New Development Bank

THEMATIC EVALUATION

NDB FINANCING AND ACTIVITIES IN THE **ENERGY SECTOR IN SOUTH AFRICA**

FINAL REPORT
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INDEPENDENT
EVALUATION OFFICE

PREFACE

I am delighted to present this report, which showcases the findings and recommendations of the thematic evaluation on New Development Bank (NDB) Financing and Activities in the Energy Sector in the Republic of South Africa. This is the first such thematic evaluation undertaken by the Independent Evaluation Office (IEO), and it analyses both NDB's portfolio performance, and strategic issues and trends in the country's energy sector.

The thematic evaluation reviewed five sovereign and non-sovereign energy-sector projects that NDB invested in between 2016 and 2024. The total approved NDB financing was USD 972.8 million, spread across eight provinces of the country. The projects were designed in line with the government's development priorities and aimed to contribute to the country's power generation mix, strengthen transmission capacity, help the country meet peak energy demand and reduce carbon dioxide (CO_2) emissions.

The evaluation found that NDB investments have yielded important results, adding approximately 1,600 megawatts of renewable energy capacity, 374 km of transmission lines, and reducing millions of tonnes of CO_2 emissions. NDB interventions had a positive social impact too, with almost 10,000 jobs created and local manufacturers utilised to make some project components. However, development effectiveness could have been better tracked if projects had systematically included social and economic aspects in project Design and Monitoring Frameworks (DMFs).

NDB was also able to leverage USD 4.698 billion for the projects from diverse sources such as state companies and other multilateral development banks.

However, although the Bank added value in terms of its funds and by using country systems, it has not provided a sufficient amount of technical assistance and capacity-building to partner institutions and project implementers, and while it has built strong relations with government institutions and private sector borrowers, there is room for enhancing partnerships with relevant players such as think tanks and research institutions engaged in the energy sector in South Africa.

The energy sector in South Africa is at a crossroads, and NDB needs to make some strategic choices on its future role in the sector and how it can best position itself to continue to be competitive and relevant. So, although good investment decisions were made by the Bank in the energy sector in the past, the decisions appear somewhat ad hoc and opportunistic, rather than driven by an overarching strategy for NDB activities in the country.

The evaluation makes a number of recommendations for the way forward, which include the need for a joint South Africa-NDB country strategy, enhancing its financing product mix, developing an energy sector knowledge management framework in the country, prioritising transmission capacity for future investments, making use of the Project Preparation Fund for project design and implementation support, and using project DMFs as a more strategic instrument for achieving better outcomes at completion.

I trust this report will be helpful to readers seeking to better understand the support NDB is providing to South Africa in energy sector development, and how it needs to evolve to act more effectively in the dynamic context in which it operates and to meet the sustainable development objectives that it has set for itself in the country.

Ashwani K. Muthoo
Director General
Independent Evaluation Office
New Development Bank

ACKNOWLEDGEMENTS

The Independent Evaluation Office (IEO) of the New Development Bank (NDB) would like to thank all those who have contributed to this thematic evaluation on NDB financing and activities in the energy sector in South Africa – the first evaluation on a particular sector conducted by IEO.

IEO is thankful for the collaboration and insights from the Government of South Africa, in particular the National Treasury; and to the various government agencies related to the energy sector, such as the Department of Electricity and Energy (DEE) and the National Energy Regulator of South Africa, who also provided key guidance and inputs throughout the evaluation process. IEO would especially like to express its appreciation to the Department of Planning, Monitoring and Evaluation for being the peer reviewer of the report and providing key inputs at different stages of its development.

In addition, IEO also acknowledges the support from borrowers (Eskom, the Industrial Development Corporation and the Development Bank of Southern Africa), project implementation units and stakeholders in energy sector where NDB financed projects and conducted activities in South Africa. In particular, IEO is grateful to Eskom for facilitating a site visit during the main mission for the report. Moreover, as part of the benchmarking exercise conducted, valuable inputs were provided by colleagues in several peer multilateral development banks and international organisations regarding their overall experience, good practices and lessons on the topic.

Special thanks go to the NDB Board of Directors for their support and broader guidance to ensure the evaluation is appropriately customised to NDB's specific context; and to NDB Management and operations staff and other colleagues, in particular those from the Africa Regional Centre, for their openness in sharing critical reports, data and insights.

The report was produced under the overall supervision of Mr. Ashwani K. Muthoo, Director General, IEO. Ms. Jin Zhao, Evaluation Specialist IEO, was the lead evaluator for this report and she was supported by Ms. Maliha Hamid Hussein (Senior Development and Evaluation Expert), Ms. Ruse Thembela Moleshe (Energy Expert) and Ms. Beatriz Vieira Rauber (IEO Evaluation Specialist). Mr. Luiz Maurer provided critical inputs as the external energy sector peer reviewer.

Moreover, the report also benefited from strategic comments from Ms. Zenda Ofir, the South African representative on NDB's High-Level Evaluation Advisory Committee.

Finally, Ms. Jaqueline Rabelo Souza, IEO communication and outreach expert, and Mr. John Laird, IEO evaluation editor and content creator, provided support in editorial quality assurance, proof-reading, communication and outreach.

IEO is exclusively responsible for the contents and quality of the evaluation report.

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ABBREVIATIONS AND ACRONYMS

ARC	Africa Regional Centre (NDB)
BEE	Black Economic Empowerment
BESS	Battery Energy Storage System
BESP	Battery Energy Storage Project
BW	Bid Window
CEH	Climate and Ecosystem Health
CGV	Credit Guarantee Vehicle
CO_2	Carbon Dioxide
CSP	Concentrated Solar Power
DBSA	Development Bank of Southern Africa
DEE	Department of Electricity and Energy
DFI	Development Finance Institution
DMF	Design and Monitoring Framework
DMRE	Department of Mineral Resources and Energy
DPME	Department of Planning, Monitoring and Evaluation
E&S	Environmental & Social
EIRR	Economic Internal Rate of Return
ESG	Environmental, Social and Governance
GHGER	Greenhouse Gas Emissions Reduction and Energy Sector Development Project
GW	Gigawatt
GWh	Gigawatt/Hour
IDC	Industrial Development Corporation
IPP	Independent Power Producer
IPPPP	Independent Power Producer Procurement Programme
IRP	Integrated Resource Plan
kWh	Kilowatt/Hour
MDB	Multilateral Development Bank
MW	Megawatt
NDC	Nationally Determined Contribution
NTCSA	National Transmission Company of South Africa
PCR	Project Completion Report
PDB	Project Document to the Board
PPF	Project Preparation Fund
PV	Photovoltaic
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
REITAP	Renewable Energy Integration and Transmission Augmentation Project
RESP	Renewable Energy Sector Development Project
SDG	Sustainable Development Goal
SIP	Sustainable Infrastructure Project

EXECUTIVE SUMMARY

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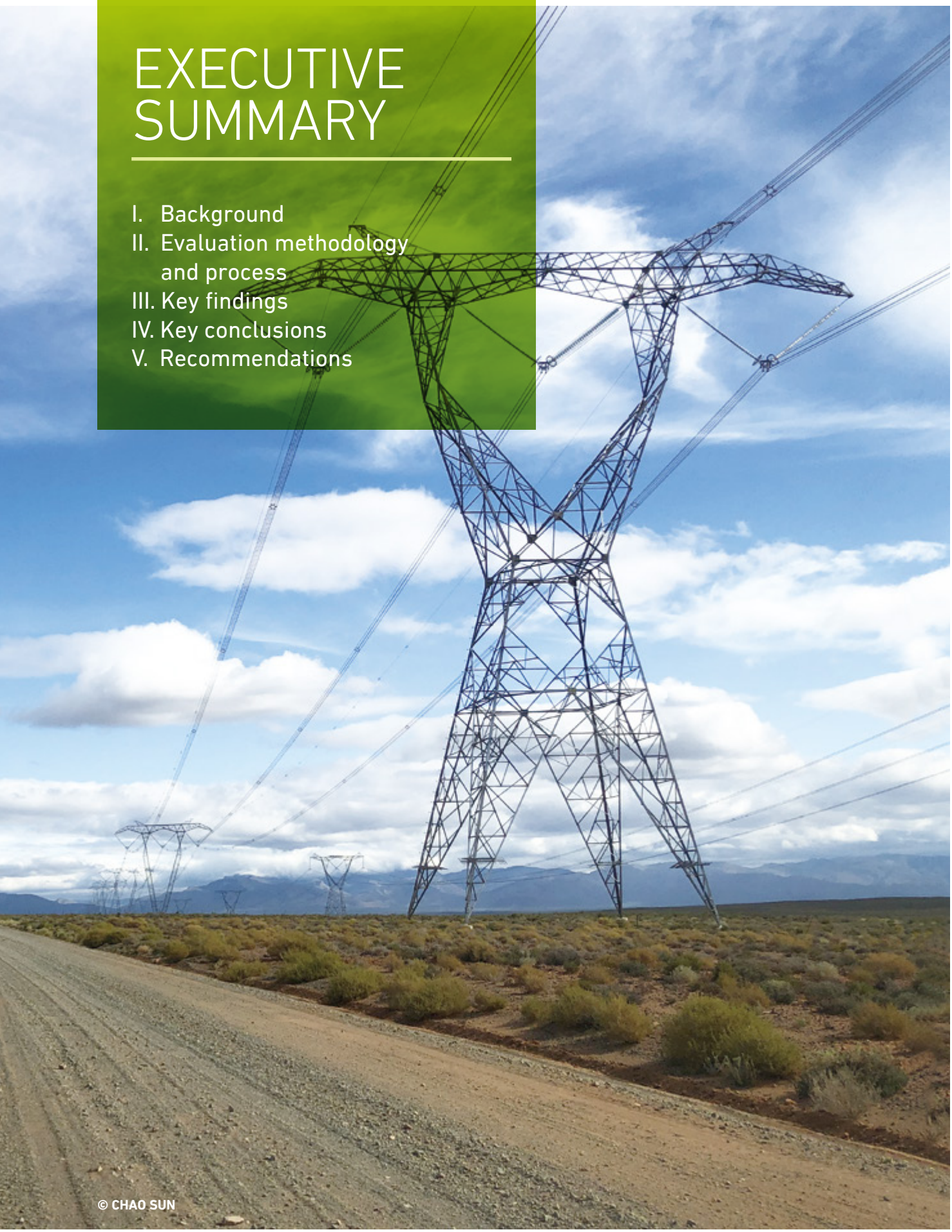

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I. Background

1. This report presents the thematic evaluation of the New Development Bank's (NDB) investments and activities in the energy sector in South Africa. The main objectives are to assess the results of NDB-financed operations and activities in the sector, and generate lessons and recommendations for the way forward.

2. NDB has financed projects in multiple sectors in South Africa since 2016. Over the last decade, NDB approved five energy sector projects in the country, consisting of 39 sub-projects. Given the social and economic significance of the energy sector for the country, in December 2024 the NDB Board approved this evaluation; and the Independent Evaluation Office (IEO) carried it out during 2025. The projects covered by this evaluation include both sovereign and non-sovereign loans. The evaluation also covered NDB's lending and non-lending activities to provide a comprehensive understanding of the Bank's overall development impact.

II. Evaluation methodology and process

3. The evaluation assessed the projects against a set of internationally recognised evaluation criteria, such as relevance, effectiveness, efficiency, impact and sustainability. In addition, for each project, the evaluation also assessed NDB and borrower performance. This evaluation also adopted a tailored approach in the evaluation of project design to reflect South Africa's national development priorities and respect its in-country evaluation system. As such, two additional criteria, (i) climate and ecosystem health, and (ii) transformative equity, were added to the assessment. The key methods used for the evaluation included a document review, semi-structured interviews with key stakeholders, and project site visits. Triangulation techniques were used to validate the analysis, leading to the assignment of a performance rating for each criterion on a six-point scale.

4. Some key process steps in conducting this evaluation involved the preparation of an approach paper and interim report, on which IEO received feedback from key stakeholders. An evaluation reference group was established for the evaluation, with the aim of promoting dialogue and exchanges at key stages of the evaluation process as well as to foster learning and build ownership in the evaluation. The evaluation team also conducted a preparatory mission and main mission to South Africa which included a project site visit. IEO plans to organise a stakeholder seminar in South Africa at the end of 2025 to discuss and share the results and lessons from the evaluation.

III. Key findings

A. Performance of lending activities

5. **Relevance.** The relevance of NDB's energy sector portfolio in South Africa is rated as "successful", reflecting its strong alignment with key national priorities to increase its supply of renewable energy and alignment with its global commitments. The portfolio is well aligned with NDB's general strategies in its choice between sovereign and non-sovereign lending, use of local currency financing, adoption of innovative new technologies, mobilisation of private capital and NDB's commitment to dedicate 40% of its total volume of approvals to projects contributing to climate change mitigation and adaptation. The Bank has had limited engagement in gas-to-power and nuclear energy projects.

6. **Effectiveness.** The effectiveness of the NDB portfolio in South Africa is rated as "successful". The projects supported the development of South Africa's energy sector value chain by investing in integration and generation. The evaluation results show that the projects contribute to improving the energy mix, reducing carbon dioxide (CO_2) emissions and increasing capacity to meet peak demand. The projects have also been very effective in leveraging private sector funds from commercial sources for the sector. However, possible financing tools are not adequately utilised by the Bank especially in its initial years.

7. **Efficiency.** NDB's portfolio in South Africa is rated as "moderately successful" in terms of efficiency. There are mixed results with respect to project commencement and completion timelines. Many sub-projects experienced delays at the start of implementation and during commercial operations – although often for causes outside of their control. Key causes of delays included the COVID-19 pandemic, port flooding, procurement challenges and the need for retendering due to rising costs, servitude encroachment and the use of complex technologies such as concentrated solar power. Most projects are within budget and cost overruns have been reported by two of the five projects evaluated. Disbursements are facilitated by a mechanism which allows both the reimbursement and advanced disbursement of loans; and completed projects have used the allocated funds efficiently.

8. **Impact.** The impact of NDB's energy sector portfolio is rated as "successful". The completed projects have had an impact on the country's energy diversification mix and have added to energy reliability and stability, and contributed to the CO_2 reduction targets. Overall, the installed capacity of the NDB energy projects is about 1,600 MW which can provide 7,503 GWh/year of electricity. Under standard assumptions, this would be sufficient to supply around 1.8 million South African households per year. Some sub-projects have contributed to positive social and economic outcomes as well, such as Black Economic Empowerment (BEE) shareholding, local employment, community development and income growth opportunities.

9. **Sustainability.** The sustainability of the NDB-financed energy portfolio in South Africa is rated as "successful", underpinned by the strong corporate capability of the sponsors and the supportive government policy framework. The sector has crowded in private sector capital which is likely to continue to show interest in the sector. The projects have used tested technologies and there are strong operations and maintenance arrangements in place. The long-term power purchase agreements with sovereign guarantees and non-recourse finance ensure the financial sustainability of the projects.

10. **Overall portfolio achievement.** The achievement of the portfolio is considered as "successful". This is due to the high degree of relevance of the energy sector portfolio and its contribution to key sector objectives, the effectiveness of the projects in meeting their output targets and disbursing the loans (despite the delay in the initiation and commissioning of some of the sub-projects) and their overall impact in addressing the strategic objectives and commitments of the country and the strong institutional arrangements with a diverse set of public and corporate sector partners.

B. Performance of non-lending activities

11. Overall, NDB's non-lending activities are assessed to be "moderately unsuccessful" in the country. NDB has not provided any technical assistance, nor built strategic relationships, developed knowledge products, or enhanced its visibility or recognition as a player in the renewable energy space. This indicates a missed opportunity to use its convening power and technical platforms to enhance developmental impact beyond financing.

12. **Knowledge management:** "moderately unsuccessful". NDB did not sufficiently leverage its role to highlight its added value in areas where project risks were high; and the Bank played a minimal role in showcasing its role in the sector in its early years. While NDB's Africa Regional Centre's recent initiatives in energy sector knowledge exchange were appreciated by key stakeholders, more could be done by NDB and a more proactive approach adopted to enhance its non-lending activities in the country.

13. **Partnership development:** "moderately unsuccessful". NDB has collaborated with key government and national institutions and has established a good dialogue with the National Treasury. However, NDB's engagement with the National Treasury and other multilateral development banks could have been better structured. NDB has limited visibility in national energy dialogues which reduced its opportunity to shape upstream project development; and co-financing is not yet systematic across the portfolio.

14. **Capacity-building and technical assistance:** "moderately unsuccessful". NDB has not provided any capacity-building or technical assistance to its energy projects in the country so far. The Bank has only provided basic support on procurement and environmental, social and governance aspects, partly due to its own limited technical capacity in the energy sector. The borrowers all have well-established systems for project selection and appraisal and counted on the strong technical capacity of their sub-borrowers who are among the leaders in the energy sector internationally. While this may justify limited engagement during implementation, it also curtailed opportunities to shape project design through capacity inputs or dialogue on upstream opportunities.

15. **Climate and ecosystem health:** "successful". There are strong procedures in place to assess projects based on their environmental and social (E&S) impact. The country has strong legislation and implementation systems to monitor this aspect, and all borrowers also have mechanisms in place to screen projects based on this criterion. Regular reports are prepared by technical specialists, and local authorities are required to exercise oversight and monitor these aspects. NDB's projects have had minimal adverse E&S impact; and the Bank is also required to include E&S aspects in its monitoring reports on a regular basis.

16. **Transformative equity:** "moderately successful". NDB does not include transformative equity elements in its key appraisal documents or in its reports during monitoring; and neither has the Bank given any specific guidance on these aspects at the corporate level. Regardless of this, all projects which are part of the government's Renewable Energy Independent Power Producer Procurement Programme are judged and selected on the basis of the transformative equity criterion and also report on it to the Independent Power Producer Office.

17. **NDB's performance:** "moderately successful". NDB projects have been demand-driven and the Bank has been able to select very relevant projects and efficient partners. However, it could have played a more strategic role in building its relationship with key and emerging partners and better seized the opportunity to highlight its role as a development bank to drive development innovation in South Africa. Furthermore, by dedicating more effort to capturing and sharing lessons from successful operations, NDB could significantly enhance its outreach and visibility, thereby highlighting its presence in the development sector.

18. **Borrower performance:** "moderately successful". The South African government has had a positive role in supporting NDB projects and activities in the country. Relevant government agencies such as the National Treasury and the Department of Electricity and Energy (DEE) provide overarching and critical guidance in making sure that the Bank's projects are in alignment with the country's development priorities and delivering development impact. The three main borrowers, Eskom, the Development Bank of Southern Africa and the Industrial Development Corporation have strong technical capacity. All projects are on course to be completed despite delays. The borrowers have been regularly providing supervision and project completion reports in the required formats to NDB. However, there is a lack of reporting on socio-economic development aspects, and the speed of disbursements to sub-borrowers has been varied.

IV. Key conclusions

19. NDB has provided both sovereign and non-sovereign loans to finance development projects in South Africa which have attracted a healthy amount of co-financing. The completed or nearly completed projects financed by NDB in the energy sector in South Africa have generally achieved successful results, whereas the ongoing operations are on track to deliver expected results. NDB investments are helping to integrate and generate renewable energy, reduce the country's reliance on fossil fuels, increase the capacity to meet peak demand, contribute to the reduction in CO_2 emissions, and improve economic growth. However, given South Africa's still overwhelming reliance on fossil fuels, the overall energy mix in the country has changed only marginally so far.

20. While the Bank has made some good choices in its investment decisions in the energy sector in South Africa, its investments at the country level are not anchored in an overall NDB country or energy sector strategy. Moreover, NDB has not used the project preparation fund (PPF) since it was approved in 2017, which could have been leveraged to provide technical assistance to critical preparatory studies and enhance the quality of project design – particularly in critical transmission planning where bottlenecks persist.

21. Moreover, the Bank has a broad suite of instruments that have not been adequately deployed to support South Africa's energy sector investments. NDB has not complemented its financing by supporting them through non-lending activities; and incorporation of social and economic aspects of renewable energy sector projects are not adequately reflected in NDB's reporting formats.

V. Recommendations

A. Strategic recommendations

22. **Recommendation 1: Develop an NDB country level strategy for South Africa in alignment with the country's development needs and NDB's general strategies.** A country level NDB strategy would assist NDB in outlining its overall objectives and targets and weighing up its decisions of which sectors to invest in and the underlying rationale, principles and targets for each. Such an approach would also clarify NDB's value proposition in South Africa's energy financing landscape. More importantly, an NDB country-level strategy could also be used as a monitoring mechanism for country level performance and as a tool for communication and engagement with key stakeholders.

23. **Recommendation 2: NDB should enhance its investment areas and product mix.** NDB needs to consider how it can make its offerings more relevant and competitive by offering a mix of products and engaging in areas which enable it to play its role as a development finance institution. Going forward, there will be limited demand for NDB's financing on the current terms as there is more competitive financing being provided by the commercial sector and private investors. NDB needs to reflect on how it can add value through mechanisms such as guarantees, blended finance, grants, etc.

24. **Recommendation 3: Develop an energy sector knowledge management framework in South Africa.** NDB can play a key role as a generator, curator and disseminator of knowledge on the energy sector in the country. The Bank's knowledge generation in South Africa has not been used to develop knowledge products for sharing – and so the Bank can, for example, commission case studies of its experience and draw important insights from them.

B. Technical recommendations

25. **Recommendation 4: NDB should prioritise strengthening South Africa's transmission capacity and get ready to leverage the emerging credit guarantee vehicle to mobilise private investment.** The country has committed to constructing approximately 14,000 km of transmission infrastructure over 10 years, but there are significant capacity and resource constraints preventing the National Transmission Company of South Africa from executing the initiative alone.

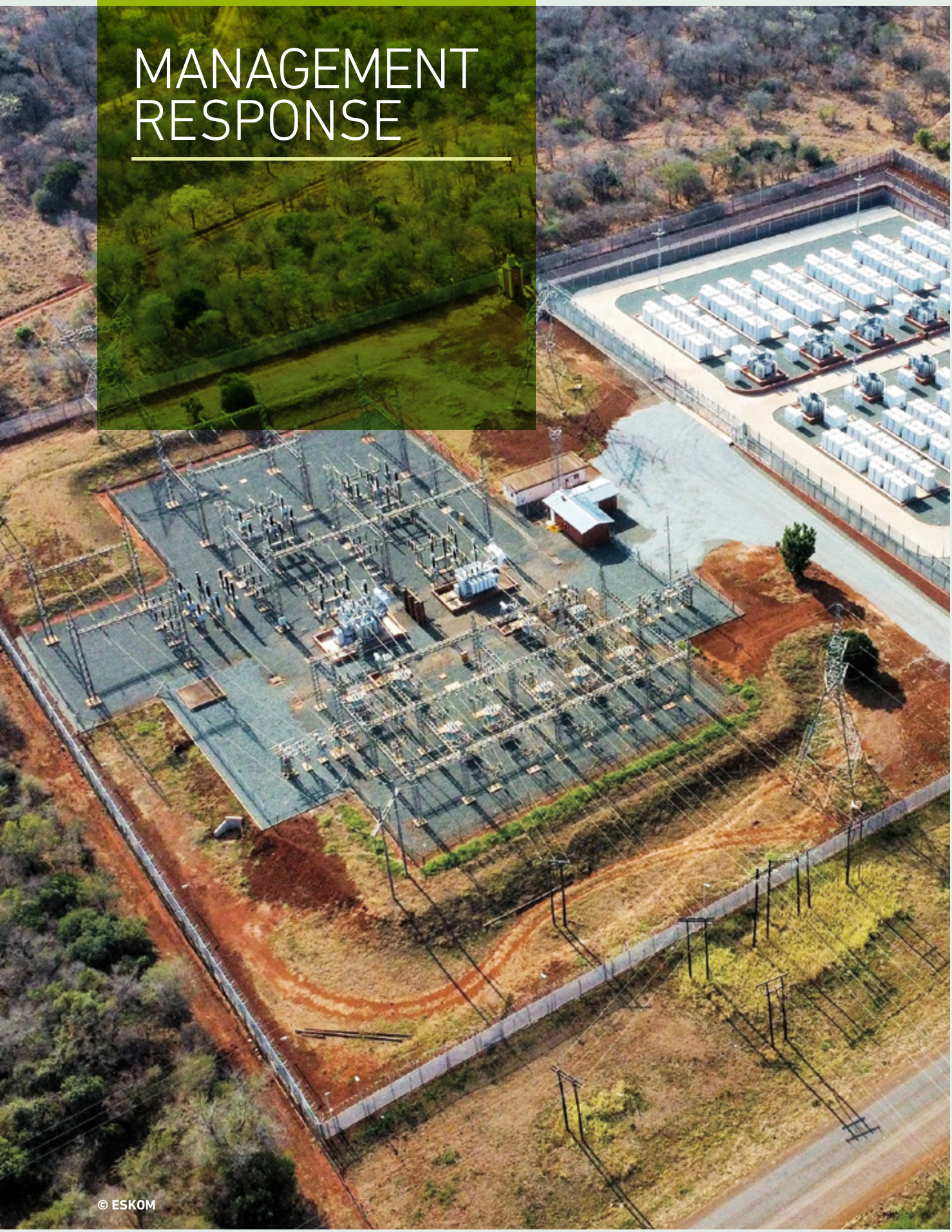
26. **Recommendation 5: Utilise the project preparation fund and provide technical assistance for bankable energy projects as well as use it for implementation support, monitoring and evaluation, and capacity-building.** NDB needs to engage in the development of its pipeline through greater interaction and engagement with key stakeholders by enhancing their awareness of the PPF, its purpose and how they can access it.

C. Operational recommendations

27. **Recommendation 6: Use the Design and Monitoring Framework (DMF) as a more strategic instrument to monitor and measure socio-economic aspects of energy projects.** As a development bank with a strong social and transformative agenda, it is recommended that NDB incorporate socio-economic benefits such as job creation, skills development, BEE shareholding, community ownership, etc. into its DMF, supervision and monitoring templates, and report upon them regularly.

28. **Recommendation 7: NDB needs to better structure its supervision and project completion reporting processes and reports.** NDB should work with borrowers to improve their data collection and analysis methods, and reporting formats. In addition to providing an account of results, supervision reports should have a section on lessons learned and recommendations that are addressed to the borrower and project implementation authorities.

MANAGEMENT RESPONSE



The NDB Management appreciates the Independent Evaluation Office's (IEO) Thematic Evaluation on **NDB Financing and Activities in the Energy Sector in South Africa (GoSA)**. The evaluation provides useful insights into the NDB's energy sector interventions in our founding member countries. Management agrees with some of the report's key findings that NDB's investments have been relevant, effective, and impactful in supporting South Africa's (SA) energy transition, by supporting the creation of 1,600 MW of renewable energy capacity (out of a nationwide renewable capacity of 10,600 MW as of 2024)[1]. NDB's interventions resulted in the adoption of innovative technologies (concentrated solar power, battery energy storage system), strengthening of the financial sector - by providing crucial long-term finance to key institutions (such as Industrial Development Corporation, Development Bank of Southern Africa) thereby mitigating their asset liability mismatches – much needed to build out long term infrastructure. The portfolio's "successful" rating across most criteria—relevance, effectiveness, impact, and sustainability— affirms our alignment with SA's national priorities, such as the Integrated Resource Plan (IRP) and Nationally Determined Contributions (NDCs), as well as the NDB's General Strategy.

However, Management differs on some of the areas, such as assessments on non-lending activities, where the report suggests performance as "moderately unsuccessful." These do not fully reflect NDB's contextual constraints, on the need to build a stable loan portfolio as a priority amidst financial and human resource constraints. During NDB's nascent phase (2015–2020), resource limitations prioritized lending over non-lending activities (such as knowledge products or technical assistance). The report could better acknowledge post–2022 progress, like Africa Regional Centre (ARC) high-level energy seminar during the NDBs 9th Annual Meeting in August 2024, which engaged stakeholders on BRICS energy collaboration and the knowledge exchange in India and Brazil on the transition to the Independent Transmission Program (IDP) which will allow private sector participation in the financing of the sector. Additionally, active engagement with National Treasury and co-financing with MDBs in battery storage technologies demonstrate evolving depth and warrant a more balanced narrative. Non-lending activities requirement will differ across projects. Work is underway to provide technical assistance (TA) to projects in need of TA in SA.

The report is also based on a relatively small and early-stage sample (five projects, two completed). While some recommendations are actionable, some (e.g., country strategy) require additional resource allocation. On product mix (Recommendation 2), we agree on the need to introduce new instruments, however implementation timelines should consider the Bank's risk management appetite and frameworks.

Please refer below for the detailed Management response.

Recommendation 1

Develop an NDB country level strategy for South Africa in alignment with the country's development needs and NDB's general strategies. A country level NDB strategy would assist NDB in outlining its overall objectives and targets and weighing up its decisions of which sectors to invest in and the underlying rationale, principles and targets for each. Such an approach would also clarify NDB's value proposition in South Africa's energy financing landscape. More importantly, an NDB country level strategy could also be used as a monitoring mechanism for country level performance and as a tool for communication and engagement with key stakeholders.

Management Response

The NDB Management acknowledges that the development of a Country Partnership Plan (CPP) for South Africa may be undertaken should the Government of South Africa endorse the initiative. The NDB has commenced the formulation of the new General Strategy, which will establish the Bank's overarching direction. Given that CPPs are demand-driven, the NDB's strategy formulation process presents a timely opportunity for the preparation of a CPP, if deemed necessary. The Management is already in discussions with the Government on expanding operations in sectors such as water and sanitation, social infrastructure, energy based on South Africa's development priorities.

[1] Source: https://www.irena.org//media/Files/IRENA/Agency/Publication/2025/Mar/IRENA_DAT_RE_Capacity_Statistics_2025.pdf.

Recommendation 2

NDB should enhance its investment areas and product mix. NDB needs to consider how it can make its offerings more relevant and competitive by offering a mix of products and engaging in areas which enable it to play its role as a development finance institution. Going forward, there will be limited demand for NDB's financing on the current terms for which there is more competitive financing being provided by the commercial sector and private investors. NDB needs to reflect on how it can add value through mechanisms such as guarantees, blended finance, grants, etc.

Management Response

The NDB Management agrees with this recommendation and has been actively working towards expanding the Bank's product offerings in line with the General Strategy 2022–2026 and intends to continue this process in the next Strategy cycle. However, the implementation timelines for these should consider the Bank's risk management appetite and frameworks.

Over the last year NDB has significantly increased the number of project finance transactions and is currently working on introduction of multiple new instruments such as guarantees, unfunded risk participation, and investment in bonds to enhance the Bank's competitiveness and additionality. NDB intends to conduct a review of existing process for approval of new products to make it more efficient and robust in the next General Strategy cycle. The Bank has been active in enhancing its local currency financing options, which will provide it with a long-term competitive edge in the local financing market and minimize potential currency risk for the clients. The Bank has successfully issued four distinct ZAR-denominated bonds since 2023 (worth ZAR 3.8 billion under its ZAR 10 billion Domestic Medium-Term Note Program) and has provided (approved or disbursing) ZAR 39.3 billion of local currency denominated loans.

Recommendation 3

Develop an energy sector knowledge management framework in South Africa. NDB can play a key role as a generator, curator and disseminator of knowledge on the energy sector in the country. The Bank's knowledge generation in the South Africa has not been used to develop knowledge products for sharing – and so the Bank can, for example, commission case studies of its experience and draw important insights from them.

Management Response

The NDB Management acknowledges the importance of accumulation of knowledge and exchanging lessons learned and good practice with member countries, clients and development partners. The Bank accumulates operational knowledge, incorporates lessons into project design, preparation, and implementation, and supports sharing energy sector experiences in South Africa with partners via various tools. As documented in the evaluation, NDB has undertaken knowledge sharing activities including conducting a High-Level Seminar on Energy in Cape Town in August 2024 during NDB's 9th Annual Meeting, field visits for key stakeholders in the South African energy sector to India and Brazil and for officials from the South Africa National Treasury to the same countries.

Recommendation 4

NDB should prioritise strengthening South Africa's transmission capacity and get ready to leverage the emerging credit guarantee vehicle to mobilise private investment. The country has committed to constructing approximately 14,000 km of transmission infrastructure over 10 years, but there are significant capacity and resource constraints preventing the National Transmission Company of South Africa from executing the initiative alone.

Management Response

The NDB Management acknowledges the importance of developing South Africa's energy sector, including strengthening transmission capacity. The Bank will closely review potential investments in grid infrastructure, battery energy storage system, and transmission, to provide additional support towards investment in South Africa's energy sector. NDB is already actively working with the National Treasury and other Multi-lateral Development Banks on the Credit Guarantee Vehicle and has expressed interest in supporting this important initiative that would allow us to mobilize private investment to the energy sector.

Recommendation 5

Utilise the project preparation fund and provision of technical assistance for bankable energy projects as well as use it for implementation support, M&E and capacity-building. NDB needs to engage in the development of its pipeline through greater interaction and engagement with key stakeholders by enhancing awareness about the PPF among key stakeholders and sharing with them how they can access the facility and the purpose for which the facility has been designed.

Management Response

The NDB Management agrees with this recommendation, which has already been implemented in part. To assist member countries in preparing new projects and to overcome capacity constraints, NDB has undertaken a comprehensive revision of Project Preparation Fund and Technical Assistance Policy to expand the eligibility criteria for the Project Preparation Fund and technical assistance, including implementation support. The Bank will enhance awareness and engagement with key stakeholders to develop the energy project pipeline. The Bank has offered to provide resources from NDB Project Preparation Fund for the Credit Guarantee Vehicle initiative.

Recommendation 6

Use the Design and Monitoring Framework (DMF) as a more strategic instrument to monitor and measure socio-and economic aspects of energy projects. As a development bank with a strong social and transformative agenda, it is recommended that NDB incorporate socio-economic benefits such as job creation, skills development, BEE shareholding, community ownership, etc. into its DMF, supervision and monitoring templates, and report upon them regularly.

Management Response

The NDB Management shares the view that a strong result framework is an important element of the design of projects that NDB finances and pays utmost attention to. The Bank aims to evaluate and enhance positive social impact from all projects, including for key socio-economic indictors such as job creation, equitable economic development and social empowerment. At the same time, it is crucial not to overload DMF and keep only relevant indicators that would reliably measure the impact of intervention.

Recommendation 7

NDB needs to better structure its supervision and project completion reporting processes and reports. NDB should work with borrowers to improve their data collection and analysis methods, and reporting formats. In addition to providing an account of results, supervision reports should have a section on lessons learned and recommendations addressed to the borrower and project implementation authorities.

Management Response

The NDB Management agrees that project implementation and supervision play a key role in ensuring the achievement of project objectives and pays significant attention to constantly improving the quality of project implementation and fostering collaboration amongst various NDB functions. The NDB Management has already implemented several of the suggested recommendations in its work. NDB has developed and implemented a robust project implementation monitoring process for all modalities of financing extended by the Bank (sovereign, non-sovereign, equity funds). For all sovereign projects NDB conducts annual supervision mission, while most of transactions are undergoing the MTR (or equivalent in-depth review) once during implementation, however replacing these with regular annual missions is not advisable at this stage. For non-sovereign operations NDB has developed a comprehensive monitoring process in line with the best practices adopted by peer multilateral development banks. Borrower capacity-building is being integrated into project design at the approval stage itself and NDB has recently allowed to use NDB Project Preparation Fund resources for capacity building initiatives during the project implementation phase.

1. BACKGROUND

A. Introduction
B. Country and energy sector context
C. NDB energy sector investments in South Africa

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A. Introduction

1. The Republic of South Africa is one of the five founding members of the New Development Bank (NDB) and has actively participated as both a contributor and a borrower since the Bank started its operations in 2015. NDB has financed projects in multiple sectors in the country since 2016. Given the social and economic significance of the energy sector for the country, in December 2024 the NDB Board of Directors approved the Independent Evaluation Office (IEO) conducting a thematic evaluation of NDB financing and activities in the energy sector in South Africa to take place in 2025. This report presents the findings and recommendations from the evaluation which is also the first thematic evaluation conducted by IEO on a particular sector.

2. The projects covered by this evaluation include both sovereign and non-sovereign loans and all projects classified in the "clean energy and energy efficiency" thematic area and those with energy-related components. NDB has approved five energy sector projects in South Africa with three different borrowers: two with Eskom,[1] two with the Development Bank of Southern Africa (DBSA), and one with the Industrial Development Corporation (IDC). Two of these investments have been the subject of project performance evaluations already completed by IEO: (i) the IDC Renewable Energy Sector Development Project (RESP)[2] and (ii) the DBSA Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER).[3] The findings of both of these evaluations have been used in this report. See table 1 below for a full list of the projects assessed.

3. The evaluation also covered NDB's non-lending activities in South Africa, in order to provide a comprehensive understanding of the Bank's overall development impact. Non-lending activities include the Bank's role in providing technical assistance, capacity-building, partnership development and knowledge management. Analysing such activities can provide insights into how, for example, NDB sought to address systemic barriers or enabled a catalytic impact on the energy sector.

B. Country and energy sector context

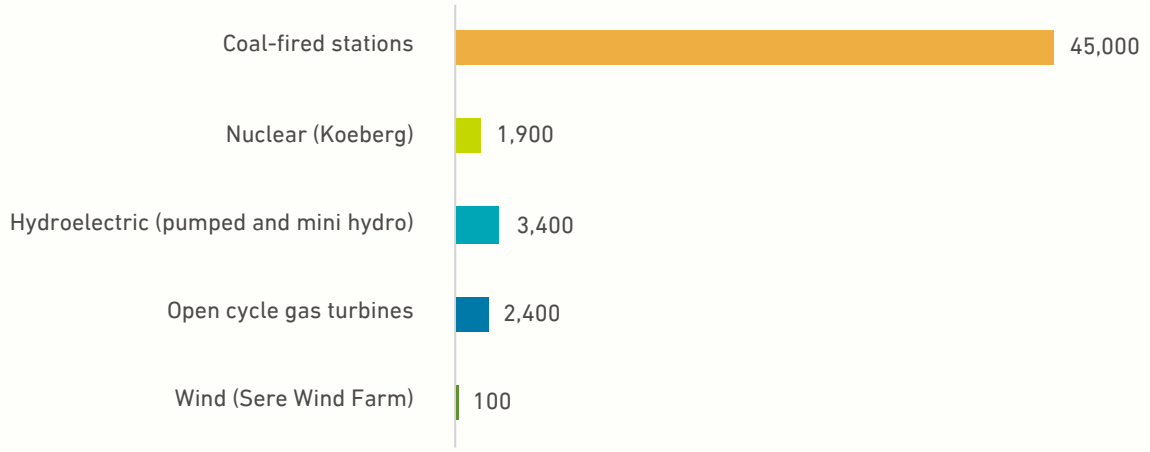
4. South Africa, the most industrialised economy in Africa with about 64 million people (as of mid-2024), pursues macroeconomic policies promoting inclusive growth, fiscal sustainability, infrastructure development, green energy investment, and small business support, alongside social protection and industrial policies aligned with the government's plan to transition to cleaner energy sources. The energy sector is central to economic performance, both enabling and constraining growth through its impact on business activity, service delivery and living standards.

5. Eskom's installed capacity is 53,032 megawatts (MW), led by coal at ~45,000 MW, followed by hydro, open-cycle gas turbines, nuclear and wind (see figure 1). In addition, about 6,735 MW procured under the government's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) reached commercial operation by July 2025, a significant increase of over 300% compared to pre-2010 levels. Launched in 2010 under the Integrated Resource Plan (IRP), REIPPPP aims to support the diversification of the energy mix with cleaner sources. The Risk Mitigation Independent Power

[1] The state-owned power company which generates approximately 95% of the electricity used in the country.
[2] See http://www.ndb.int/wp-content/uploads/2024/09/PPE-South-Africa-Renewable-Energy-Sector-Development-Project.pdf.
[3] See http://www.ndb.int/wp-content/uploads/2024/02/SA-Report.pdf.

Producer Procurement Programme (RMIPPPP) adds flexible capacity to address renewable intermittency. One RMIPPPP project, Scatec's hybrid solar-plus-battery facility, combines 540 MW of photovoltaic (PV) energy with 225 MW/1,140 MWh storage – oversized to guarantee 150 MW of power for 16.5 hours daily. Two other hybrid projects of 278 MW are under construction for completion by 2026.

Figure 1: Eskom's energy generation mix and installed capacity (2025) (in MW)



Source: Eskom.

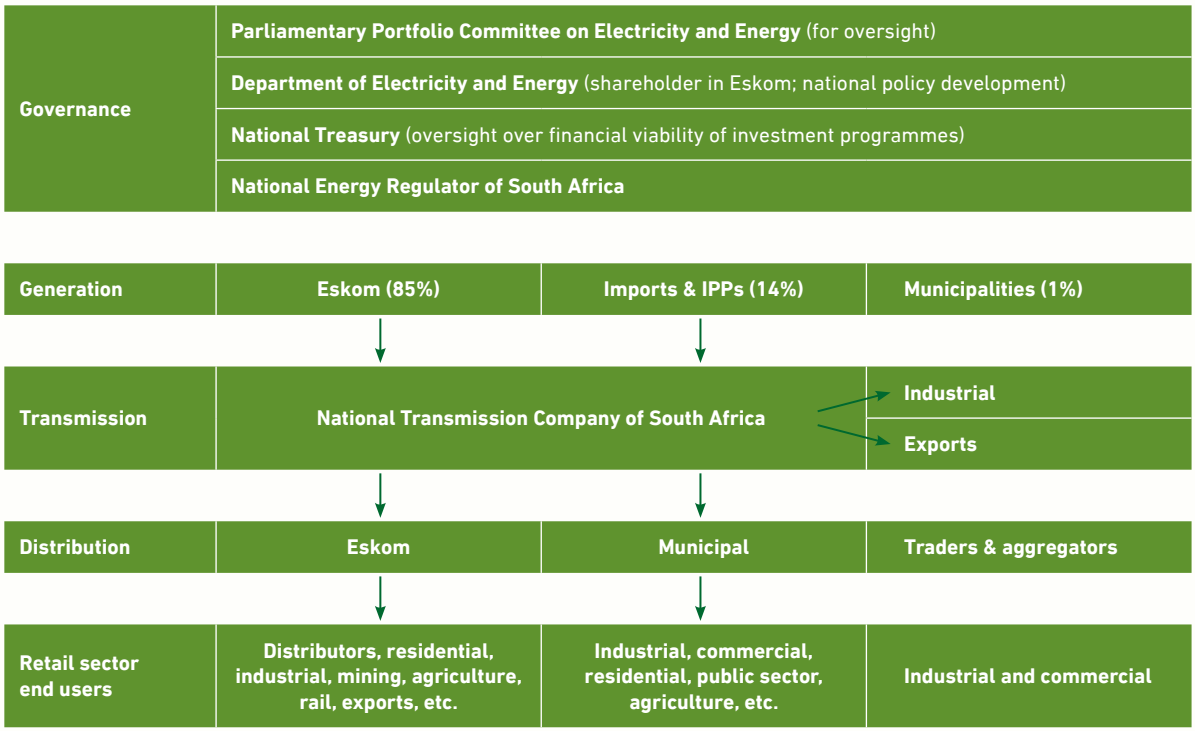
6. The government introduced "bid windows" (BWs) for companies wishing to participate in the REIPPPP. BWs 5–7 include projects at various stages, mostly solar PV due to limited grid capacity in wind-rich areas. BW7 awarded 1,760 MW of solar and reallocated 1,290 MW from unused wind capacity. Grid constraints create curtailment risks, prompting multilateral development banks (MDBs) to prioritise financing of transmission infrastructure.

7. The Independent Transmission Projects initiative, launched in 2024, aims to mobilise private investment (supported by World Bank Group and MDB credit enhancements) and provides payment guarantees against possible default by the National Transmission Company of South Africa (NTCSA). Unbundled from Eskom, NTCSA now operates the grid and plans 14,500 km of new lines and 210 transformers over the next 10 years —over five times Eskom's historical build rate. Embedded generation exceeds 6,000 MW, growing among commercial and industrial users, with market aggregators reshaping revenue flows and raising financial sustainability concerns for traditional utilities. Key initiatives in South Africa's energy sector can be found in annex V.

8. South Africa's decarbonisation strategy, outlined in its 2021 Nationally Determined Contributions (NDCs), relies on a managed coal phase-down balanced with socio-economic impacts on coal-dependent communities. Eskom plans to decouple coal closures from renewable commissioning and will repower six coal plants—Komati, Grootvlei, Hendrina, Camden, Arnot and Kriel—into hybrid renewable-plus-storage or gas facilities by 2030.

9. The electricity sector is transitioning from Eskom's vertically integrated monopoly to a more competitive market involving independent power producers (IPPs), power aggregators and traders. Years of project delays, cost overruns, and mounting debt led, in 2019, to the government to begin unbundling Eskom, starting with transmission separation to enable grid access for IPPs and increase competition. Figure 2 illustrates market participants; annex IV provides a full stakeholder mapping.

Figure 2: South Africa's electricity market structure



Source: IEO.

10. Eskom, once known for providing reliable, low-cost coal power, saw its performance collapse around 2007–2008, after major delays and cost overruns at its plants in Medupi, Kusile and Ingula. This deterioration led to increasing load shedding (157 days in 2022 and 289 days in 2023). In July 2022, the President of South Africa launched the Energy Action Plan with the key priority of restoring Eskom's generation performance through a Generation Recovery Plan, intensive maintenance and technical interventions, to lift the "energy availability factor". The plan also encompassed providing Eskom with debt relief, accelerating new capacity (renewables, storage), enabling distributed solar technology, and reforming sector governance. To coordinate implementation, a National Energy Crisis Committee was formed, bringing together key government, Eskom, business and other stakeholders.

11. Eskom's energy availability factor reached a record low in 2023 but improved in 2024 and stabilised in 2025, supported by a disciplined maintenance regime and operational reform. The Eskom Debt Relief Act (2023) allocated ZAR 254 billion over three years—conditional on operational reforms, enhanced maintenance and transmission investment. This improved liquidity, stabilised performance and reduced diesel reliance, allowing suspension of load shedding in March 2024. Following this, South Africa experienced unprecedented supply stability through most of 2024. Power cuts briefly resumed in February and March 2025—reaching stage 6 at one point—due to plant failures and capacity shortfalls. Since then, supply has remained largely stable, including through the winter of 2025, with only isolated short-duration interruptions, highlighting both progress and the system's ongoing vulnerability.

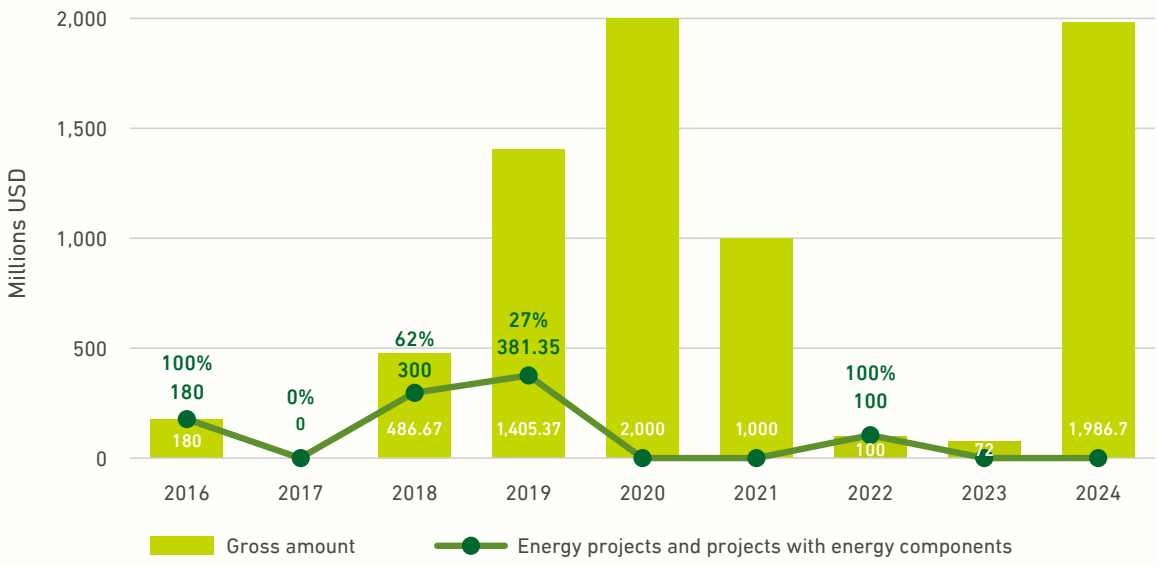
C. NDB energy sector investments in South Africa

12. The NDB Board of Directors approved the first energy sector project for South Africa in April 2016. This was also the first project financed by NDB in the country. By the end of 2024, the Bank had approved 15 projects in the country, comprising 10 sovereign projects (including two COVID-19 emergency loans) and five non-sovereign projects. The cumulative disbursement ratio of South Africa was 50% of the overall loan amount to the country. The loan currency of NDB's South Africa projects was both United States dollars and South African rand, with 30% of all loans provided in local currency.

13. NDB's projects in South Africa were across seven different sectors: four in clean energy and energy efficiency, four in transport infrastructure, two in water and sanitation, two in COVID-19 emergency assistance, one in digital infrastructure, one in environmental protection, and one covers multiple areas. Clean energy and energy efficiency projects accounted for 14% of the overall financing in the country.[4]

14. Globally, the overall approved energy sector portfolio of NDB amounted to USD 3.592 billion by December 31, 2024, and 24% of the total projects by loan amount were in South Africa, ranking it the second among member countries, after China at 41%. The percentage of energy projects against the overall approved loan amount in South Africa showed an upward trend before 2019. However, no new stand-alone energy projects have been approved since then except for a multiple area project approved in December 2022 which included a renewable energy component. Figure 3 below shows the NDB approved loan amount in South Africa by year, and the percentage invested in the energy sector.

Figure 3: Annual investments by NDB in South Africa 2016–2024



Source: Project summary as of December 2024.

[4] The multiple areas project, the DBSA Sustainable Infrastructure Project, contains energy components, and thus was also considered in this thematic evaluation.

15. By the end of December 2024, there were four projects categorised under clean energy and energy efficiency (two sovereign and two non-sovereign), and one multiple areas project which also contained an energy component. Of these five projects, two have been closed and 100% disbursed. The details of the projects can be seen in table 1 below. These five projects, at different stages of approval and implementation, have been included in the scope of this evaluation given that the purpose of this thematic evaluation is to review all operations in a country including closed, ongoing and approved projects which may not yet be under implementation. The inclusion of projects which are not yet completed helps bring a fuller understanding of NDB's processes and procedures and some of the challenges that projects may face.

Table 1: List of approved renewable energy projects included in the evaluation

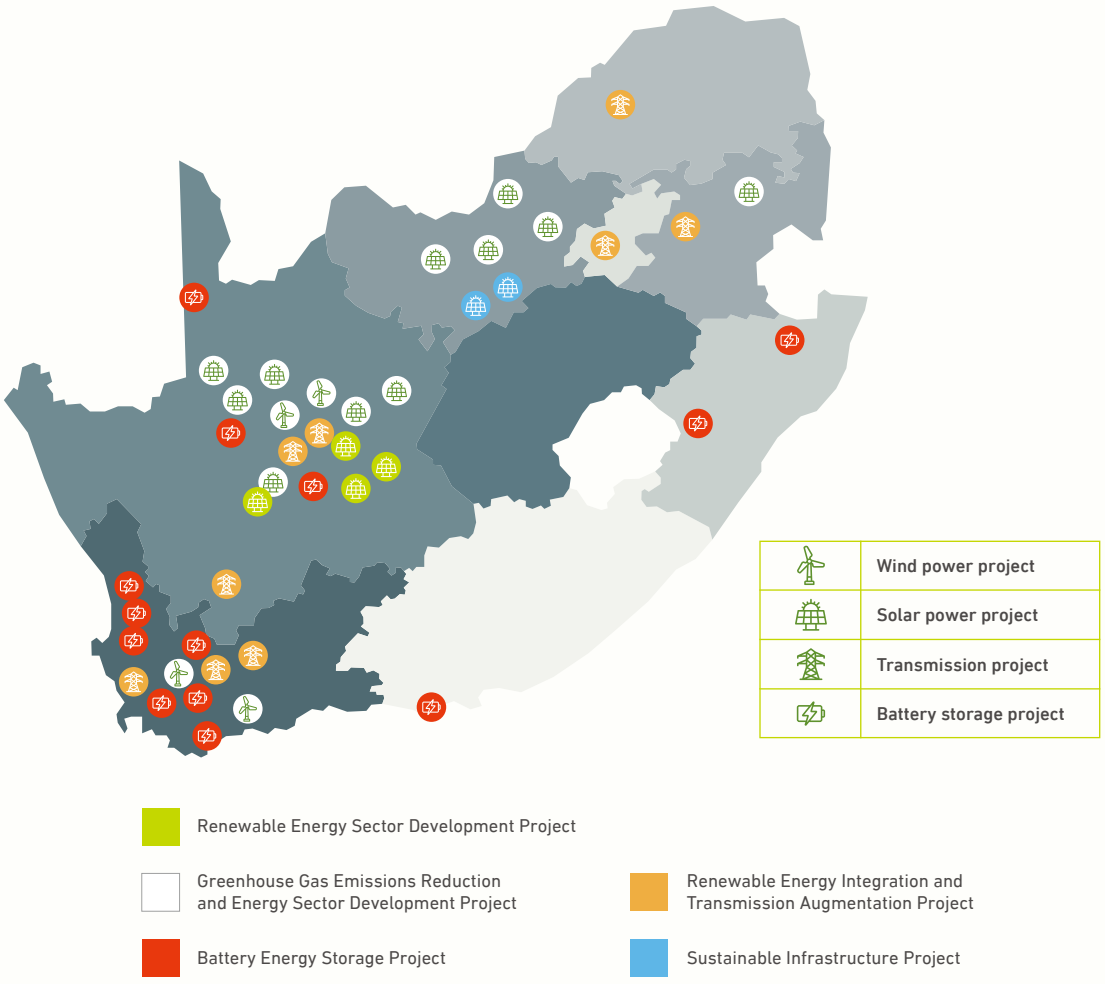
Loan no.	Borrower	Sovereign/ non-sov.	Loan currency	Approved amounts (million)		Disburse-ment (%)	Approval date	Closing date (original)	Number of sub-projects
				In loan currency	In USD equivalent				
Renewable Energy Integration and Transmission Augmentation Project (REITAP)									
16ZA01	Eskom	Sov	USD	180	180	75.9	13-Apr-16	11-Sep-24	6
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)									
18ZA02	DBSA	Non-sov	USD	300	300	100	20-July-18	28-Jan-24	15
Renewable Energy Sector Development Project (RESP)									
19ZA03	IDC	Non-sov	ZAR	1,150	63.18	100	31-Mar-19	6-Dec-23	4
Battery Energy Storage Project (BESP)*									
19ZA05	Eskom	Sov	ZAR	6,000	329.62	0	16-Dec-19	/	12
DBSA Sustainable Infrastructure Project (SIP)									
22ZA01	DBSA	Non-sov	USD	100	100	41.76	13-Dec-22	18-Aug-26	2

Source: Project summary as of 31 December 2024.

* BESP, a multi-phase project being implemented with resources from other MDBs, started in 2011. NDB joined in 2019 with the Board approving an all-phase loan of ZAR 6,000 million (USD 329.62 million) for battery storage systems (with an allocation of ZAR 1,400 million for phase I). NDB has signed loan agreement on June 12, 2025 with Eskom to finance the phase I of BESP with loan amount ZAR 1,400 million. The loan had not become effective at the time of this evaluation.

16. Each of the five energy projects consists of sub-projects which support electricity generation and transmission, e.g. solar photovoltaic panels, biomass, onshore wind, concentrated solar power, substation construction, transformer construction, circuit line construction, etc. The sub-projects are located in eight provinces and 31 municipalities/ towns. The Northern Cape province has most of the sub-projects, 18, as shown in figure 4. A detailed list of information on sub-projects is in annex IX.

Figure 4: Geographical distribution of sub-projects by energy type



Source: With reference to NDB project progress reports.
Note: The location of sub-projects shown on the map is approximate. The map is from a public source.

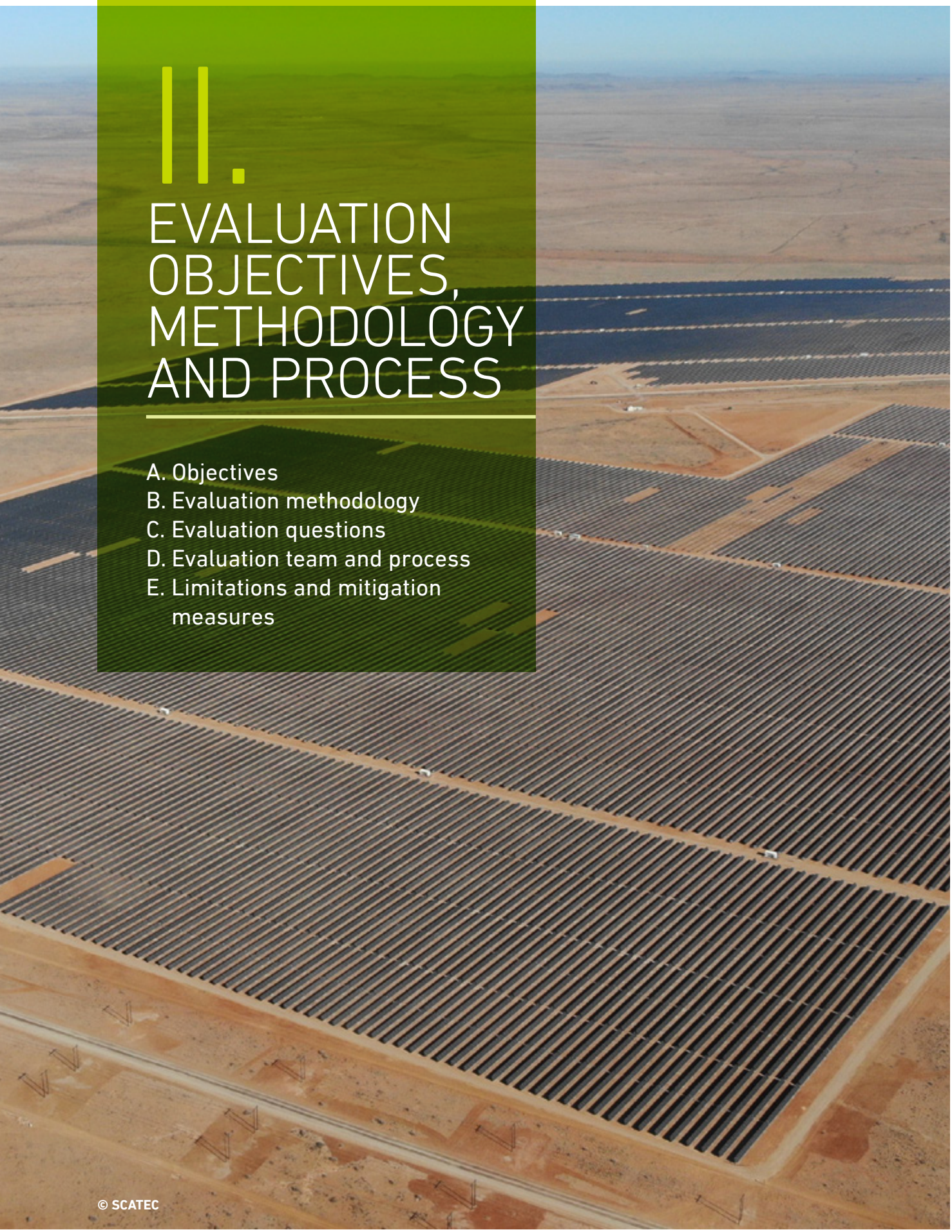
17. As of Q3 2024, there were three South Africa projects in the NDB pipeline, however none of them are categorised as a clean energy and energy efficiency project or contain energy components. There are also five standby projects, one of which is categorised as an energy efficiency programme; and a public hospital project was meant as a backup alternative to Eskom supply in the event of load shedding. However, due to exorbitant cost and presence of a much cheaper alternative, this was not pursued. Annex VII gives detailed information on the pipeline and standby projects. Since 2022, there have been 6–7 non-sovereign clean energy and energy efficiency projects which dropped out of the standby projects list at the pre-concept note stage, with an accumulated value of approximately USD 800 million. These projects were dropped for various reasons, including the pricing of the NDB loan.

18. Pipeline and standby projects were excluded from the quantitative outcome analysis, since they have not generated measurable results. However, they were examined in a parallel stream focused on selection logic, reasons for non-advancement and lessons for project identification and uptake, to provide contextual insight into the pipeline dynamics.

II.

EVALUATION OBJECTIVES, METHODOLOGY AND PROCESS

A. Objectives
B. Evaluation methodology
C. Evaluation questions
D. Evaluation team and process
E. Limitations and mitigation measures



A. Objectives

19. The main evaluation objectives are to:
    (i) assess the results of NDB-financed operations and activities in the energy sector; and
    (ii) generate lessons and recommendations for the way forward.

B. Evaluation methodology

20. The key methods used for the evaluation included document review,[5] semi-structured interviews with key stakeholders in the renewable energy sector (such as the sovereign and non-sovereign borrowers, private sector sub-project implementing partners [Scatec, ACWA Power, contractors of Eskom] and key institutions involved in policy formulation and the regulation for the energy sector and academic institutions leading on research). The team also visited some of the ongoing project sites for interviews on the ground.

21. This evaluation followed the methodology elaborated in the NDB Evaluation Manual.[6] As such, projects covered by this evaluation were assessed against a set of internationally recognised evaluation criteria, such as relevance, effectiveness, efficiency, impact and sustainability. In addition, for each project, the evaluation also assessed NDB and borrower performance, respectively. The evaluation customised different approaches and priorities of assessment for non-sovereign and private sector operations in the energy sector portfolio. For instance, more analysis was conducted on financial and economic performance and investment profitability. The evaluation team also tailored the assessment techniques to the specific characteristics and requirements of different loan modalities, such as the project finance facility, which was designed to be more flexible.

22. However, considering NDB's unique context and its use of borrowing country legislation, regulations and oversight procedures, this evaluation also adopted a tailored approach in evaluation design to reflect South Africa's national development priorities and respect its in-country evaluation system. One of IEO's previous two project performance evaluations in South Africa assessed the two country-specific criteria: "transformative equity" and "climate and ecosystem health" (CEH). This thematic evaluation adopted these as additional standalone criteria under the advice of the South Africa Department of Planning, Monitoring and Evaluation (DPME) which is the peer reviewer of this evaluation and considers the practice a key part of evaluations in South Africa. Tailored questions were designed to reflect them. Please see annex XII for the definition of all evaluation criteria used in this evaluation; and annex I for DPME's peer review letter.

23. The two additional criteria add value as they examine additional parameters specific to the South African context, and do not overlap with the existing criteria of impact or sustainability. Transformative equity assesses the extent to which the projects address systemic injustice and correct for historical inequalities through offering Black Economic Empowerment (BEE) shareholding, addressing gender inequality and meaningful engagement with poor local communities. CEH includes environmental and

[5] See para. 29 (ii) for a list of documents. In addition, the evaluation team also reviewed the renewable energy sector reports made available online by the REIPPPP such as the bid window news and updates, programme review reports and socio-economic impact reports. The evaluation included a review of extensive secondary information on the sector and the reports published by the main development partners such as the World Bank, African Development Bank (AfDB), etc.
[6] See http://www.ndb.int/governance/independent-evaluation/evaluation-manual-first-edition/.

social (E&S) aspects and examines a project's effect on local habitats, biodiversity, water and soil health, etc. The evaluation assessed transformative equity and CEH at various stages of the project cycle, namely design, implementation, management, monitoring and evaluation.

24. In addition, analysis of private sector initiatives and major investments in the country is important to understand the dynamics of private capital engagement and its role in energy sector growth and transformation, and how this impacts NDB's role in the energy sector investments in the country. Annex XI presents analysis on the crowding-in of the private sector. Besides this, the report also benchmarked energy sector investments by MDBs and key development partners. Annex X presents a comparative analysis of the investments in the energy sector in South Africa by key multilateral development partners.

25. Each project was rated individually against the adopted criteria, and an overall rating was given based on the cumulative assessment. For individual project assessments, project briefs were prepared (see annex II) as supporting evidence for the ratings assigned with an overall assessment for each project. The criteria used were based on the level of disbursement. Projects with disbursements below 40% were evaluated only for relevance (i.e. an assessment of the relevance of objectives and design, respectively). Projects that are in more advanced stages of implementation and have disbursed more than 40% but less than 100% were evaluated for relevance, effectiveness and efficiency. Completed projects with 100% disbursement were assessed against all the criteria. One exception was made for REITAP which despite having a disbursement rate of 75.9% was still rated for impact and sustainability. This was done due to the fact that this project was approved in 2016, and several of its sub-projects have achieved commercial operation, allowing for an assessment of its impact and sustainability. NDB performance and borrower performance were assessed for projects that had achieved over 40% disbursement (including for REITAP). Please see table 2 below for the evaluation criteria used in this evaluation.

Table 2: Criteria used for each project evaluated

Project name	Borrower	Sovereign/non-sovereign	Disbursement (%)	Approval date	Closing date (actual/estimated)	Relevance	Effectiveness	Efficiency	Impact	Sustainability	Climate and ecosystem health	Transformative equity	NDB performance	Borrower performance
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Eskom	Sov	75.9	13-Apr-16	30-Sep-25	✔	✔	✔	✔	✔	-	-	✔	✔
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	DBSA	Non-sov	100	20-Jul-18	28-Jan-24	✔	✔	✔	✔	✔	✔	✔	✔	✔
Renewable Energy Sector Development Project (RESP)	IDC	Non-sov	100	31-Mar-19	06-Dec-23	✔	✔	✔	✔	✔	✔	✔	✔	✔
Battery Energy Storage Project (BESP)	Eskom	Sov	0	16-Dec-19	/	✔	-	-	-	-	-	-	-	-
DBSA Sustainable Infrastructure Project (SIP)	DBSA	Non-sov	41.76	13-Dec-22	18-Aug-26	✔	✔	✔	-	-	-	-	✔	✔
Overall project achievement						✔	✔	✔	✔	✔	✔	✔	✔	✔

Source: IEO.

26. Triangulation techniques were used to validate the analysis, leading to the assignment of a performance rating for each criterion on a six-point scale (see table 3). Each project was rated on the above criteria, and for each criterion, all projects and the portfolio-level was considered to assess the overall rating for that particular criterion. Based on the assessment and ratings of the composite sets of criteria mentioned above, the evaluation formed a holistic performance judgement of the overall achievement of NDB investments and activities in the energy sector in South Africa. The overall performance of non-lending activities was also rated taking into consideration knowledge management, partnership development, capacity-building and technical assistance.

Table 3: Evaluation rating scale

#	Rating	Score descriptor
6	Highly Successful	Under the concerned criterion, the activity (project, programme, non-lending, etc.) achieved or surpassed all main targets, objectives, expectations, and results and could be considered as a model within its project typology.
5	Successful	Under the concerned criterion, the activity achieved almost all (indicatively, over 80–95%) of the main targets, objectives, expectations, and results.
4	Moderately Successful	Under the concerned criterion, the activity achieved the majority (indicatively, 60 to 80%) of the targets, objectives, expectations, and results. However, a significant part of these was not achieved.
3	Moderately Unsuccessful	Under the concerned criterion, the activity did not achieve its main targets (indicatively, less than 60%), objectives, expectations, and results.
2	Unsuccessful	Under the concerned criterion, the activity achieved only a minority of its targets, objectives, expectations, and results.
1	Highly Unsuccessful	Under the concerned criterion, the activity (project, programme, non-lending, etc.) achieved almost none of its targets, objectives, expectations, and results.

Source: IEO.

C. Evaluation questions

27. Key evaluation questions were formulated for each evaluation criterion to assess performance (see the full list in annex XIII) with details of each of the evaluation criteria and the full set of questions to be explored under each criterion. Some of the key questions that were posed are summarised below.

- How does the process of selection of energy projects align with the needs and priorities of the country, and the goals set forth in South African national policies and plans such as the National Integrated Resource Plan and the NDCs; and to what extent did the investments in the energy sector advance the targets of Sustainable Development Goals (SDGs) 7 (Affordable and Clean Energy) and 13 (Climate Action)?
- In what ways and to what extent were the investments in alignment with NDB's two general strategies and its policies?
- To what extent have the projects achieved their stated objectives? How effective have the projects been in producing the expected amount of electricity? Have the projects effectively contributed to a reduction in carbon emissions as planned? Is there quantifiable data to support the assessment?
- How did the projects' progress, in terms of their construction, procurement, operations and management activities, compare with the planned targets? Were there lessons learned to enhance future management efficiency and quality?

- How significant were the investments' contribution towards alleviating the energy crisis in South Africa? To what extent did the projects succeed in contributing to the energy generation mix and reduction of carbon emissions?

- Are the operations and maintenance aspects of the projects structured to ensure long-term sustainability? Are there effective monitoring systems in place, staffed by an experienced team, with sufficient quality checks to maintain high standards of operation?

- Did the projects contribute to transformative equity in dealing with local community members, Black Economic Empowerment, job creation and training for local community members and investment in local economic development projects?

- How did the projects deal with social and environmental safeguards, with water and land issues and any resettlement measures to protect biodiversity, local wildlife and other species?

D. Evaluation team and process

28. The evaluation was conducted under the overall leadership and oversight of Mr. Ashwani K. Muthoo, the Director General of IEO. Ms. Jin Zhao, IEO Evaluation Specialist, was the lead evaluator, and was supported by a team of experts, including Ms. Maliha Hamid Hussein (Senior Development and Evaluation Expert), Ms. Ruse Thembela Moleshe (Energy Expert) and Ms. Beatriz Vieira Rauber (IEO Evaluation Specialist). The South African Department of Planning, Monitoring and Evaluation was the peer reviewer. Mr. Luiz Maurer provided critical inputs as the external energy sector peer reviewer. Prior to the external peer review, IEO also undertook an in-house internal peer review which added to the quality of the report and analysis. IEO bears full responsibility for the contents and quality of the evaluation report and all related outputs.

29. The evaluation comprised the following phases:

(i) **Preparation of the Approach Paper.** Between January and February 2025 the evaluation team prepared an Approach Paper which defined the objectives, methodology and process to be followed.[7]

(ii) **Desk review.** The desk review covered sector and country context and key documents related to project performance including, inter-alia, the project design documents, loan agreements and any amendments, the project progress reports, project performance assessment reports, supervision reports, and any other relevant documents made available by NDB, the borrower, and the implementation agencies.[8] In addition, energy sector projects financed by AfDB, the European Investment Bank and World Bank Group were also studied and lessons and good practices were identified that could be adopted by NDB, taking carefully into account the Bank's own specificity.

(iii) **Preparatory mission.** IEO conducted a preparatory mission in the week of January 20, 2025 to South Africa to brief key stakeholders about the thematic evaluation and sensitise local stakeholders, as well as capture their feedback and priorities for the evaluation.

(iv) **Main mission.** The main mission was conducted between February 26 – March 7, 2025. IEO coordinated closely with the NDB Africa Regional Centre (ARC) and relevant stakeholders on the ground to conduct visits to selected project sites,[9] collect additional data and information and documents,

[7] See http://www.ndb.int/wp-content/uploads/2025/03/SA-Thematic-evaluation-of-energy-projects-Approach-Paper.pdf.
[8] For each project included in this evaluation and based on desk reviews, IEO produced short project briefs summarising the project's performance. The project briefs informed the main evaluation report and can be made available by IEO upon request.
[9] To Witkop Substation & Medupi Witkop Section D.

and hold discussions with key informants and stakeholders. At the end of the mission, IEO organised a wrap-up meeting with key stakeholders to share its initial observations.

(v) **Stakeholder consultations.** The main mission also consulted directly with local communities during its field visits and engaged with community officers hired by the contractors implementing the Eskom integration project and used IEO findings from its consultations with local communities from the Redstone project.[10] The mission also reviewed project logs regarding community grievances and their redress.

(vi) **Establishment of an evaluation reference group.** An evaluation reference group (ERG) was established for the evaluation, with the aim of promoting dialogue and exchanges at key stages of the evaluation process as well as to foster learning and build ownership in the evaluation. The ERG is composed of representatives from NDB divisions and departments: ARC, the Public Sector Department, Private Sector and Non-Sovereign Guaranteed Transactions Department, Environmental, Social and Governance (ESG) Department (including the Procurement Division), and the executive assistant of the Vice-President and Chief Operating Officer (VP&COO); and from external organisations like the South African National Treasury, Department of Mineral Resources and Energy[11], DPME, DBSA, Eskom and IDC. Members of the ERG were specifically invited to, for example, comment on key deliverables, participate in briefing sessions, provide inputs and access to data and documents on specific topics as well as attend any workshops and seminars that are organised as part of the evaluation.

(vii) **Interim reporting.** Before drafting the evaluation report, IEO prepared an interim report which included initial findings of the thematic evaluation for discussion with the ERG. The purpose of the interim report was to share some emerging insights from the evaluation and invite feedback from relevant stakeholders to make any refinements in the analysis if required and add additional sections to enrich the report. The interim report did not include any recommendations to allow greater time for reflection.

(viii) **Drafting of the evaluation report.** Building on the desk review, fieldwork and feedback on the interim report, IEO drafted the main evaluation report. The draft was shared with in-country partners concerned and NDB Management for comments and finalised considering the comments received. An audit trail was produced illustrating how the comments received have been incorporated by IEO in the final report.

(ix) **NDB Management Response.** Based on the final evaluation report, NDB Management prepared a written Management Response, which can be found at the beginning of this document.

30. **Knowledge-sharing and outreach.** The final evaluation report, inclusive of NDB Management Response, will be published on the IEO webpages and disseminated to key audiences. Evaluation findings will also be shared through relevant social media and communication instruments. An Evaluation Lens and Infographic will be prepared and disseminated.[12] The dissemination of the main evaluation report will be done in line with the provisions of the Evaluation Policy and Evaluation Strategy 2024–2026, approved by the Board. Finally, in cooperation with key stakeholders, IEO will organise a stakeholder seminar in South Africa at the end of 2025 to discuss and share the results and lessons from the evaluation.

[10] Redstone project is a sub-project in IDC Renewable Energy Sector Development Project.
[11] The Department of Mineral Resources and Energy (DMRE) was split into the Department of Electricity and Energy (DEE) and the Department of Mineral and Petroleum Resources (DMPR) after the 2024 General Elections. The Department of Electricity and Energy (DEE) was formed from the DMRE. However, DMRE continues to exist until the necessary legislation and human and financial resources are transferred. During the NDB project approval, DMRE was the main counterpart in South Africa government for energy sector.
[12] An Evaluation Lens is a two-page reader-friendly brochure, summarising the main evaluation findings and recommendations, intended for a wide readership, especially policy and decision makers. The Infographic is also a two-page brochure, summarising project and evaluation data on outcomes in a visual format.

E. Limitations and mitigation measures

31. **First evaluation at the sector level.** This is the first thematic evaluation conducted by IEO on a particular sector, and therefore there was no readily available evaluation methodology that could be easily emulated. This was partly addressed by referring to the evaluation methodology used by IEO in the evaluation on NDB's Fast-Track Support to the COVID-19 Emergency and the India Country Portfolio Evaluation report. As a reference guide, the IEO team used some IEO project-level evaluations and regional-level thematic evaluations from peer organisations. Select thematic evaluation reports from members of the Evaluation Cooperation Group of the MDBs were also reviewed to learn from their practices and experience.

32. **Limited sample size.** There were five projects analysed in the evaluation of which two were fully disbursed and two were on-going, while the fifth project's loan agreement has not taken effect although the project is being implemented on the ground. The limited sample base was addressed by assessing different criteria for projects at different stages. In addition, the evaluation team also examined the five projects' 39 sub-projects.

33. **Lack of information to assess value for money.** There was limited information available to undertake a comprehensive value for money analysis at the project level. While all projects had undertaken an assessment of their economic feasibility at design, it was beyond the scope of the IEO team to undertake this analysis at the sub-project level and neither was this data tracked by the ARC team nor shared by the sub-borrowers. The IEO team did, however, undertake an analysis of value for money by recalculating the quantity of greenhouse gas emissions avoided per million ZAR invested and compared these with standard benchmarks. Some information in the two recently completed project completion reports (PCRs) of GHGER and RESP by the borrowers were also used for the purpose.

34. **Limited number of projects in operation for more than a year.** A key limitation of the evaluation was that at the time of this evaluation limited projects/sub-projects have been in operation for more than a year. As such many of the critical metrics which determine efficiency and effectiveness at the project level could not be adequately assessed.[13] Furthermore, at the time of this evaluation, only two PCRs had been provided by the borrowers for two projects. NDB is also obliged to prepare a PCR, but it is only obliged to provide such a report after the first year of the completion of each project. The evaluation team reviewed the latest project progress reports provided by ARC and supplemented these with interviews with the implementing partners and, in some cases, with the sub-borrowers.

[13] More time was needed to assess sub-project performance, in terms of: (i) achieving technical specifications, such as plant availability and efficiency; and (ii) comparing resource estimations with the assumptions used for the projects.

III.
PERFORMANCE OF THE PROJECT PORTFOLIO

A. Relevance
B. Effectiveness
C. Efficiency
D. Impact
E. Sustainability
F. Overall portfolio achievement

A. Relevance

35. The assessment of relevance of the portfolio of projects covers two mutually reinforcing dimensions. These include: (i) relevance of objectives; and (ii) relevance of design. In the former, the evaluation includes an analysis of the extent to which the investments in the energy sector were aligned with overall government objectives, country energy sector needs, NDB's strategic priorities and the SDGs. Under the relevance of design, the evaluation assesses choice of institutional partners, the coherence of the design and monitoring framework (DMF) and the technological choices that were deployed.

The relevance of NDB's energy sector portfolio in South Africa is rated as "successful", reflecting its strong alignment with key national priorities to increase the supply of renewable energy and its alignment with the country's global commitments, particularly SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action). The portfolio is well aligned with NDB's general strategies in its choice between sovereign and non-sovereign lending, use of local currency financing, adoption of innovative new technologies, mobilisation of private capital and NDB's commitment to dedicate 40% of its total volume of approvals to projects contributing to climate change mitigation and adaptation. The sub-projects were also very relevant in terms of addressing peak energy demand and the technologies selected were appropriate. Institutional mechanisms selected were well aligned with the country systems and very relevant for the financing of renewable energy sector projects in the country. NDB chose strong partners for both its sovereign and non-sovereign projects. Although technology choice is relevant to national policy, the Bank's limited engagement in gas-to-power and nuclear reflects broader policy and market uncertainties but also suggests a gap in supporting transition options explicitly recognised in the Integrated Resource Plan 2019.

Relevance of objectives

36. **Relevance of NDB energy sector portfolio to the country's development needs, policy priorities and strategies.** The individual project objectives were strongly aligned with the energy sector objectives and needs of the country. The projects' objectives were all aligned to addressing core constraints in the energy sector that are explicitly outlined in governmental policy documents, namely the White Paper on Energy Policy 1998, the 2003 Renewable Energy White Paper, the NDCs, Integrated Resource Plan(s) and Just Energy Transition Investment Plan. REITAP was designed to strengthen and expand the national grid with transmission bottlenecks removed and losses reduced; GHGER and RESP were designed to increase energy generated from renewable energy sources; BESP was designed to promote increased availability of electricity during peak demand hours, including electricity from renewable resources – it included battery energy storage systems (BESS) across the country and software applications for monitoring and controlling power flow. This was highly relevant given the growing gap between peak demand and supply; and SIP was designed to enhance electricity availability. Detailed data of power generation capacity can be found in table 5. Thus, the projects directly target South Africa's systemic constraints such as heavy coal dependency (>80%), transmission infrastructure limitations in the integration of renewable energy projects and a power supply deficit of 4–6 GW.

37. **Alignment with SDGs and the national and global climate agenda and targets.** The investments in the renewable energy sector are highly relevant to meeting SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all) and SDG 13 (Take urgent action to combat climate change and its impacts). South Africa, identified as the region's largest greenhouse gas emitter and world's thirteenth largest emitter,[14] has positioned the development of renewable energy sources as a conscious choice in its power generation

[14] The International Energy Agency. Note that number refers to CO_2 emissions from fuel combustion in the energy sector. They do not include other important sources of energy-related greenhouse gas emissions such as methane leaks from oil and gas operations, which are more difficult to measure.

mix with the aim to reduce carbon dioxide (CO_2) emissions. The investments in the energy sector are consistent with commitments under the country's updated NDCs to a mitigation range of between 398–510 $MtCO_2e$ by 2025, and between 350–440 $MtCO_2e$ by 2030.[15] There is also synergy with the SDGs in terms of accelerating clean energy transition, fostering climate resilience and sustainable development. All five energy sector projects aimed to address SDG 7 and SDG 13 in their DMF.

38. **Alignment with NDB's first (2017–2021) and second (2022–2026) general strategies.** Four of the five projects under evaluation were approved and signed during the implementation of NDB's first general strategy which prioritised clean energy and the adoption of innovative new technologies, such as energy storage systems, adaptable smart electricity grids and solid-waste-based energy generation. The strategy emphasised the need for transmission infrastructure and core technologies which include storage to systemically address the integration challenges and peak demand reliability. NDB energy sector investments include concentrated solar power (CSP) with storage and BESS, which are technically advanced in terms of the South African context. Battery storage systems also play a critical role in responding quickly to grid instability (ancillary services) caused by non-dispatchable and variable renewable energy projects connected to the national grid. Such investments showcase the appropriateness and innovative nature of the technology chosen – and their alignment with the General Strategy for 2017–2021. The investments contributed to NDB's commitment to dedicate 40% of its total volume of approvals to projects contributing to climate change mitigation and adaptation, supporting member countries' transition to a more sustainable development pathway. The investments were also in line with the General Strategy for 2022–2026 regarding their mobilisation of private capital, expanding non-sovereign operations and focus on clean energy and energy efficiency.

Relevance of project design

39. **Relevance of project partners and institutional mechanisms deployed.** There were three key partners driving energy sector investments in South Africa, namely Eskom (which supplies approximately 95% of the country's electricity), DBSA and IDC (both fully government-owned development finance institutions [DFIs]). Even though Eskom carries a substantial debt burden, its strategic role in the sector makes partnership with it essential for institutions like NDB. Further, any non-payment risk is mitigated through government guarantees. DBSA and IDC both used the institutional framework available through the well-established REIPPPP which has a well-structured procurement system, selection criteria and appropriate safeguards. In addition, NDB co-financed the BESP with other MDBs, such as the World Bank and AfDB, an example of investment in the energy sector in the country via partnership and cooperation.

40. **Criteria set for sub-projects' selection could have been more relevant and pertinent to different types of technology.** NDB and borrowers ensure the relevance of sub-projects' selection by specifying selection criteria in both the design document and loan agreement. In general, the sub-project selection criteria for all five projects cover the technical feasibility, financial, economic viability, environmental and social soundness, and ability to obtain certain approvals, etc. However, for the GHGER and RESP one common criterion, that the sub-project shall contribute towards the power generation mix and reduction in CO_2 emissions in South Africa by a minimum amount of tonnes per year per ZAR 1 million expenditure, was included without consideration of different types of energy sources and technologies. Instead, an aggregate average number per estimated sub-project energy type was assessed.

41. **Relevance of technological options financed.** The technological choices which NDB financing supported were highly relevant for the country,

[15] Factsheet: Eskom Just Energy Transition Project in South Africa. World Bank. June 2023.

focusing on investments in renewable energy integration, transmission and generation projects. The investments were designed to address the energy gap and to balance the need for peak electricity demand. The choices were in alignment with government plans as outlined in the Integrated Resource Plan 2010 and the subsequently updated and increased IRP 2019. The target according to the IRP 2010 was 17,800 MW, consisting of 8,400 MW of solar, 8,400 MW of wind and 1,000 MW of CSP by 2030. The IRP 2019 targets were subsequently approved as follows: 14,400 MW (wind), 600 MW (solar) and 600 MW (CSP) – target of approximately 41% of renewable energy (2019–2020).

42. NDB financing was also used to invest in innovative technologies which were suited to meet the critical need for dispatchable energy during peak times in South Africa. These included a CSP plant that was included in DBSA and IDC projects. CSP systems are technically complex and generally more expensive to build and maintain compared to solar PV systems. South Africa's future technology allocation under the IRP does not include CSP due to its expense and complexity. The country's energy policy outlines that future energy storage needs should be met through pumped storage (hydropower), BESS and the use of gas to enhance system flexibility. While the NDB portfolio includes wind energy projects to capitalise on the availability of wind along the Cape, further use of this technology is constrained by grid congestion and the need for new transmission infrastructure.

43. Financing CSP was shaped by government policy, embedded in the periodically reviewed IRP and premised on the expectation that CSP costs would decline over time, as seen in other renewable energy technologies. However, limited global deployment and concentration of CSP projects within a few relatively new market players impeded the realisation of such cost reductions through learning effects. The strategy was deliberate, as South Africa (especially in the Northern Cape), enjoys world class solar resources, and policymakers expected CSP to offer the country a competitive edge. Under the REIPPPP, approximately 600 MW of CSP capacity has been procured and all these projects are grid connected and supplying power under long-term (20 year) power purchase agreements, backed by government guarantees and operations and maintenance agreements. Although current policy no longer includes CSP technology in future planning, the rationale behind its initial support—its current contribution of comparatively reliable, dispatchable capacity with storage—and the continued sustainability of existing projects remain relevant to and supportive of the country's energy objectives of diversifying into cleaner energy sources and increasing energy security.

44. **Although the NDB portfolio aligns with South Africa's cleaner energy objectives through substantial investment in renewables, limited upstream engagement constrains NDB's catalytic role in gas-to-power and nuclear diversification.** While NDB's portfolio demonstrates strong alignment with South Africa's clean-energy transition, the Bank's role has remained limited to issuing expressions of interest to developers, a downstream function that addresses project participation rather than systemic challenges. The IRP 2019 identifies gas-to-power as a key transition technology to balance renewables and support industrial activity, yet persistent infrastructure gaps—such as the absence of liquid natural gas import terminals, limited transmission capacity, and delayed port and pipeline projects—continue to threaten industrial productivity and economic competitiveness. Industry stakeholders and lenders, notably Standard Bank's Independent Power Producers' Office Gas-to-Power Request for Proposals Discussion Document (February 2023), highlighted major bankability constraints in the 2019 version of the document, including structural, pricing and regulatory weaknesses—areas where MDB-type technical input could have improved design and investor confidence. Similarly, nuclear energy is prioritised for diversification under the draft IRP 2023, with a 2,500 MW build programme targeted for 2032–2033 and a potential expansion to 14,500 MW by 2050.

Table 4: Assessment of the relevance of individual projects

Project name	Rating
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Moderately Successful
Renewable Energy Sector Development Project (RESP)	Successful
Battery Energy Storage Project (BESP)	Successful
DBSA Sustainable Infrastructure Project (SIP)	Successful
Overall portfolio performance	**Successful**

Source: IEO.

B. Effectiveness

45. Effectiveness assesses the extent to which project objectives have been met or are likely to be met at the time of project completion. In this evaluation, effectiveness is assessed based on the progress of the completed projects and the potential of those which are still under construction but have not achieved a commercial operation date.

The effectiveness of the NDB portfolio in South Africa is rated as "successful". The NDB-financed projects have been effective in achieving their outputs in terms of the targeted number of sub-projects and are expected to achieve their overall objectives and outcomes. The projects were effective in using a range of new and varied technologies to meet the needs of the sector and, overall, they supported the development of South Africa's energy sector value chain by investing in integration, generation and partly meeting the demand for peak supply. NDB investments have contributed to innovation in the energy sector and have attempted to address the issue of peak demand. The projects have also been very effective in leveraging private sector funds from commercial sources for the energy sector. The evaluation results show that the projects contribute to improving the energy mix, reducing CO_2 emissions and increasing the capacity to meet peak demand. Overall, the Bank has successfully supported the development of South Africa's energy sector value chain.

46. **Achievement of the projects' high-level objectives.** The NDB energy investments achieved the high-level objectives to support renewable energy development, reduce the country's reliance on fossil fuels, contribute to the reduction in CO_2 emissions and improve economic growth which is negatively impacted by the electricity shortage.[16] Projects, such as CSP and hybrid solar PV-battery storage options, contributed to an increase in energy storage to meet peak demand. Transmission projects support the integration of renewable energy into the national grid and augment the Eskom transmission network in selected areas. The evaluation results show that the projects contribute to improving the energy mix and reducing CO_2 emissions and increasing the capacity to meet peak demand. However, the energy mix has so far changed only marginally,

[16] According to the country's National Treasury, GDP growth will increase by roughly 2% if the issue of electricity shortage is addressed.

owing to the continued heavy reliance on fossil fuels and the infancy of the renewable energy industry. By July 2025, approximately 6,735 MW of renewable energy capacity had been connected to the grid through the government's REIPPPP. The borrowers' PCRs of the two completed NDB energy projects reported that by the end of May 2025 projects had initiated commercial operations and were providing 1,397 MW to the grid (Redstone 100 MW, GHGER 1,147 MW[17] and Scatec 150 MW). The energy sub-projects of DBSA SIP have also achieved a commercial operation date and provided 200 MW capacity.

47. Together, NDB-financed renewable projects have added approximately 1,600 MW of generation capacity to South Africa. The country's renewable energy market has matured, and commercial banks and private investors have become the primary financiers of REIPPPP projects, driving highly competitive pricing and reducing the need for MDB participation in direct renewable project funding. MDBs, including NDB, are therefore shifting their focus toward grid, storage and system-level transition investments that support long-term decarbonisation and energy security objectives. NDB's contribution to renewable generation capacity is thus expected to remain broadly stable through to 2030, with future operations likely to concentrate on enabling infrastructure and system resilience consistent with South Africa's Just Energy Transition Investment Plan, IRP 2019 and forthcoming IRP updates.

48. **Project outputs and outcomes were achieved.** The outputs estimated in the project documents to the Board were not always specified, as in some cases the sub-projects were decided later based on specified selection criteria. Overall, the five projects are expected to finance 39 sub-projects. The project level outputs which were explicitly outlined in the DMF included: (i) construction of renewable energy and increase of renewable energy generation; (ii) grid strengthening and power integration; (iii) increased storage capacity; (iv) development of software applications. The outcomes can be summarised as: (i) national grid strengthened; (ii) reduction of CO_2 emissions; (iii) electricity generated from renewable energy; and (iv) increase in electricity availability. Some sub-projects or components of projects have not been fully realised.

49. The REITAP contributes to the reduction of grid congestion, enhancing system stability and enabling power to be delivered consistently through the integration of 670 MW of renewable energy (wind and solar PV) and the augmentation of 347 km of transmission lines (estimated by 2027). The integration of 670 MW of renewable energy was achieved in 2022. The 15 km associated with the Soweto Strengthening phase 1 and 2 projects was no longer part of the output target as these projects have been deferred. Three additional projects were approved by the Bank (Ankerlig Sterrekus, Kusile Lulamisa and Waterberg). With the newly approved sub-projects, the length of transmission lines will be almost eight times the planned value. Currently, the additional transmission lines built by 2023 were 326.1 km in length.[18] In addition, the project brought 1,065 mega volt-amperes (MVA) of additional transformer capacity.

50. The GHGER achieved 1,247 MW[19] of new generation capacity, which was more than three times the originally targeted 375 MW. It supported 15 sub-projects, exceeding the initially planned 11 sub-projects. All the sub-projects under both the GHGER and the RESP are now in commercial operations. This variation from the original plan reflects the loan agreement's flexibility, which allowed project substitutions if certain criteria were met. As NDB financing is channelled through DFIs – for example DBSA or IDC – and not directly to individual projects, flexibility is necessary to allow them to choose suitable projects. A pipeline of potential projects was pre-approved, subject to viability and financing. If any project did not proceed, it could be replaced by another of equal or greater renewable value, with project selection made by the DFIs and approved by NDB.

[17] To avoid double counting on CSP, this does not include the Redstone CSP sub-project which was the same sub-project financed under Renewable Energy Sector Development Project.
[18] Project performance assessment as of March 2024.
[19] Including the CSP 100 MW.

51. The RESP delivered approximately double its original target, creating approximately 250 MW[20] of renewable energy capacity. It is worth highlighting that power plants supported by the project are highly effective, due to their storage capabilities which allow dispatch of energy when demand is highest, thereby enhancing grid stability. The IDC structured financing to retain flexibility, and along with the approved CSP project, there was scope to add small-scale renewable energy projects or substitute them if they did not materialise. When the Independent Power Producer Office's planned small-scale projects failed to proceed – the IDC replaced them with a Scatec-backed, solar-plus storage hybrid project. With integrated battery storage, this project offers greater reliability than the originally envisaged small-scale renewable energy projects would have provided. Storage capacity reduces the impact of renewable energy variability, saving costs of using expensive diesel-based peaking power plants and improving the reliability of supply. However, the reassessed calculation of tonnes of CO_2 emissions reduction per ZAR 1 million invested for both sub-projects were below the sub-project selection criteria at 70 tonnes. Nevertheless, there are also environmental benefits due to avoiding water use and CO_2 emissions; and demonstrable technological innovation given that the projects are the first to use utility-scale solar PV with storage in the country. The solar facilities contributed to South Africa's renewable energy capacity while supporting broader development and climate goals.

52. Finally, the DBSA SIP has installed 200 MW using solar PV with two renewable energy sub-projects which have started commercial operations (Project 1 in March 2024 and Project 2 in April 2024).

53. The main outcomes of the four projects included an increase in transmission capacity, power generation, capacity for storage and CO_2 emissions avoided annually. The projects are expected to cumulatively generate 7,372 GWh annually and avoid greenhouse gasses of 6.455 million tonnes annually based on the assumptions used.[21] These values are significantly higher than expected at design. Some projects, such as REITAP, were designed to enable increased transmission through grid strengthening, increase in the number of housing units connected and a reduction in load shedding hours. However, there is little indication of the extent to which it will be able to meet its initial targets for the number of households connected at this point. The Redstone CSP sub-project, financed under both DBSA and IDC, was considerably delayed and only started its operations in May 2025, although its planned commercial operation date was in November 2023. However, the installed generation capacity exceeded the power generation capacity at design which actually increased CO_2 emissions reduction significantly to 3 million tonnes per year from the GHGER project. The Scatec and Redstone sub-projects which are part of the RESP generate 1,140 MWh storage capacity which was not envisaged in the initial design and DMF. The two solar PV sub-projects of DBSA SIP started commercial operations (Project 1 in March 2024 and Project 2 in April 2024) and are estimated to bring 438 GWh annually.

[20] The 250 MW includes energy capacity from sub-project Scatec (150 MW) and Redstone CSP (100 MW). The Scatec installed capacity (physical capability) is 540 MW of PV and 225 MW/1,140 MWh of battery storage. However, the contracted capacity (i.e. the dispatchable output guaranteed under the power purchase agreement) is 150 MW, delivered daily from 05:00 to 21:30 (a total of 16.5 hours per day). The facility is deliberately oversized to ensure it can meet contractual delivery even during low-output periods and mitigate variability (such as from weather or seasonal changes), with any excess energy curtailed. Hence, the capacity is reported as the 150 MW contracted capacity.

[21] Based on the assumption that for every MWh of energy generated using renewable energy sources, the country would avoid CO_2 emissions of 0.94 tonnes. The overall contribution includes the estimated number for BESP; but note that this project was not evaluated for effectiveness.

Table 5: NDB financed renewable energy projects in South Africa

Planned sub-projects	Actual no. of sub-projects	Planned power generation capacity (MW)	Actual/expected power generation capacity (MW)*	Other planned outputs	Actual/expected other planned outputs	Expected annual power (GWh)**	Actual annual power (GWh)**	Planned annual avoidance of CO_2 equivalent (tonnes)***	Actual/expected annual avoidance of CO_2 equivalent (tonnes)
Renewable Energy Integration and Transmission Augmentation Project (REITAP)									
6	6	670	670	45 km circuit	347 km by 2027	2,054	2,054	1,930,760	1,930,760
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)									
11	15	375	1,247	/	/	887	3,540	834,000	3,000,000
Renewable Energy Sector Development Project (RESP)									
5	4	120	250	/	1,140 MWh storage capacity	512	1,340	481,436	920,000
Battery Energy Storage Project (BESP)****									
17+	13	60	/	Battery energy storage system of 360 MW/1,440 MWh	/	131.4	528.9 Storage capacity	900,000	/
DBSA Sustainable Infrastructure Project (SIP)									
5	2		200	/	/	438	438		604,523

Source: PDBs, loan agreements, project performance assessments and PCRs.

* The Redstone CSP financed under both DBSA and IDC started its operations in May 2025.

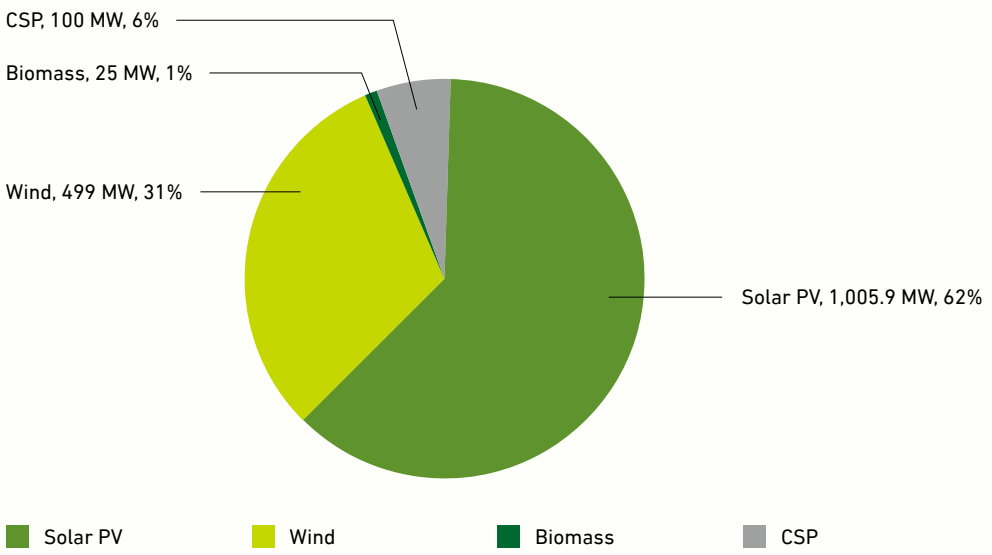
** For the annual power generation, some data are not available via documentation, thus the evaluation team uses the average capacity factor for different types of energy to calculate an estimated power generation with the energy capacity installed. PV 25%, wind power 32–35%.

*** The estimated figure is based on the calculation that for every MWh of energy generated using renewable energy sources, the country would avoid CO_2 emissions of 0.94 tonnes.

**** The BESP loan agreement has not yet become effective, but it has started construction, and sub-projects are in various stages of completion (phase I and phase II) towards annual power storage of 528.9 GWh.

54. **Overall, the Bank has supported the development of South Africa's energy sector value chain.** The value chain consists of energy generation, transmission, distribution, and retail (users) subsectors. DBSA GHGER, IDC RESP and DBSA SIP have added new and cleaner generation capacity to the national grid. Through leveraging financing from other lenders, the Bank's projects added approximately 1,600 MW of energy generation capacity using solar photovoltaic panels, wind, biomass and concentrated solar power technologies. The majority of which (87%) is from solar PV and wind sources, as shown in figure 5. Through the Eskom REITAP, NDB also supported the construction of 347 km of transmission lines. At the same time, this project assisted 670 MW of renewable energy integration into the grid. Also, multiple substations have been updated and built to facilitate the transmission and integration of energy.

Figure 5: NDB energy projects in renewable energy generation



Source: IEO reports, project performance assessments, etc.

55. NDB was involved in the drafting of the paper which was used to advocate for the privatisation of the transmission network and presented to the South African Government Cabinet in December 2024. NDB has also supported both the National Treasury and Department of Electricity and Energy (DEE) with knowledge-sharing via seminars and study tours to other BRICS member countries that have walked the path of privatisation of transmission infrastructure.

56. **Another key objective, to crowd in private sector financing and increase the availability of long-term funds, was achieved.** Across the five projects, NDB has been able to finance from 4% to 80% of the total project cost. On average, NDB investment accounts for 18% of the overall project cost. Via its intervention in the energy sector, the Bank has been able to leverage USD 4.698 billion in the country from diverse sources such as state companies, other MDBs like the World Bank, AfDB, etc. – see table 6 for details. Consequently, the borrower has also been able to use long-tenor schemes to finance the sub-projects.[22] The positive aspect of co-financing with other MDBs is exemplified in the Battery Energy Storage Project and can be strengthened and leveraged further through coordinated monitoring functions, to ensure alignment in terms of strategies to mitigate project implementation challenges. Syndicated project finance transactions typically benefit from expertise provided by various parties to the transaction. The NDB investments also leverage additional funding to close infrastructure gaps in the sector for the on-lending of sub-projects from borrowers, which typically deploy blended finance (debt, grants/ guarantees) with milestone-based disbursement and performance-linked interest terms.

[22] For instance, all sub-loans on-lent by DBSA to the sub-borrowers were long-term funds dominated in ZAR with a minimum maturity of 17 years for the GHGER.

Table 6: NDB leveraging funds for the energy sector in South Africa

Project	Type of loan	Loan currency	Full tenor (years)	Millions of USD			NDB % of overall cost
				Total project cost	NDB loan	Other sources	
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Sov.	USD	19.97	513	180	333[a]	35%
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Non-sov.	USD	14.56	2,500	300	2,200[b]	12%
Renewable Energy Sector Development Project (RESP)	Non-sov.	ZAR	14.11	1,400	60	1,340[b]	4%
Battery Energy Storage Project (BESP)	Sov.	ZAR	15.77	1,200	400	800[c]	33%
DBSA Sustainable Infrastructure Project (SIP)	Non-sov.	USD	12.54	125	100	25[d]	Up to 80%
			Totals	**5,738**	**1,040**	**4,698**	**18%**

Source: Project summary, PDBs.
[a] Eskom.
[b] Mainly commercial banks in South Africa.
[c] NDB has signed loan agreement with Eskom to finance phase I of this project for ZAR 1,400 million; the World Bank for USD 215 million and AfDB for USD 57 million. Investment for phase II sub-projects are still at the appraisal stage.
[d] DBSA.

Table 7: Assessment of the effectiveness of individual projects

Project name	Rating
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Successful
Renewable Energy Sector Development Project (RESP)	Successful
Battery Energy Storage Project (BESP)	N/A
DBSA Sustainable Infrastructure Project (SIP)	Successful
Overall Portfolio Performance	**Successful**

Source: IEO.

C. Efficiency

57. Efficiency is about assessing how economically resources and other inputs have been converted into results. Various proxy indicators have been used to assess project and portfolio efficiency, such as time lags, implementation progress, project completion rates, disbursements, procurement processes, cost overruns, and others. Most of these issues were beyond the control of NDB and the borrower.

The efficiency of NDB's portfolio in South Africa is rated "moderately successful". There are mixed results with respect to project commencement and completion timelines. Of the 39 sub-projects across the five NDB financed projects, 21 were completed within the specified timeframes. Only the two sub-projects under the DBSA SIP commenced commercial operations within the specified timeframes. Several others also met envisaged timelines, including 14 under the DBSA GHGER and Scatec under the IDC RESP. Many sub-projects experienced delays in commencement and commercial operations. Key causes of delays included the COVID-19 pandemic (GHGER), port flooding (Redstone CSP), rising costs and procurement challenges (REITAP, GHGER, RESP), and the use of complex technologies such as CSP. The Eskom RESP has experienced significant delays due to servitude encroachment and retendering due to price increases. A few sub-projects also experienced cost overruns. The disbursements under projects are facilitated by the mechanism which allows both reimbursement and advanced disbursement of loans.

58. **The projects performed variably with regard to their efficiency in terms of the time lag in the project cycle.** Overall, the construction period of the projects is between 3–7 years. The average time between approval and signing of projects in South Africa is approximately 520 days, and between signing and effectiveness approximately 144 days. The three non-sovereign projects are quite efficient with the time taken between approval and signing below the average level. However, as shown in Figure 6 below, the REITAP took 1,098 days between approval and signing and 149 days to effectiveness, above the average level in the country. The three non-sovereign projects became effective quickly after signing. The GHGER has the most amendments to the loan agreement which extended the project's implementation period and loan closing date. REITAP received the borrower's request for extending the effectiveness date, closing date, and increasing the overall project cost,[23] and one amendment is pending (see table 8).

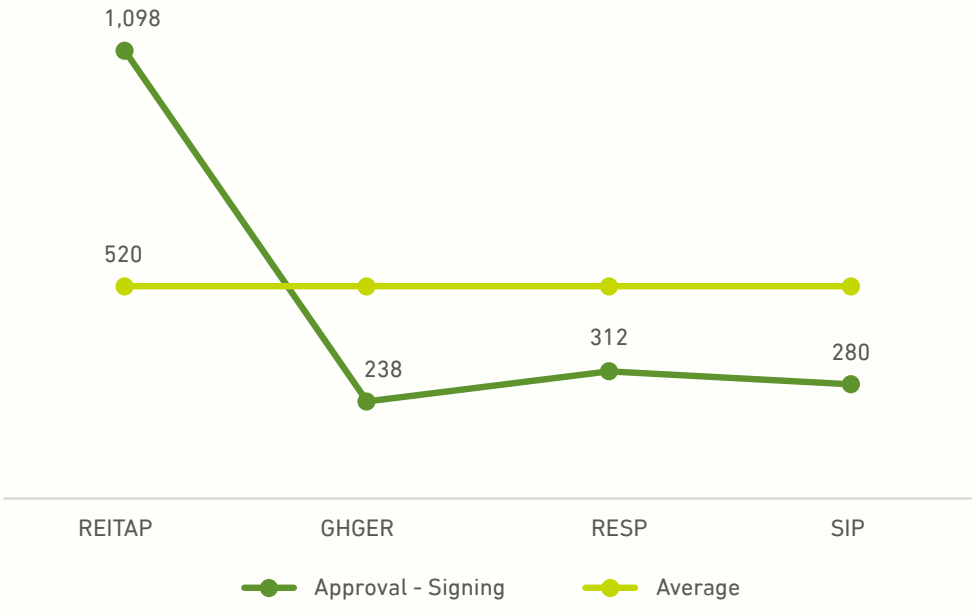
[23] This does not impact NDB's overall investment amount.

Table 8: Key dates of South Africa energy sector projects

Project	Sov. / Non. Sov.	Approval date	Signing date	Effective date	No. of amend-ments	Original completion data	Actual / estimated completion date	Commercial operation date
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	S	13-Apr-16	16-Apr-19	12-Sep-19	1 pending	11-Sep-24	30-Sep-25	Beyond 2025
Greenhouse Gas Emissions Reduction & Energy Sector Development Project (GHGER)	NS	20-Jul-18	15-Mar-19	15-Mar-19	5	30-Mar-22	28-Jan-24*	Redstone on 30-May-25
Renewable Energy Sector Development Project (RESP)	NS	31-Mar-19	06-Feb-20	06-Feb-20	2	06-Dec-23	06-Dec-23*	Redstone on 30-May-25
Battery Energy Storage Project (BESP)	S	16-Dec-19	12-Jun-25	/	/	/	/	/
DBSA Sustainable Infrastructure Project (SIP)	NS	13-Dec-22	19-Sep-23	19-Sep-23	/	18-Aug-26	16-May-24**	16-May-24**

Source: NDB project summary.
* With the recent commercial operation date of Redstone sub-project, the actual closing date for the project is March 2025.
** For the two energy sector sub-projects.

Figure 6: Days lagged between approval and signing



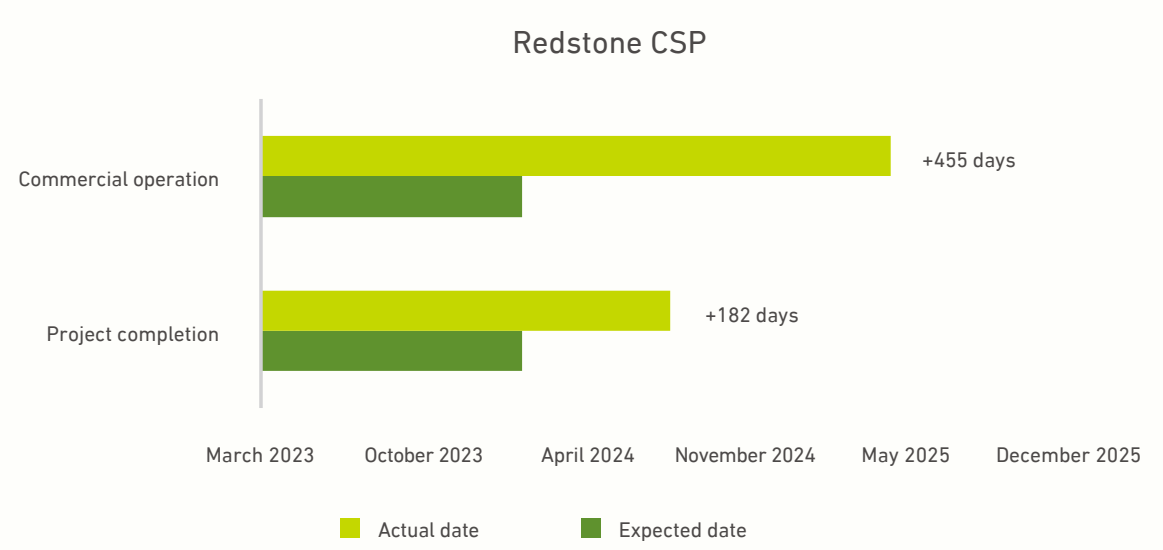
Source: Project summary.

59. **Delays in overall project completion are due to the delay in one or more of the sub-projects.** Five out of the six sub-projects of the REITAP were delayed.[24] For example, the Glockner-Etna was initially delayed by 4 years. Eskom has taken measures to expedite the projects, using experienced engineering, procurement and construction contractors, enhanced project management and monitoring. A price increase on tenders for the Waterberg sub-project meant that the tenders had to be cancelled and reissued on the market. Delays experienced on the sub-project are mainly due to the delayed procurement process for the line contracts and issues with securing servitude. Extreme weather events such as persistent rains and flooding also caused the delay in construction. Although Eskom transmission infrastructure improvements have experienced delays, the integration parts have been completed. Figure 7 and figure 8 illustrate the details of delayed sub-project completion dates.

60. The completion dates for the RESP and GHGER were both affected by the implementation of the Redstone CSP sub-project due to the complexity of the transaction, COVID-19 and the withdrawal of one of the lenders due to a change in the country's credit rating. However, 14 out of 15 projects of the DBSA GHGER achieved the planned output and outcome within the planned timeline.

61. The NDB monitoring team did not have the necessary technical and sector expertise that were required to identify project implementation risks and propose the necessary interventions to mitigate completion, operation and maintenance risks. Such risks could be identified upfront (during the project appraisal phase) and monitored throughout the project implementation phase to ensure timely delivery of the NDB interventions' results and better utilise the allocated resources.

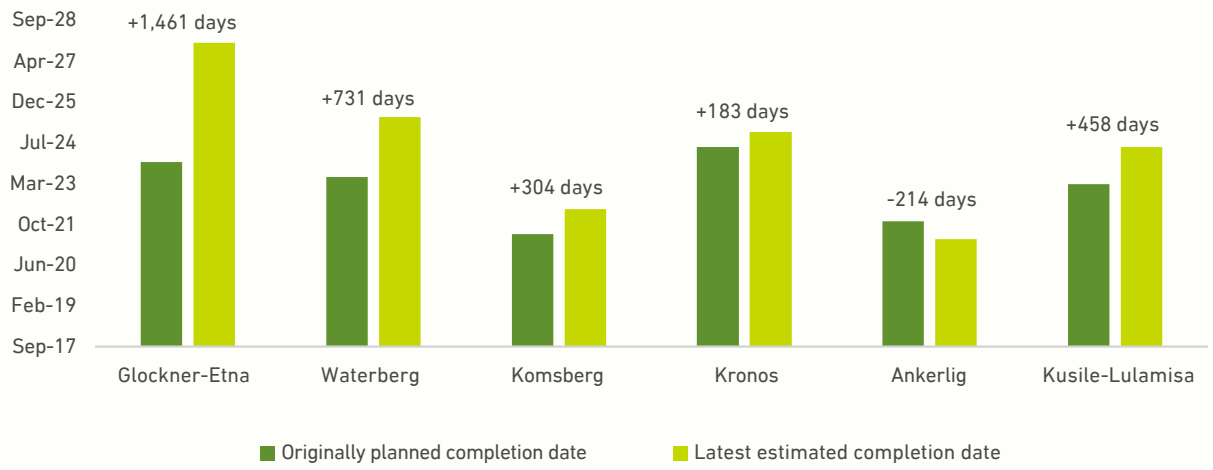
Figure 7: Redstone concentrated solar power project: planned and expected completion date



Source: Latest news on Redstone commercial operation date, project performance evaluation from IEO.

[24] The most critical delays were caused by external factors, primarily a political and legal issue that led to Eskom not signing the power purchase agreements. This sovereign-level dispute, which froze the project for years, required a presidential directive to resolve and was far beyond any lender's influence. Additional delays were also driven by legal challenges from competitors and complex community issues, which were outside the lenders' ambit. The project also experienced technical challenges, for example the issues with the pump, which contributed to the delay.

Figure 8: Renewable Energy Integration and Transmission Augmentation Project: sub-projects' planned and estimated completion dates



Source: Data from project performance assessments as of January 2024.

62. **Most projects are within budget, and cost overruns have only been reported by two of the five projects:** (i) the REITAP overrun was mainly due to procurement challenges. The overall project cost is double the initial estimate. The awarded contracts for the Kusile-Lulamisa sub-project were higher than the estimated value due to the delays in issuing tenders, their cancellation and subsequent re-issuance. And the transformer required for the Kronos sub-project had not been delivered until the last project performance assessment; and (ii) the delay in the completion of one of the sub-projects the Redstone CSP included in both the GHGER and the RESP led to additional interest expenses, operating costs during construction, and expenses to arrange debt repayments. Nevertheless, it successfully managed to fund the overruns by pre-commissioning revenue, interest earned on drawn funding, and liquidated damages claims. Under the DBSA SIP, USD 41.76 million out of USD 100 million was utilised on two solar PV projects which were within the stipulated budget allocations for energy projects.

63. **Procurement has followed efficient processes.** The sovereign projects used Eskom procedures for procurement while the projects through DBSA and IDC followed the government's REIPPPP criteria and procedures as well as the borrower financial institutions' own systems. All engineering, procurement and construction contractors were selected through a competitive bidding process among the best global suppliers, chosen for their competitive tariffs under the REIPPPP. Additionally, the projects were also required to meet additional criteria regarding at least 40% of the sub-project investment value spent on local content. NDB also guarantees that the procurement procedure follows the core principles of NDB's Procurement Policy, namely economy, efficiency, value for money, fitness for purpose, competition and transparency.

64. **Efficiency of disbursements.** The NDB funds were disbursed in two stages for the non-sovereign loans while the sovereign loans were to be provided directly to Eskom with a project finance facility. Of the total financing for the five energy projects, 59% was disbursed by the end of 2024. Taking the BESP out of the equation (which has not yet become effective) takes the disbursement rate to 91% for NDB funds. Disbursements have been facilitated due to the use of the mechanism which allows both reimbursement and advance disbursement of loans. A staged disbursement mechanism was used for loans from NDB to the borrower and from the borrower to the sub-borrower. While the first disbursements are generally very fast, subsequent disbursements can be at different speeds. Slower disbursement at the second stage was due to a host of reasons

which could be technical, legal or procedural; and this was left to the discretion of the borrowers instead of NDB.

65. Under the REITAP, the availability date was extended by a year to September 30, 2025. Almost five years into the implementation period, NDB has disbursed only 75.9% of the loan. For the GHGER, NDB swiftly disbursed the project funds to DBSA within 13 months, between May 2019 to June 2020; and advance disbursement was used in this project for the borrower to quickly disburse funds to the sub-borrowers. For the RESP, the loan was fully disbursed by NDB to IDC between December 9, 2021 and May 19, 2023, with five disbursements made within 18 months. Under the DBSA SIP, an amount of USD 41.8 million has been disbursed for two renewable energy projects which is the total amount that the project can disburse due to the ceiling on DBSA of not more than 50% of each of the sub-project's costs. Details of disbursements from borrowers to sub-borrowers can be found in annex XIV.

Table 9: Disbursements of energy projects in South Africa by December 2024

Project	Millions of USD		% disb.	No. of disbursements	Currency	Method	Date 1st disbursement
	Approved	Disbursed					
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	180	136.54	75.9	12	USD	Reimbursement	16-Oct-2019
Greenhouse Gas Emissions Reduction & Energy Sector Development Project (GHGER)	300	300	100	5	USD	Advance disbursement	21-May-2019
Renewable Energy Sector Development Project (RESP)	63.18	63.18	100	5	ZAR	Reimbursement	9-Dec-2021
Battery Energy Storage Project (BESP)	329.62*	0	0	/	ZAR	/	/
DBSA Sustainable Infrastructure Project (SIP)	100	41.76	41.8	3	USD	Reimbursement	25-Mar-2024
Total	**922.8**	**541.48**	**59%**				

Source: NDB project summary.
* This amount represents the gross approved amount equivalent to USD.

66. **Examining the efficiency of local currency lending.** The IDC RESP and Eskom BESP are local currency loans. However, at the time when the former was approved, NDB had not issued any ZAR bonds and NDB converted USD into ZAR to support the loan disbursements. To manage the foreign exchange risk, NDB entered the cross-currency swap or forward contracts with National Treasury counterparties. Some of the forward contracts were short-term due to the underlying costs, market regulations as well as inherent risks, which were rolled forward on a monthly basis. Some of the potential implications of the above practices could include inefficient and escalated operational risks due to frequent rolling forward of transactions for managing the foreign exchange exposures; complications related to calculating and attributing the entire funding costs for supporting the ZAR disbursement and opportunity costs of using the USD assets for managing a ZAR funding swap, compared with raising the ZAR from the debt financial markets. With the issuance of the ZAR bond, the Bank will be in a better position to finance local currency loans and crowd in investment for energy projects in the country.

67. **Financial and economic analysis using different methods showed the economic viability of projects at design, but these have not been subsequently assessed.** The different projects used slightly different metrics, and these were part of the appraisal documents submitted to the Board. There was limited information on these

aspects shared with the evaluation team, and the Africa Regional Centre did not track or monitor these aspects as it did not see this as part of its mandate. Due to reasons of confidentiality in the sector, it is difficult to assess the cost-benefit analysis and profitability of the projects. Admittedly, this is also difficult to assess at this point since most of the projects have not been in operation for more than a year yet.

68. At design, the REITAP used the "least economic cost" method and determined that the investment was viable since the weighted average customer interruption costs of ZAR 10.66 per kWh were greater than the break-even cost of unserved energy of ZAR 2.34 per kWh. However, since the changes of sub-projects and the cost overruns, the final economic analysis is not available.

69. The GHGER estimated that the economic internal rate of return (EIRR) for renewable energy projects ranged from 12% to 18%, which was above the social discount rate used for projects in South Africa. The evaluation team reviewed sub-project allocation letters submitted by DBSA and confirmed all EIRRs were above the hurdle rate of 8% set in the loan agreement, ranging from 12% to 20%. The sub-projects' financial internal rate of return (FIRR) during selection ranged from 11.2% to 14.5%. These values were also higher than their corresponding weighted average cost of capital, ranging from 8.4% to 12.8%, affirming their economic viability during the project design phase. The main factor affecting the sub-projects' financial performance was their annual power generation, which has been closely monitored by their on-site operators and co-investors.

70. The RESP's Redstone sub-project reported a nominal FIRR of 14.8% and EIRR of 11.6%, while Scatec reported an FIRR of 14.11% and an EIRR of 33.98%. The BESP undertook an options analysis and when all externalities were properly measured and considered in the course of economic analysis, the project proved to be the best solution for the country among feasible alternatives, as demonstrated by higher expected net present value and EIRR values. The project document to the Board for the DBSA SIP did not include any economic and financial analysis as the sub-projects had not been identified at appraisal; however, with the previous EIRR for DBSA's renewable projects and the provision that up to 50% sub-projects will be allocated to renewable projects, the appraisal deemed the project economically viable.

71. **Cost efficiency for renewable energy.** The use of "tonnes of CO_2 avoided per ZAR 1 million invested" provides a meaningful indicator for assessing cost-efficiency in renewable energy projects. In the IDC RESP, NDB specified a design target of 70 tonnes per year per ZAR 1 million of sub-project investment. However, the Redstone CSP and Scatec solar-storage sub-projects achieved only 44 and 48 tonnes respectively, falling short of this benchmark. These deviations are largely due to higher capital costs and, in the case of CSP, complex technology with lower marginal abatement efficiency. In contrast, the DBSA GHGER had a higher design threshold of 90 tonnes per year per ZAR 1 million, which was generally met by most sub-projects—except those involving CSP and biomass—highlighting better cost efficiency among more mature and lower-cost renewable technologies.[25]

[25] Data from IEO project performance evaluations on DBSA and IDC projects.

Table 10: Assessment of the efficiency of South Africa energy projects

Project name	Rating
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Moderately Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Moderately Successful
Renewable Energy Sector Development Project (RESP)	Moderately Successful
Battery Energy Storage Project (BESP)	N/A
Sustainable Infrastructure Project (SIP)	Successful
Overall portfolio performance	**Moderately Successful**

Source: IEO.

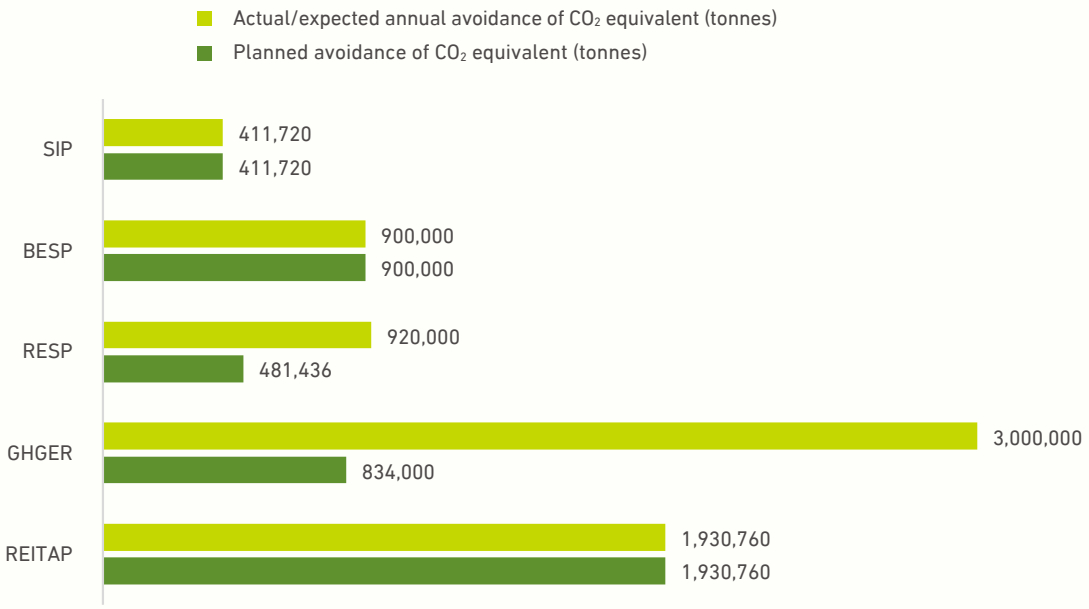
D. Impact

72. Impact is about assessing the long-term, high-level results achieved by the projects funded by the Bank. A key challenge for this evaluation in assessing impact was that, of the five projects reviewed, only two have been completed so far. Nevertheless, drawing on the project performance evaluations already conducted by IEO in South Africa, together with emerging results from two other projects, an informed assessment of impact was possible. More specifically, the overall impact of the investments in the energy sector is assessed in terms of their impact on improving energy availability and reliability, meeting peak demand, and CO_2 reductions. While NDB currently does not systematically monitor the impact on economic and social aspects and any adverse impacts on the environment, these aspects were examined for projects where data was available.

The impact of NDB's energy sector portfolio is rated "successful". The completed projects have had an impact on the country's energy mix diversification and have added to energy reliability and stability and contributed to CO_2 reduction targets set by the country, thereby having a positive impact on climate mitigation. The estimated CO_2 reduction has achieved significantly higher outcomes than planned. Overall, the installed capacity of the NDB energy projects is 1,600 MW and can provide 7,503 GWh/year of electricity to the country. Under standard assumptions, this would be sufficient to supply around 1.8 million South African households per year. Some sub-projects have contributed to positive social and economic outcomes as well, such as BEE shareholding, local employment, community development and income growth opportunities. The projects have not had any negative impact on the environment either (see the section on CEH). It should be noted that there were 39 sub-projects included in the five NDB-supported projects of which 21 have been completed so far. The delay in the initiation and completion of some projects may affect the achievement of project impact as expected.

73. **NDB interventions in the energy sector have the potential to contribute to CO_2 emissions reduction and the nationally determined contributions' target.** All NDB energy sector projects include reduction of CO_2 as a key indicator; some give precise targets while others provide more general targets such as the achievement of the emission trajectory targets. For completed projects, the DBSA GHGER was estimated to contribute to three million tonnes of CO_2 reduction, exceeding the designed level by a large amount. The IDC RESP set the target of 481,436 tonnes of greenhouse gases avoided annually, and the estimated amount is around 920,000 tonnes. For the not-completed projects, the evaluation team has also done an assessment of actual and estimated reduction of CO_2 from NDB interventions.[26] The estimated CO_2 emissions reductions per year from energy generation projects are estimated at 7,162,480 tonnes per year, almost 1.6 times the planned level and contribute to almost 12% of the overall reduction required in the country to achieve its NDCs. The detailed information can be found in figure 9 below.

Figure 9: CO_2 emissions reduction of NDB energy projects in South Africa



Source: PDB, project performance assessments, project performance evaluations, evaluation team.

74. **NDB projects have a positive impact on improving energy stability for the country. NDB has invested in strengthening the grid infrastructure which is likely to increase the energy stability.** The installed capacity of the NDB energy projects is expected to have around 1,600 MW capacity and be able to provide 7,503 GWh/year of electricity to the country.[27] However these numbers could vary depending on the average plant availability of the completed sub-projects. The REITAP led to grid strengthening and integration of 670 MW. Most of the sub-projects of the GHGER have been completed and it is expected that the power generated would supply the electricity usage of 757,585 households.[28] Further, the four onshore wind farms financed play a crucial role during the evening peak, helping to prevent exacerbated load-shedding. For the sub-projects under

[26] Following the logic of NDB project document, for every MWh of energy generated using renewable energy sources, the country would avoid CO_2 emissions of 0.94 tonnes.
[27] For the annual power generation, some data are not available via documentation, thus the evaluation team uses average capacity factor for different types of energy to calculate the estimated power generation with the installed energy capacity. PV 25%, wind power 32–35%.
[28] DBSA project performance evaluation report.

the GHGER, the average plant availability was assessed to be over 98%.[29] Several of the projects, especially the concentrated solar power sub-projects, can provide storage capacity and dispatchable services that can deliver after sunset.

75. **The energy mix has been diversified with NDB investment in the sector.** South Africa has strived to diversify the energy mix. At the time of NDB's first investment in the country in 2016, over 90% of generation came from coal-fired plants. NDB-financed sub-projects have broadened the mix by adding renewable energy technologies, including wind, solar PV, CSP with molten salt battery storage technology and hybrid solar-plus-storage photovoltaic solutions. According to the Independent Power Producer Office's July 2025 data, approximately 6,736.36 MW of commercially operational capacity installed under the REIPPPP is contributing to a diversification of energy sources. In addition, the NTCSA's October 2025 data estimates show that private embedded generation and rooftop installations by industrial commercial and domestic users generate 7,345.30 MW.[30] This evaluation concludes that NDB's investments through the DBSA and IDC under the REIPPPP have had a positive impact on energy source diversification. While the exact share attributable to NDB is not easy to calculate, its two-step financing model helped crowd in private capital and mobilise long-term ZAR funding, ultimately enabling around 3% direct funding and leveraging up to 18% of total renewable energy investment towards a cumulative programme value of approximately ZAR 291.1 billion in the country via REIPPPP and the RMIPPPP.[31] Overall NDB-funded REIPPPP projects have advanced South Africa's energy mix transformation and contributed to the country's transition to a more sustainable energy system.

76. **Contribution to local economic development and inclusion.** For DBSA GHGER, around 2% of the completed sub-projects' annual revenue has been spent on programmes in favour of local communities since they began commercial operations (i.e. funding improvements in healthcare, infrastructure and education, etc.), which is double the minimum compliance threshold.[32] The RESP's sub-projects are expected to have a positive social impact due to shareholding under Black Economic Empowerment schemes, job creation, increasing local content in procurement, and community initiatives. We should also note that these projects have been funded by the IDC and DBSA through equity instruments that NDB does not provide. NDB has only provided loan facilities in these projects, thus the impact is for the project itself. During the field visit by the evaluation team to one of the sub-projects of Eskom REITAP, the community liaison officer confirmed the positive economic impact the projects had brought to the local community, as well as for skills development. The NDB projects have provided multiple jobs for local youth especially during the construction phase (see the transformative equity section).

Table 11: Assessment of the impact of individual projects

Project name	Rating
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Moderately Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Successful
Renewable Energy Sector Development Project (RESP)	Successful
Battery Energy Storage Project (BESP)	N/A
DBSA Sustainable Infrastructure Project (SIP)	N/A
Overall portfolio performance	**Successful**

Source: IEO.

[29] See the IEO evaluation https://www.ndb.int/wp-content/uploads/2024/02/SA-Report.pdf.
[30] Eskom Weekly System Status Report – 2025 Week 40.
[31] IPP Office, as of July 2025.
[32] IEO report.

E. Sustainability

77. Sustainability is about assessing the extent to which results achieved by projects are durable beyond project completion and implementation. The assessment of sustainability in this evaluation covered institutional, policy and regulatory frameworks, and technical, financial, environmental and other related aspects. For those projects not yet completed, the evaluation assessed the likelihood of projects achieving sustainable results.

The sustainability of the NDB-financed energy portfolio in South Africa is rated as "successful". The sustainability of the investments is underpinned by the strong corporate interest and capability of the sponsors of the sub-projects and the supportive government policy framework. Institutional sustainability is underpinned by a supportive framework like the REIPPPP, as well as sound implementation by well-established public institutions. The projects have used tested technologies and there are strong operations and maintenance arrangements in place. Financial sustainability was tested with the data available and presented positive outcomes. The long-term power purchase agreements with sovereign guarantees and non-recourse finance ensure the sustainability of the projects. Finally, the energy sector has crowded in private capital which is likely to continue to show interest in the sector.

78. **NDB investments benefit from a supportive framework for renewable energy investments in South Africa.** NDB capitalised on the presence of a supportive country framework. The success of the REIPPPP has resulted in a very competitive market resulting in relatively low tariffs which have allowed commercial banks and other financial institutions to participate in the market and offer competitive funding. The REIPPPP contributes to an increase in energy generation and to broader socio-economic and environmental goals, supporting greater stakeholder ownership in the country and increasing sustainability. For instance, the DBSA GHGER and IDC RESP have both gone through the REIPPPP for the national procurement process to identify sub-projects.

79. **Energy projects are implemented through well-established public institutions.** Although Eskom's high debt, operational inefficiencies and revenue collection issues present sustainability challenges, the government's debt relief support to the utility has partly mitigated such risk. Additionally, sectoral reforms such as the unbundling of Eskom to form an independent transmission, system and market operator, and the facilitation of competitors in the market, mitigates market dominance by one player and the risk of sustainability challenges if the entity fails. Both DBSA and IDC are financially sound, well-capitalised, and robust institutions with a history of delivering projects domestically and regionally. These entities have established systems for appraising and monitoring projects. They have been at the forefront of taking early-stage risks to develop projects and prove market viability.

80. **NDB energy sector investments are generally economically viable and financially sustainable and may have new opportunities via credit guarantee vehicles (CGVs).** At the sector level, the government has put in place a host of conditions which have made investments in the sector attractive. The provision of government guarantees, non-recourse finance, long-term power purchase agreements along with a government framework support agreement, effectively guarantees Eskom's payments to the sub-projects over the entire lifespan of their 20-year power purchase agreements. Investments in strengthening and expanding transmission capacity are key for the sustainability of the sector and NDB is already in discussions with the National Treasury regarding its participation in this area.

81. At the project/sub-project level, financial analysis is used to assess the viability of the projects, ensuring that developers can earn returns on equity investments and the project is able to cover debt payments. There may be challenges over the long term for the sustainability of some of the renewable energy projects due to an inability to connect to the grid. Nevertheless, this is unlikely to affect any of the existing projects since they already have agreements in place. However, government initiatives to address transmission

infrastructure will help to redress this issue. The South Africa National Treasury is developing a CGV to de-risk transmission infrastructure investment that will build on the REIPPPP experience. Capital raising for the CGV initiative is being undertaken in collaboration with development finance institutions, targeting a 20% Government of South Africa stake in the CGV. To address transmission challenges, which are a key bottleneck in the energy sector, the initial focus of the CGV will be to issue guarantees to support independent transmission projects to bridge the energy transmission deficit, with options to include other sectors over the medium term.

82. **Projects have used proven technologies (solar PV, wind, concentrated solar power, storage) and grid integration.** The projects financed by NDB have mainly used solar technology (62%), followed by wind (31%), CSP (6%) and biomass (1%). Battery storage will also be part of the mix once the loan becomes effective for the BESP. Most of the technologies have long lifespans: typically between 20–30 years for solar panels and wind projects; CSP is projected to last longer than 25 years; battery energy storage projects have much shorter lifespans of 10 to 15 years due primarily to battery degradation; and grid infrastructure is designed for extreme longevity and can last for 40-plus years. Intermittency and curtailment (especially wind) and biomass feedstock/ logistical arrangements tend to pose risks for the sustainability of some of the sub-projects, but most are technically sustainable. The solar panels degrade slowly and can continue operating beyond 30 years but at reduced efficiency. Continuous maintenance, refurbishment, and partial component replacement are essential to achieve these long lifespans. Some components of these projects have to be replaced, such as turbines, solar field reflectors, and fluids for CSP investments, and require regular and rigorous maintenance. However, there are strong operations and management arrangements in place for all sub-projects.

83. **Overall, the technological mix was technically and operationally sustainable although some technologies are being reconsidered.** The rationale for the inclusion of CSP technology in South Africa's energy mix was to diversify energy sources to include renewable energy, mitigate carbon emissions and increase dispatchability for security of supply, given the CSP's storage capabilities. However, CSP costs proved to be expensive, requiring a special peaking tariff to encourage more storage capacity. Further, it can only be deployed in areas with high direct normal irradiance, such as the Northern Cape, where grid availability is constrained. Supply chains are controlled by a handful of original equipment manufacturers, thus potentially limiting cost reductions and future deployment scalability. South African government policy now excludes CSP, with the government now opting to use gas-to-power, pumped storage and hybrid solar-PV-storage solutions to provide flexible power to the grid. The CSP, as well as other renewable energy projects which are connected to the grid, however benefit from long-term power purchase agreements and government backing, guaranteeing payments and operation for at least a period of twenty years. The Redstone loan tenure is 18 years, mitigating non-payments risk. In addition, lenders in the REIPPPP place strong emphasis on stability and risk mitigation when structuring projects, and one of the key risks mitigation strategies is requiring long-term operations and maintenance agreements with tier 1 operators that have proven international track records – often (but not always) matching the purchase power agreement terms and debt instruments. The intention is to minimise operational risk, ensure smooth plant operation over decades, and thus derisk the project financing.

84. **The operational efficiency of the completed projects is adequate to meet its contracted obligations.** The evaluation team looked at the project completion reports on GHGER and RESP from DBSA and IDC. The availability ratios of a wind farm, one of the 15 sub-projects was 87%, which was lower than the 95% target set in the operating plan. The sub-project met its minimum base case financial ratio despite this factor. The Scatec solar plants in the same project continue to perform above the guaranteed performance rate of 78.8% with a performance rate of more than 80% for all three plants. This was despite the fact that the power production in one solar PV power production was lower than budgeted due to lower incline irradiation. One PV plant reported electricity production higher than the budgeted levels by 0.4% mainly attributable to the higher-than-expected inclined irradiation. In the other PV plant, the performance ratio was 1.6% above the expected 80.8% and the annual guaranteed performance ratio of 78.8%. Redstone started its operations in May 2025. Due to the lack of

revenue, the project owners have approached lenders to waive "event of default" as a result of late interest repayment of October 31, 2024 and the borrower has approached its majority shareholder for a bridge facility loan to make interest payments. An analysis of the performance of the Scatec projects under the RESP shows that the actual revenue for the Q3 2024 was below the amount envisaged due to lower-than-expected incline irradiation. Various issues with cable termination failure, overhead line pole failure, multiple power conversion system trips due to grid voltage dip events and unfavourable weather conditions have led to lower levels of incline irradiation for all Scatec Kenhardt[33] projects from RESP.

Table 12: Assessment of the sustainability of individual projects

Project name	Rating
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Successful
Renewable Energy Sector Development Project (RESP)	Successful
Battery Energy Storage Project (BESP)	N/A
Sustainable Infrastructure Project (SIP)	N/A
Overall portfolio performance	**Successful**

Source: IEO.

F. Overall portfolio achievement

85. Overall, the NDB portfolio in South Africa is rated as **"successful"** given that most completed projects are relevant for the country, in alignment with their high-level objectives and have achieved or exceeded their outputs and outcomes, such as the GHGER, the RESP and the energy sub-projects under SIP. The two on-going projects with Eskom are likely to complete their contracted outputs. The REITAP will be delayed but will complete most of its outputs – although part of the original design has been changed and some transmission lines, such as to the Soweto line, have been dropped.[34] The BESP is under construction with eight of its 12 sub-projects completed using funding from alternate resources pending the NDB loan agreement to be effective.

86. The project completion reports of the two completed projects indicate the variable performance of some of the sub-projects which have been in operation for a year or so and the proactive approach required to ensure their long-term sustainability. The borrower's PCR of DBSA highlights factors which have impacted the revenue of some of the sub-projects (Sirius and DK2) such as the lower-than-expected incline

[33] The Scatec sub-project under RESP financed the Scatec Kenhardt projects which is a different set of power plants.
[34] Even though the BESP has not yet been effective, it has initiated work on its 12 sub-projects with two in commercial operation already, three completed and three under construction.

irradiation that negatively affected energy production and the higher costs of repair and maintenance due to currency rate fluctuation. The IDC reported on the re-gearing process for Scatec to ensure the project remains viable by increasing its Black Economic Empowerment mezzanine facility. There were issues during procurement and construction and in the operational performance of the plants mainly due to manufacturing delays, COVID-19 related impacts and the flooding in the ports.[35] Some of the projects demonstrate potential for long-term sustainability due to the strong technical, economic and institutional arrangements at the project level and the enabling regulatory and policy environment, while other projects continue to face challenges arising from factors beyond their control, such as irradiation levels, delays in manufacturing and climate factors such as inclement weather.

87. The table below provides a summary assessment of project performance ratings, including a rating of the composite indicator on overall project achievement. The composite indicator is not rated based on a mathematical average of the various ratings but is based on IEO's holistic judgement of the success and challenges faced by the various projects as a whole. Overall, the achievement of the portfolio is considered **"successful"** due to: the high degree of relevance of the energy sector portfolio and its contribution to key sector objectives; the effectiveness of the projects in meeting their output targets and disbursing the loans despite delays in the initiation and commissioning of some of the sub-projects; the projects' overall impact in addressing the strategic objectives and commitments of the country and the strong institutional arrangements with a diverse set of public and corporate sector partners.

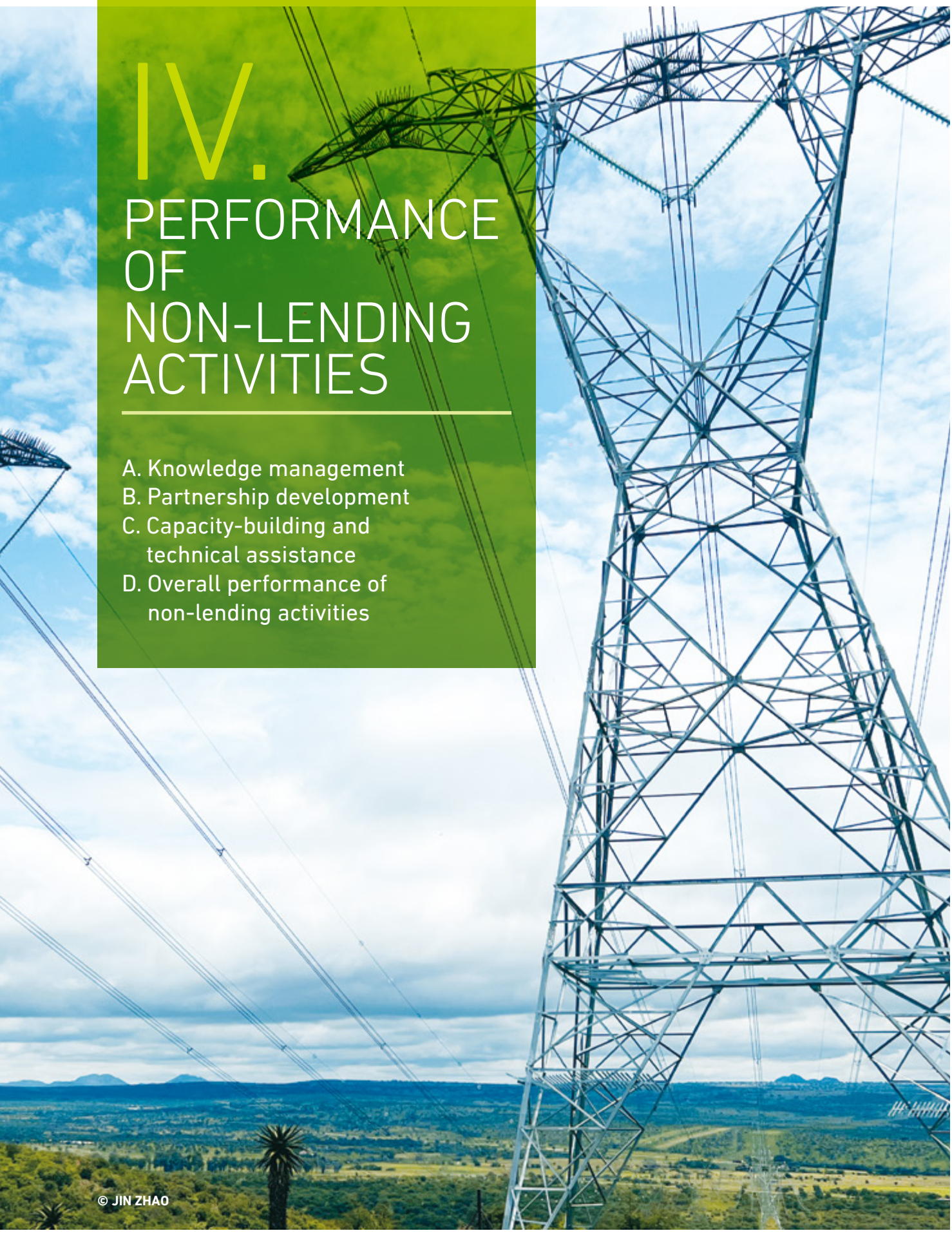
Table 13: Summary of project portfolio ratings

Criterion	IEO rating
Relevance	Successful (5)
Effectiveness	Successful (5)
Efficiency	Moderately Successful (4)
Impact	Successful (5)
Sustainability	Successful (5)
Overall project achievement	**Successful (5)**

[35] IDC Project Completion Report. RESP. December 6, 2024.

IV. PERFORMANCE OF NON-LENDING ACTIVITIES

A. Knowledge management
B. Partnership development
C. Capacity-building and technical assistance
D. Overall performance of non-lending activities



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88. Non-lending activities refer to initiatives that complement financial loans by providing technical, advisory and knowledge-sharing support to enhance project effectiveness and sustainability. While the NDB primarily focuses on infrastructure and sustainable development financing, it also engages in non-lending activities to strengthen project outcomes. The non-lending activities that are assessed in this section focus on knowledge management, partnership development, capacity-building and technical assistance, all integral components of the Bank's mission as outlined in the General Strategies for 2017–2021 and 2022–2026.

NDB's non-lending activities in the energy sector in South Africa are rated as "moderately unsuccessful". While the NDB's general strategies emphasise the provision of knowledge management, technical assistance, capacity-building and partnership development, only limited activities were pursued in these areas by NDB in South Africa in its initial years. This was primarily due to there being no technical assistance facility available and the limited human and financial resources available to the Africa Regional Centre to undertake these activities, given that ARC's focus in its initial years has been on its lending operations and building a portfolio. NDB was not very visible in its financing of the energy sector and only in 2024 began developing knowledge products and conducting knowledge events. Similarly, NDB did not provide technical assistance during project design or project implementation support. Admittedly, there was little requirement from it to provide such assistance in its non-sovereign projects, but the Bank did have the project preparation fund (PPF) available and deeper engagement with key public sector stakeholders would have helped NDB better engage the National Treasury and Eskom to pursue more innovative opportunities to develop its pipeline more strategically and help it build deeper partnerships. However, this is beginning to change, and ARC has been exploring non-lending opportunities more actively.

A. Knowledge management

Rating: Moderately Unsuccessful

89. Knowledge management is critical for NDB because it can enhance the effectiveness of its investments by ensuring lessons are learned, best practices are shared, and future projects use the experience for optimising its resources. Knowledge management can enhance project sustainability, strengthen local capacity and assist in risk management.

90. NDB has a unique opportunity for knowledge management in the rapidly growing renewable energy sector in South Africa. The Government of South Africa has put in place a policy environment which encourages private sector investments, through a transparent and competitive procurement system from which other NDB member countries could have learnt. NDB funds were invested in innovative technologies which were well suited to meet the critical need for dispatchable energy during peak demand. NDB did not sufficiently leverage its role to highlight its added value in areas where risk was high, such as in the use of concentrated solar power technology or of the hybrid photovoltaic plants with the battery storage system used by Scatec. NDB played a minimal role in showcasing its role in the sector in its early years.

91. The ARC has recently initiated some key knowledge management initiatives which have also served to highlight its role. The first was a High-Level Seminar on Energy in Cape Town in August 2024 during NDB's 9th Annual Meeting. The seminar was organised to draw insights from the experiences of BRICS member states and identify opportunities for collaboration. By bringing together a diverse group of stakeholders, including government officials, energy experts, academics and BRICS representatives, the seminar sought to foster knowledge exchange, critical dialogue and collaborative problem-solving, generating pragmatic and implementable solutions.[36]

[36] See https://www.ndb.int/news-events/events/programme-of-the-9th-annual-meeting/ndb-seminars-high-level-energy-seminar/.

The Annual Meeting generated momentum for effective collaboration. The second key event was a field trip and knowledge exchange for key stakeholders in the South African energy sector and officials from the South Africa National Treasury to visit India and Brazil which garnered positive feedback from participants. While these events marked an improvement, mechanisms to document, internalise and share the insights from these engagements more broadly remain underdeveloped.

92. NDB has relatively low visibility in the country and its role in the sector has not been made very prominent. NDB has done little in its first few years to highlight its role as a player in the renewable energy sector. Few of the sub-borrowers of its sovereign operations realised that NDB was a back-end financier of the DFIs (i.e. IDC and DBSA) from whom they had borrowed funds. While NDB engaged directly with Eskom it did not fully expand on the role it could have played in working together to find some innovative solutions to the sector's issues. The evaluation notes that the Bank did not until recently develop specific documents, brochures, videos or other promotional activities, nor did it organise events to showcase its various projects or the Bank's role during implementation. This constrained the Bank's ability to frame its contribution in the sector and limited opportunities to shape policy discourse or attract replication. It also reflects a missed opportunity for the Bank to sustain the impact of NDB-funded energy projects in South Africa, especially considering the Bank's intervention in the country in the energy sector has brought a positive impact and generated hands-on knowledge in terms of project management, construction, technology, etc.

93. Furthermore, in South Africa, NDB did not sufficiently leverage its role to highlight its added value in areas where risk was high, such as in the use of concentrated solar power technology or of the hybrid photovoltaic plants with the battery storage system used by Scatec. While the NDB invested in innovative technologies which were better suited to the critical need to meet dispatchable energy during peak times in South Africa, this aspect of the investment was not fully highlighted by NDB in any detail in any of its reports. The sub-projects' investors produced several websites, documents, and videos to enhance their visibility, raise awareness, and share lessons learned. NDB's role is not mentioned in any of these materials.

94. The reason for the current inadequacy of knowledge management approaches is rooted in unclear responsibility for knowledge management and the ad hoc way of documenting lessons learnt from projects. The ambiguity in knowledge management responsibilities stems from unclear boundaries between different departments, leading to confusion over who owns, curates and disseminates knowledge. This diffusion of responsibility points to a broader organisational gap in embedding knowledge functions across operations. Also, NDB currently does not have the necessary human capacity and dedicated financing resources for delivering such a function in a systematic and technically professional manner.

B. Partnership development

Rating: Moderately Unsuccessful

95. Partnerships are central to NDB's mandate in supporting South Africa's energy sector. The Bank's second General Strategy for 2022–2026 sets a target of 20% co-financing with other MDBs. While co-financing, mobilising concessional finance, leveraging private capital and addressing investment gaps is a key component of partnerships, partnerships also support project design, implementation, knowledge-sharing and analytical work. Partnerships are also important in helping to address investment gaps and accelerate project delivery and alignment with government priorities.

Partnerships with government and national institutions

96. NDB has collaborated with key government and national institutions, including Eskom, the Industrial Development Corporation, the Development Bank of Southern Africa, the Ministry of Electricity and Energy, and the National Treasury. These relationships have supported grid investments, clean energy financing and knowledge-sharing. NDB has established a strong dialogue with the National Treasury, however, feedback from the National Treasury suggests that NDB's engagement could be better structured. The National Treasury coordinates with MDBs such as the World Bank and AfDB through formal instruments such as country partnership frameworks and strategy papers, supported by regular steering groups to align pipelines and monitor performance. The absence of a similar structured framework with NDB has limited the Bank's visibility in national energy dialogues and reduced the opportunity to shape upstream project development. Collaboration with governments enables access to regulatory clarity, guarantees, and procurement frameworks, and ensures alignment with national energy strategies.

Partnerships with the private sector

97. NDB has supported clean energy generation projects under the Renewable Energy Independent Power Producer Procurement Programme. Over time, however, the programme has become highly competitive, dominated by local DFIs and commercial banks, limiting opportunities for other MDBs. The Bank's comparative advantage lies in less commercially attractive areas such as grid and storage infrastructure, gas-to-power, nuclear generation, and innovative or higher-risk technologies. Going forward, enabling private sector participation will also require derisking municipalities as off-takers of renewable energy projects, an area NDB is already considering. Co-financing such projects with other MDBs is critical to ensure financial feasibility, enhance bankability, and leverage complementary expertise and concessional resources, particularly given that NDB primarily provides loan facilities.

Partnerships with international and regional organisations

98. NDB has co-financed the BESP with the World Bank, AfDB and Eskom, demonstrating the value of MDB collaboration in mobilising resources and expertise. In contrast, the REITAP was financed bilaterally with Eskom, showing that co-financing is not yet systematic across the portfolio. Partnerships with United Nations agencies, to explore opportunities to complement loan financing with grants, technical assistance, and engagement with municipalities, which are particularly relevant for sovereign projects such as transmission, remain largely untapped.

Partnerships with civil society organisations

99. NDB's engagement with civil society organisations in South Africa's energy sector is currently limited. Unlike other MDBs and DFIs, which interact with communities through mechanisms such as the REIPPPP's community trusts or local oversight platforms, NDB does not have structured partnerships to monitor project impacts or facilitate local benefits. This limits visibility on social outcomes and local development contributions, particularly on sovereign projects and municipality connected renewable energy projects.

Knowledge and learning partnerships

100. Knowledge and learning partnerships remain an area with untapped potential for NDB in South Africa's energy sector. Engagement with academic institutions, technical research organisations and sector think tanks has been limited. The Bank has supported knowledge-sharing initiatives through its ARC, including a study tour to Brazil to examine electricity sector reforms and engagements organised for government stakeholders to strengthen understanding of integrated transmission projects and related reforms. These initiatives have the potential to complement NDB's financial interventions by supporting evidence-based decision-making, enhancing project preparation, and contributing to more effective project implementation and system-level impact.

C. Capacity-building and technical assistance

Rating: Moderately Unsuccessful

101. **Capacity-building:** NDB has not provided any capacity-building or technical assistance to its energy projects in the country so far. Its first project with Eskom was signed at a time when NDB had just started its operations, and its systems were still evolving. In any case, Eskom has strong technical, procurement and implementation capacity in the energy sector and NDB was not required to play a role in project design or implementation. Furthermore, NDB's role in this regard was also constrained by its own limited technical capacity in the energy sector. Similarly, the projects with DBSA and IDC had their own well-established systems for project selection and appraisal and counted on the strong technical capacity of their sub-borrowers who are among the leaders in the energy sector internationally. While this may justify limited engagement during implementation, it also curtailed opportunities to shape project design through capacity inputs or upstream dialogue. Although South Africa has relatively strong technical capacity in the energy sector, Eskom indicated that there was still need for targeted capacity development support for development of knowledge and skills, systems, procedures, etc. NDB so far has only provided some limited support on procurement and environment, social and governance aspects.

102. **Technical assistance:** NDB established a project preparation fund in 2017 to provide technical assistance[37] at the country level. However, this facility has not been used and there is limited awareness about the facility among its key stakeholders such as Eskom and the National Treasury. Some of the DFIs also indicated that they would have welcomed the use of this facility to undertake preparatory studies in critical areas which were proving to be a bottleneck. This suggests a disconnect between NDB's internal tools and its external engagement, with potential value left untapped due to weak outreach and targeting. This facility could have been used for early-stage project participation to capture first-mover advantages and strengthen partnerships with key stakeholders and enhance project bankability. According to the National Treasury, this would have been especially useful in areas like transmission which presents a real challenge and requires innovative solutions. There is an opportunity to also provide the PPF to subnational governments to work together in building energy sector development capacity.

103. NDB has not activated its PPF to support South Africa's private sector in preparing and derisking projects. There is a potential for NDB to strategically position itself to support regulatory reforms and derisk projects that are in their early stages, requiring technical assistance to reach bankability. The NDB could also strategically leverage knowledge from successful member country case studies to complement national reforms, help scale clean dispatchable energy, and accelerate private investment across the energy sector and broader infrastructure spectrum. In 2025, NDB has been working with the National Treasury to support knowledge development through case studies on Brazil's reform process, especially related to transmission infrastructure solutions. Yet this remains an isolated initiative, and there is little evidence of a structured technical assistance agenda that

[37] According to NDB technical assistance policy, NDB provides two kinds of TA to (i) prepare and/or implement projects—project technical assistance (PTA), and (ii) prepare and/or implement projects in more than one country—regional/inter-regional technical assistance (RITA). TA is available to all eligible clients as defined in other operational policies after due consultation and obtaining no-objection from concerned member government.

aligns with national reform priorities or sector-wide needs.

D. Overall performance of non-lending activities

Rating: Moderately Unsuccessful

104. **Summary:** NDB has added value in terms of its funds: not so much through the volume of its financing but through its flexibility in considering some risks, adjusting its loan agreements and by using country systems which strengthen local institutions. NDB has not provided any technical assistance or added value to its role as a development bank; neither has it built strategic relationships, developed knowledge products or enhanced its visibility or recognition as a player in the renewable energy space. This indicates a missed opportunity to use its convening power and technical platforms to enhance developmental impact beyond financing. While the ARC's recent initiatives in energy sector knowledge exchange were highly appreciated by key stakeholders such as the National Treasury, more could be done by NDB and a more proactive approach adopted to enhance its non-lending activities in the country. Overall, NDB's non-lending activity is assessed to be **"moderately unsuccessful"** in the country.

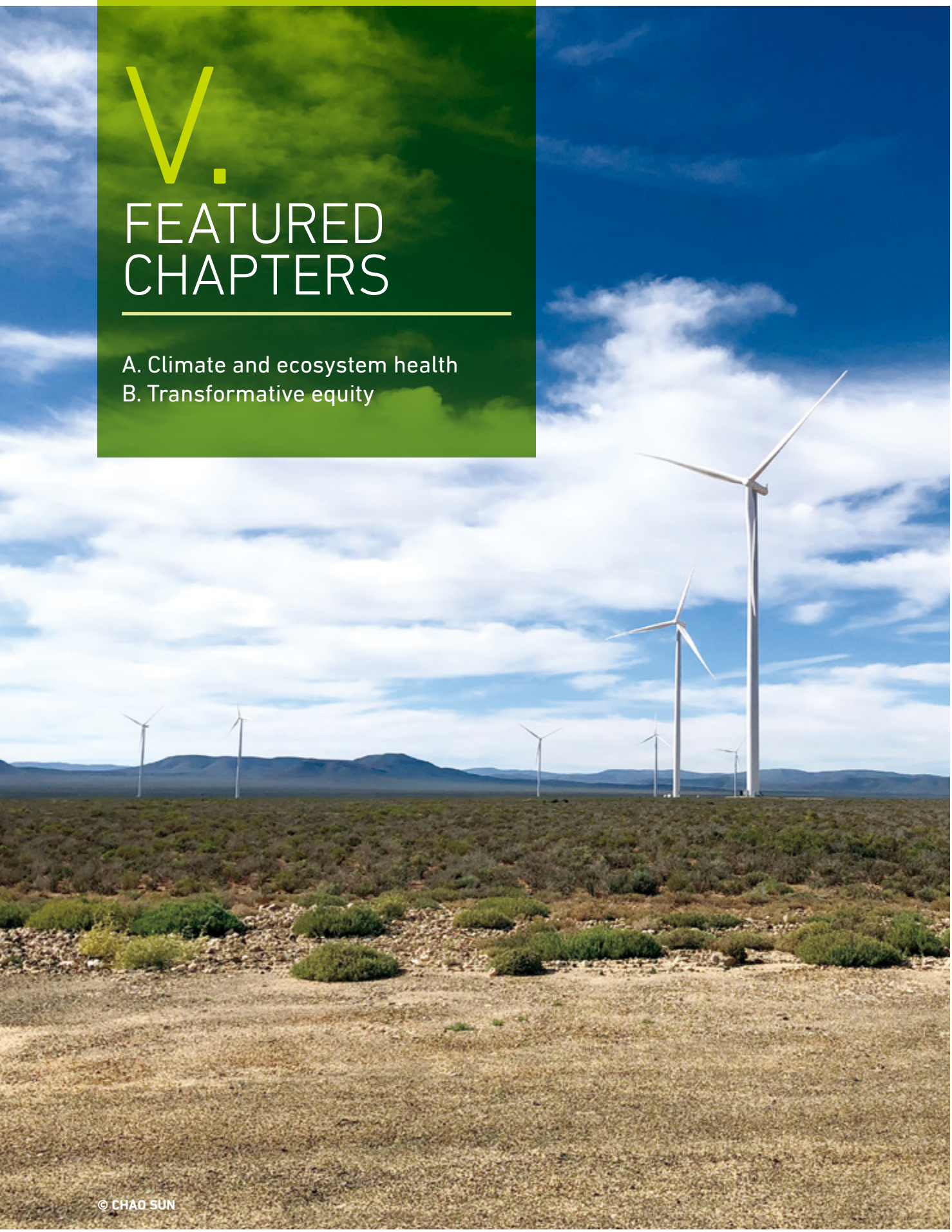
Table 14: Summary of non-lending activities' ratings

Criterion	IEO rating
Knowledge management	Moderately Unsuccessful (3)
Partnership development	Moderately Unsuccessful (3)
Capacity-building and technical assistance	Moderately Unsuccessful (3)
Overall non-lending activities	**Moderately Unsuccessful (3)**

Source: IEO.

V.
FEATURED CHAPTERS

A. Climate and ecosystem health
B. Transformative equity



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A. Climate and ecosystem health

105. A climate and ecosystem health perspective provides an opportunity to examine the effect of investments on local habitats, biodiversity, water and soil health, and other aspects of the local ecosystem. CEH is a guiding principle for most development investments in South Africa (in line with DPME guidelines) and is included as a key part of the appraisal of projects. NDB includes environmental and social assessments as a key part of project appraisal and its monitoring and supervision reports.

The NDB investments in the energy sector are rated as "successful" with regard to CEH aspects. There are strong procedures in place to assess projects based on their E&S impact. The country has strong legislation and implementation systems to monitor these aspects, and all borrowers also have mechanisms in place to screen projects based on this criterion. Regular reports are prepared by technical specialists, and local authorities are required to exercise oversight and monitor these aspects. NDB's projects have had a minimal adverse impact on E&S aspects and all of them are rated in category B or FI-B, according to the Bank's E&S Framework. NDB is also required to include E&S aspects in its monitoring reports on a regular basis.

(i) Positive and negative climate and ecosystem health effects brought by NDB interventions

106. **NDB investments in South Africa support clean energy projects that deliver positive CEH effects.** NDB-financed renewable energy initiatives help avoid adverse environmental impacts such as greenhouse gas emissions, air pollution, and extensive water use commonly associated with conventional power projects. This applies to all renewables except concentrated solar power with wet cooling systems – but notable examples such as the Redstone CSP initiative employ dry cooling technology, dramatically reducing water consumption. Environmental challenges remain, however, regarding, for example, the eventual disposal of solar photovoltaic panels and battery storage materials. Although solar PV and CSP plants use water for mirror and panel cleaning, their overall operational water use is much lower than that of fossil fuel plants. The NDB portfolio includes solar PV, CSP, hybrid solar plus storage, onshore wind, and biomass projects, all contributing to reduced greenhouse gas emissions and improved water conservation. Several plants are specifically designed for climate resilience: for instance, dispatchable solar PV paired with battery storage, and CSP with molten salt storage, which enhance grid stability and reduce reliance on water-intensive thermal operations. Additionally, new transmission lines and substation upgrades, financed under the REITAP, have facilitated the seamless integration of renewable energy into South Africa's grid.

107. **Most of the NDB energy projects in South Africa do not have high environment and social risk.** Most projects are assessed as "medium risk", as shown in table 15 below. These impacts are site-specific, and very few, if any are irreversible and, in most cases, mitigation measures can be designed.

Table 15: NDB Environmental and Social Framework category of energy projects

Project	Category
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Given that grid integration projects typically do not entail very significant risk on account of environment and social aspects, the risk on account of this factor is considered low. *
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Category B sub-projects
Renewable Energy Sector Development Project (RESP)	Category FI-B
Battery Energy Storage Project (BESP)	Category B
DBSA Sustainable Infrastructure Project (SIP)	Category FI-B

Source: PDBs.
* Due to the footprint of transmission projects – with lines built over long distance – there is an impact on land.

108. **The projects and sub-projects' environmental assessment during implementation and completion showed that they are overall in compliance and only minor adverse impacts on CEH were identified.** The REITAP's sub-projects implemented by Eskom entailed the setting up of electricity lines and associated infrastructure. Transmission projects do not entail any emissions on their own. There were no complaints raised from the local community over the reporting period. Servitude encroachment on the Vaal Strengthening Phase 2B is still ongoing. For the GHGER, monthly reporting to the authorities took place, and limited adverse environmental impacts were noted such as: (i) potential alteration and loss of natural habitats; (ii) soil erosion due to removal of vegetation; (iii) poor waste management by engineering, procurement and construction contractors; and (iv) potential loss of wildlife species, particularly avifauna and bats.[38] The RESP's sub-projects are not expected to have any significant adverse negative effects on the environment during construction or operations, or to generate any affluents or significant waste or air pollution. Dust levels are closely monitored, and the project entails considerable water savings.[39] For the DBSA SIP, both the two sub-projects were evaluated for environmental compliance during the construction phase, resulting in a final environmental authorisation compliance score of 100%.

(ii) CEH consideration in project design, implementation and monitoring

109. **NDB energy sector projects include environmental and social aspects as a key part of project appraisal and include measures to identify, adapt and mitigate their negative effects, if any.** There is a dedicated section on E&S aspects in each project document to the Board for approval by NDB and an annex on the E&S assessment of the projects. In addition, the loan agreement with each borrower also includes a schedule that specifies that all projects should be environmentally and socially sound, include means to mitigate any adverse impacts, complete all required environmental and social studies, and secure all necessary approvals. Some loan agreements also specify the requirement for E&S aspects in the format of a completed NDB questionnaire and due diligence reports by qualified persons. Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) have to be submitted that include an assessment of the risks that the sub-projects may pose to local communities, Indigenous people and biodiversity, and identify any community or labour issues. When required, the borrower also has to submit a resettlement plan or similar documents with evidence satisfactory to NDB that the requirements of the South African legislation

[38] See the IEO project performance evaluation report https://www.ndb.int/wp-content/uploads/2024/02/SA-Report.pdf.
[39] Solar photovoltaic technology exhibits the lowest demand for water and can be considered the most viable renewable option in terms of water withdrawal and consumption.

are met, and the process of public consultations is undertaken preceding approval of these plans.

110. **NDB utilised the South Africa country system and borrowers' strong capacity in environmental and social management and monitoring to guarantee the projects' compliance with regulations and bring the least adverse environmental impact.** The procedures include: E&S appraisal and categorisation of each new sub-project by using the NDB Environmental and Social Framework; and review of the technical documentation to ensure that relevant E&S studies and management plans are prepared, and applicable E&S approvals and permits have been secured. For sovereign projects, Eskom has modelled its own processes, procedures and governance documents to integrate these concerns. These include: (i) environment management strategy; (ii) corporate social investment strategy; (iii) climate change policy; (iv) climate change and adaptation to climate change strategy; (v) waste management strategy, etc. Eskom's reporting for E&S performance includes an integrated report. The indicators for E&S aspects are also externally verified. These include, for example: particulate emissions, water usage, carbon dioxide levels, and transformative indicators – including local development, gender and race equity, etc. NDB includes the E&S measures in its project performance assessments and back-to-office reports for all the projects that it supervises.

111. **For on-lending projects, NDB assesses the borrowers' capacity in E&S. However, the responsibility of E&S appraisal and monitoring of sub-projects is with the borrowers.** For the non-sovereign loans, there are two levels at which the reviews are undertaken. This includes the procedures followed by DBSA and IDC for project approval. DBSA has an Environmental, Social and Governance Unit, staffed with a team of experienced specialists responsible for compliance with E&S requirements, including on environmental and social safeguards, gender, risk assessment, project appraisals and monitoring of project implementation. Based on the nature of the risks of the projects, DBSA is expected to supervise and monitor projects during implementation and operation. The DBSA's environmental and social safeguards' risk appraisal and categorisation are aligned to the best international practice and Environmental, Health and Safety (EHS) guidelines. IDC has developed E&S-related policies and risk management procedures including an EHS due diligence procedure. The IDC process is found to be in material compliance with the NDB Environmental and Social Framework.

112. **During implementation, the assessment of a project's E&S aspects is undertaken by technical advisors appointed for each sub-project.** The scope of work under these advisors encompasses monitoring of sub-project adherence to the country E&S systems and close monitoring of action plans addressing identified concerns. There is a well-specified system of monitoring these aspects during implementation. NDB's Africa Regional Centre conducts E&S management and performance reviews of the sub-projects during the regular review missions and includes them in its quarterly reports. These aspects are monitored by both the sovereign and non-sovereign borrowers and are based on the existing legislation in the country.

(iii) Mitigation and adaptive measures adopted by NDB energy projects in South Africa

113. **The sub-projects will all have a positive impact on climate mitigation because of their capacity to reduce CO_2 emissions by using clean energy sources, and mitigation and adaptive measures are in place for any adverse impacts.** The renewable projects also use much less water than traditional coal fired plants and entail substantial water savings. All sponsors had put in place proper arrangements for monitoring and reporting on the E&S management plans they were expected to develop and track. Any heritage sites in the small area in which the sub-projects were located were properly identified and cordoned off. Where there was any probability of endemic species on the site, relevant authorities were contacted, and their advice was sought. The mitigation measures that some of the projects took include reforestation, rehabilitating using endemic species, anti-poaching initiatives, dust, noise and waste management, awareness training and prevention programmes, developing an EHS plan, grievance mechanisms for workers and communities, etc.

114. **The sub-projects were all carefully assessed prior to approval for any adverse impacts on land and water use and loss of biodiversity**

where these were identified. For example, regarding the selection of the land sites under Scatec, the sponsors reported that the projects did not displace anyone and did not cause any adverse impacts on the local flora and fauna in the area. Scatec sub-projects have dedicated areas cordoned off where no construction was undertaken due to species that are facing extinction, and the staff was also trained on how to handle snakes and other animals found on site. All permissions were sought from national authorities and local municipalities as required. Water for the project was abstracted from licensed boreholes for which due permissions were sought from the Department of Water and Sanitation.

115. **Summary.** There are strong procedures in place to assess projects based on their environmental and social impact. The country has strong legislation and implementation systems to monitor these aspects, and all borrowers also have mechanisms in place to screen projects based on this criterion. Regular reports are prepared by technical specialists and local authorities are required to exercise oversight and monitor these aspects. Projects have had a minimal adverse impact on the environment or social aspects and all of them are rated in category B or FI-B under the NDB's Environmental and Social Framework. NDB is also required to include E&S aspects in its monitoring reports on a regular basis. The NDB investments in the renewable energy sector are rated as **"successful"** with regard to CEH aspects.

B. Transformative equity

116. Transformative equity is an important principle that has been adopted by the Government of South Africa to actively dismantle systemic inequalities through economic inclusion, resources and opportunities to historically marginalised groups (black communities, women, youth, etc.). Transformative equity ensures that investment decisions in the renewable energy sector address past injustices (e.g. exclusion from energy ownership), create fair economic participation (jobs, ownership, skills) and prioritise vulnerable communities. In the energy sector this is undertaken through ownership in renewable energy projects (e.g. Black Economic Empowerment schemes), job opportunities, gender equity and contributions for community development projects. This key criterion for the country was included in the current evaluation to align with DPME guidelines.

Overall, the projects are rated as "moderately successful" for transformative equity. Borrowers do not report on these aspects to NDB, even when the information is available, as NDB does not require them to do so. NDB does not include transformative equity elements in its key appraisal documents or in its reports during monitoring, and neither has it given any specific guidance on these aspects at the corporate level. Regardless of this, all projects which are part of the REIPPPP are judged and selected on the basis of transformative equity criteria and also report on these aspects to the IPP Office.

(i) The impact of transformative equity in the NDB investments

117. **NDB projects have created jobs.** Job creation has a significant impact on socio-economic development due to the high unemployment rates in the isolated areas where the sub-projects are located. The Independent Power Producer Office highlighted in its quarterly report that at the end of June 2024 the programme had altogether created the equivalent of 85,830 jobs[40] for South African citizens during construction and operations, and employment and enterprise development for local communities too. Job creation in the renewable energy sector is mostly generated during the construction phase and

[40] The equivalent of a full time employment opportunity for one person for one year.

reduces significantly during the later operations and maintenance phase. The energy sector is an area where women are still largely under-represented, one reason being the isolation of project sites. From the information available, the overall number of jobs created during construction peak in the NDB portfolio is around 9,022 and 849 during the operations stage. Some jobs can also be created through the emphasis on promoting local content such as the local manufacturing industry for energy equipment. The local content utilisation is reported to be between 40%–45% where known. Table 16 below highlights some key metrics of transformative equity for each project where available.

Table 16: Transformative equity aspects of NDB energy investments in South Africa

	Renewable Energy Sector Development Project (RESP)	DBSA Sustainable Infrastructure Project (SIP)	Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Renewable Energy Integration and Transmission Augmentation (REITAP)
Jobs created during construction peak	4,000	465	3,862	695
Local community jobs created at peak	2,400	/	/	/
Jobs created during operations	152	82	615	/
% of jobs for women and youth	15	35	/	/
% local content	40	/	45	/

Source: Project performance assessments, IEO reports.

118. **The NDB projects contribute to the promotion of a more inclusive society through Black Economic Empowerment shareholding.** The REIPPPP and the RMIPPPP both require independent power producers to allocate a portion of their anticipated earnings throughout the 20-year duration of their operational project towards initiatives that promote socio-economic development and enterprise development. The Redstone project shareholding includes a 24% shareholding to their BEE partner "Pele Green" and 15% to a community trust, SPV (Bowwood), while Scatec has funded 49% of the shares to H1 holding representing black entrepreneurs. The minimum requirement for socio-economic development contributions is 1% of revenue. In addition, both sponsors under the RESP, namely ACWA Power and Scatec, invested funds in a range of community initiatives and outreach programmes and expect to continue to support these initiatives during the life cycle of the project. Redstone has invested ZAR 5 million in community initiatives during the construction phase and has reported that it will provide another ZAR 575 million over the next 20 years. Nine sub-projects were financed by the GHGER via lending to a BEE facility. The BEE facility used loan proceeds to conduct equity investments in these sub-projects, with a marginal contribution of the total sub-project value cost ranging from 2% to 6%.

119. **Some of the sub-project sponsors have invested in building local youth capacity by training local youth for construction work during the operations and maintenance phase.** Scatec has also increased sensitivity regarding gender-based violence and harassment and worked with a local non-governmental organisation to build increased awareness about these issues to ensure the increased protection and safety of women. Based on a needs assessment, Scatec has made annual plans for local development, enterprise development, investment in youth, education and health programmes and small infrastructure. It is too early to assess how the sponsors will perform on these aspects over time.

120. **Systematic monitoring is needed at the project level for gender specific targets in each of the development initiatives.** There is little

information on these aspects in any of the other project documents or reports by Eskom, DBSA, IDC or NDB. The reports by the borrowers to NDB and NDB's own documents do not track the transformative equity metrics. There is limited gender disaggregated data on the level of jobs and training provided to women. The overall impact of the sub-projects on the stimulation of local industry and employment generation needs to be better tracked and reported upon with systematic reporting over time. During the project evaluation of the RESP by IEO, it was noted that the number of both men and women employed during the operations and maintenance phase has reduced significantly with only two women out of 52 people on site at the time of the IEO team's project evaluation visit in 2024.

(ii) Transformative equity consideration in project design, implementation and monitoring

121. **The NDB projects' appraisal documents and project monitoring do not specifically assess the potential of the projects for transformative equity generally.** While the loan agreement and the project document to the Board focus on examining the environmental and social impacts of a project, they do not mention any of the criteria of transformative equity in their appraisal as this is not yet part of the guidance from NDB. NDB does not monitor aspects of transformative equity as these are not included in the Design and Monitoring Framework or in the format of operations' teams' quarterly review reports. The IEO evaluation report on the RESP also recommended that transformative equity should be a key aspect of NDB investments and that these aspects should be incorporated as key elements in all relevant documents to highlight the contribution that NDB can make to transformative equity through its investments. NDB Management responded by stating that it would consider incorporating these elements going forward. It is worth mentioning that the DBSA SIP, which was approved in 2022, includes "the number of jobs created" in its DMF.

(iii) Mechanism in place to ensure transformative equity

122. **NDB financed renewable energy projects are procured through the REIPPPP process which includes transformative equity as key elements.** This, to a certain extent, helps to overcome the gap of NDB's insufficient focus on this dimension. Transformative equity is a critical component of the evaluation and scoring criteria for project bids under the REIPPPP. There is a scoring system designed to ensure that projects contribute to socio-economic development, economic transformation and environmental sustainability. The REIPPPP selects bidders based on their contribution to job creation, funds realised for socio-economic and enterprise development, BEE spend and local content, and tracks this information in its quarterly reports.

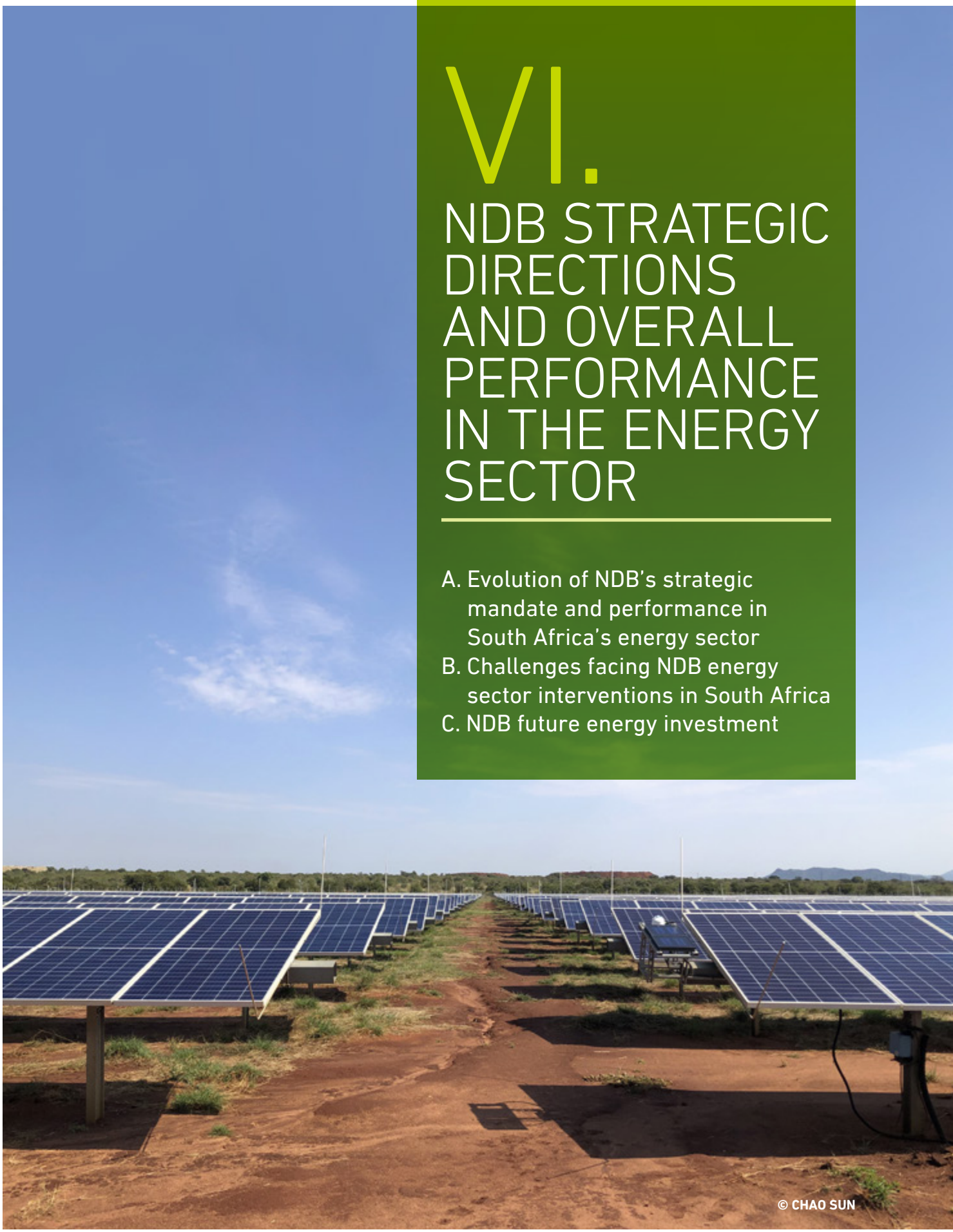
123. NDB has remained at arm's length from its projects in terms of its role in promoting a transformative economic and social agenda regarding BEE, community development and the impact on women. These aspects are key in the South African context and are highlighted in the selection criteria in the renewable energy sector under the Risk Mitigation Independent Power Producer Procurement Programme. Its projects with DBSA and IDC have included partners with substantial shares for local BEE and for community initiatives. This data is maintained by the REIPPPP. However, these aspects of the sub-projects have not been highlighted or included in NDB's DMF, and are therefore not included by the Africa Regional Centre in its monitoring reports.

124. The sub-projects which were selected created jobs and contributed to the promotion of a more inclusive society through Black Economic Empowerment shareholding, the promotion and focus on community initiatives, and providing employment creation and enterprise development for local communities. The sub-projects have had a positive social impact due to BEE shareholding, job creation, increasing local content in procurement, and community initiatives. While the level of these is small, it can be significant for local marginalised communities who have few other options.

VI.

NDB STRATEGIC DIRECTIONS AND OVERALL PERFORMANCE IN THE ENERGY SECTOR

A. Evolution of NDB's strategic mandate and performance in South Africa's energy sector
B. Challenges facing NDB energy sector interventions in South Africa
C. NDB future energy investment



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A. Evolution of NDB's strategic mandate and performance in South Africa's energy sector

125. Historically, NDB initially supported sovereign-backed energy projects to manage credit risk, before moving to intermediary financing via institutions such as the Development Bank of South Africa and Industrial Development Corporation, and ultimately to direct project financing as its sector knowledge deepened.

126. More recently, NDB has signalled a deliberate shift towards systemic interventions. For example, the Bank is exploring an opportunity to provide loan funding to the South African government through participation in its credit guarantee vehicle. The government, with support from the World Bank, is planning to capitalise a CGV to provide guarantees for private integrated transmission projects. NDB is also exploring municipal renewable purchase power agreements through DBSA.

127. However, NDB has not yet developed a comprehensive country/sector strategy or formal transition roadmap. Its investment selection remains largely project-driven, dependent on pipeline availability rather than a sequenced strategy tied to South Africa's Integrated Resource Plan or climate targets. National stakeholders have highlighted this absence of an overarching strategy—including the National Treasury—as a barrier to meaningful engagement on NDB's evolving role and tools in the energy sector context.

128. NDB initially focused on funding energy infrastructure in South Africa by leveraging its mandate to provide sovereign-guaranteed loans, thus reducing credit risk and aligning with national priorities. This authority is rooted in its foundational Articles of Agreement and is reinforced in the NDB General Strategy for 2017–2021, which places sustainable infrastructure at the core of its mission. Since 2016, NDB has approved five energy sector projects in South Africa totalling USD 973 million, consisting of two sovereign loans to Eskom and three non-sovereign credit lines to the DBSA and the IDC. The sequence of interventions mirror NDB's strategic trajectory of sovereign, intermediated non-sovereign (General Strategy for 2017–2021) and direct private sector mobilisation to meet the 30% non-sovereign target (General Strategy for 2022–2026).

129. **Sovereign first (2016):** involved a loan to Eskom for the REITAP. The financing, delivered through its project finance facility, funded grid-connection infrastructure upgrades—essential to integrating renewable energy into the national grid. Eskom, South Africa's dominant power utility, was the natural partner given its critical role of supplying 95% of the country's electricity and existing grid infrastructure. The project enhanced Eskom's capability to diversify the energy mix, improve grid resilience, and increase electricity access in targeted regions, thus supporting sustainable development goals.

130. **Intermediated non sovereign (2018–2019):** involved credit lines to the DBSA and IDC, which on lent them to the REIPPPP. These enabled NDB to crowd in private sponsors and leverage a pipeline of bankable projects through trusted financial intermediaries. The Bank funded sub-projects using solar photovoltaic, CSP, hybrid PV plus storage, onshore wind, and biomass. These technologies are outlined in the country's IRP and the REIPPPP. The NDB thus supported country plans to diversify the energy mix, decarbonise and mobilise private capital to increase energy generation capacity.

131. **Return to sovereign lending for grid flexibility (2019):** NDB joined the World Bank and AfDB to provide a sovereign-backed loan to Eskom for a utility scale Battery Energy Storage Project. The project aimed to deploy 1,440 MWh of distributed batteries and 60 MW of solar PV across 17 Eskom distribution substations in the Western Cape, Northern Cape, Eastern Cape and KwaZulu Natal. The total project cost was approximately USD 1.2 billion, approximately one-third of which (around USD 400 million) was planned from the NDB funding, and the difference was co-funded by the World Bank, AfDB, the Clean Technology Fund and Eskom's equity. The NDB tranche (ZAR 6 billion) has however not yet been disbursed because the loan agreement has not become effective. The funding from the Clean Technology Fund was initially earmarked for the Eskom build programme (a CSP project which did not materialise). Nonetheless the NDB funding enables the project to be fully funded, and project implementation is ongoing.

132. **Direct private sector investments (post 2022):** in line with NDB's second General Strategy (for 2022–2026) target of reaching 30% in non-sovereign lending, the Bank provided a loan facility to DBSA to fund a pipeline of projects. The successful interventions by NDB and other MDBs and DFIs have contributed to the growth of the renewable energy sector, derisking it and attracting private capital. Renewable energy now contributes 10–15% of South Africa's electricity, growing from less than 1% in 2010.[41]

B. Challenges facing NDB energy sector interventions in South Africa

133. The success and maturity of the renewable energy market have led to very competitive tariffs and projects being able to attract competitive pricing from commercial banks. NDB, together with other MDBs and DFIs, is thus less competitive as the market prefers commercial financing. There is a need to redefine MDBs' role as the renewable energy sector's contribution is still far below the Integrated Resource Plan 2023 target of a share of ~33% of electricity by 2030; and growth is slowing without the continued support of these players. NDB is reassessing its role and planning to support municipalities as off-takers of renewable energy from independent power producers, an early-stage or relatively riskier segment where commercial banks are not involved.

C. NDB future energy investment

134. **Grid and transmission limitations are impeding new renewable energy integration but present opportunities for future NDB investments.** Grid limitations are a challenge, especially in regions with abundant solar and wind resources. According to the National Transmission Company of South Africa's Transmission Development Plan 2024, approximately 14,500 km of new transmission lines and 133,000 MVA transformer capacity is needed between 2025 and 2034, to integrate 56 GW of renewable energy into the grid. This equates to a five-time increase in delivery over the next 10 years, relative to the previous decade. But the current pace of delivery is very slow at ~1,400 km/year, pointing to the need to mobilise private sector capacity and capital to supplement the NTCSA's in-house delivery model and constrained balance sheet.

135. **The National Treasury and the World Bank have partnered to support regulatory reforms to enable private sector grid infrastructure investments.** A credit guarantee vehicle is being created to enhance project bankability and mimic the success of the government guarantee provided for the renewable energy programme. The Government of South Africa will hold the initial 20% equity (USD 100 million junior capital), aiming to scale the CGV to ~USD 2.5 billion. The World Bank declared its intention to invest USD 500 million, in participation with DBSA, AfDB, KfW Banking Group and British International Investment exploring co-investment opportunities. These stakeholders will help to mobilise capital, share risk across multilateral and private sources and reduce National Treasury contingent liabilities. The initial focus will be to de-risk independent transmission projects, with possible future extension to other infrastructure sectors.

[41] The South African Council for Scientific and Industrial Research, 2021.

136. In March 2025, the government launched the Independent Transmission Projects programme, through ministerial determination to develop a 1,164 km pilot pipeline of projects. There is an opportunity for NDB to play a strategic role in this initiative, leveraging its strong local presence and sustainability mandate. NDB aims to support government equity in the CGV capital structure. There are potential opportunities to also support transmission-related private sector projects. The government is expected to release a quotations and proposals package by November 2025 for the pilot projects and the CGV is expected to be operational by 2026. The Bank's active involvement could strengthen the CGV's capital framework and operational viability.

137. **Impact of Eskom's unbundling on NDB sovereign investments in South Africa.** NDB's sovereign investments are intricately linked to structural reforms/unbundling of Eskom. NDB's USD 180 million loan for grid augmentation to support renewable integration is through the newly formed transmission entity, the National Transmission Company of South Africa. There is, however, regulatory clarity around its tariffs and licensing. NTCSA received its transmission, trading, and import/export licences between July and September 2023. The regulator has ring-fenced its tariff allocation. NDB's loans for grid augmentation and battery storage projects are backed by sovereign guarantees. However, not all funding into NTCSA will automatically carry sovereign backing. Each loan requires separate negotiation and guarantee underwriting, where applicable. The tariff methodology is still evolving, and the regulator is yet to clarify that cost recovery will not expose NTCSA to Eskom's legacy debt.

138. **Opportunities to support reliable energy transition and energy security in South Africa.** In addition to scaling up renewable energy and transmission infrastructure, South Africa's future generation plans include dispatchable capacity to ensure system adequacy and manage intermittency. According to the draft Integrated Resource Plan 2023, the government plans to add the following capacity:

    - **Gas-to-power:** 3,000 MW of capacity by 2030, through the repurposing of coal-fired plants to operate on gas.

    - **Nuclear energy:** 2,500 MW of new nuclear capacity is targeted for procurement by 2026 and commissioning between 2032–2033 as part of government's long-term decarbonisation strategy.

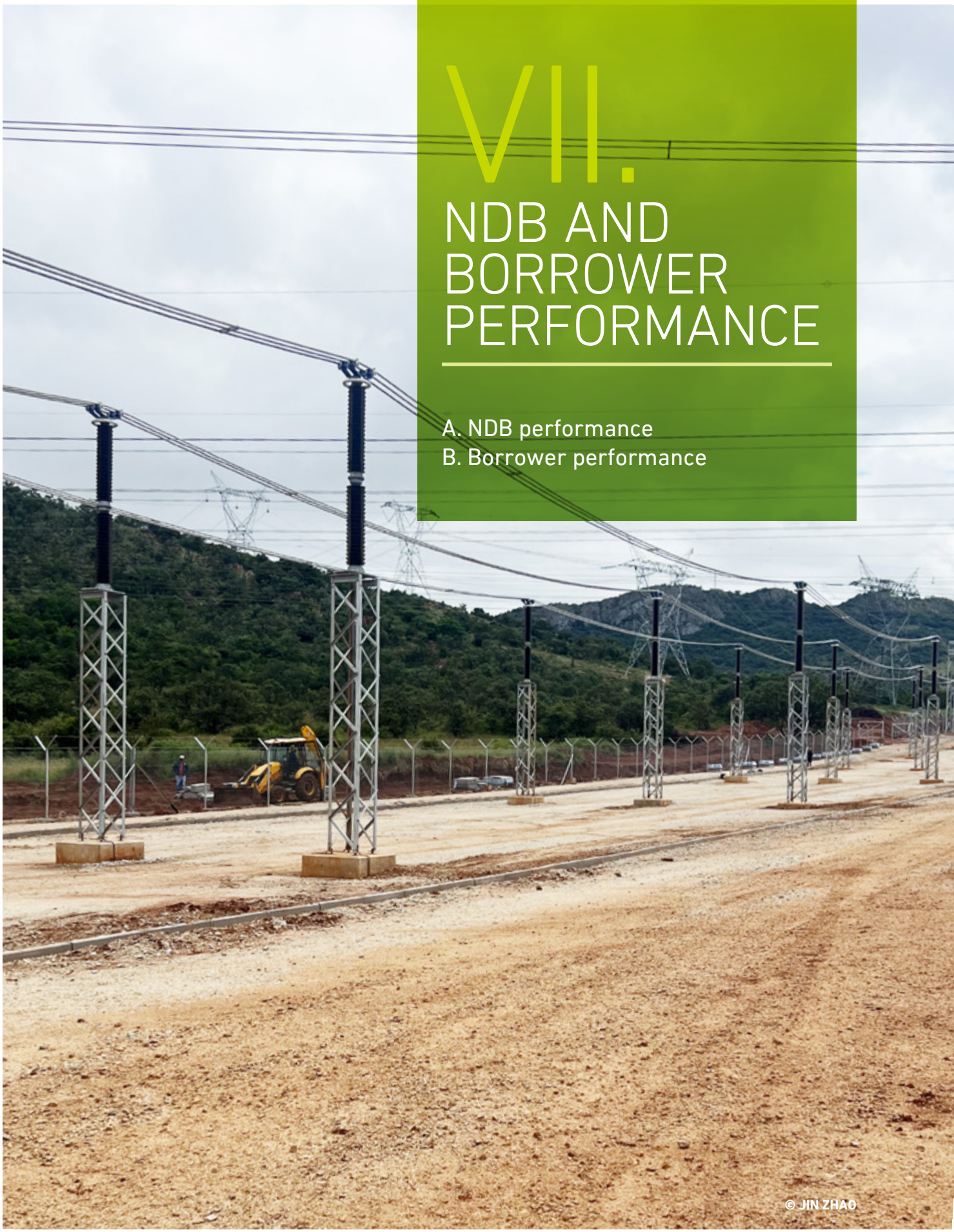
    - **Pumped storage:** 1,500 MW to provide long-duration flexibility, the government is advancing the Tubatse project with technical assistance and funding support from development partners and expected commissioning is in the 2030s.

139. These investments, along with planned battery storage additions, are intended to stabilise the grid, reduce diesel reliance, and support a reliable energy transition. MDB and DFI support, through infrastructure financing and non-lending activities, is critical to ensure these cleaner energy and storage projects are de-risked and bankable.

VII.

NDB AND BORROWER PERFORMANCE

A. NDB performance
B. Borrower performance



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A. NDB performance

140. The assessment of NDB's performance is undertaken from both a strategic perspective and an operational perspective. The strategic assessment of NDB's performance is based on its choice of investment opportunities, its selection of partners, its choice of financial instruments, its approach in developing its pipeline, building partnerships and understanding of the key sector dynamics. At the operational level, NDB performance covers an assessment of its key appraisal processes, project design and supervision, implementation support and monitoring, knowledge management and visibility, etc.

(i) NDB performance at the strategic level

141. Overall, NDB interventions have supported South Africa's energy transition, addressing critical bottlenecks and sector priorities facing the country's energy system. NDB's Africa Regional Centre has played a pivotal role through close collaboration with Eskom in identifying and supporting sovereign energy projects that alleviate grid constraints. Among the most significant is the financing of Eskom's REITAP via a sovereign-guaranteed loan signed in April 2019. Another one is the distributed Battery Energy Storage System—a project integrating approximately 1,440 MWh of battery storage and 60 MW of solar PV across ~17 substation sites in four provinces. These initiatives support the integration of renewable energy, enhance dispatchability, help to defer transmission upgrades, and provide frequency support.

142. However, NDB's overall involvement has been largely reactive rather than catalytic. It typically finances projects already embedded in South Africa's development pipeline, rather than helping to shape them during early preparation stages. Specifically, for projects under the Just Energy Transition Plan—including Eskom's planned repurposing of coal-fired plants to gas—NDB generally waits until they become fully "bankable" before engaging meaningfully.

143. Unlike other MDBs that maintain formal energy-sector strategies and structured collaboration with the National Treasury, NDB currently lacks a formal energy strategy or transition roadmap. Consequently, it operates on a project-by-project basis, limiting its ability to coordinate technical assistance, early-stage project preparation, and guarantee mechanisms aligned with South Africa's climate and energy targets.

144. For non-sovereign investments, NDB has contributed to renewable energy initiatives—such as REIPPPP and embedded generation projects. However, its continued participation is constrained by competitive pricing pressures that also affect other MDBs, restricting its role in driving new private-sector investment.

145. Importantly, the outlook for future engagement remains unclear. NDB has not publicly articulated its continued strategic role in South Africa's energy transition, and its project pipeline appears thin. As noted by NDB, the shortage of commercially viable, bankable projects is a key limiting factor to expanding NDB's involvement. The Bank has ZAR 56 billion to invest in South Africa's energy shift but can't find viable projects.[42] Without clearer strategic direction or pipeline development support, NDB's ability to play a more catalytic and forward-looking role remains limited.

146. **NDB's energy project pipeline follows the general strategies of the Bank and reflects the alignment with national priorities; there is limited understanding of the rationale for the fluctuating volume of finance provided and the factors which drive these investment decisions.** While NDB has invested in key priority areas in the energy sector, its investments at the country level do not indicate the overall vision of the Bank and are not sufficiently anchored in an explicit NDB country strategy. This makes its investment decisions appear to be ad hoc and does not give a clear sense of how its energy sector investment decisions (or indeed in other sectors) are weighted. Furthermore, NDB has not articulated any strategy with reference to investments in gas or nuclear although these are important in the development plans of the country. This brings limitations on the investment predictability, resource allocation and funding effectiveness.

[42] BusinessTech: https://businesstech.co.za/news/finance/713134/brics-bank-has-r56-billion-to-invest-in-south-africas-energy-shift-but-cant-find-viable-projects/.

147. **NDB's choice of partners and investment decisions have been relevant and efficient in helping it to identify sub-projects and in the disbursement of its funds.** NDB's choice of Eskom, DBSA and IDC was a good strategic decision despite the weaknesses of some partners such as Eskom, which is the major player in the public sector. However, these partnerships were not very deep and were mostly transactional in nature and NDB did not capitalise on any strategic advantage in partnering with these institutions. NDB also did not build on its relations with some of the other key development partners in the country or the sponsors of the sub-projects for a more strategic analysis and understanding of the lessons learnt from these projects, the emerging trends in the sector and where it could play a more strategic role for the future.

148. **The falling prices due to the competitiveness of the Renewable Energy Independent Power Producer Procurement Programme has resulted in MDBs being priced out of the market.** Consequently, none have participated in the REIPPPP beyond bid window 4. ARC, in collaboration with NDB's Private Sector and Non-Sovereign Guaranteed Transactions Department, undertook a study to review the financing challenges facing NDB in the South African energy sector, using the REIPPPP (BW5 and BW6 projects) and embedded generation projects as case studies. Direct senior lending proved to be unfeasible because these projects are priced by commercial banks as sovereign given the implicit guarantee for Eskom.[43] Similarly for commercial and industrial embedded generation projects, NDB's pricing is not feasible as these projects are also in the same price range as the REIPPPP. The study concluded that NDB pricing was ~30 basis points above market rates, making NDB financing uncompetitive.

(ii) NDB performance at the operational level

149. **The Africa Regional Centre plays the key role in engaging with local partners and developing the project pipeline for NDB investments in the country, as well as monitoring project performance.** ARC has tried to develop private sector energy sector projects, focusing on the REIPPPPP and commercial and industrial renewable energy projects. To understand their constraints and challenges in participating in private sector energy transactions, the ARC also undertook benchmarking with other MDBs participating in the private sector. The ARC benchmark study revealed that other MDBs have also had limited success in financing the private sector in South Africa, in the period between 2018–2024. The funding activities that are in line with NDB's products include equity via funds and corporate loans to commercial banks to support and scale the availability of green building and green home loan finance for South Africans.

150. ARC participates in meeting updates for discussion on the major investment opportunities and seeks potential projects. After the identification of projects, the ARC prepares a pre-concept note to NDB HQ, HQ then assigns a project team leader for project appraisal and hands the project back to ARC. ARC also monitors project performance and produces reports on performance indicators, such as electricity output and financial performance.

151. **At the operational level, NDB's borrowers in the energy sector in South Africa have strong technical capacity to identify and appraise the sub-projects selected through the various bid windows of the REIPPPP.** NDB was not expected to have an active role in the design of the sub-projects which had strong sponsors. This strategy has proved to be very efficient for NDB as it did not have to spend resources on project design or development. It has used the country system which is a strong element of its approach and has been appreciated by key stakeholders in the country.

152. **NDB demonstrated flexibility during implementation, and the decentralisation of the project monitoring and supervision process has been a step in the right direction.** NDB has demonstrated adequate flexibility during implementation and has made amendments to the loan agreements when required to deal with changes in the credit rating, delays in implementation and adjusting projects when they could not meet the original project selection criteria for qualification, etc.

153. **NDB has had very little direct engagement with the private sector sub-borrowers during implementation.** NDB's relationship in its sub-projects has been with the lead agency – namely Eskom, DBSA and IDC. In all three of its non-

[43] South Africa Private Sector Pipeline with Pricing Challenges, provided by ARC.

sovereign operations, NDB provided a two-step loan through DBSA and IDC. NDB has specified a selection criterion for sub-projects which is given in the project agreements and approval documents, but does not get further involved in the appraisal of sub-projects due to its limited technical capacity. The evaluation saw limited evidence of direct engagement with the private sector sub-borrowers during implementation. Sub-borrowers, sub-project operators, and local municipal managers interviewed by the evaluation team during the project performance evaluation of the GHGER stated that they only became aware of the participation of NDB in this operation during IEO's project evaluation mission. The same message was repeated during the evaluation of RESP by IEO.

154. **NDB could have better seized the opportunity to highlight its role as a development bank established by the BRICS nations and its capacity to drive development in Africa.** NDB's main focus has been on expediting disbursements and tracking compliance with some aspects of the loan covenants. NDB staff had limited opportunities to visit projects regularly or to gain an in-depth understanding of the challenges faced by the sub-projects during implementation. Additionally, interactions with the main sponsors of the sub-projects were infrequent, which may have affected the clarity regarding NDB's role as a financier. Furthermore, by dedicating more effort to capturing and sharing lessons from successful operations, NDB could significantly enhance its outreach and visibility, thereby reinforcing its impact and presence in the development sector.

155. **NDB funds were not assigned for dedicated use or any specific component within the renewable energy sector sub-projects.** A question to be asked therefore is whether NDB could have added greater value by specifying the use of its funds for specific activities such as a focus on ensuring transformative equity, climate and ecosystem health, policy dialogue or innovation. However, the NDB loan provided IDC with attractive long-term financing in the local currency to avoid currency risk for IDC, which then lent to sub-projects in ZAR. It is assessed that NDB provided little additionality, given the low proportion of its financing to the overall project cost, the undirected use of its funds, its lack of ability to highlight its role as a development bank in the investment and its failure to build strategic relationships, develop knowledge products or draw lessons from the investment.

156. **Attractive aspects of NDB financing:** NDB has approved USD 973 million to date for the energy sector in the nine years up to the end of December 2024. Discussions with borrowers revealed that one of the main attractive features of NDB loans is the loan tenor. Local currency loans help the borrowers with currency fluctuation risk. In April 2019, NDB registered its debut ZAR bond programme in South Africa on the Johannesburg stock exchange, with a maximum size of ZAR 10 billion and unlimited validity. The Bank's first bond in South Africa, amounting to ZAR 1.5 billion, was issued on August 15, 2023. South Africa has a well-developed financial and banking sector, and NDB could use it effectively by actively engaging with local stakeholders and partnering with local investment banks to continually identify issuance opportunities, broaden its investor base in South Africa, and optimise deal structures.[44] The ZAR bond market opens new opportunities for NDB projects to bring in investors from the local market and support local currency finance arrangements for energy projects.

157. **NDB has not used the range of financial instruments that it could have deployed for the energy sector.** NDB has used only senior loans in South Africa as its main financing instrument so far. NDB policy allows loans, guarantees, equity via funds and other instruments for investing in special funds, and subscribing to bonds and debentures. The NDB Policy on Non-sovereign Loans also allows the Bank's Management to adopt any new capital market instruments that it deems necessary. NDB's current debt facilities, mainly senior debts, have the benefit of lower interest and with catalytic effect to attract additional funding sources. However, they are not adequate to address the needs of the private sector due to limited flexibility, especially considering debt can be adequately serviced by the commercial lenders in the South African energy market. There is, however, still a need for other instruments such as mezzanine financing, equity via funds, guarantees grant funding, etc. Specifically, IDC highlighted the need for mezzanine financing to support BEE transactions – but so far NDB participates only in senior debt and does not extend to such hybrid instruments.

[44] NDB website.

158. **NDB has recently shown interest to explore innovative financing structures and financial instruments** such as the credit guarantee vehicle which the South African National Treasury is developing to crowd in more private sector investment. NDB has shown interest in participating in the CGV which provides a new opportunity for the Bank to participate in private sector interventions in the energy sector, especially on transmission capacity.

159. **Supervision and monitoring: NDB has played a minimal role in project supervision and monitoring.** Monitoring and supervision activities at the sub-project level were mainly conducted by co-lenders through the lenders' technical advisors. NDB played a very minimal supervision role in its preparation of its annual project performance assessments largely based on the project performance reports submitted by the borrowers. For on-lending projects, this is in line with funding projects through financial intermediaries, which interact with the syndicate of lenders and monitor projects' sub-projects directly. According to NDB Project Implementation Guidelines, NDB can undertake different types of missions aimed at collecting information on the project development as well as engaging with NDB's counterparts in order to administer the project implementation: regular review missions, special missions, midterm review (MTR) missions and project completion missions. For non-sovereign projects, field trips may be undertaken regularly, as per the frequency arising from business needs, and the NDB Guideline on Non-sovereign Monitoring. NDB project teams performed project monitoring missions for both sovereign and non-sovereign projects at least on an annual basis. And a special review mission was conducted for REITAP.

160. The MTR mission assesses whether attainment of a project's immediate objective is still likely. However, the evaluation team only found one waiver of an MTR – for the REITAP which was obtained because of concurrence of the special review mission as mentioned above. Several sub-projects were identified at a later stage of project appraisal and design, and an MTR could serve as an opportunity to review the Design and Monitoring Framework. Other projects did not specifically document missions as MTRs or have a clear planning of MTRs so that the importance and function of an MTR was not fully developed in assessment of need to restructure or reformulate the project and the effects of this on the immediate objectives (purpose) and long-term goals of the project, or update of the DMF where restructuring or reformulation is necessary or its immediate objectives will change. Two project completion reports from borrowers DBSA and IDC were submitted to the ARC in time, and the ARC is in the process of finalising the NDB PCRs for these two projects which are still within the timeline as per NDB guidelines.

161. Regarding the content of supervision documentation: project performance reviews were provided by the borrower and NDB prepared project performance assessments based on the information provided. However, NDB's project performance assessment reports tend to be meagre and repetitive and there is a lack of structured analysis of project progress. The reports currently do not mention some key aspects such as:

    (i) The projects' potential for a reduction of greenhouse gases, despite this being a key indicator which was included in all DMFs. The lack of analysis and linkage of energy projects' outcomes with climate adaptation and mitigation is a missed opportunity for NDB to track its development effectiveness in South Africa's energy sector. The Strategy, Policies and Partnerships Department at NDB headquarters is putting in place a mechanism for greenhouse gas accounting, and developing a methodology for the purpose.

    (ii) Aspects of the projects like climate and ecosystem health and transformative equity or other elements of REIPPPP which are not included in the DMF but for which information could be easily obtained and reported. NDB monitoring processes to mitigate implementation risks are hindered by NDB's limited technical capacity and its limited access to the records of the borrowers and sub-borrowers due to reasons of confidentiality.

162. Lack of technical and sector-specific expertise in key areas: NDB's relatively lean staffing model, especially at the ARC, limits its ability to engage substantively on technical, regulatory, and policy issues in the energy sector. Unlike more established MDBs, NDB does not have in-house energy economists, power system engineers, or sector strategists. The absence of deep in-house technical expertise in energy systems, grid integration, or regulatory economics has constrained NDB's ability to identify cutting-edge investment opportunities and engage meaningfully with South African energy policy stakeholders.

Table 17: NDB performance in the energy sector in South Africa

Project name	NDB performance
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Moderately Successful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	Moderately Successful
Renewable Energy Sector Development Project (RESP)	Moderately Unsuccessful
Battery Energy Storage Project (BESP)	N/A
Sustainable Infrastructure Project (SIP)	Successful
Overall NDB performance	**Moderately Successful**

Source: IEO.

163. **Summary.** NDB projects have been demand driven and the Bank has been able to select very relevant projects and efficient partners in the first stage of its operations in South Africa. However, going forward the country programme will need to be more strategic and identify its priorities more explicitly. NDB does not design and implement projects and its lending is through participation in sovereign projects, financial intermediaries and providing loans directly to bankable projects (which are already prepared and presented to lenders for approval); it could have played a more strategic role in building its relationship with key and emerging partners and better seized the opportunity to highlight its role as a development bank to drive development innovation in South Africa. For project monitoring, NDB's focus has been on expediting disbursements and tracking compliance. NDB has missed opportunities to better capture and monitor its impact and development effectiveness as well as climate goals. Furthermore, by dedicating more effort to capturing and sharing lessons from successful operations, NDB could significantly enhance its outreach and visibility, thereby reinforcing its presence in the development sector. **The evaluation rates NDB's performance as "moderately successful".**

B. Borrower performance

164. **Government of South Africa.** The South Africa National Treasury has had a positive role in supporting NDB projects and activities in the country. The National Treasury provides overarching and critical guidance in making sure the Bank's projects are in alignment with the country's development priorities and delivering development impact. The National Treasury also actively engages with the Bank and supports accelerating infrastructure investments at a country-level. The ARC was established under the strong support from relevant ministries in South Africa – a testimony to the significant role of the Government of South Africa in shaping its relationship with NDB.

165. The South African National Treasury and the Department of Electricity and Energy (DEE) acknowledge NDB's support in the energy sector but urge a more proactive and strategic engagement aligned with national transformation goals. The National Treasury emphasises the need for NDB to anticipate and integrate into South Africa's energy priorities, particularly under the Integrated Resource Plan and Just Energy Transition frameworks. This includes structured collaboration to clarify NDB's role and enhance alignment with government objectives. Similarly, the DEE values NDB's partnership but stresses the importance of NDB's active participation in projects that promote transformation and

localisation within the renewable energy sector. While NDB lacks a manufacturing mandate, it is encouraged to leverage its financial instruments to support initiatives that enhance local capacity and value addition in the renewable energy value chain. Both departments advocate for NDB to engage more directly in projects that support transformation and localisation in the renewable energy sector, utilising a diversity of instruments. This approach aims to strengthen the alignment between NDB's operations and South Africa's energy sector objectives, fostering a more integrated and impactful partnership.

166. The Government of South Africa actively supports Eskom's borrowing through sovereign guarantees, enhancing bankability and protecting lenders from payment defaults. Both NDB-backed projects with Eskom – for distributed battery storage and grid augmentation – are sovereign-guaranteed. The National Treasury has also historically provided payment guarantees to REIPPPP independent power producers to cover off-taker risk, ensuring project viability. These guarantees facilitated concessional lending that might otherwise be inaccessible given Eskom's debt load. However, sovereign backing is project-specific, not universal, and the National Treasury has indicated that future guarantees will be granted selectively. The battery storage programme, however, still enjoys full government guarantee backing.

167. **Reliable procurement processes and environmental and social safeguards.** NDB follows the country system, and it relies on the borrowers' capacity and systems to process the project procurement and E&S guidelines and requirements, especially for on-lending projects. The borrowers' performance was proven to be consistent with NDB's policy and guidelines, and they have provided a reliable project operational environment. For instance, IDC was required to monitor compliance by sub-projects and share relevant E&S information with NDB prior to NDB financing of each sub-project. If any gaps between the country system and NDB's Environmental and Social Framework were identified during the financing of sub-projects, NDB would engage with IDC on proposals to close the gaps. IDC referred to country systems for project E&S management and has developed E&S related policies and risk management procedures including an Environmental, Health and Safety Due Diligence Procedure. The IDC process was found to be in material compliance with the NDB Environmental and Social Framework.

168. **Addressing the challenges.** Despite the challenges that Eskom is facing and the current debt moratorium, it is an invaluable partner for NDB in the energy sector. It has been an NDB borrower for two projects. The first project, the REITAP, is facing construction delays due to several problems such as servitude encroachment on the sub-projects. Price increases on the line tenders led to cancellation and reissue of the tenders. DBSA's rating was downgraded during its implementation of the project in 2020 due to a challenging external environment worsened by the outbreak of the COVID-19 pandemic. Its policy framework, including due diligence processes and risk management, appeared to be sound and efficient in managing operational costs.

169. From a policy and regulatory perspective, the project was constrained by prolonged land and servitude approvals due to fragmented institutional mandates, lengthy environmental authorisations required under the National Environmental Management Act, and rigid procurement requirements under the Public Finance Management Act, which limited flexibility to adjust tenders amid rising costs. Coordination among Eskom, the National Energy Regulator of South Africa, and the DMRE also proved complex, with sequential and overlapping approval processes extending implementation timelines. These systemic constraints highlight the need for a more coherent regulatory environment, streamlined permitting and procurement frameworks that support timely project delivery. At the policy level, the Presidency has initiated efforts to strengthen intergovernmental coordination and accelerate approvals for strategic infrastructure. Although these reforms remain in early implementation, the developments bode well for future projects.

170. **Technical competence.** Despite DBSA's limitations in sharing information due to its confidentiality agreements with sub-borrowers, it managed to submit project progress reports annually and other required documents to facilitate NDB's monitoring activities. NDB's second project with the bank is the DBSA SIP under which it has disbursed the entire amount allocated for two energy projects under REIPPPP and the energy

component was completed on time. The format of the reports submitted does not reflect all aspects of the project performance systematically but that is not so much due to DBSA but more to the fact that no standard format has been agreed upon. It has fully disbursed the NDB funds allocated to it within the stipulated time.

171. **Continuous collaboration.** NDB has channelled financing of two of its projects in the country through DBSA which has substantial experience in developing, financing and managing renewable energy projects with independent power producers from the private sector. Also, NDB has financed two sovereign projects with Eskom.

172. **Sub-project selection.** The borrowers have roles in identifying, selecting, appraising, financing, and monitoring sub-projects eligible for NDB funding. For instance, IDC chose sub-projects in keeping with the selection criteria that the NDB financing should not exceed 50% of the sub-project's costs. The successful identification of sub-projects has shown the competence of the borrower. The CSP sub-project asked for a waiver of the requirement that CO_2 emissions reductions reach a certain level per ZAR 1 million per year invested for the GHGER as it was included in a later stage after the project approval. For IDC, the CSP Redstone project is an anchor project which was analysed as a base case in the project document to the Board, and no waiver was needed for such inclusion.

173. **Loan disbursement.** The loan was disbursed in a timely manner after the initial delay following the loan agreement between the borrower and NDB. The borrower ensured compliance with the NDB's procurement policy.

174. **Project monitoring.** While the REIPPPP funded the socio-economic development aspects of its projects, including Black Economic Empowerment schemes, community initiatives, employment creation, and enterprise development for local communities, they are not well monitored with specific outcomes, such as the number of jobs created, or the proportion of women hired, or the nature of jobs created.

Table 18: Borrower performance in the energy sector in South Africa

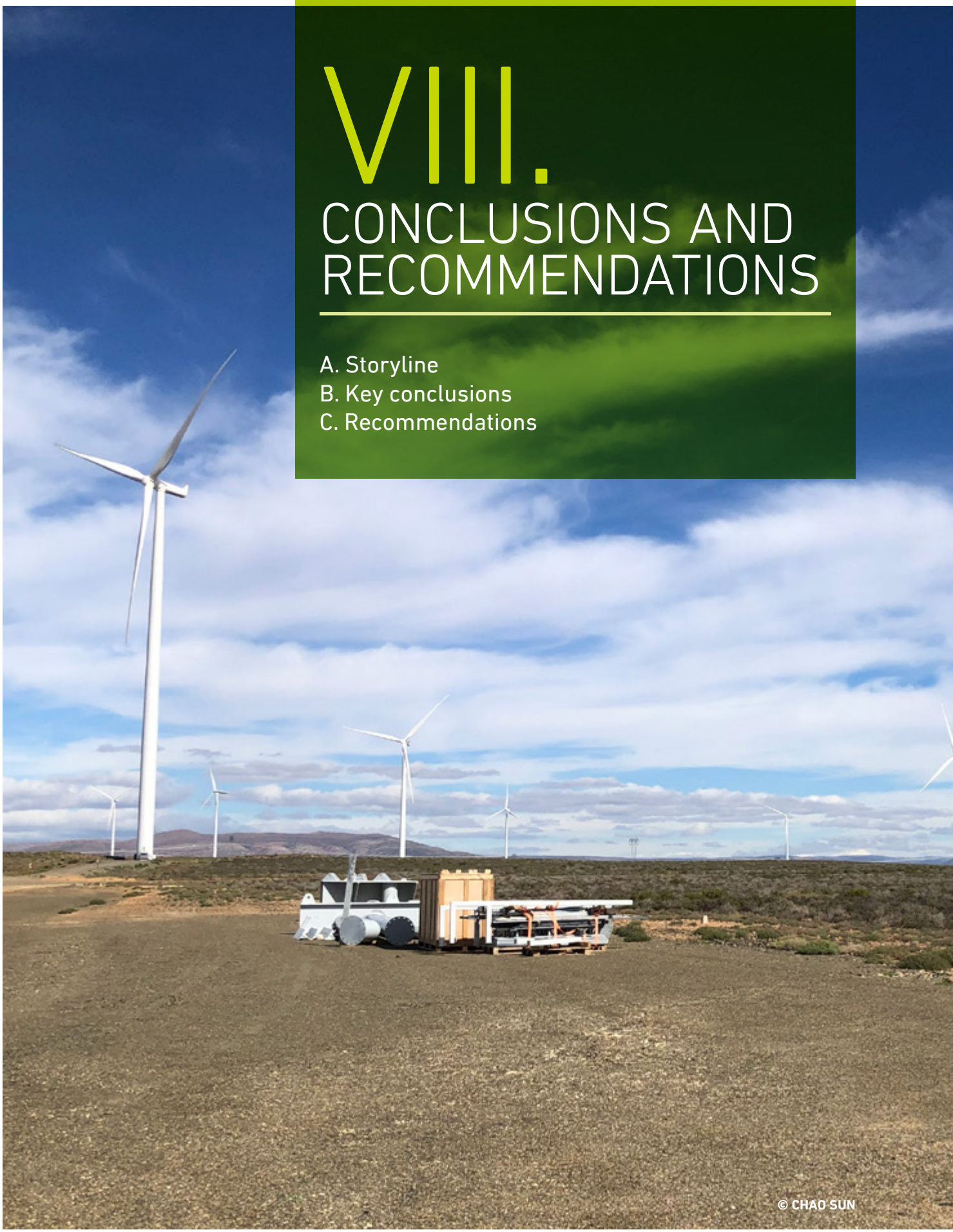
Project name	Borrower	Borrower performance
Renewable Energy Integration and Transmission Augmentation Project (REITAP)	Eskom	Moderately Unsuccessful
Greenhouse Gas Emissions Reduction and Energy Sector Development Project (GHGER)	DBSA	Successful
Renewable Energy Sector Development Project (RESP)	IDC	Moderately Successful
Battery Energy Storage Project (BESP)	Eskom	N/A
Sustainable Infrastructure Project (SIP)	DBSA	Successful
Overall borrower performance		**Moderately Successful**

Source: IEO.

175. All three borrowers have strong technical capacity despite the delays in implementation and disbursement which are sometimes caused by factors beyond their control. All projects are on course to be completed despite their significant delays. For the on-lending projects, the borrowers also take responsibility for monitoring the sub-projects and providing ARC with the monitoring results. Sub-projects of completed projects have entered commercial operation, and Eskom is also on track. **All in all, the borrower performance is "moderately successful" with room for improvement.**

VIII.
CONCLUSIONS AND RECOMMENDATIONS

A. Storyline
B. Key conclusions
C. Recommendations



A. Storyline

176. The energy sector is an important driver of South Africa's economy. Over the past decade, NDB has provided considerable support to the development of the country's renewable energy sector – contributing to its transition away from the heavy reliance on fossil fuels towards a more diversified energy mix. NDB's contributions have yielded important results. Now, after ten years of operations in the country, time has come for thorough introspection. Building on the lessons and good practices of the past decade will be essential to achieving greater impact and sustainability in the future.

177. The energy sector will require continued public and private investments in the future to alleviate the energy shortages in the country. There are several key questions raised in this evaluation, including: how NDB should better position itself as a preferred development financier in the country; to what extent NDB can and should diversify its portfolio and sectors of interventions to contribute in a more holistic manner to the country's social and economic development; how NDB can promote a more integrated country programme approach to its assistance for better results; and what internal adjustments are required within NDB's own business model, capacities, resources and instruments to further solidify its valued partnership with South Africa.

178. More specifically, in the past decade, NDB financed both sovereign and non-sovereign projects in South Africa for improving energy generation. Sovereign loans were valued by borrowers for their long tenors, while private project financing was recognised for supporting innovative technologies such as CSP and hybrid solar-plus-battery. These investments strengthened grid infrastructure and mobilised private capital to diversify the energy mix, while leveraging South Africa's competitive procurement framework and country system. Persistent challenges, however, include grid bottlenecks, financing gaps for emerging developers, delays resulting from limited local manufacturing, and the need for additional storage to manage the intermittency of renewable energy. Addressing these issues will require innovative instruments, such as blended and mezzanine finance, as well as public-private partnership models. The National Treasury also considers that, given the increasing complexity of the energy environment, the availability of technical support is increasingly necessary to assist the government in navigating policy design. Beyond lending, NDB can add value through technical assistance, knowledge management, and integrating socio-economic indicators into appraisals and reporting. Looking forward, opportunities include participation in the credit guarantee vehicle initiative, alignment with electricity market reforms, and supporting draft IRP 2023 priorities for dispatchable and flexible generation to catalyse private investment and enhance system reliability.

B. Key conclusions

179. **The completed or nearly completed projects financed by NDB in the energy sector in South Africa have generally achieved successful results, whereas the ongoing operations are on track to deliver expected results.** Projects are therefore contributing to the country's energy generation, integration and transmission capacity. However, the evaluation notes that there have been various shortcomings in the efficiency of delivery. More specifically, NDB investments are helping to integrate and generate renewable energy, reduce the country's reliance on fossil fuels, increase the capacity to meet peak demand, contribute to the reduction in CO_2 emissions, and improve economic growth which is impacted by the electricity shortage.[45] Some of the projects included components to increase energy storage (to meet peak demand and to support the integration of renewable energy into the national grid) and augment the Eskom transmission network in selected areas. However, given the overwhelming reliance on fossil fuels, the overall energy mix in the country has changed only marginally so far.

180. **NDB investments have been appreciated by individual borrowers in South Africa with the provision of funding for energy generation.** While NDB has made some good choices in its investment decisions in the energy sector in South Africa, the evaluation also concludes that these investments may appear ad hoc and piecemeal in the absence of an explicit NDB country or sector-level strategy to frame them – in other words, it does not constitute what could be called an overarching "country programme approach". Though it can be argued that the NDB general strategies provided some guidance for investments in South Africa, the general strategy is generic and does not respond to the specific opportunities and challenges of the energy sector specifically in South Africa.

181. The lack of country programme approach means that, for example, there is limited understanding of the rationale for the fluctuating volume of finance provided to the energy sector and the factors which drive these investment decisions. The evaluation also notes that the rationale behind the choice of investing in the energy sector compared with investments in, for example, the transport or water sector – which are also development priorities of the government – is not immediately apparent in the absence of an NDB country-level strategy. Similarly, NDB's position on the use of gas and nuclear technologies to support the energy transition is not explicit, something that could also be clarified in an NDB country-level strategy.

182. **NDB has provided both sovereign and non-sovereign loans to finance development projects in South Africa mobilising a healthy amount of co-financing, yet NDB has not fully utilised instruments to engage in energy projects at an early development stage, missing opportunities to shape project structures, and influence financing models.** The Bank has a broad suite of instruments that have not been adequately deployed to support South Africa's future energy sector investments. More specifically, NDB policy allows loans, guarantees, equity via funds and other instruments for investing in special funds, and subscribing to bonds and debentures. The NDB Policy on Non-Sovereign Loans also allows Management to adopt new capital market instruments as needed. Moreover, NDB has not used the project preparation fund which could have been leveraged to provide technical assistance to critical preparatory studies and enhance the quality of project design – particularly in transmission planning where bottlenecks persist.

183. **Key partnerships have been established, and there is room to explore collaboration with other actors.** Partnerships with government institutions (in particular the National Treasury and the Department of Mineral Resources and Energy) and government-related institutions (like DBSA, IDC and Eskom) have been established, even though dialogue with them can be further systematised.

[45] According to the country's National Treasury, GDP growth will increase by roughly 2% if the issue of electricity shortage is addressed.

In addition, engagement with the private sector has been mainly through the IDC and sub-contractors in individual projects. However, partnerships with other major international players in the energy sector (such as AfDB, the World Bank and others) are limited. Similarly, the evaluation did not find evidence of partnerships with think tanks, research institutions and universities on knowledge, research and analytic work, nor on the provision of technical assistance and capacity-building. Nevertheless, NDB was involved in the development of the concept paper presented to the South African Cabinet advocating for the adoption of the integrated transmission projects model for transmission. Furthermore, NDB has supported capacity-building of the teams involved in the development of the Independent Transmission Projects programme through knowledge-sharing tours in India and Brazil and a seminar on energy during NDB's annual meeting in Cape Town in 2024. NDB is also planning to support the creation of the credit guarantee vehicle which is meant to de-risk and mobilise private sector financing of transmission in South Africa.

184. **While NDB has provided a fair amount of financing for projects in the energy sector in South Africa, this has not been complemented adequately by investing in non-lending activities (i.e. knowledge-sharing, capacity-building and technical assistance, and partnerships).** Having said that, the evaluation recognises that a key reason for this has been due to the limited human and financial resources available to the ARC and NDB in general for such activities, but also due to the fact that in its first decade, NDB primarily focused on lending resources for development interventions. For example, few publications have been produced and only some knowledge-sharing events have been held on NDB's experience in the energy sector in the past decade. The evaluation is of the view that complementing essential financing could have contributed to even wider results from the portfolio, enhanced the Bank's visibility and positioned it as a key player in the sector. Overall, the results for non-lending activities have been generally weak.

185. **Incorporation of social and economic aspects of renewable energy sector projects:** The REIPPPP's competitive bidding process requires projects to meet strict criteria beyond just the price of electricity. For example, equity partners were encouraged to establish Black Economic Empowerment investment consortia as shareholders in the project company. Some projects established community trusts as a special-purpose trust to hold a significant share (e.g. 5-20%) of the project on behalf of the local communities. NDB has not provided any lending for BEE shareholding or community development. While some of the sub-projects that NDB co-financed include such equity shareholding (Redstone CSP, etc.), NDB did not provide financing for this type of equity partnerships. NDB's appraisal and monitoring of its co-financed projects does not include any social or local community development aspects of the project such as employment creation at the construction and operational stages,[46] the share of BEE holding, funds spent on community development activities or the share of local content. These are currently not stipulated in the NDB guidelines and therefore not included in the DMF format.

186. **Some project supervision and monitoring has been done by NDB, however, only one project covered by the evaluation benefitted from an in-depth review during its implementation**. In general, the evaluation finds that the quantity and quality of NDB's own supervision and monitoring has not been sufficient. The duration of NDB supervision missions was generally rather short and did not always include an energy expert. Reports covered mostly inputs, outputs and some DMF indicators, with limited analysis and documentation of the proximate causes of strengths and weaknesses and lessons learned. They also do not give information on any of the social or economic development aspects that the projects may have engaged with as part of the requirements under the REIPPPP. Although NDB does not invest in manufacturing capacity, better monitoring could be done with the necessary indicators to provide evidence in local content. By and large, the NDB supervision missions were a repetition of the reports produced by the borrowers. It can be concluded that NDB has not adequately leveraged supervision and monitoring as instruments for mid-course adjustments and improvements to implementation.

[46] Apart from the SIP project which has an employment creation target.

C. Recommendations

Strategic recommendations

187. **Recommendation 1: Develop an NDB country-level strategy for South Africa in alignment with the country's development needs and NDB's general strategies.** A country-level NDB strategy would assist NDB in outlining its overall objectives and targets at the country-level and weighing its decisions of which sectors to invest in and the underlying rationale, principles and targets for each. The presence of such a strategy would also shift its approach from project-by-project engagement to a country programmatic one. Within that strategy, a framework for investments at the sector level would provide a better understanding and rationale for the selection of project level investments and would help to identify the overall strategic objectives, outcomes and targets at the sector level. This would ensure that NDB selects high pay-off investments in keeping with its overall corporate general strategy. Such an approach would also clarify NDB's value proposition in South Africa's energy financing landscape. Such a strategy would be a good opportunity for the Bank to explore its position in gas-to-power and nuclear power sector upstream involvement and how it can play a catalytic role. It could provide clarity on whether infrastructure considerations are likely to extend to projects in the distribution industry. While there is ongoing work to develop the modality of projects in this sector, it remains a critical area that may benefit from funding and other forms of support. More importantly, the NDB country-level strategy could also be used as a monitoring mechanism for country-level performance and as a tool for communication and engagement with key stakeholders.

188. **Recommendation 2: NDB should enhance its investment areas and product mix.** NDB needs to consider how it can make its offerings more relevant and competitive by offering a mix of products and engaging in areas which enable it to play its role as a DFI. There is need for NDB to broaden the scope of its projects and the technologies it finances to better align them with the Integrated Resource Plan, given the need to ensure a balanced energy mix. Given that procurement of new generation capacity is a critical feature of the broader electricity sector's reform agenda, it would be useful for NDB to consider opportunities for more active involvement in the development of the market and what additional opportunities for support may exist. Going forward, there will be limited demand for NDB's financing on the current terms because there is more competitive financing being provided by the commercial sector and private investors. NDB needs to reflect on how it can add value through mechanisms such as guarantees, blended finance, grants, etc. and build its appetite for instruments such as equity via funds, mezzanine finance, and enhance its toolbox to offer products which are attractive to its clients.

189. **Recommendation 3: Develop an energy sector knowledge management framework in South Africa.** NDB can play a key role as a generator, curator and disseminator of knowledge on the energy sector. NDB has built considerable experience in the implementation of some innovative technologies in the sector. However, this knowledge has not been used to develop knowledge products for sharing. NDB can play a key role by commissioning case studies of its experience and drawing important insights from them which it can share with its development partners, as a Bank with a specific agenda to promote development cooperation in its member and regional countries.

Technical recommendations

190. **Recommendation 4: NDB should prioritise strengthening South Africa's transmission capacity and get ready to leverage the emerging credit guarantee vehicle to mobilise private investment.** The Department of Electricity and Energy (through the IPP Office) is piloting the public-private sector model for investments in transmission infrastructure, a critical step in addressing constraints to integrate renewable energy into the grid. The country has committed to constructing approximately 14,000 km of transmission infrastructure over 10 years, but there are significant capacity and resource constraints preventing the National Transmission Company of South Africa from executing the initiative alone.[47] Scaling up private sector participation is essential. NDB could facilitate knowledge exchange across its member countries, enabling South Africa to learn from diverse business, financing and implementation models for transmission expansion and modernisation.

191. **Recommendation 5: Utilisation of the project preparation fund and provision of technical assistance for bankable energy projects as well as use it for implementation support, monitoring and evaluation, and capacity-building.** NDB needs to engage in the development of its pipeline through greater interaction and engagement with key stakeholders. NDB can do so by enhancing awareness about the PPF among key stakeholders and sharing with them how they can access the facility and the purpose for which the facility has been designed. This will give NDB greater access to the key stakeholders and help it engage in a more substantive manner in pipeline development, as well as in implementation support and enhancing the quality of supervision, monitoring and evaluation, and knowledge management.

Operational recommendations

192. **Recommendation 6: Use the Design and Monitoring Framework as a more strategic instrument to monitor and measure socio-economic aspects of energy projects.** Given NDB's status as a development bank with a development mandate, all projects in South Africa should also incorporate socio-economic benefits such as job creation, skills development, BEE shareholding, community ownership, etc. The Department of Planning, Monitoring and Evaluation has recently established new guidelines for a focus on transformative equity and climate and ecosystem health. As a development bank with a strong social and transformative agenda, it is recommended that NDB integrate these guidelines and the associated monitoring metrics into its DMF, supervision and monitoring templates, and report upon them regularly.

193. **Recommendation 7: NDB needs to better structure its supervision and project completion reporting processes and reports.** In close coordination with the borrowers, NDB supervision missions should be held periodically, and for projects in the energy sector they should systematically include an energy expert among mission members. Projects are encouraged to undertake an in-depth review (like a mid-term review) once during its implementation period, which would replace the regular/annual supervision mission. In addition to providing an account of results, supervision/MTR reports should have a section on lessons learned and recommendations to support implementers achieve project objectives. Similarly, NDB should work with borrowers, providing them with technical assistance and capacity-building as needed, towards improving their data collection and analysis methods, and reporting formats.

[47] Current Eskom capacity is only 100 km annually.

ANNEXES

The annexes to the report (listed below) are available on the Independent Evaluation Office website at:

Annex I.	DPME peer review letter
Annex II.	Project briefs
Annex III.	South Africa's major energy mix
Annex IV.	Key energy sector stakeholders in South Africa
Annex V.	South Africa's key initiatives in energy sector
Annex VI.	SA Renewable Energy Generation (2011–2024)
Annex VII.	South Africa project pipeline and standby projects
Annex VIII.	Design and Monitoring Framework summary of NDB financed energy projects
Annex IX.	List of sub-projects
Annex X.	MDB benchmark for energy sector intervention
Annex XI.	Crowding in private sector investments
Annex XII.	Definition of the evaluation criteria used by IEO
Annex XIII.	Evaluation framework
Annex XIV.	Details of disbursements from borrowers to sub-borrowers
Annex XV.	List of key persons met
Annex XVI.	Key documents reviewed
Annex XVII.	Photos

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