experience: tagging can make climate spending visible, but visibility alone does not guarantee that tagged funds convert into adaptation or mitigation outcomes.

Emerging Challenges And Future Directions

Both nations' capacity to manage geopolitics, take advantage of natural resources, and carry out structural changes will determine the future of climate financing in both nations. Critical minerals like nickel, cobalt, and bauxite, which are necessary for global battery supply networks, are what give Indonesia its strategic significance. Utilising these resources could put Indonesia in a stronger position to bargain for better conditions in partnerships related to climate change and development, particularly with nations that want clean energy materials.

Opportunities for South-South climate cooperation are presented by South Africa's membership in BRICS, including bilateral renewable energy technology exchanges with China and India, knowledge transfer, and concessional financing from development institutions such as the New Development Bank (NDB). To draw in non-traditional climate financiers, this calls for improved regulatory frameworks and a closer connection between national development plans and climate goals (Phillips & Hall, 2022). To guarantee efficacy and accountability, both nations must increase institutional capacity, fortify transparency procedures, and integrate climate finance into public financial management systems.

METHOD

Research Design

This study adopts a qualitative approach in research to explore the past, present, and future climate finance gaps in South Africa and Indonesia, representing two different continents (Africa and Southeast Asia). The analysis is focused on the mechanisms of mobilising and disbursing of climate finance, challenges in mobilising finance directed towards adaptation and mitigation, and opportunities associated with climate finance in these two countries, drawing on secondary data and case studies to identify systemic barriers and solutions for scaling up financial flows to climate action.

Data Collection

Data was collected from a range of secondary sources, including government reports of climate finance in Indonesia and South Africa, Climate finance reports of the V20 most vulnerable countries in the world, reports from Small Islands States, climate finance databases (such as those published by the international organisation e.g. UNFCCC, World Bank, Paris agreement, IPCC reports), and literatures from climate finance-related research journals in Africa, and Southeast Asia. In particular, the study relies on the following key reports and case studies:

South Africa's energy transition, vulnerability to climate change, and climate finance needs: Information was gathered from South African government reports on energy policy and climate financing strategies, including the SNAPFI (Strengthen National Climate Policy Implementation) study, which addresses the country's transition from coal to renewable energy (Winkler et al., 2020).

Indonesia's climate finance mechanisms: Data for Indonesia was derived from case studies of the country's renewable energy sector, specifically focusing on renewable development, REDD+ policy, and the role of international climate finance in overcoming barriers to clean energy deployment and enhancing the effective adaptation and mitigation of climate policy (Chelminski, 2022).

Analytical And Comparative Analysis Framework

A comparative approach was applied, assessing and comparing South Africa and Indonesia in terms of their climate finance mechanisms. The idea is to use each of these countries to represent a broader view of climate finance, past, present, and future gaps in Africa and Southeast Asia. This study deems it necessary to uncover the climate finance effectiveness in the global south by using South Africa and Indonesia, because these countries in their respective continent are the leading countries in terms of receiving climate finance support. The study explores how each country mobilised financial support gathered from multilateral organisations such as the Green Climate Fund (GCF), assesses whether the current modalities of climate finance disbursement, and compares whether the financial support correlates with the level of vulnerability in climate change-induced disasters. Key elements analysed include the effectiveness of financial flows, their giving mechanisms, political will, and institutional capacity to deploy resources efficiently.

For the purposes of this comparison, the framework is defined by five dimensions, each applied to both countries in the results: the effectiveness of financial flows; the mechanisms through which finance is given; the political will behind disbursement and implementation; institutional capacity to deploy resources efficiently; and whether financial support correlates with the level of vulnerability to climate change-induced disasters. No scoring scale or threshold is applied to these dimensions; they are used as qualitative lenses for comparing the two cases, and the results report them in narrative form rather than as a scored matrix.

Evaluation Of Gaps

The gaps in climate finance were evaluated by assessing each country's historical, current, and projected funding needs, taking into account the scale of their emission reduction targets and the capacity of domestic and international financial instruments. Key criteria included the level of

concessional finance available through the loss and damage fund, the involvement of the private sector, and the ability to address local development needs through climate finance mechanisms.

Analysis Techniques

Qualitative content analysis was used to analyse and assess policy documents, reports, and academic literature on climate finance, identifying key themes related to the financial gaps. This study leverage in secondary data analysis to estimate the financing needs of the energy transition in South Africa and Indonesia, amount of climate finance cash transfers received, how much was invested in to climate actions, and data on the drastic increase in debts due to concessional loans in climate finance using data on current financial flows and projected financial needs for mitigation and adaptation efforts.

RESULTS AND DISCUSSION

This research shows that, despite countries like the US and the EU member states raising their climate finance commitments, South Africa and Indonesia are still facing challenges in implementing the necessary climate actions. Evaluations carried out in recent years emphasise that reforms are essential to make sure climate finance is available and disbursed to the right countries (Akinbowale et al., 2024). Africa is widely regarded as an underdeveloped continent that faces challenges such as the lack of resources and weak institutions, which make it difficult to lobby for climate funds and implement them wisely (Kelly, 2024). It is important to note that governance is a contributing factor to the menace of climate finance in developing countries. However, it should also be noted that the means of giving out the climate finance have also led to setbacks in ensuring that nations are well compensated for the damages caused by climate change events. Figure 1 outlines that, indeed, most climate finance support is in the form of investment loans, leading to more debt in developing countries. Instead of supporting developing countries to achieve their climate target, they are often constrained by a burden to repay the financial support given to them. Climate finance should be in the form of a grant to support vulnerable countries because they are the ones contributing less in terms of emissions. The figure below suggests that almost 61% of climate finance is in the form of loans, which is not helping countries like Indonesia and South Africa because they are still regarded as developing countries, while still confronted with a lot of change-induced disasters.

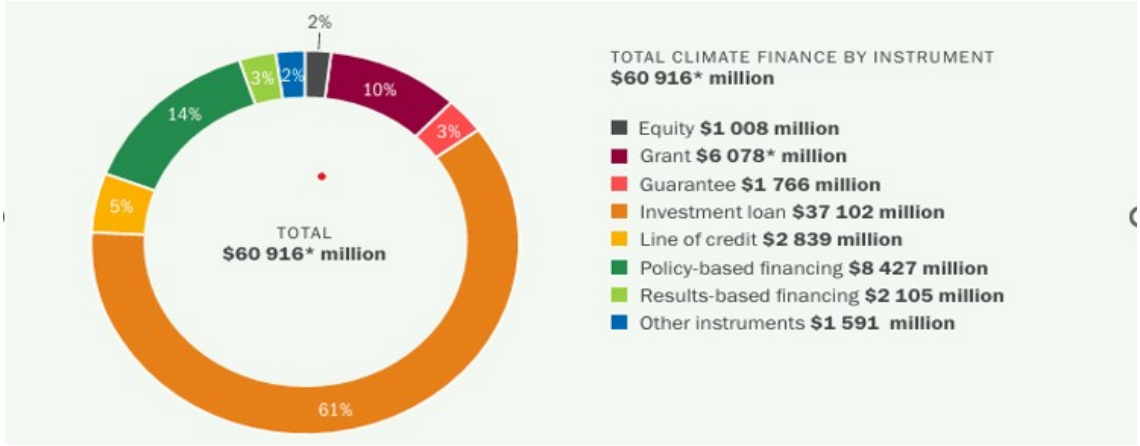


Figure 1. MDB estimates finance by type of investment in low and middle-income economies, 2022 in $million
Source: 2022 joint report on Multilateral Development Banks' climate finance.

The figures in this article are reproduced as reported in their source charts. The underlying datasets for the five figures are not reproduced in the article, so the values shown in the figures should be read as reported illustrations of the patterns discussed in the text, not as independently verified datasets.

Climate Finance Disbursement Patterns: Volume Vs. Accessibility

The climate finance pledges from COP29 are impressive in size, but they do not include clear ways to help the most vulnerable developing countries. South Africa and Indonesia have been chosen as the main recipients of Just Energy Transition Partnerships (JETPs), with each receiving $8.5 billion and $20 billion (Seiler et al., 2023). These numbers are important, but their impact is reduced when you realise that much of the aid is given as concessional loans instead of grants. As a result, countries with high debt-to-GDP ratios are now facing even greater financial difficulties. This project fails in both countries because the international donors' financial support was not enough for these countries, which are reliant on coal, to transition to clean energy.

In the same vein, due to the COVID-19 pandemic, it exacerbated South Africa's debt-to-GDP ratio rose to 80.5% (Indrawati et al., 2024). As debt rises, the country is less able to support the lasting green infrastructure and safety nets that are needed during the change. Similarly, Indonesia's large and rapidly growing population, as well as its clusters of islands, mean it will take even more effort and resources to move towards sustainability, since it is highly vulnerable to sea level rise. Amidst all the challenges faced by countries yet still the availability of international finance is not enough, which can disrupt their economic development and capacity to fully transition to renewable energy (Ridho & Vinichenko, 2024).

Furthermore, financial tracking has proven inconsistent, raising concerns in terms of the transparency of climate finance in most developing countries. Disbursements pledged by multilateral banks often fail to match their commitments, as demonstrated in the most recent review of MDB climate finance operations (MDBS, 2024). Most countries in the global south often rely on climate finance; thus, if there is a shortage of financial commitments, it will impact their ability to adapt to climate change. One could also argue that, in fact, sometimes it's not about the pledges but rather the lack of capacity for the countries in the global south to effectively use their financial support most appropriately. This has, over the years has raised concerns in climate finance as international aiders find it hard to hold countries receiving climate finance accountable. Therefore, one of the factors that is leading to low adaptation needs in the developing countries is the fact that most supporting climate finance institutions or organisations have lost trust in developing countries because, most often, they are not offered the means to track how their financial support has been utilised.

Figure 2 below illustrates that there is still more funding needed in helping developed countries adapt to climate change, as there still exist huge imbalances between the financial flows and the adaptation needs, especially in South Africa. Therefore, these countries need to enhance and strengthen their governance to ensure that they earn the trust of climate aid institutions to mobilise more funds into climate action.

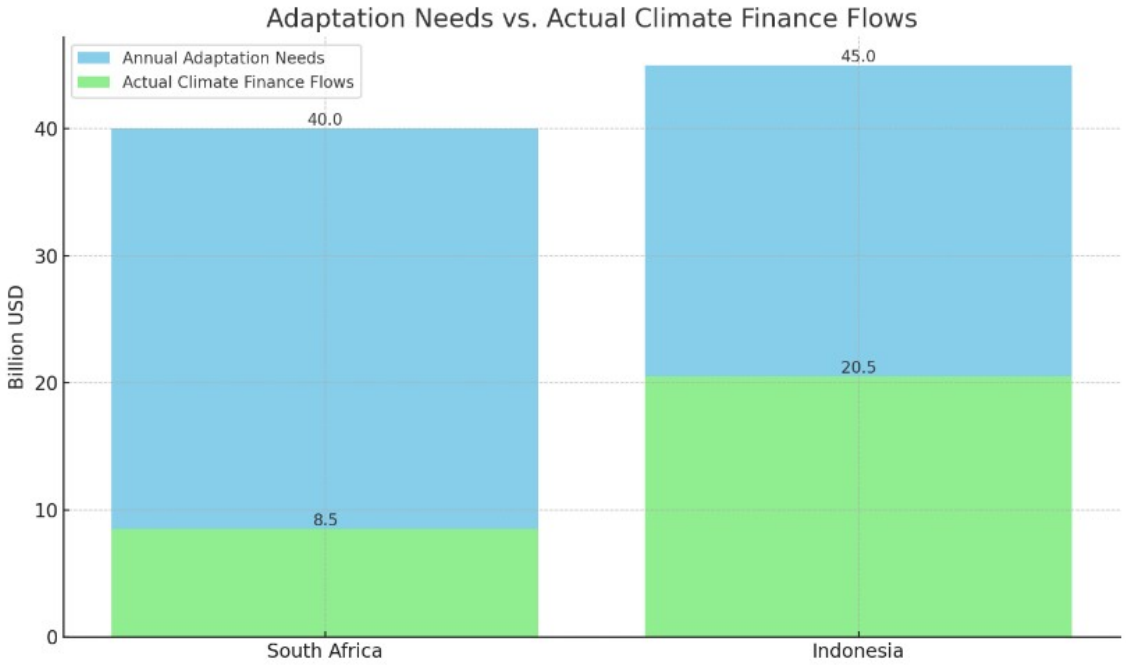


Figure 2. Adaptation Needs vs. Actual Climate Finance Flows in South Africa and Indonesia
Source: Watkiss (2023); Seiler et al. (2023); Africa (2022).

Structural Barriers: Governance, Gender, And Institutional Capacity

One of the primary reasons climate finance fails to deliver results in these regions is weak institutional capacity. Both South Africa and Indonesia are confronted with bureaucratic delays, unclear regulatory frameworks, and fragmented governance systems. Indonesia, for instance, has weak energy policies, which have discouraged a lot of private renewable developers from investing in the energy sector because its energy sector is highly monopolised. South Africa, on the other hand, faces similar obstacles impacting its ability to lure private investors in the renewable energy sector. These inefficiencies prevent the smooth disbursement and utilisation of funds, particularly those from institutions like the Green Climate Fund (GCF) and the Adaptation Fund (Fankhauser et al., 2016).

Moreover, social inequalities embedded in cultural and institutional systems exacerbate climate vulnerabilities. In South Africa, where patriarchal norms dominate, financial resources often flow toward male heads of households, marginalising women from adaptation and recovery planning (Tamasiga et al, 2023). This usually exacerbated the vulnerability of households headed by women since most of the support in the form of cash transfers is usually limited to their men counterparts. In Indonesia, similar issues are evident in the underrepresentation of women in climate finance mechanisms (N. et al., 2020), hindering women's capacity to be resilient against climate, especially those who venture into small-scale agriculture and petty trading.

Coal Dependency And Emissions Challenges

South Africa and Indonesia are among the world's highest emitters due to their heavy reliance on coal. South Africa ranks 14th globally in emissions, and Indonesia ranks 9th. Coal forms the backbone of their energy economies, making the transition to renewable energy both necessary and economically unattractive. In Indonesia, around 80% of its emissions stem from deforestation and coal-fired power plants (Seiler et al., 2023). To address this issue, depending on coal, both countries need more financial support from international organisations and the private sector. Figure 3 below outlines the emissions of both countries by each sector, in which coal energy remains the highest.

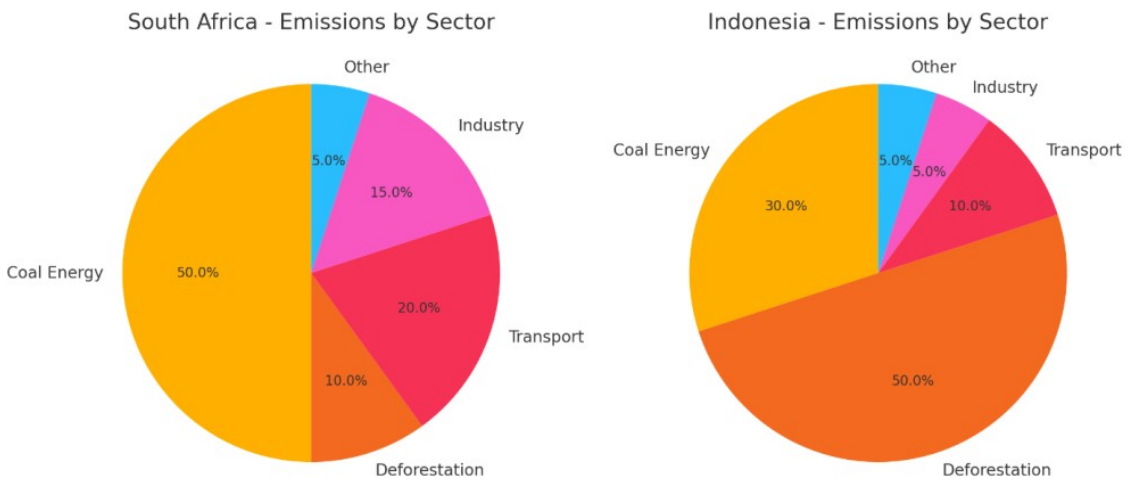


Figure 3. Greenhouse Gas Emissions by Sector in South Africa and Indonesia
Source: Seiler et al. (2023); OECD (2016).

Transitioning away from coal could lead to mass job losses, especially in coal-reliant areas such as Mpumalanga, South Africa, and East Kalimantan, Indonesia. Without integrated socio-economic policies, the shift risks exacerbating poverty. Recent studies highlight the need for social protection, job retraining, and inclusive transition frameworks to avoid deepening inequality (Jakob et al., 2015). These countries will need a lot of investments in green jobs to ensure that even if they transition entirely to coal, those affected in terms of employment can regain jobs in the green jobs sector.

Adaptation Vs. Mitigation: An Ongoing Imbalance

There exist huge imbalances in terms of climate finance disbursement for adaptation and mitigation. While mitigation continues to dominate climate finance flows, adaptation remains critically underfunded. In Africa alone, the annual adaptation cost is estimated at $30-50 billion until 2030, yet actual financial flows remain far below this requirement (Watkiss, 2023). Both adaptation and mitigation are equally important in the pursuit of climate finance for developing countries like South Africa and Indonesia. Despite climate finance institutions or organisations prioritising more adaptation funding, it is already evident that climate-induced events have significantly affected this country's economic trajectory. Climate change has impacted major economic sectors such as agriculture in South Africa, for instance, due to drought, which employs a chunk of the population. Though South Africa and Indonesia still rely on coal production, but yet still do not emit as much as developed countries like China and America. Thus, their governments should prioritise how best to adapt to climate change reliability because they are vulnerable. Figure 4 below outlines that, in fact, we still have both mitigation and adaptation, but adaptation should be prioritised, as it is illustrated that adaptation funding still remains significantly low.

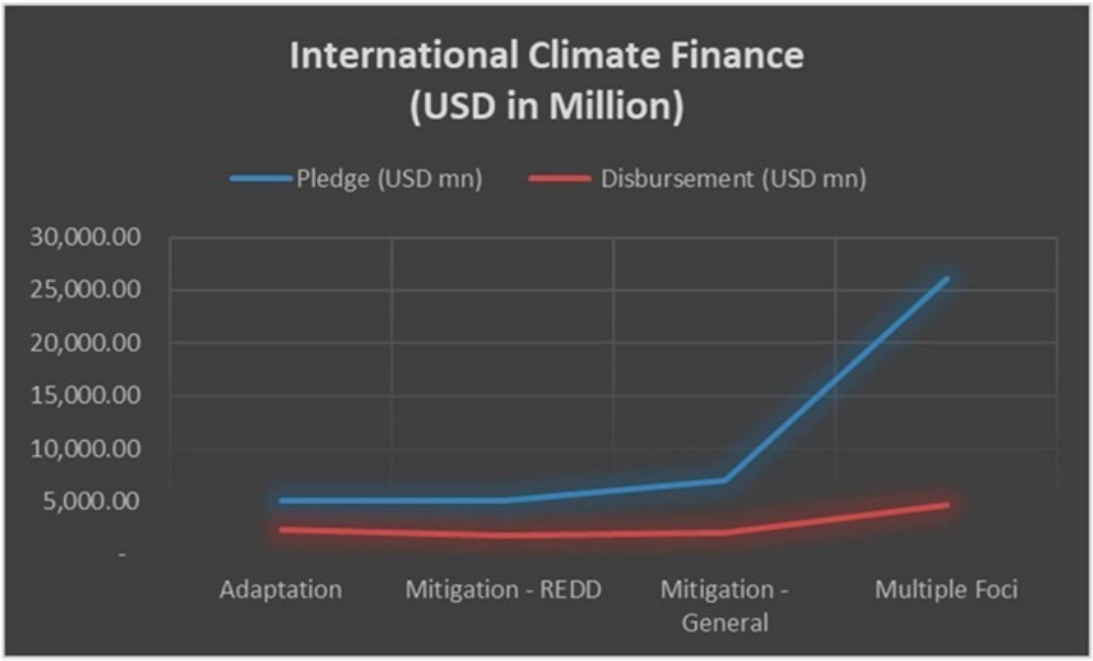


Figure 4. International climate finance (USD in Million)
Source: Nor (2025).

In Southeast Asia, countries like the Philippines, Vietnam, and Indonesia are highly vulnerable to natural disasters. Yet, climate finance is primarily channeled into mitigation, not resilience-building. Addressing this misalignment is essential for achieving equitable climate outcomes (Pauw et al., 2022). This trend is further exacerbated by institutional reluctance to prioritise grant-based funding over debt instruments. Grant components, experts argue, should be explicitly elevated in the post-2025 finance framework (Pauw et al., 2022).

Two further studies help to place this imbalance in context. Basty and Azouz Ghachem (2022) take a sectoral approach to adaptation finance in developing countries and ask whether climate justice applies across sectors, using evidence from 90 developing countries over 2010-2019. Their sectoral lens supports the point made above: aggregate adaptation totals hide very different needs across sectors, so a single adaptation-mitigation split does not capture where the shortfall bites. Monsod et al. (2023) approach the same problem from the fiscal side, estimating fiscal space for climate adaptation in climate-vulnerable developing countries. Their work underlines that the adaptation gap is not only a matter of international pledges; it is also a matter of how much fiscal room a vulnerable country has to absorb, co-finance, and sustain adaptation spending.

Private Sector Gaps And Overreliance On Loans

A significant barrier is the limited involvement of the private sector. Indonesia's use of green sukuk and other Islamic finance instruments offers some promise (Faizi et al., 2024). Still, private sector engagement remains insufficient across both nations, highlighting the need for stronger policy incentives and risk guarantees.

Concessional loans dominate climate finance in both countries, contributing to debt burdens without generating sufficient returns in resilience or emissions reduction (Nor, 2025). Innovative finance mechanisms such as debt-for-climate swaps may offer viable alternatives, especially for highly indebted low- and middle-income countries (Jakob et al., 2015). Figure 5 below shows that in Indonesia, despite the involvement of the private sector in funding climate actions, there still exists a

huge gap. Though in Indonesia, this is commendable but it still needs to enhance its policies and governance in ensuring that the private sector invests in the renewable market, which can significantly reduce its susceptibility to climate change-induced disasters. The government should ensure that it reinforces policies such as feed-in tariffs, auctions to ensure that there is minimal risk for private renewable energy developers to equally take part in the renewable energy market.

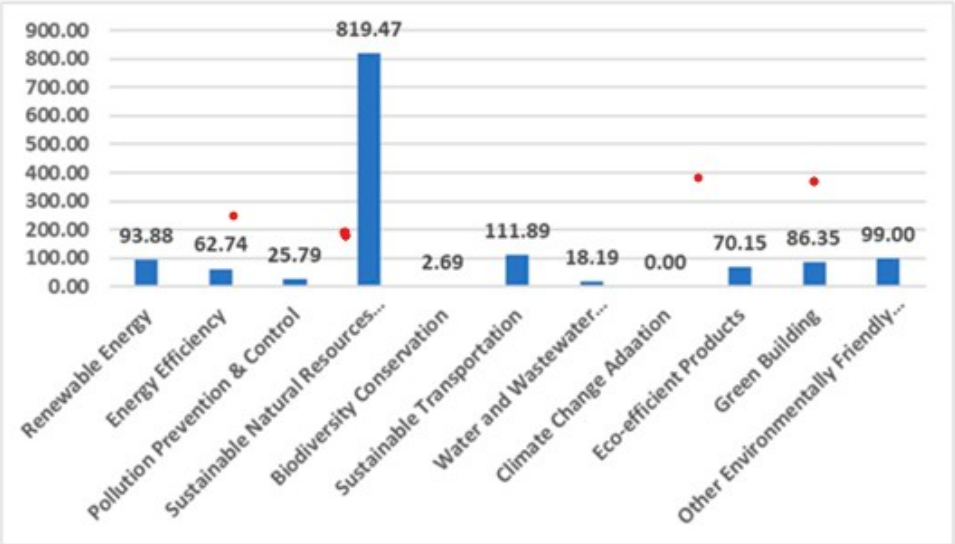


Figure 5. Distribution of green business loans sectors in 2019-2022 (in trillion rupiahs)
Source: Ridho & Vinichenko (2024).

The private-sector gap has a mobilisation side as well as a risk side. Kerr and Hu (2025) argue for holistic approaches to mobilising private finance in developing economies, arguing that closing the climate finance gap requires coordinated action across instruments and institutions rather than reliance on any single channel. Chavarría-Flores and Warren (2024) examine sovereign climate bonds as a policy innovation for just transitions in developing countries, an instrument family that sits between the green bonds discussed for South Africa and the green sukuk discussed for Indonesia. Both studies reinforce the conclusion of this section: without stronger incentives, risk guarantees, and credible project pipelines, private finance will remain a complement to, rather than a substitute for, public and concessional finance.

Global Geopolitical And Post-Pandemic Constraints

The geopolitical context continues to shape the flow and conditionality of climate finance as the world is highly divided into blocs based on political ideology. Multilateral banks remain dominant actors, but recent analysis calls for more democratic and need-based distribution frameworks (MDBs, 2024). The post-pandemic economic climate has amplified concerns around fiscal tightening, donor fatigue, and the redirection of resources toward domestic recovery priorities.

Whether climate finance achieves its stated goals under these constraints is an empirical question. Wei (2025) provides an econometric assessment of mitigation and adaptation outcomes of climate finance in developing countries. That assessment is a useful discipline on the argument of this article: headline pledges, partnership announcements, and disbursement totals are inputs, and the test of a financing system is whether those inputs translate into mitigation and adaptation outcomes on the ground.

Innovations And Future Directions

Innovative financing tools like debt-for-climate swaps are gaining traction. Meanwhile, sustainable banking frameworks such as Indonesia's BESGI assessment are starting to influence financial institution practices, albeit inconsistently (Rudiyanto & Sudrajad, 2024). This is remarkable because in the long run, it can reduce the country's reliance on international climate aid and mobilise resources internally through public-private partnerships. The integration of climate-related risk into macroprudential supervision, as suggested by Indonesia's central bank and OJK, could further improve regulatory resilience (Puspitasari & Faturohman, 2024).

LIMITATIONS

This study is limited by its reliance on secondary sources. No primary data were collected, and no systematic corpus is defined in the method: the documents examined are not listed, no count of sources is given, no search terms or databases searched systematically are stated, and no inclusion or exclusion criteria are specified. The comparison therefore rests on the secondary literature and reports summarised in the text, and its findings should be read as a thematic synthesis of that material rather than as a systematic review.

The method states an intention to estimate financing needs, amounts received and invested, and debt increases from current flows and projected needs. No such estimation table or country-level disbursement dataset is presented in the results, so no quantified financing gap for either country can be drawn from this article beyond the figures reported in the text and figures. Several headline figures in the text, including emission reduction percentages, global emission rankings, finance-need totals, and the values shown in the five figures, are reported as stated in secondary sources; the underlying datasets were not available for independent verification, and the figures carry no baseline, inventory basis, or year in some cases. They should therefore be read as reported estimates, not as independently verified totals.

The five figures are reproduced as chart images without accompanying data tables, so their values cannot be re-checked from the article itself. The gender discussion is the least well sourced part of the analysis, because its key citations cannot be traced to full references in the reference list. Finally, the use of two countries to stand for two continents is a further limit: South Africa and Indonesia illustrate contrasting political economies of climate finance, but two cases cannot represent the full diversity of Africa and Southeast Asia, and examples drawn from other countries in the text are context, not additional cases.

CONCLUSION

South Africa and Indonesia illustrate the dual challenge of high climate vulnerability and inadequate financial support. Despite significant international pledges, climate finance remains inaccessible, unevenly distributed, and poorly aligned with ground realities. Addressing these challenges requires not only more funding but also smarter, more inclusive, and better-targeted mechanisms. Unless global climate finance frameworks prioritise justice, flexibility, and equity, countries in the Global South will continue to struggle under the dual burdens of climate change and structural underdevelopment.

Research Question 1, on how climate finance is mobilised and disbursed, is answered as follows. In both countries, mobilisation has produced large headline pledges and partnerships, but disbursement lags behind announcement, and loan-based instruments dominate the flows that do arrive. The South African partnership and the Indonesian partnership illustrate the same pattern from different starting points: large totals announced, deployment slowed by coordination and capacity problems, and a continuing dependence on concessional loans that adds to debt pressure rather than relieving it.

Research Question 2, on institutional and governance challenges, is answered as follows. Fragmented institutions, unclear regulatory frameworks, bureaucratic delays, weak tracking and transparency, and limited technical capacity at subnational levels constrain effective use in both countries, in different institutional forms. South Africa's constraint centres on a centralised, politically charged energy system and fragmented delivery across levels of government. Indonesia's constraint centres on interministerial coordination, inconsistent data, competence gaps under decentralisation, and the political influence of fossil fuel interests, despite more institutionalised budget tools such as green sukuk and Climate Budget Tagging.

Research Question 3, on effects on adaptation and mitigation activities, is answered as follows. Mitigation continues to attract the larger share of finance, while adaptation remains critically underfunded relative to need in both countries, and coal dependence in both energy systems keeps transition costs high and job losses a live risk in coal regions. Private sector participation remains insufficient in both countries, and gendered barriers further limit who benefits from adaptation and recovery support, with women underrepresented in the mechanisms discussed.

The recommendations that follow from these findings are tied to them one by one. Because loans dominate and add to debt pressure, grant-based funding should be prioritised and its grant share made explicit in future finance frameworks. Because tracking and transparency are weak, reporting on allocation, disbursement, and utilisation should be strengthened, including through the intermediary institutions that channel multilateral funds. Because adaptation lags mitigation, adaptation funding should be elevated explicitly in the post-2025 finance framework and matched to sectoral and fiscal realities rather than set as a single aggregate. Because private participation is limited by pipeline and risk problems, policy incentives, risk guarantees, and de-risking tools should be developed alongside bankable project pipelines. And because the two countries' political economies differ, finance frameworks should be adjusted to governance structures, resource endowments, and subnational planning systems rather than applied as a single template.

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