



## 1. Project Data

<b>Project ID</b> P122329	<b>Project Name</b> ZA - Eskom Renewables Support Project		
<b>Country</b> South Africa	<b>Practice Area(Lead)</b> Energy & Extractives		
<b>L/C/TF Number(s)</b> TF-10690	<b>Closing Date (Original)</b> 31-Dec-2016	<b>Total Project Cost (USD)</b> 249,999,999.25	
<b>Bank Approval Date</b> 27-Oct-2011	<b>Closing Date (Actual)</b> 31-Dec-2023		
	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>	
Original Commitment	250,000,000.00	250,000,000.00	
Revised Commitment	250,000,000.00	250,000,000.00	
Actual	249,999,999.25	249,999,999.25	
<b>Prepared by</b> Maria Shkaratan	<b>Reviewed by</b> Chikako Miwa	<b>ICR Review Coordinator</b> Avjeet Singh	<b>Group</b> IEGSD (Unit 4)

## 2. Project Objectives and Components

### a. Objectives

The Project Development Objective (PDO) was to facilitate accelerated development of large-scale renewable energy capacity in support of the long-term carbon mitigation strategy of South Africa (ICR, page 9). The PDO was stated identically in the Project Appraisal Document (PAD) (PAD, page ii).

The PDO is sourced from the PAD and the ICR because the Loan Agreement was not available in the Operations Portal.



The PDO was not revised.

For the purposes of this ICR review, the objective will not be broken into parts but will be assessed as one PDO.

**b. Were the project objectives/key associated outcome targets revised during implementation?**

Yes

**Did the Board approve the revised objectives/key associated outcome targets?**

Yes

**Date of Board Approval**

30-Nov-2018

**c. Will a split evaluation be undertaken?**

Yes

**d. Components**

**1. Original components**

**Component 1: 100 MW Sere Wind Power Plant and associated infrastructure for the connection of wind and renewable IPPs to the grid (cost at appraisal: US\$353.5 million; actual cost: US\$252 million).** The component was to finance the design, procurement, construction and commissioning of a 100 MW wind power plant and associated transmission lines and substations at Sere in the Western Cape Province. The plant design comprised turbines totaling 100 MW with an expected load factor of 26 percent and an annual energy output of 219 GWh. The plant would be a flagship in the sector; and investments in transmission capacity would catalyze private sector investment under the renewable energy (RE) development program.

**Component 2: 100 MW Upington Concentrating Solar Plant (CSP) (cost at appraisal: US\$1,197.4 million; actual cost: US\$0 million).** This component was to finance the design, procurement, construction, and commissioning of 100 MW CSP capacity at Upington in the Northern Cape Province on a turnkey basis, including associated infrastructure to connect the plant to the grid (an overhead 132 kV power line linking the substation at the facility site to the nearest substation at the grid). The plant was designed to operate as semi-base load using storage capacity. The plant was expected to operate at a load factor of 60-65 percent, generate 516 GWh per year, and result in avoidance of an estimated 9 million tons of GHG emission over its projected 20-year life.

**Management fee at appraisal:** US\$0.875 million.

**Revised Components:** The components were revised, as described in section 2.e under "Restructurings".

**e. Comments on Project Cost, Financing, Borrower Contribution, and Dates**



**Project Cost:** The appraisal estimate was US\$1,551.8 million (PAD, page 10), and the actual disbursement was US\$512.9 million. This difference is explained by the following. At Restructuring 5 of November 2018, the CSP investment under component 2 was replaced by a Battery Energy Storage System (BESS) investment, resulting in a reduction in component 2 cost by US\$542.4 million. The BESS was implemented partially, and its actual cost at Project closing was US\$260 million (an additional reduction in cost of US\$395.0). Component 1 was completed at a lower cost than expected, with a reduction of US\$101.5 million, bringing the overall cost reduction to US\$1,038.9 million. With this reduction, a total actual cost was US\$512.9 million.

**Project Financing:** Project's financing from IBRD was expected to be US\$510 million and consist of: a Clean Technology Fund (CTF) loan to the Eskom Holdings SOC Ltd., though IBRD (appraisal estimate: US\$250.0 million) and own IBRD financing (appraisal estimate: US\$260.0 million) (PAD, page 10). The actual disbursement at closure was US\$250 million.

**Project's co-financing** was expected to be US\$1,000.0 million, provided by several lenders, including the African Development Bank (AfDB), Agence Française de Développement (AFD), Kreditanstalt für Wiederaufbau (KfW), and European Investment Bank (based on PAD, page i, page 10). The amount at closure was US\$212 million, including AfDB's loan in the amount of US\$9.0 million, a CTF loan (though the AfDB) in the amount of US\$73.0 million, and a contribution from AFD in the amount of US\$130 million (at IEG's request, these data were provided by the team).

**Borrower/Recipient contribution:** The Borrower's (Eskom Holdings') contribution was estimated at US\$41.78 million at appraisal, but there was no Borrower contribution.

**Project Dates:** The Project was approved on October 27, 2011, and became effective on July 25, 2012. The MTR review was on September 12, 2014. The Project was restructured eight times: (i) on December 11, 2014; (ii) on December 31, 2016 (source: Restructuring Paper RES20010, page 1); (iii) on June 30, 2017; (iv) on March 29, 2018; (v) on November 30, 2018; (vi) on December 17, 2021; (vii) on December 24, 2022; and (viii) on April 13, 2023. The original closing date was December 31, 2016. The Project was extended four times, for a total of seven years (or 84 months), to December 31, 2023, which was the date of the Project's actual closure.

**Restructurings:** The Project had eight restructurings. Five of them were for extension of Project closing dates only, while two included minor adjustments of components and reallocation of financing (within the same overall funding), and one involved significant restructuring, requiring a split evaluation (Restructuring 5, of November 30, 2018). Restructuring 5 was mainly to significantly revise component 2: drop the CSP investment (original Component 2, estimated cost US\$1,197.4 million) and introduce instead the Battery Energy Storage System (BESS) (revised Component 2, estimated cost US\$655 million), after the failure of the CSP bidding process under the Project and advances in private sector development of CSP. The BESS component was further revised at Restructuring 7 in December 2022 to exclude two sites from the activities financed by the CTF Loan, following an Eskom's decision. After that, six sites for a total of 162.5 MW remained for Bank financing. There was no revision of Project results framework (RF) targets at Restructuring 7.

**Restructuring 1 (December 11, 2014)** was to amend the disbursement percentages for financing under the CTF to align them with the financing plan as updated after Board approval due to changes in project



costs and contributions by co-financiers. The restructuring also added the African Development Bank (AfDB) to the list of co-financiers for the CSP.

**Restructurings 2-4 (December 31, 2016; June 30, 2017; and March 29, 2018, correspondingly)** were to extend the Project's closing date by a total of 23 months, from December 31, 2016, to November 30, 2018, to allow time to select an alternative to the CSP investment and prepare and appraise it. The recommendation by Eskom to replace the CSP component was due to significant delays in its implementation and the non-responsive final stage bids for the main package (because of commercial and technical deviations).

**Restructuring 5 (November 30, 2018) involved the following changes:**

- i. **Changes in components:** under component 2, the investment in the CSP plant was replaced with the investment in a 360 MW BESS with a storage capacity of 1,440 MWh, at an estimated cost at restructuring of US\$655.0 million and the actual cost at closure of US\$260.0 million. **Note:** The BESS cost estimate was made for the whole BESS program, including phase 1 and 2, whereas only a part of phase 1 was implemented (ICR, page 32).
- ii. **Changes in financing:** some of the funding for component 1 was reallocated to component 2;
- iii. **Changes in the RF:**
  - A new core indicator was added to measure battery storage capacity (MW);
  - The intermediate results indicator (IRI) measuring the CSP progress was dropped;
  - The PDO indicator measuring GHG emissions avoided due to the Project was reduced to reflect that the CPS investment was dropped (gains from the BESS investment were not accounted for).
  - The IRI "Energy supply from renewable sources, GWh" was replaced with the IRI "Generation Capacity of Renewable Energy (other than hydropower) constructed, MW" to better reflect the value added by the Project;
  - The CTF leveraged financing indicator was adjusted to include investments outside of the Project (in addition to the Project co-financing);
  - A new indicator measuring the number of jobs created by the Project was added.
- iv. **Changes in safeguards requirements:** the Indigenous People Policy (OP4.10) was triggered;
  - i. A change in Project closing date by 37 months, from November 30, 2018 to December 31, 2021, to allow time for the implementation of the BESS component.

**Restructuring 6 (December 17, 2021)** was to extend the Project closing date by 18 months, from December 31, 2021, to June 30, 2023, to allow time to implement the BESS component.

**Restructuring 7 (December 24, 2022)** was to: (i) remove the site on which the IP policy was triggered (the implementation was to be financed by non-WBG sources); (ii) reallocate the remaining Component 1 funding (there were savings of 12 percent of the allocated funding) to Component 2 (a total Project cost remained the same).

**Restructuring 8 (April 13, 2023)** was to extend the Project closing date by six months, from June 30, 2023, to December 31, 2023, to allow completion of construction and commissioning of BESS.



### 3. Relevance of Objectives

#### Rationale

**Country and Sector Context.** At Project appraisal, South Africa continued to experience power shortages. During the decade of 1999-2008, average growth in electricity demand was above 6 percent a year, outpacing GDP growth of 4.1 percent per year. The growth in electricity demand was, however, not matched by investments in new generation capacity, leading to severe power shortages and load shedding. At the same time, the Government was preparing its climate policy, and environmental goals were incorporated in the country's energy development strategy. This required that power system planning factor in the externalities, in particular, GHG emissions from fossil fuel-based generation.

**Relevance to Government Strategies at approval and at closure.** At Project appraisal, its objectives were aligned with South Africa's macroeconomic and energy sector development strategies. Energy was considered essential for the macroeconomic recovery and growth, especially after the global financial crisis of 2007-2009. The Government had committed to low carbon growth and set the objective of reducing GHG emissions by 34 percent by 2020 and 42 percent by 2025, after which they would plateau for a decade before reducing in absolute terms thereafter (Presidency statement of December 6, 2009, and a confirmation letter on these commitments issued by the South African Government to the UNFCCC). At closure, the Project was aligned with the *Presidency Strategic Plan 2020-25 Grow South Africa*. Priority 1: *Economic transformation and job creation*, intervention 2 *Improve the quality and rate of infrastructure investment*. It was also aligned with the *National Development Plan (NDP) 2030 Our Future-Make it Work*, which stated the following objectives in the energy sector: energy infrastructure investments that promote growth; reliable and efficient energy service; social equity through access and affordable tariffs; and environmental sustainability through a reduced share of coal in electricity mix, an increased own production of wind and solar electricity, and hydroelectricity imports.

**Relevance to the WBG's Assistance Strategies at closure.** The Project was aligned with the WBG's Country Partnership Framework (CPF) FY2022-26, specifically, with Objective 1.2 *Greater climate change Resilience and Environmentally Sustainable Investments in Selected Sectors*, which emphasized support to South Africa in implementing its Integrated Resource Plan (2019) to achieve a secure and sustainable energy mix by, amongst other measures, installing battery storage facilities to support grid integration of renewables, and increasing the share of renewables in electricity generation mix.

**Related projects and support to clean energy at appraisal.** At appraisal, the Government and Eskom had begun the development of South Africa's first utility-scale RE projects. South Africa's CTF Investment Plan, a US\$2,350 million program to scale up CSP and wind, was endorsed by the CTF Trust Fund Committee in October 2009. It included support for development of a private sector-led solar water heater market and energy efficiency investments. At the same time, the Bank's Carbon Partnership Facility offered an opportunity to attract carbon finance resources through projects in energy efficiency, solar water heating, and RE. Bank support to the electricity sector would include analytical work to help catalyze private sector financing of RE investments, development of low carbon options, and strengthening Bank-South Africa Partnership on climate change.

While the Project was in full alignment with the CPF FY2022-26 and with the government objectives of energy sector development and low carbon growth, the Project's objectives were overambitious considering



the Government's and Eskom's capacity in relation to RE project implementation at the time. On balance, the rating for Relevance of Objectives is Substantial.

## Rating

Substantial

## 4. Achievement of Objectives (Efficacy)

### OBJECTIVE 1

#### Objective

To facilitate accelerated development of large-scale renewable energy capacity in support of the long-term carbon mitigation strategy of South Africa.

#### Rationale

The theory of change (ToC) for the Project was not included in the PAD; it was prepared for the ICR (ICR, page 9). It reflected the logic of the implementation of the Original Project and did not include the BESS component added at Restructuring 5 of November 2018. It showed causal links from Project activities to outputs/intermediate outcomes, and to the PDO outcomes. To achieve the three PDO objectives, the Project would support the following activities: (i) construction of the wind power plant and the associated infrastructure; and (ii) construction of the CSP plant and the associated infrastructure. The expected outputs/intermediate outcomes of these activities were presented as the RF indicators and included: cumulative implementation progress, number of jobs created, total investments in clean energy generation, and percentage of clean electricity supply in total electricity supplied. The achievement of the intermediate outcomes would ultimately result in the following PDO outcomes: (i) energy supply from RE increased; (ii) GHG emissions reduced; and (iii) financing leveraged by funding from other sources.

While the ICR's ToC provided a clear description of the Project's logic from inputs to PDO outcomes, it was not comprehensive because it did not include the BESS component. Also, the intermediate outcomes replicated the RF indicators and did not play the expected role of showing how the outputs result in sectoral changes, how they are used to solve problems. In addition, the critical assumptions were not listed.

**The efficacy under Objective 1, Original Project, was assessed using the following indicators:**

#### Outputs/Intermediate Outcomes:

1. "Sere Wind Power Project commissioned, percentage" (target: 100 percent). The actual achievement at closure was 100 percent, the target was reached.
2. "Upington Concentrating Solar Power (CSP) commissioned, percentage" (target: 100 percent). The component was cancelled, and the achievement of the target was zero percent.





3. "Total investments in clean energy generation (public and private), US\$ mn" (target: US\$1,900 million). The actual achievement at closure was US\$14,882 million, the target was significantly exceeded.

The ICR explained this discrepancy: at Restructuring 5 in November 2018, the definition of financing leveraged was expanded to include not only the co-financing under the Project, but also all private sector investment in clean energy. Under this definition, the leveraged amount was US\$14,882 million at closure. This created two issues: (i) the original target's achievement was no longer tracked and was unknown at closure and (ii) the level of attribution to the reviewed Project under this definition became unclear. Regarding the attribution, the ICR assured that there was "a strong basis for assigning some attribution to the project in qualitative terms", as the Project truly facilitated investment in RE in the country in many ways. (ICR, page 13) The feedback from local stakeholders showed that by supporting improved regulatory and environmental frameworks for competitive bidding and developing an inventory of potential sites and technical specifications for BESS, the Project facilitated large scale private investments in RE (ICR, page 39).

4. "Investments in clean energy generation as a share of all investments in electricity generation, percentage" (target: 17 percent). The actual achievement at closure was 10 percent, the target was 58.8 percent achieved (partially achieved).

5. "Percentage of clean energy supply in the overall electricity consumption" (target: 3 percent). The actual achievement at closure was 3.5 percent, the target was exceeded.

6. "Number of jobs created (Number)" (target: 800 jobs). The actual achievement at closure was 572 jobs, the target was 71.5 percent achieved (partially achieved).

#### **PDO outcomes:**

1. "Direct GHG emissions avoided under the project, t/year" (target: 952,000 tons/year). The actual achievement at closure was 271,000 tons/year, the target was 28.5 percent achieved (partially achieved). This was due to the cancellation of the CSP component, while the contribution of the wind power plant component exceeded the expectations (ICR, page 13)

2. "Energy supply from renewable sources, GWh" (target: 520 GWh). The actual achievement at closure was 329 GWh (ICR, page 12), the target was 63.3 percent achieved (partially achieved). The sole contributor to this indicator was the Sere wind plant (component 1), which was completed by closure. This partial achievement of the target was due to the cancellation of the CSP plant (component 2).

3. "CTF Leveraged financing under the project, US\$mn" (target: US\$1,200 million) and "CTF Leveraged financing under the project, % of project cost" (target: 77 percent). The actual achievement at closure was US\$1,778 million and 80 percent, respectively; the target was exceeded.

*Note:* At closure, the BESS window launched three private sector bids: 513 MW in 2022, 615 MW in 2023, and 616 MW in 2024 (ICR, page 13). Other related solar PV and battery storage projects were awarded contracts in prior rounds, including the Norwegian Scatec's 540 MW solar PV and 225 MW/1140 MWh battery storage projects that went into operation at the end of 2023 (ICR, page 39).

**Rating.** The Original Project partially achieved its intended results, and its efficacy rating is Modest. Specifically, the Project barely achieved one of the PDO targets (on avoided emissions), partially achieved another one (on energy supply from RE sources), and exceeded the other two (on CTF leveraged financing



for RE). Regarding the IRI targets, the wind power plant construction target was reached, while the CSP construction was not implemented (zero percent achievement of the target); one of the two targets on investment in clean energy generation was exceeded, while the other was partially achieved; and the job creation target was partially reached.

**Rating**  
Modest

## **OBJECTIVE 1 REVISION 1**

### **Revised Objective**

To facilitate accelerated development of large-scale renewable energy capacity in support of the long-term carbon mitigation strategy of South Africa.

### **Revised Rationale**

Please see the discussion of the ToC under Objective 1, Original Project.

**The efficacy under Objective 1, Revision 1 Project, was assessed using the following indicators:**

### **Outputs/Intermediate Outcomes:**

1. "Sere Wind Power Project commissioned, percentage" (original target: 100 percent). The actual achievement at closure was 100 percent, the target was reached.
2. "Total investments in clean energy generation (public and private), US\$ mn" (original target: US\$1,900 million). The actual achievement at closure was US\$14,882 million, the target was significantly exceeded (please see the note to this indicator under Original Project).
3. "Investments in clean energy generation as a share of all investments in electricity generation, percentage" (original target: 17 percent). The actual achievement at closure was 10 percent, the target was 58.8 percent achieved (partially achieved).
4. "Percentage of clean energy supply in the overall electricity consumption" (original target: 3 percent). The actual achievement at closure was 3.5 percent, the target was exceeded.
5. "Number of jobs created (Number)" (original target: 800 jobs). The actual achievement at closure was 572 jobs, the target was 71.5 percent achieved (partially achieved).

### **PDO outcomes:**

1. "Direct GHG emissions avoided under the project, t/year" (revised target: 199,000 tons/year). The actual achievement at closure was 271,000 tons/year, the target was exceeded.
2. "Generation Capacity of Renewable Energy (other than hydropower) constructed, MW" (newly added target: 460 MW). The actual achievement at closure was 168 MW, the target was 36.5 percent achieved





(partially achieved). The underperformance was due to the low achievement of the BESS sub-target (component 2), while the wind power plant sub-target (component 1) was fully reached.

2.a. Generation Capacity of Renewable Energy constructed – Wind, MW (newly added target: 100 MW). The actual achievement at closure was 100 MW, the target was reached.

2.b. Battery Storage Capacity Constructed, MW (newly added target: 360 MW). The actual achievement at closure was 68 MW, the target was 18.9 percent achieved (barely achieved).

**Rating.** The Revised Project mostly achieved its intended results, and its efficacy rating is Substantial, with moderate shortcomings. Specifically, two of the PDO targets (on avoided emissions and wind generation capacity constructed) were reached or exceeded; while one PDO target was barely reached (on battery storage constructed), leading to a partial achievement of the overall RE capacity target. Regarding the IRI targets, two were reached or exceeded (the wind power plant construction and one of the RE investment targets), while two were partially reached (the target on the number of jobs and one of the investment targets).

**Revised Rating**  
 Substantial

## OVERALL EFFICACY

### Rationale

For the Original Project, the rating for efficacy is Modest. The main reason is that the construction of the CSP plant (component 2) was not implemented. As a result, the PDO targets on avoided emissions and on energy supply from RE sources were barely/partially reached. At the same time, the PDO indicator target on leveraging RE financing was exceeded.

### Overall Efficacy Rating

Modest

### Primary Reason

Low achievement

## OVERALL EFFICACY REVISION 1

### Overall Efficacy Revision 1 Rationale

For the Revision 1 Project, the rating for efficacy is Substantial, with moderate shortcomings. The two PDO targets related to wind generation capacity constructed and avoided emissions were reached. At the same time, battery storage construction was barely implemented, resulting in a low achievement of the third PDO target.



## Overall Efficacy Revision 1 Rating

Substantial

### 5. Efficiency

#### a. Economic Analysis:

##### At appraisal (PAD, pages 19-21).

The economic analysis was carried out for the two components separately; it was then combined for the Project as a whole. The benefits were estimated based on the consumer willingness to pay (WTP) approach. The discount rate was 10 percent. The price of CO<sub>2</sub> per ton was assumed at US\$29. *For the Sere wind plant (component 1)*, the economic internal rate of return (EIRR) was estimated at 4.7 percent, and the NPV was negative, -US\$103.2 million. When the benefits from GHG emission reduction were added, the EIRR increased to 7.3 percent, and the NPV became positive at US\$55.3. These calculations assumed a conservative 26 percent load factor. With a 32 percent load factor, the EIRR increased to 4.8 percent. *For the CSP plant (component 2)*, the EIRR was zero percent and the NPV was negative, -US\$404.1 million, when using a conservative load factor of 12 hours a day. When the benefits from the GHG emission reduction were added, the EIRR increased to 2.2 percent. When using the load factor of 15 hours a day (the intended level), the EIRR increased to 4.8 percent. *For the Project as a whole* (combining the calculations for the two components), the conservative EIRR estimate without the benefits of GHG emission reduction was 1.4 percent, while with such benefits, it was 3.8 percent.

##### At Restructuring 5 of November 2018 (ICR, pages 33).

The economic analysis for the new BESS component was conducted at the time when the component was added to the Project (at Restructuring 5). The discount rate used was 10 percent. The price of carbon was estimated at US\$35 per tCO<sub>2</sub>. The analysis resulted in the EIRR of 1.2 percent and the negative NPV of -US\$139 million. The ERR increased to 3.1 percent after accounting for GHG emissions. The analysis assumed that the batteries would displace energy during the evening peak usage for four hours per day. The counterfactual to the batteries was the existing open cycle gas turbines (OCGT).

##### At closure (ICR, pages 14-15, pages 33-35).

The economic analysis at closure was conducted separately for the Sere wind plant and BESS; a combined analysis for the Project as a whole was not presented. The approach replicated the one used originally, at appraisal for the wind plant and at Restructuring 5 of November 2018 for the BESS investment. The discount rate was 10 percent. The price of carbon was US\$55 per tCO<sub>2</sub> (low price scenario) and US\$108 per tCO<sub>2</sub> (high price scenario). *For the Sere wind plant (component 1)*, the EIRR was 17.5 percent and the NPV was US\$96 million. When the GHG reduction benefits were added, the EIRR increased to 20.4 percent and the NPV to US\$128 million in the low carbon price scenario (in the high carbon price scenario, 22.6 percent and US\$160 million, respectively). *For the BESS component*, the EIRR was 4.8 percent and the NPV was negative at -US\$47.6 million. The EIRR increased to 11.4 percent after accounting for GHG emissions, while the NPV increased to US\$21.1 million in the low carbon price scenario (in the high carbon price scenario, 17.0 percent and US\$89.6 million, respectively).



At appraisal, since the EIRRs for both components 1 and 2, as well as the combined estimate, were below the opportunity cost of capital (discount rate), the Project was economically inefficient. However, at closure, the EIRR for both components were above the discount rate (for component 2, only after accounting for the benefits of the GHG emission reduction), therefore, the Project was economically efficient.

**b. Administrative Efficiency (ICR, page 15):**

The administrative efficiency differed for the two components of the Project. The wind plant construction (component 1) was implemented efficiently: it was completed ahead of the schedule, within the budget, and following the original design. However, both the Original and Revised component 2 were implemented inefficiently: there was a seven-year delay and inefficiently used resources (including the failed bid for the CSP and the non-response to the first BESS tender).

On balance, considering the economic viability of the Project at closure and the administratively efficient implementation of the wind plant construction (component 1), but also taking into account the economic inefficiency of the Project at appraisal and the deficiencies of implementation of both the CSP and BESS (component 2) (significant delays and the inefficiency in the use of resources), Project's efficiency is rated as Modest.

**Efficiency Rating**

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	3.80	100.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	11.40	100.00 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

**6. Outcome**

	Original Project:	Revised Project:
Relevance of objectives	Substantial	
Efficacy	Modest	Substantial
Efficiency	Modest	
Outcome	Moderately Unsatisfactory	Moderately Satisfactory
Outcome value	3	4
Amount disbursed, US\$ million	34.93*	238.07



Disbursement percentage	12.79%	87.21%
Weight value	0.38	3.49
Total weight	3.87	
Overall outcome rating	Moderately Satisfactory	

Based on the shares of the disbursed funds before and after Restructuring 5 of November 2018 (US\$34.93 or 12.79 percent; and US\$238.07 or 87.21 percent), the overall Project outcome rating is Moderately Satisfactory\*\* ( $0.1279 * 3 + 0.8721 * 4 = 3.87$ ).

\* Source: Restructuring Paper 5 of November 30, 2018, page 6.

\*\* Based on a six-point scale, where: 1 = Highly Unsatisfactory, 2 = Unsatisfactory, 3 = Moderately Unsatisfactory, 4 = Moderately Satisfactory, 5 = Satisfactory, and 6 = Highly Satisfactory.

**a. Outcome Rating**  
 Moderately Satisfactory

**7. Risk to Development Outcome**

**Financial.** The risk to sustainability relates primarily to Eskom’s financial capacity for maintenance and replacement of batteries, and for investments to remove transmission system bottlenecks, which were cited by the private sector as a key constraint to investing in RE capacity. To facilitate Eskom’s investment in transmission and maintenance of existing assets, the Government approved a three-year substantial debt relief package for the utility. The tariff increases approved by the regulator for 2023/24 and 2024/25 will provide additional help. (ICR, page 22)

**Institutional.** Limited capacity of the public sector during implementation was a significant factor of the Project’s low administrative efficiency. Going forward, the sustainability of the Project’s outcomes depends on enhanced capacity of Eskom and relevant government agencies to support RE development.

**8. Assessment of Bank Performance**

**a. Quality-at-Entry**

The ICR reported that the Project was prepared with technical due diligence on the CSP technology; thorough safeguards due diligence; credible risk identification and mitigation; and reliable arrangements regarding lenders’ coordination, as reflected in the MoU.

However, there were shortcomings, including the following: (i) insufficient market research for the CSP design (a technology which was still in its early stages of development when a scale-up can be



challenging), which could have signaled the unsuccessful market response if it were done properly. The ICR notes that the CSP failed because it was a new technology that both Eskom and the regulators were unfamiliar with, and the Project fully relied on public sector solutions, leading to delays and ultimately unsuccessful bids. Later in Project life, it was realized that public sector intervention was no longer necessary since the private sector was already involved in other CSP projects in South Africa, and the component was cancelled. This could have been avoided if sound market research was done at appraisal.; (ii) limited risk identification and mitigation in relation to the BESS component, particularly, with capacity constraints within Eskom, as well as the limitations of the Government's legal and regulatory framework; and (iii) insufficient considerations for the risk of not obtaining the level of co-financing expected at appraisal. (ICR, pages 18-19, 21).

### **Quality-at-Entry Rating**

Moderately Unsatisfactory

#### **b. Quality of supervision**

The ICR reported that Project implementation had several strengths, including: (i) the proactivity of the Bank team; (ii) the adequacy of supervision inputs, and (iii) coordination with other lenders. The Project task team had diverse skills mix, supporting various aspects of Project implementation; only four task team leaders over the 12 years of Project implementation; and a stable core team. Coordination with other donors was critical and focused on joint supervision missions and on the dialogue with Eskom on important matters. Project reporting was adequate, with only a few gaps in filing ISRs and aide memoires.

The ICR also pointed out that Project implementation was challenging and took 12 years from Board approval to partial completion on loan closing date, instead of the 5-year period that had been expected at appraisal. There were several factors of delays and challenges. This included due to disagreements by the financiers, including the AfDB and the New Development Bank (NDB), to follow the Bank's procurement guidelines and safeguard policies, contradictory to the MoU signed by all lenders at appraisal. Moreover, the Government's regulatory actions (a factor outside of the Project's control) added to delays, including the two-year time it took to approve Eskom's investment in BESS; the 120-day waiting period required by the energy regulator for licensing of BESS; and delays with approvals for contract awards and waivers, which were required by law, resulting in delayed bidding or award of contracts.

### **Quality of Supervision Rating**

Moderately Satisfactory

### **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. M&E Design, Implementation, & Utilization**



### a. M&E Design

The RF reflected the logic of Project interventions in the PAD, was sufficiently linked to the PDO and the ToC, and was comprehensive yet manageable. The PDO outcome indicators reflected all expected Project outcomes. The intermediate results indicators (IRIs) were linked to the PDO indicators, providing more details. All of the RF indicators were quantitative and time bound. The ICR noted that the Project's M&E system comprised quarterly progress reports, annual reports, and quarterly interim unaudited financial statements; and that the data collection instruments, responsibilities, frequency of reporting, and the intended use of the collected data were defined well at approval (ICR, pages 17, 18). There was also an agreement on a five-year M&E program for BESS, to be continued after Project closure (ICR, page 19).

The ICR noted that there were shortcomings, such as the inclusion of the contributions from the CSP component in the targets, while CSP was a high-risk pilot activity; and the design of the leveraged financing indicator to capture the RE co-financing under the Project but not the potentially catalyzed private sector investment in RE outside of the Project. (ICR, pages 17-18)

### b. M&E Implementation

The RF design proved to be solid, and the RF remained stable, assuring a continuity of monitoring of Project outcomes throughout Project life. The changes made during implementation were limited to: (i) adding a new PDO indicator for BESS and dropping the IRI measuring the CSP progress, to reflect component 2 restructuring in November 2018; (ii) changing the unit of measurement for the component 1 PDO indicator, from GWh to MW, to refine the measurement of the outcomes; (iii) modifying the leveraged financing indicator to include investment in RE outside of the Project; and (iv) adding an indicator of the number of jobs created by the Project.

There were some deficiencies. *First*, the new leveraged financing indicator, while being more reflective of the Project objectives, also created an attribution issue, as there were other RE investments in the country that were also incentivizing a scale-up. *Second*, in the initial stages of the project, there was a lack of clarity regarding reporting format. This was later resolved, and a common reporting format was agreed for the World Bank and other financiers; the ICR assessed the quality of the progress reports as generally satisfactory. *Third*, the revised CTF leveraging indicator was not consistently tracked during implementation. *Fourth*, the RE targets for the BESS component continued to be based on the whole program, even as the scope of activities financed by the Bank was reduced at Restructuring 7. (ICR, page 13, page 20)

### c. M&E Utilization

The quarterly progress reports, though not of a high quality, provided the basis for the implementation missions' discussions with Eskom. The use of a common report format facilitated the joint missions by the World Bank and other financiers and helped in focusing all parties on the key issues. (ICR, page 20)

Overall, the design of the M&E system was solid, supporting monitoring during Project life, and the weaknesses were limited. At the same time, there were several deficiencies in the implementation and utilization of the M&E system. On balance, the M&E system is rated as Modest.





## M&E Quality Rating

Modest

### 10. Other Issues

#### a. Safeguards

**Environmental and Social Safeguards.** At appraisal, the Project was classified as Environmental Category A (Full Assessment), and the following safeguards policies were triggered: Use of Country Systems (OP/BP 4.0), Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Physical and Cultural Resources (OP/BP 4.11), and Involuntary Resettlement (OP/BP 4.12). The Indigenous Peoples (OP/BP 4.10) policy was triggered during Restructuring 5 in November 2018 due to the presence of Indigenous peoples in one site proposed for BESS. Eskom decided to use AfDB and NDB funding for this site. Other issues that arose during implementation were: the management of biodiversity areas at some sites, the handling of waste management at one site, and minimum land acquisition. In all cases corrective actions were taken; and there were no significant outstanding safeguards issues at closure in the final ISR dated December 18, 2023. The project was rated Satisfactory for Safeguards throughout its implementation. (ICR, page 20)

#### b. Fiduciary Compliance

**Financial management (FM).** The ICR reported that financial management was rated Satisfactory for most of the Project implementation and remained as such at Project closure. However, there were some deficiencies. The main issue was the continuing audit qualification of Eskom's financial statements based on the inadequacy of Eskom's system to record irregular expenditures fully and accurately. The auditors also expressed an emphasis of matter due to material uncertainty in their report on the financial year ending on March 31, 2023, relating to Eskom's ability to continue as a going concern. The last ISR rated Project's FM as Satisfactory and the FM risk as Moderate. On the Loan closing date there were no outstanding audits. (ICR, page 21)

**Procurement.** The ICR reported that procurement presented major challenges for the successful implementation of the Project; and most of the ISRs rated it either Moderately Unsatisfactory or Unsatisfactory. Procurement challenges were due to several reasons, including the lack of familiarity with the new technologies, which contributed to delays in obtaining regulatory/approval decisions; procurement capacity constraints within Eskom; and delays in bidding and contract awards due to the requirements to meet the GoSA's regulatory approvals under the Public Financial Management Act (PFMA) and Preferential Procurement Policy Framework Act (PPPFA) legislation. There were a few cases of non-responsive bids that resulted in re-tendering. The challenge of coordinating activities among the financiers complicated the procurement. However, procurement performance improved towards the end of the Project when all contracts financed by the Bank had been awarded, and its rating was Moderately Satisfactory at closure (ICR, page 26).



**c. Unintended impacts (Positive or Negative)**

There were no unintended impacts.

**d. Other**

---

**11. Ratings**

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	
Quality of M&E	Modest	Modest	
Quality of ICR	---	Substantial	

**12. Lessons**

The following lessons were derived from the ICR (ICR, page 23):

**1. Projects based on innovative technologies, despite being associated with higher risks, can produce significant development outcomes and incentivize a scale-up and knowledge sharing, provided that they are properly designed with respect to ambition and cost.** The CSP component of the reviewed Project was designed as a large and costly pilot, which increased its risks and contributed to the failure of the bidding process. An innovative BESS program, while also large, was based on a phased approach and although considerably delayed, had a wide catalytic impact in South Africa and globally. The first phase contributed to a large investment in renewable energy, including in BESS capacity, by the private sector, and encouraged other countries to invest in solar battery storage. It also supported Eskom’s acquisition and sharing of related knowledge and experience.

**2. When projects introduce new and innovative technologies, it is important to focus due diligence not only on the feasibility of the technology, but also on the options for implementation structures, including private sector involvement when applicable.** In the reviewed Project, if such due diligence was conducted during the preparation stage, it could have suggested alternatives to a public sector project design and involved private sector, since it was already showing interest in CSP. This could have helped to avoid the waste of resources used to prepare the Eskom’s CSP, which ultimately failed.

**3. For projects implemented in highly regulated sectors, careful advance planning and consultations, as well as a clear agreement with the Borrower and/or government agencies on decision timelines, are critical.** This can help ensure that the required regulatory licenses,



authorizations, permits, and consents are secured on time. Implementation of the reviewed Project was plagued by delays in granting approval and regulatory licenses for the BESS component.

### **13. Assessment Recommended?**

No

### **14. Comments on Quality of ICR**

The ICR provides sufficient technical details and evidence to support the analysis and the ratings; the analysis clearly links the evidence to the findings; and the presentation is succinct and has internal consistency. Both efficacy and efficiency analyses are logical, well-structured, and written clearly. The lessons are based on evidence and are useful for future operations. The expected transformative impact of the project is clear, as well as the challenges of Project implementation and the resulting level of achievement. However, the presentation of Project costs and sources of financing could have been clearer.

Overall, the ICR quality is rated as Substantial.

#### **a. Quality of ICR Rating** Substantial